**3GPP TSG-SA3 Meeting #115 *draft\_S3-240948-r3***

Athens, Greece, 26th February - 1st March 2024

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **33.533** | **CR** | **0056** | **rev** | **-** | **Current version:** | **18.1.0** |  |
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| *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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Clarification on the procedure of UE privacy check |
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| ***Source to WG:*** | Ericsson, Huawei, Xiaomi |
| ***Source to TSG:*** | S3 |
|  |  |
| ***Work item code:*** | Ranging\_SL\_Sec |  | ***Date:*** | 2024-02-19 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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:*** | The UE Ranging/SL Positioning privacy profile is under development by SA3.The existing LCS privacy check procedure covers only one target UE invovled in the LCS service request. It is unclear how to perform the privacy related check (e.g. notification and privacy verification), when one or more UEs are involved in Ranging/SL positioning service request. This paper clarifies the procedure to support notification and privacy verification defined in the UE Ranging/SL positioning privacy file.For UEs from the same PLMN as target UE that are served by the same serving AMF of the target UE, the anchor GMLC triggers privacy verification of these UEs reusing existing SL-MT-LR procedure. When one or more UEs from the same PLMN as target UE are served by different AMF(s), the anchor GMLC triggers privacy verification of these UEs towards the AMF(s) of the UEs via VGMLC, using SL-MT-LR message indicating "notification only". When one or more UEs are from different PLMNs, the home GMLC of the UE triggers privacy verification of these UEs towards the AMF(s) of the UEs via VGMLC, using SL-MT-LR message indicating "notification only". This SL-MT-LR request indicating "notification only” is to reuse the similar method as for 5GC-MT-LR to trigger a location request only for privacy notification towards UE, step 17 clause 6.1.2 TS 23.273.SA2 has also agreed S2-2401387 which defines service operations to be used for privacy check between GMLCs from different PLMNs. This paper also proposes to align the procedure for privacy check with agreed SA2 CR. Therefore, it is proposed to add NL3 as a reference point which supports Ranging/SL positioning security architecture. |
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| ***Summary of change:*** | * Added the NL3 interface in clause 4.2.2.
* Add procedure for anchor GMLC to trigger privacy profile check when references UEs belonging to different PLMNs;
* Add procedure for anchor GMLC to trigger privacy verification over SL-MT-LR procedure.
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| ***Consequences if not approved:*** | Missing privacy verification procedure for Ranging /SL Positioning service request. |
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| ***Clauses affected:*** | 4.2.2, 6.3.5 |
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|  | **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:*** |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of the 1st Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 4.2.2 Reference points

In addition to the reference points specified in clause 4.2 of TS 23.586 [2], the following reference points are added or enhanced for supporting Ranging/SL positioning security architecture:

**NL3:** The reference point between the GMLCs in different PLMNs. It is used to transport the UE authorization result for authorization of Ranging/SL Positioning service exposure.

**NL6:** The reference point between the UDM and the GMLC. It is used to transport the UE privacy profile to GMLC for authorization of Ranging/SL Positioning service exposure.

**PC8\*:** The reference point between the UE and the SLPKMF, which relies on 5GC user plane for transport (i.e. an "over IP" reference point). It is used to transport security materials to UEs for Ranging/SL Positioning discovery and communication.

**Npc9\*:** The reference point between the SLPKMFs of the UEs subscribed in different PLMNs. It is used to transport security materials between SLPKMFs to support Ranging/SL Positioning services in inter-PLMN scenarios.

**Npc10\*:** The reference point between the UDM and the SLPKMF. It is used to request subscription information related to Ranging/SL Positioning service from the UDM for UE authorization.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of the 2nd Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.3.5 Procedures for authorization of AF/5GC NF/LCS Client for Ranging/SL positioning service exposure

For the authorization of the AF, 5GC NF or LCS client for Ranging/SL Positioning service exposure, the SL-MT-LR procedure specified in TS 23.273 [3] is taken as the baseline. The authorization shall be performed towards all the n UEs (n ≥ 2), i.e. UE1, UE2, ..., UEn in the request message. If all of the UEs grant permission for Ranging/SL Positioning exposure, the GMLC shall forward the service request from the AF,5GC NF or LCS client to the AMF. If UEs grants permission for Ranging/SL Positioning exposure, the GMLC shall reject the service request. If part of the UEs grant and part of the UEs don't grant permission for Ranging/SL Positioning exposure, the GMLC shall decide to proceed with or reject the service request from the AF, 5GC NF or LCS client based on implementation, e.g. a local rule configured by the network operator. If the GMLC decides to accept the service request, it shall only include the identities of the UEs granting permission in the service request forwarded to the AMF.

When receiving the Ranging/SL Positioning service request from the AF,5GC NF or LCS client, the GMLC (i.e. anchor GMLC) interacts with the UDM to check the UE privacy profile for the UEs belonging to the same PLMN. If any of n UEs belong to different PLMNs, then the anchor GMLC sends a request to the Home GMLC of each of those UEs to check the Ranging/SL positioning privacy profiles of the UEs.

The UE LCS Privacy Profile defined in clause 5.4.2 of TS 23.273 [3] is taken as the baseline for the UE privacy profile for Ranging/SL positioning services.

NOTE: The address of the Home GMLC of the UE(s) in a different PLMN is determined by the anchor GMLC based on local configuration or by the NRF query.

#### 6.3.5.1 Authorization for the home GMLCs

The Home GMLCs of each of those UEs queries the UDM in its own PLMN to check the UE privacy profile and sends back the privacy check result to the anchor GMLC. When the Home GMLC of each of those UE checks UE Ranging/SL Positioning privacy profile and if privacy check related action (e.g. notification, verification) towards the UE is required, the Home GMLC of each of those UEs shall retrieve the serving AMF from the UDM of each of the UEs and trigger privacy check of the UE towards the serving AMF of each of these UEs via VGMLC, using Ngmlc\_Location\_ProvideLocation and Namf\_Location\_ProvidePositioningInfo message which include the indicator of privacy related action for the UE and location type indicating "notification only". The serving AMF shall respond to the Home GMLC of each of the UEs with privacy check results of the UE. If the Ranging/SL Positioning service exposure is disallowed by the UE, or signalling connection establishment fails for UE notification (including UE notification with privacy verification), the serving AMF shall also include failure cause for the UE in the response message to the Home GMLC.

#### 6.3.5.2 Authorization for the anchor GMLCs

The anchor GMLC interacts with the AMF of the target UE (which is treated as UE1 in clause 6.20.3 in TS 23.273 [3]) to request the ranging/SL positioning result of UEs based on the SL-MT-LR procedure as specified in clause 6.20.3 in TS 23.273 [3], which may include an indication of a privacy related action, for each of the UEs if privacy related action is required by the UEs based on privacy profile check result from UDM and if the UEs belonging to the same PLMN and served by the same AMF as the target UE.

If one or more UEs are served by different AMF(s) and privacy related action is required, the anchor GMLC triggers privacy check of these UEs towards the serving AMF(s) of these UEs via VGMLC, using Ngmlc\_Location\_ProvideLocation and Namf\_Location\_ProvidePositioningInfo message which include the indicator of privacy related action for each of the UEs and location type indicating "notification only". If the indicator of privacy check related action for each of the UEs indicates that the UEs must either be notified or notified with privacy verification, a notification invoke message is sent to each of the UEs by the serving AMF(s) if the signalling connection is established. The serving AMF(s) shall respond to the anchor GMLC with privacy check results of the UEs. If the Ranging/SL Positioning service exposure is disallowed by the UE(s), or signalling connection establishment fails for UE notification (including UE notification with privacy verification), the serving AMF(s) shall also include failure cause for each of the UE(s) in the response message to the anchor GMLC.

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