**3GPP TSG-WG SA2 Meeting #163 *S2-2406585***

**Jeju, South Korea, 27th – 31st May, 2024**

**Source: IIT Bombay**

**Title: KI#6:Evaluation and Conclusion**

**Document for: Approval**

**Agenda Item: 19.6**

**Work Item / Release: FS\_VMR\_Ph2/ Rel-19**

*Abstract: Evaluation of solutions and conclusion for KI#6: Support of Emergency services for UEs via a MWAB.*

# 1. Discussion

This contribution proposes evaluation and conclusion for KI#6.

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| **Key issue** | **Solutions in TR 23.700-06 V****0.2.0** |
| #6: Support of Emergency services for UEs via a MWAB | Solution #12: Support of Emergency services for UEs via a MWAB  Solution #13: Support of Emergency calls in MWAB  Solution #14: Graceful release of Emergency services |

Depending on the feature requirements defined in KI#6, 4 categories are identified for the evaluation of solutions:

* Category#1: Enhancements needed for Emergency support when connected via MWAB
* Category#2: How does Roaming / Mobility of MWAB impact the emergency services for the UE
* Category#3: How to handle new and ongoing emergency session via MWAB
* Category#4: How to handle graceful release of emergency services

# 2. Text Proposal

It is proposed to capture the following changes into TR 23.700-06.

\* \* \* \* First change \* \* \* \*

# 7 Evaluation

Editor's note: This clause provides the evaluations of the solutions of clause 6.

# 7.X Evaluation of solutions for KI#6

From the feature requirement defined in KI#6, 4 categories are identified for the support of UE emergency PDU sessions served by MWAB. They are covered as below:

* **Category#1: Enhancements needed for Emergency support when connected via MWAB.**

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| **Solutions** | **High-level Descriptions** | **Specific enhancements required** |
| Solution #12 | UE reports the Cell ID/TAC broadcasted by the MWAB-gNB to enable emergency services. |  |
| Solution #13 | MWAB establishes a dedicated BH PDU session to support UE emergency sessions. This is configured using S-NSSAI and DNN reserved for emergency sessions backhaul support.  The trigger for MWAB to establish a BH PDU session is when ‘UE places an emergency call in CM-IDLE or CM-CONNECTED mode’ | The required configurations for emergency sessions are done on MWAB-gNB and AMF of the PLMN (the MWAB is serving) |
| Solution #14 | Doesn’t address this aspect |  |

* **Category#2: How does Roaming / Mobility of MWAB impact the emergency services for the UE.**

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| **Solutions** | **High-level Descriptions** | **Impact on Emergency service** |
| Solution #12 | Mobility induced handover procedure for UEs in RRC\_Connected state is covered  Location services support is as addressed by solutions for KI#5 | Upon mobility, MWAB triggers handover for all UE PDU sessions including an emergency session |
| Solution #13 | Doesn’t address this aspect |  |
| Solution #14 | Doesn’t address this aspect |  |

* **Category#3: How to handle new and ongoing emergency session via MWAB**

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| **Solutions** | **High-level Descriptions** | **How is emergency session triggered for the UE** |
| Solution #12 | Emergency PDU session establishment is described considering some updates to the emergency features defined in TS 23.501 and Rel-18 MBSR | Emergency session is triggered based on ‘Emergency Request’ indication during UE PDU session establishment |
| Solution #13 | This solution proposes a dedicated BH PDU session for the UEs emergency PDU session. It uses the reserved S-NSSAI and DNN for emergency session backhaul support.  BH PDU session is also assigned a ARP value which corresponds to the ARP values reserved for emergency  It handles emergency call for UEs in CM-IDLE and CM-CONNECTED states | For the UEs in CM-IDLE mode, MWAB detects ‘EMERGENCY’ indication in RRC establishment cause and either establishes a new BH PDU session or modifies the existing one to meet the requirements  For UEs in CM-CONNECTED mode, MWAB detects emergency call by inspection of the ARP value it received for the UE session. Then it either establishes a new BH PDU session or modifies the existing one to meet the requirements  MWAB uses a BH PDU session from another UEs recently terminated session or creates a new one. |
| Solution #14 | Doesn’t address this aspect |  |

* **Category#4: How to handle graceful release of emergency services**

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| **Solutions** | **High-level Descriptions** | **How is graceful release handled** |
| Solution #12 | Graceful release of UE sessions are dependent on how MWAB authorization changes based on the solution proposed for KI#2 and KI#4. Hence it addresses only the release of the PDU sessions when MWAB is unauthorized to serve. | When MWAB is unauthorized, both emergency as well as normal PDU sessions are handed over, for UEs in RRC\_CONNECTED state. |
| Solution #13 | Doesn’t address this aspect |  |
| Solution #14 | 1. When UDM triggers deregistration notification for MWAB-UE, if MWAB-UE has an ongoing emergency PDU session, AMF updates MWAB-UE to register only for emergency services and non-emergency PDU sessions are not allowed. MWAB performs cleanup and hands over all UEs sessions to neighbouring gNB.  2. If the MWAB-UE deregistration is triggered by the UDM, AMF updates MWAB-UE about the unauthorization status. Then MWAB tries to handover an ongoing emergency session of the UE to a neighboring gNB. If that is not possible, MWAB informs AMF of the ongoing session. Deregistration will be completed after the UE’s emergency session is completed. | 1. By handing over UEs to neighboring gNBs.  2. MWAB deregistration will be pending until all the UE emergency PDU sessions are either completed or handed over. |

# 8 Conclusion

## 8.x KI#6 Conclusion

Following points can be concluded based on the solutions proposed for KI#6

* MWAB either establishes a BH PDU session or modifies an existing one to support an emergency PDU session for the UE
* MWAB establishes the BH PDU session to support emergency services using designated S-NSSAI and DNN configuration
* Required configuration parameters are pre-configured in the MWAB and AMF by OAM to support emergency PDU sessions.
* Regular location information updates are important to support emergency services.
* When a MWAB is unauthorized to serve, it hands over all the UEs to nearby gNBs before it is deregistered. If the emergency session handover is not possible, MWAB deregistration will be in pending status until the ongoing UE session is completed.
* No changes to UE is suggested to use emergency services when connected via MWAB.

\* \* \* \* End of changes \* \* \* \*