**3GPP TSG-CT WG1 Meeting #134-eC1-22xxxx**

**E-meeting, 17th – 25th February 2022 (was 0820, 0749, 0386)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.571** | **CR** | **0009** | **rev** | **3** | **Current version:** | **17.0.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | Clarification on the LMF ID |
|  |  |
| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_eLCS\_ph2 |  | ***Date:*** | 2022-02-07 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Considering the following statements in the TS 23.273:*When receiving a NAS message from UE, including an LMF ID together with a LPP message (refer to step 25 in clause 6.3.1 for event reporting for a deferred 5GC-MT-LR), AMF sends the LPP message to the LMF, as indicated by the LMF ID.**NOTE 2: Description on how UE encapsulates the LMF ID in the NAS message is documented in TS 24.571 [36].*The LMF ID may be encapsulated in the UL NAS TRANSPORT message to the AMF, which can assist the route of the LPP message to the identified LMF. Nevertheless, there is not captured in the TS 24.571.In subclause 5.3.2 in TS 24.571, the Correlation ID can be used for the route of the LPP message:*The Routing identifier is the Correlation ID, which is defined in 3GPP TS 29.572 [6], so that the AMF can map the Routing identifier to the LMF and the Correlation identifier when the AMF receives a UL NAS TRANSPORT message including the responding LPP message.*However, in TS 29.572, the Correlation ID and LMF ID (which is mentioned as LMF identification) are two different data types. How to handle these two Routing Identifiers in the NAS TRANSPORT messages is not specified. |
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| ***Summary of change:*** | CT1#133-bis-e:Clarification on deferred Routing Identifier can be the LMF ID in the initiation and cancellation of the event reporting for a deferred 5GC-MT-LR.CT1#134-e:The following information is added:1. A general introduction for the Routing Identifier in subclause 4.1.2.2. The Deferred Routing Identifier in the downlink is only carried in LCS PeriodicTriggered Invoke message and EventReport Acknowledgement message.3. All “Routing Identifier” are changed into “routing identifier” including Figure 5.2.2.3-1. |
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| ***Consequences if not approved:*** | Missing specification of the LMF ID. |
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| ***Clauses affected:*** | 4.1.2, 5.2.1.3.1, 5.2.2.2.1, 5.2.2.4.1, 5.2.2.6.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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

4.1.2 LCS aspect

LCS uses the defined payload container to transfer LCS signalling messages between the UE and the network.

The corresponding LCS signaling messages include:

a) LTE Positioning Protocol (LPP) messages (see 3GPP TS 36.355 [4])

- Both downlink and uplink LPP messages are supported

- Routing information is transported as the Additional information IE in UL/DL NAS TRANSPORT message for LPP messages (see 3GPP TS 24.501 [3])

b) Location services messages

- Messages for MO-LR operations (see 3GPP TS 24.080 [5])

- Messages for LocationNotification operations (see 3GPP TS 24.080 [5])

- Messages for EventReport operations (see 3GPP TS 24.080 [5])

- Messages for PeriodicTriggeredInvoke operations (see 3GPP TS 24.080 [5])

- Messages for CancelDeferredLocation operations (see 3GPP TS 24.080 [5])

- Messages for MSCancelDeferredLocation operations (see 3GPP TS 24.080 [5])

- Messages for LocationPrivacySetting operations (see 3GPP TS 24.080 [5])

 Routing information associated with the LMF is transported as the Additional information IE in UL/DL NAS TRANSPORT message for Location services messages that are transported from/to the LMF (see 3GPP TS 24.501 [3])

The Routing information transported as the Additional Information IE can be Routing identifier in the current specification, which includes immediate routing identifier and deferred routing identifier. The immediate routing identifier transported as the Additional Information IE is the Correlation ID, which is allocated by the AMF and can be used in the UL/DL NAS TRANSPORT message (see clause 5.2 and clause 5.3). The deferred routing identifier transported as the Additional Information IE can be used in the UL NAS TRANSPORT and CONTROL PLANE SERVICE REQUEST message for the AMF routing the LCS messages to the particular LMF (see clause 5.2.2).

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

##### 5.2.1.3.1 General

The supplementary services LCS PeriodicTriggered Invoke operation enables the LMF to initiate periodic or triggered location event reporting by a target UE as described in clause 6.3.1 of 3GPP TS 23.272 [2]. The supplementary services LCS PeriodicTriggered Invoke message is transferred to the target UE via the serving AMF in a DL NAS Transport message. A response from the target UE is similarly returned to the LMF via the serving AMF and is transferred to the AMF in an UL NAS Transport message. If the LCS PeriodicTriggered Invoke message in the Payload container IE of a DL NAS TRANSPORT message includes the deferred routing identifier, the UE shall include the deferred routing identifier in the Additional Information IE of a UL NAS TRANSPORT message during the subsequent procedures as specified in clause 5.2.2.

Figure 5.2.1.3.1.1 illustrates an example of the NAS signalling transport for initiation of periodic or triggered location,



Figure 5.2.1.3.1.1: NAS signalling transport for LCS PeriodicTriggered messages

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

##### 5.2.2.2.1 General

The supplementary services MSCancelDeferredLocation operation enables the UE to cancel ongoing periodic or triggered location in a target LMF using NAS signalling as described in 3GPP TS 23.273  subclause 6.3.3 [2]. The supplementary services MCancelDeferredLocation messages are transported using the UL NAS TRANSPORT message and the DL NAS TRANSPORT message defined in 3GPP TS 24.501 [3]. The deferred routing identifier in the Additional information IE of the UL NAS TRANSPORT message for the cancellation of periodic or triggered location event reporting can be an LMF ID.

Figure 5.2.2.2.1-1 illustrates an example of the NAS signalling transport.



Figure 5.2.2.2.1-1: NAS signaling transport for UE initiated Cancel Deferred Location

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

#### 5.2.2.3 UE initiated Positioning Information Transport

The UE sends LPP message and the associated Routing identifier in the UL NAS Transport message (refer to 3GPP TS 24.501 [3] and 3GPP TS 23.273 [2] clause 6.11.1). Figure 5.2.2.3-1 illustrates an example of the NAS signalling transport for uplink LPP messages.



Figure 5.2.2.3-1: NAS signalling transport for uplink LPP messages

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

##### 5.2.2.4.1 General

The supplementary services EventReport operation enables the UE to report the periodic or triggered location event invoked by the LMF via LCS PeriodicTriggered Invoke operation as described in clause 6.3.1 of 3GPP TS 23.273 [2] when some certain events are detected in the UE. The supplementary services EventReport message is transferred to the LMF via the serving AMF in a UL NAS TRANSPORT message defined in 3GPP TS 24.501 [3]. A response from the LMF may be returned to the UE via the serving AMF and be transferred to the UE in a DL NAS TRANSPORT message. The deferred routing identifier in the Additional information IE of the UL NAS TRANSPORT for reporting the periodic or triggered location event can be an LMF ID. If the serving LMF is changed, the deferred routing identifier may be included in the EventReport Acknowledgement message (refer to clause  6.3.1 of 3GPP TS 23.273 [2]).

Figure 5.2.2.4.1-1 illustrates an example of the NAS signalling transport for EventReport messages,



Figure 5.2.2.4.1-1: NAS signalling transport for EventReport messages

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

##### 5.2.2.6.1 General

The supplementary services EventReport operation enables the UE to report the periodic or triggered location event invoked by the LMF via LCS PeriodicTriggered Invoke operation as described in clause 6.7.1 of 3GPP TS 23.273 [2] when certain events are detected in the UE and when the UE supports and the LMF allows the use of Control Plane CIoT 5GS Optimisation. The supplementary services EventReport message is transferred to the LMF via the serving AMF in a CONTROL PLANE SERVICE REQUEST message defined in 3GPP TS 24.501 [3]. A response from the LMF may be returned to the UE via the serving AMF and be transferred to the UE in a DL NAS TRANSPORT message defined in 3GPP TS 24.501 [3]. The deferred routing identifier in the Additional information IE of the CONTROL PLANE SERVICE REQUEST message for reporting the periodic or triggered location event can be an LMF ID. If the serving LMF is changed, the deferred routing identifier may be included in the EventReport Acknowledgement message (refer to clause  6.3.1 of 3GPP TS 23.273 [2]).

Figure 5.2.2.x.1-1 illustrates an example of the NAS signalling transport for EventReport messages,



Figure 5.2.2.6.1-1: NAS signalling transport for EventReport messages using Low Power Event Reporting and Triggered 5GC-MT-LR

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

#### 5.3.2.1 Downlink Positioning Information Transport using LPP messages

The AMF shall set the Payload container type to "LPP message container" in the DL NAS TRANSPORT message.

The AMF includes a Routing identifier in the Additional information IE of the DL NAS TRANSPORT message which identifies the LMF and the positioning session between the AMF and LMF when a positioning session is being used.

The Routing identifier is the Correlation ID, which is defined in 3GPP TS 29.572 [6], so that the AMF can map the Routing identifier to the LMF and the Correlation identifier when the AMF receives a UL NAS TRANSPORT message including the responding LPP message.

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

#### 5.3.2.2 Uplink Positioning Information Transport using LPP messages

The UE shall set the Payload container type to "LPP message container" in the UL NAS TRANSPORT message.

The UE includes a Routing identifier received in the Additional Information IE of the DL NAS TRANSPORT message in the Additional Information IE of the UL NAS TRANSPORT message. This association of the Routing Identifier is provided at the LPP level: the UL NAS TRANSPORT message carries an LPP message that is a response to or instigated by the LPP message in the DL NAS TRANSPORT message. The Routing identifier is the Correlation ID, which is defined in 3GPP TS 29.572 [6], so that the AMF can map the Routing identifier to the Correlation identifier when the AMF receives the UL NAS TRANSPORT message.

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