3GPP TSG-RAN WG3 #112-e R3-212672

Online, 17 – 28 May 2021

Agenda Item: 8.1

Source: Nokia (moderator), Nokia Shanghai Bell

Title: Summary of Offline Discussion on SON enhancements for NR-U (CB #1216)

Document for: Approval

# Introduction

**CB: # 1216\_SONMDT\_NR-U**

**- Topics to discuss**

**- to discuss the topic of MLB for NR-U and to find solutions that lead to knowledge of resource availability for an NR-U channel**

**- to discuss the topic of cross RAN node coordination for NR-U and to find solutions that lead to an optimized NR-U configuration for more efficient channel utilization**

**- Take into account of the case PCI collisions or confusion may happen when multiple PLMNs are deployed in unlicensed spectrum**

**- Exchange type of the cell resource and the Number of Active UEs with LBT mode information is needed to be taken into account for Load Balancing Enhancements and Inter-System Load Balancing**

**- measured RSSI and channel occupancy in the unlicensed spectrum can be included in the RLF report**

**- MRO for HOF due to LBT failure in NR-U system should be considered**

**- Load of unlicensed spectrum is signalled over F1 and Xn interface.**

**- unlicensed spectrum load information is reported per cell (not per beam)**

**- unlicensed spectrum load information is reported per channel of 20MHz**

**- Start with summary of offline**

(Nok - moderator)

Summary of offline disc [R3-212672](file:///D:\CMRI%20work\2021%20projects\3GPP\RAN3%23112\Docs\R3-212672.zip)

# For the Chairman’s Notes (1st round)

Propose the following:

**Following problems seem the most relevant for the SON for NR-U: load information from NR-U towards licensed NR and new failure events related to e.g. LBT or channel occupancy in the failure report.**

**Resource coordination between licensed NR and NR-U and optimised resource utilisation in NR-U is FFS (contribution driven).**

# Discussion

Companies contributing to the meeting listed several areas where SON support may be needed for NR-U:

1. Load information from NR-U towards licensed NR [1,3];
2. New failure events related to e.g. LBT or channel occupancy in the failure report [2,4];
3. Resource coordination between licensed NR and NR-U and optimised resource utilisation in NR-U [3]

**Question 1: Which of the problems indicated in the contributed papers should be addressed first in SON for NR-U?**

|  |  |
| --- | --- |
| Company | Comment |
| Nokia | Surely, (1) and (2) above are classic SON topics and should be addressed first. (3) may be discussed later. |
| Huawei | 1. And (2). (3) may need further clarification. |
| ZTE | Issue (1) could be discussed with high priority |
| Lenovo and Motorola Mobility | (2) |
| Samsung | (1) and (2). FFS for (3) |
| CMCC | (1) and (2). FFS for (3) |
| Ericsson | (1), (2), (3). With respect to (3), the topic is not only concerning resource coordination, but it is also including exchange of NR-U configurations so to help other functions, such as MLB. It is in fact useful to the MLB function to understand, e.g. what the LBT configuration is at a neighbour cell. That is because a neighbour cell’s resources may for example result always unavailable due to LBT failure, but this could be due to a very low ED threshold at the neighbour cell. With this information, the source may decide to totally discard the option of doing MLB with that neighbour, rather than keeping on monitoring the neighbour unlicensed resources until they become available |

**Question 2: Is there any other area, not listed above, that RAN3 shall address when discussing SON for NR-U?**

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| --- | --- |
| Company | Comment |
| Nokia | Likely not. |
| Huawei | Not for the time being. Contribution driven. |
| ZTE | No |
| Lenovo and Motorola Mobility | Not yet. |
| Samsung | Maybe MDT needs to be enhanced for NR-U. |
| CMCC | MDT may be one area but it is contribution based. |
| Ericsson | We are open to discuss MDT for NR-U |

Furthermore, in [1], possible cooperation with RAN2 is mentioned. Similarly, [2] mentions enhancements to the failure reporting.

**Question 3: Is there any topic that RAN3 could ask RAN2 to help with at this moment?**

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| --- | --- |
| Company | Comment |
| Nokia | It is likely an LS will be needed in future, but at this moment there is nothing to ask yet. |
| Huawei | No need to send LS at this moment. |
| ZTE | LS is not needed at this meeting, maybe we can send the LS if some basic agreements or WA are made in RAN3. |
| Lenovo and Motorola Mobility | LS can be sent later when more progress is achieved in RAN3. |
| CMCC | Not needed at the moment, nothing to LS |
| Ericsson | Let’s try to kick start this activity first…then we will decide on possible LSs |

# Conclusion, Recommendations [if needed]

If needed

# References

1. R3-211731, Load information enhancements for NR-U (Nokia, Nokia Shanghai Bell)
2. R3-212167, SON enhancements for NR-U (Lenovo, Motorola Mobility)
3. R3-212267, Proposals on MLB for NR-U (Ericsson)
4. R3-212581, Optimization for NR-U (ZTE)