**3GPP TSG-SA WG1 Meeting #99e S1-222021r2**

**Electronic Meeting, 22 August – 1 September 2022** *(revision of S1-22xxxx)*

**Source: one2many, China Unicom**

**pCR Title: Pseudo-CR on Use Case for missed PWS message**

**Draft Spec: 3GPP TR 22.851 v0.1.0**

**Agenda item: 7.5**

**Document for: Approval**

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*Abstract: Moving from a shared RAN to the RAN in the home PLMN may cause public warning messages to be discarded wrongly.*

**1. Introduction**

The use case describes the scenario in which public warning messages get discarded wrongly.

**2. Reason for Change**

In case of shared RAN a scenario is possible where warning messages are discarded that should not be discarded. Since public warning is a regulatory service, PWS should not have a possiblity built-in for warning messages to be discarded wrongly.

**3. Conclusions**

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**4. Proposal**

It is proposed to agree the following changes to 3GPP TR 22.851 v0.1.0.

\* \* \* First Change \* \* \* \*

# 5 Use cases

[…clause 5.1 left out ….]

## 5.2 Use case of missed PWS messages

### 5.2.1 Description

When a UE is served by shared RAN and receives a public warning message, the UE doesn’t know from which PLMN it received the message, since the message does not contain any information about the PLMN where the message originated from. In this use case the originator happens to be the CBCF of the host PLMN of the shared RAN. By mutual agreement, the other PLMN operator does not offer PWS in the shared RAN, since that would lead to every warning message being presented twice.

The UE then moves out of the shared RAN area and gets coverage from its HPLMN, which is not the host PLMN of the shared RAN.

If the CBCF in the HPLMN sends a (different) warning message and happens to include the same Message Identifier and Serial Number as the CBCF of the host PLMN did for the previous warning message the UE will discard the message as duplicate, despite that the content of the message is new and yet unseen by the user. The Serial Numbers between CBCFs of different PLMNs are not synchronized.

### 5.2.2 Pre-conditions

The government-operated CBE may be a de-centralized system, which would make it impossible for the CBE to generate synchronized Serial Numbers for all involved CBCFs.

The discarded warning message was received within 24 hours after the first warning message was received.

### 5.2.3 Service Flows

The UE is in coverage of shared RAN which is shared by PLMN OP 1 and PLMN OP 2. To avoid UEs displaying each message twice, only the CBCF of PLMN OP 1 broadcasts messages in the shared RAN.

The CBCF of PLMN OP 1 sends a warning message with a particular Serial Number and Message Identifier to all UEs in the area. The UE receives the message and presents this message to the user. The warning message does not include any information which operator broadcasted the message.

The UE moves out of the shared RAN into the coverage of the HPLMN of PLMN OP 2. Since the UE does not change PLMN, the list of Serial Number and Message Identifier combinations of received warning messages in the last 24 hours is not deleted.

The CBCF of PLMN OP 2 sends a (different) warning message with the same Serial Number and Message Identifier as the CBCF of PLMN OP 1 has included previously, to all UEs in the area. Since a message with the same Serial Number and Message Identifier was received within the last 24 hours, the UE will discard this message as duplicate, despite that the message contains information not seen by the user.

### 5.2.4 Post-conditions

The UE has discarded a message which was not presented to the user but should have been.

### 5.2.5 Existing feature partly or fully covering use case functionality

SIB1 contains a list of PLMN IDs of the PLMNs that share the RAN. The first entry in the list is the host PLMN. If it can be mandated that the host PLMN also provides the PWS functionality, then the UE in this use case deletes the list of received warning messages because it has moved into coverage of a different PLMN with another CBCF than the PLMN it has just left. This would resolve the issue of discarding warning messages wrongly.

TS 23.041 [23041] specifies duplication detection functionality in clause 8.2 and states that the UE shall check the Serial Number and Message Identifier and may additionally check other criteria, such as the content of the two messages. If both criteria are met, the message shall be discarded as duplicate. However, if the Serial Number and Message Identifier match and the content is different the messages shall be considered as different, and the latter message shall be presented to the user.

### 5.2.6 Potential New Requirements needed to support the use case

The following potential requirement would solve the problem described in the present use case:

[PR 5.2.6-001] The UE shall neither miss to present new content, nor present duplicate content of public warning messages after entering or moving out of a shared network.

\* \* \* Next Change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

1. 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
2. 3GPP TS 22.101: "Service principles".
3. 3GPP TS 22.261: "Service requirements for the 5G system".

…

[23041] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

\* \* \* End of Changes \* \* \* \*