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

**Online, 17th – 29th August, 2022**

**Agenda Item:**  **8.13.2**

**Source: Ericsson (Summary rapporteur)**

**Title:** **Pre-meeting summary of 8.13.2 (Ericsson)**

**WI code(s): NR\_ENDC\_SON\_MDT\_enh2-Core**

**Document for: Discussion and Decision**

# Introduction

This summary paper addresses the proposals proposed as part of 8.13.2:

The summary is based on the following papers wherein the proposals are classified in two categories i.e.:

1. proposals for inter-system handover for voice fallback, and
2. proposals for MR DC SCG failure:

[R2-2207093](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207093.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207093)[Discussion on MRO of inter-system HO voice fallback](%5CR2-2207093.zip) **OPPO**

[R2-2207192](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207192.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207192)[Discussion on MRO enhancement for inter-system handover for voice fallback](%5CR2-2207192.zip) **NTT DOCOMO, INC.**

[R2-2207193](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207193.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207193)[Discussion on MRO for MR-DC SCG failure scenario and fast MCG recovery failure](%5CR2-2207193.zip) **NTT DOCOMO, INC.**

[R2-2207476](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207476.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207476)[Data for MRO related Enhancements](%5CR2-2207476.zip) **CATT**

[R2-2207704](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207704.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207704)[MRO for inter-system handover for voice fallback](%5CR2-2207704.zip) **Lenovo**

[R2-2207954](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207954.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207954)[Discussion on the inter-system handover for voice fallback](%5CR2-2207954.zip) **Huawei, HiSilicon**

[R2-2207955](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207955.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2207955)[Discussion on MR-DC SCG failure](%5CR2-2207955.zip) **Huawei, HiSilicon**

[R2-2208157](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208157.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2208157)[Data collection for MRO for MR-DC SCG failures and inter-system handover for voice fallback](%5CR2-2208157.zip) **Qualcomm**

[R2-2208436](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208436.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2208436)[Discussion on inter-system handover for voice fallback](%5CR2-2208436.zip) **CMCC**

[R2-2208542](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208542.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2208542)[Consideration on MRO for EPS fallback via HO and MRDC SCG failure](%5CR2-2208542.zip) **ZTE Corporation, Sanechips**

[R2-2208583](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208583.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2208583)[Discussion on MRO for MR-DC SCG failure and inter-system handover voice fallback](%5CR2-2208583.zip) **Xiaomi**

[R2-2208610](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208610.zip)[M](http://mannerheim.nomadiclab.com/Mannerheim/tdoc/R2-2208610)[UE reporting to enhance mobility parameter tuning](%5CR2-2208610.zip) **Samsung R&D Institute India**

# Summary

## Proposals collected from companies on Failures in Voice Fallback scenarios

In [[R2-2207093](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207093.zip)] OPPO proposed the following:

**Proposal 1:** RAN2 to discuss the necessity of including an indication regarding voice fallback in the RLF report.
**Proposal 2**: RAN2 to discuss how to let the network know the coverage hole of E-UTRA network in case UE cannot find a suitable E-UTRA cell after the failure of the inter-system HO failure regarding voice fallback.

In [[R2-2207192](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207192.zip)] NTT DOCOMO proposed the following.

**Proposal 1**: After EPS fallback for voice, UE should include “voiceFallbackFailure” as an indication in RLF report.
**Proposal 2**: After EPS fallback failed and no suitable LTE cell could be found, UE should include “voiceFallbackFailure” and “no suitable LTE cell found” in RLF report.

Similarly CATT in [[R2-2207476](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207476.zip)] proposed

**Proposal** 1: Introduce a voice fallback indicator in HOF report to assist the network MRO.

In yet another paper [[R2-2207704](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207704.zip)] Lenovo proposed similar proposals

**Proposal 1:** The following cases should be considered for MRO enhancement for inter-system inter-RAT handover for voice fallback:
after failure of inter-system inter-RAT handover from NR to E-UTRAN for voice fallback, the UE establishes RRC connection to E-UTRA when a suitable E-UTRA cell is selected;
after failure of inter-system inter-RAT handover from NR to E-UTRAN for voice fallback, the UE reverts back to the configuration in source PCell and initiates RRC re-establishment procedure in NR when no suitable E-UTRA cell is found.
**Proposal 2**: The UE reports an indication on whether the failed inter-system inter-RAT handover was triggered by EPS fallback for IMS voice in the RLF report.

And in [[R2-2207954](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207954.zip)] Huawei proposed the following:

**Proposal 1:** Handover case for inter-system voice fallback should be considered.
**Proposal 2:** Inter-RAT RLF report enhancement is considered for handover case of inter-system voice fallback.
**Proposal 3:** SHR enhancement for handover case of inter-system voice fallback should be considered after R18 inter-RAT SHR is captured.
**Proposal 4:** UE Mobility Information enhancement is discussed after receiving the requirement from RAN3 for handover case of inter-system voice fallback.
**Proposal 5:** Redirection case for inter-system voice fallback should be considered.
**Proposal 6:** CEF report enhancement in LTE is considered for redirection case of inter-system voice fallback.
**Proposal 7:** Successful redirection report enhancement is considered for redirection case of inter-system voice fallback.

And Qualcomm in [[R2-2208157](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208157.zip)] proposed the following:

**Proposal 4**: The following inter-system handover voice fallback scenario should be considered:
Mobility from NR failure to the target access technology
Suitable E-UTRA cell found after MobilityFromNR failure
No suitable E-UTRA cell found after MobilityFromNR failure

**Proposal 5**: In the RLF report, include the voiceFallbackIndication, if the MobilityFromNRCommand includes voiceFallbackIndication.
**Proposal 6**: No suitable E-UTRA cell found after MobilityFromNR failure can be implicitly determined by the presence of reestablishmentCellId in the RLF report.

CMCC in [[R2-2208436](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208436.zip)] proposed the following

**Proposal 1:** Send LS to ask RAN3 to discuss and decide whether to introduce the new failure that an RLF occurs shortly after a successful handover from a cell belonging to an NG-RAN node to a target cell belonging to an E-UTRAN node for Inter-system/ Too Early Handover.
**Proposal 2**: If the new failure scenario is agreed, one indication for voice fallback could be introduced in RLF report to differentiate the voice fallback from conventional inter-RAT handover.

ZTE in [[R2-2208542](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208542.zip)] proposed the following

**Proposal 1**: It is proposed to include indication in RLF-report to help NW identify whether the mobilityFromNRFailure is initiate for voice fallback or not.

Ercisson in [[R2-2208177](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208177.zip)] proposed the following

**Proposal**: The suitable LTE cell that UE selects after HOF due to voiceFallback can be included as reestablishementCellId in the RLF report.

**Proposal**: RAN2 study the scenario in which the UE fails in HO with voice fall back right upon coming to connected mode.

In addition, Xiaomi in [[R2-2208583](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208583.zip)] proposed the following:
**Proposal 1**: To support MRO for inter-system HO voice fallback, RLF-report is enhanced to indicate whether the HO is due to voice fallback or not.

Samsung in [[R2-2208610](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208610.zip)] proposed the following

**Proposal 1:** RAN2 to consider enhancements for RLF report and CEF report for Inter System voice fallback.
**Proposal 2:** RAN2 to discuss whether UE needs to include details about voice fallback in Inter-RAT SHR.
**Proposal 3:** RAN2 to discuss whether UE needs to include indication for voice fallback in mobility history information.

### Summary of the proposals for voice fallback failures:

Here is the list of proposals, merged and ordered based on the consensus among the companies:

**Proposal 1: RAN2 to discuss the necessity of including an indication regarding voice fallback in the RLF report**.

**FFS: implicit (e.g., selected EUTRA cell ID logged as re-establishment cell ID in the RFL report) or explicit flag.**

**Proposal 2: RAN2 discuss the following scenarios:**

**Suitable cell found after MobilityFromNR failure**

**No suitable cell found after MobilityFromNR failure**

 **Inclusion of “no suitable EUTRA cell found” in RLF report**

Proposals provided by single company:

Proposal 3: RAN2 study the scenario in which the UE fails in HO with voice fall back right upon coming to connected mode.

Proposal 4: Send LS to ask RAN3 to discuss and decide whether to introduce the new failure that an RLF occurs shortly after a successful handover from a cell belonging to an NG-RAN node to a target cell belonging to an E-UTRAN node for Inter-system/ Too Early Handover.

Proposal 5: RAN2 consider enhancement on RLF report, SHR, UE history information, and a successful redirection report for voice fall back.

## Proposals on MR-DC SCG Failure

Ericsson in [[R2-2208177](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208177.zip)] proposed the following:

Proposal1: If the SCG was suspended or deactivated at the time of transmission of MCGFailureInformation, the UE stores information concerning the SCG and the failed MCGFailureInformation in RLF report.

CATT in [[R2-2207476](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207476.zip)] proposed the following:

**Proposal 1:** RAN2 to identify the MR-DC scenarios for which to perform the SCG failure related information report in R18.
**Proposal 2:** Identify whether the 5 information requested by RAN3 LS ‎ R3-211332 are all needed for MR-DC scenarios other than NR-DC.
**Proposal 3:** Identify whether the SCG failure report related messages can be used for transmitting the parameters for MRO purpose in MR-DC scenarios other than NR-DC scenario.

NTT DOCOMO in [[R2-2207193](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207193.zip)] proposed the followings:

**Proposal 1:** Add a new rlf-cause of reconfigureWithSyncFailurSCG in RLF report.
**Proposal 2:** Add a new rlf-cause of MCGRecoveryFailure or T316 expiry in RLF report.
**Proposal 3:** In case RLF is triggered by SCG and MCG transmission is suspended, UE store the SCGFailureInformation and measResultMCG in VarRLF-Report.
**Proposal 4:** In case RLF is triggered by MCG and SCG transmission is suspended, UE store the MCGFailureInformation and measResultSCG in VarRLF-report.

Huawei in [[R2-2207955](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207955.zip)] proposed the following:

**Proposal 1:** It is proposed to discuss MRO for NE-DC SCG failure scenario.
**Proposal 2:** It is proposed to discuss the following parameters for SCGFailureInformationEUTRA message defined in TS 38.331:
CGI of the Source PSCell:cell information for LTE-5GC
CGI of the Failed PSCell:cell information for LTE-5GC
timeSCGFailure:Can reference timeSCGFailure-r17
connectionFailureType:The existing field failureType can be re-used
RA related info:LTE RACH report should be used as much as possible
**Proposal 3:** It is proposed to discuss MRO for EN-DC/NG-EN-DC failure scenarios.
**Proposal 4:** It is proposed to discuss the following parameters for SCGFailureInformationNR message defined in TS 36.331:
CGI of the Source PSCell:Rel-17 definitions on NR-DC SCG failure can be referenced
CGI of the Failed PSCell:Rel-17 definitions on NR-DC SCG failure can be referenced
timeSCGFailure:Rel-17 definitions on NR-DC SCG failure can be referenced
connectionFailureType:The existing field failureType can be re-used
RA related info:Rel-17 definitions on NR-DC SCG failure can be referenced

And Qualcomm in [[R2-2208157](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208157.zip)] proposed the following:

**Proposal 1:** Consider MRO for EN-DC and NE-DC SCG failures in rel-18.
**Proposal 2:** Enhance SCGFailureInformationEUTRA to include the MRO-related IEs, if UE supports inter-RAT MRO for SCG.
**Proposal 3:** Enhance SCGFailureInformationNR to include the MRO-related IEs, if UE supports inter-RAT MRO for SCG.

ZET has proposed the following in [[R2-2208542](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208542.zip)]

**Proposal 1:** It is proposed RAN2 to specify UE reporting to support MRO for NGEN-DC and NE-DC scenarios.
**Proposal 2:** SCGFailureInformationNR and SCGFailureInformationEUTRA can be enhanced to includes below parameters in case PSCell change failure, and how the parameters is encoded in siganlling can be ffs:

* the physical cell identity and carrier frequency of the failed PSCell ;
* the physical cell identity and carrier frequency of the source PSCell ;
* the elapsed time since reception of the last *RRCReconfiguration* message including the *reconfigurationWithSync* for the SCG until declaring the SCG failure;
* *perRAInfoList* in case failureType is synchReconfigFailureSCG or randomAccessProblem while T304 was running

In addition, Xiaomi in [[R2-2208583](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208583.zip)] proposed the following:

**Proposal 1**: To support MRO for MR-DC SCG failure, RAN2 to prioritize NE-DC case and deprioritize (NG)EN-DC case.
**Proposal 2**: To support MRO for NE-DC SCG failure, SCGFailureInformationEUTRA is extended to include previousPSCellId, failedPSCellId, timeSCGFailure, RA information.

### Summary of the proposals for MR-DC SCG failure

Rappourteur suggest for the first meeting RAN2 discusses the potential scenarios and the postpone the discussion on the content of the reports to the next meetings when we agree on the scenarios. With this assumption the summary of the proposals for MR DC SCG failure is given in the following.

**Proposal 1**: RAN2 discuss which of the following scenarios to priortize for MR-DC SCG failure:

* NR-DC
* NE-DC
* NG-EN-DC

Proposal 2: RAN2 consider the following scenario

* SCG is suspended or deactivated at the time of transmission of MCGFailureInformation.

**Proposal 3**: The contents (information and measurements) of the reports are FFS.

# Conclusion

## VoiceFallback

Here is the list of proposals, merged and ordered based on the consensus among the companies:

**Proposal 1: RAN2 to discuss the necessity of including an indication regarding voice fallback in the RLF report**.

**FFS: implicit (e.g., selected EUTRA cell ID logged as re-establishment cell ID in the RFL report) or explicit flag.**

**Proposal 2: RAN2 discuss the following scenarios:**

**Suitable cell found after MobilityFromNR failure**

**No suitable cell found after MobilityFromNR failure**

 **Inclusion of “no suitable EUTRA cell found” in RLF report**

Proposals provided by single company:

Proposal 3: RAN2 study the scenario in which the UE fails in HO with voice fall back right upon coming to connected mode.

Proposal 4: Send LS to ask RAN3 to discuss and decide whether to introduce the new failure that an RLF occurs shortly after a successful handover from a cell belonging to an NG-RAN node to a target cell belonging to an E-UTRAN node for Inter-system/ Too Early Handover.

Proposal 5: RAN2 consider enhancement on RLF report, SHR, UE history information, and a successful redirection report for voice fall back.

## MR DC SCG failure

Rappourteur suggest for the first meeting RAN2 discusses the potential scenarios and the postpone the discussion on the content of the reports to the next meetings when we agree on the scenarios. With this assumption the summary of the proposals for MR DC SCG failure is given in the following.

**Proposal 1**: RAN2 discuss which of the following scenarios to priortize for MR-DC SCG failure:

* NR-DC
* NE-DC
* NG-EN-DC

Proposal 2: RAN2 consider the following scenario

* SCG is suspended or deactivated at the time of transmission of MCGFailureInformation.

**Proposal 3**: The contents (information and measurements) of the reports are FFS.