**3GPP TSG-SA3 Meeting #95-LI *s3i240744***

**Las Vegas, United States, 29th Oct 2024 - 1st Nov 2024**

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| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **33.128** | **CR** | **0695** | **rev** | **1** | **Current version:** | **19.0.1** |  |
|  |
| *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** |

|  |
| --- |
|  |
| ***Title:***  | LI for IMS HSS Stage 3 |
|  |  |
| ***Source to WG:*** | SA3LI (OTD\_US) |
| ***Source to TSG:*** | SA3 |
|  |  |
| ***Work item code:*** | LI19 |  | ***Date:*** | 2024-10-31 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Currently there is no support for LI reporting from an HSS deployed to suppport IMS. There is also a missing record related to subscriber record change reporting from an HSS supporting EPS. |
|  |  |
| ***Summary of change:*** | Add one new xIRI for EPC-HSS LI reporting, add new clauses to defined LI reporting from the IMS-HSS. |
|  |  |
| ***Consequences if not approved:*** | LI solution will remain incomplete. CSPs may not be able to meet LI obligations. |
|  |  |
| ***Clauses affected:*** | 7.2.1, 7.2.3.1, 7.2.3.3.1, 7.2.3.3.4 (new), 7.2.3.4, 7.2.4 (new), Attachments ASN.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:*** | Schema changes for this CR can be found on the Forge:Merge Request 291: <https://forge.3gpp.org/rep/sa3/li/-/merge_requests/291/diffs?commit_id=36b08221146b53ed1a2be77881e8c4a10202f31c> Commit Hash: 36b08221146b53ed1a2be77881e8c4a10202f31c |
|  |  |
| ***This CR's revision history:*** | S3i240696 |

START OF CHANGES

START OF FIRST CHANGE

### 7.2.1 General description

This clause describes interception at central subscriber management functions or databases (e.g. UDM and HSS).

The IRI-POI present in the HSS supporting IMS (IMS-HSS) shall support reporting the events described in TS 33.127 [5] clause 7.2.4.3 using the xIRI defined in clause 7.2.4 of the present document. The IRI-POI present in the HSS supporting EPC shall support reporting the events described in TS 33.127 [5] clause 7.2.3.3 using the xIRI defined in clause 7.2.3.

NOTE: Dependent upon deployment architecture, there may be one or more HSS (e.g. EPC-HSS and IMS-HSS) instance present in a CSP network.

END OF FIRST CHANGE

START OF SECOND CHANGE

#### 7.2.3.1 General

The HSS provides the support functions for mobility management, session setup, user authentication and access authorization to the packet core.

The present document allows two options for HSS LI stage 3 interfaces:

1. Use LI\_X1 and LI\_X2 interfaces specified below in the present document for stage 3.

2. Use TS 33.107 [36] natively as defined in that document in addition to the start of intercept with target already registered at the HSS xIRI defined in clause 7.2.3.3.3 of the present document.

In both cases, the present document specifies the stage 3 for the LI\_HI1 and LI\_HI2 interfaces.

When the HSS is capable of exchanging information related to the target with the 5GC (e.g. via the 5G Nhss SBI defined in TS 29.563 [100]), the xIRIs defined in clause 7.2.3.3 of the present document are applicable for stage 3 reporting of such events.

END OF SECOND CHANGE

START OF THIRD CHANGE

##### 7.2.3.3.1 General description

The IRI-POI present in the HSS shall send the xIRIs over LI\_X2 for each of the events listed in TS 33.107 [36], the details of which are also specified in TS 33.107 [36].

The IRI-POI present in the HSS shall set the payload format to EpsHI2Operations.EpsIRIContent (value 14), see clause 5.3 of the present document and ETSI TS 103 221-2 [8] clause 5.4. The payload field shall contain an EpsHI2Operations.EpsIRIContent structure encoded according to TS 33.108 [12] clause B.9.

As the LIID may be not available at the HSS but is mandatory in EpsHI2Operations.EpsIRIContent according to TS 33.108 [12] clause B.9, its value in the lawfulInterceptionIdentifier field of the encoded PDU shall be set to the fixed string "LIIDNotPresent".

When the HSS interworks with the 5GC via the Nhss service based interfaces, the IRI-POI present in the HSS shall send xIRI over LI\_X2 for each of the events listed in TS 33.127 [5] clause 7.2.2.3 the details of which are described in the following clauses.

END OF THIRD CHANGE

START OF FOURTH CHANGE

##### 7.2.3.3.4 Subscriber record change at the EPC-HSS

The IRI-POI in the EPC-HSS shall generate an xIRI containing the EPCHSSSubscriberRecordChange record when the IRI-POI present in the HSS detects that the EPC UE Context Management information has been updated for the target at the HSS (see TS 29.563 [100] clause 5.4.2.3). Accordingly, example triggers for this record include:

- EPC-HSS receives an Nhss\_UECM\_IMEIUpdateInfo (see TS 29.563 [100] clause 6.3.4.3) for which the EPC-HSS observes a change to the target’s:

- IMEI

- IMSI

- EPC-HSS sends a Nhss\_UECM\_IMEIUpdateResponse (see TS 29.563 [100] clause 6.3.6.2.4) containing the target’s:

- Previous IMEI

Table 7.2.3.3.4-1: Payload for EPCHSSSSubscriberRecordChange record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSSIdentities | SEQUENCE OF HSSIdentities | 1 | Indicates the UE Identity provided for the UE context management service operation. | M |
| subscriberRecordChangePayload | SubscriberRecordChangePayload | 0..1 | Includes the payload related to the subscriberRecordChangeType indicated in the UECM Data type, see TS 29.563 [100] clause 6.3.6.1. Shall indicate either IMEIupdateInfo, IMEIUpdateResponse. | C |

#### 7.2.3.4 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the HSS, the MDF2 shall generate the corresponding IRI message and deliver it over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received in the xIRI over LI\_X2.

When Option 2 specified in clause 7.2.3.1 above is used, the MDF2 shall generate IRI messages based on the proprietary information received from the HSS, except for the HSSStartOfInterceptionWithRegisteredTarget, and provide it over LI\_HI2 without undue delay.

The IRI messages shall include an IRI payload encoded according to TS 33.108 [12] clause B.9. The MDF2 shall encode the correct value of LIID in the IRI message, replacing the value "LIIDNotPresent" given in the xIRI (see clause 7.2.3.3 above).

The IRI messages shall omit the CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The IRI messages shall be delivered over LI\_HI2 according to ETSI TS 102 232-7 [10] clause 10.

Table 7.2.3.4-1: IRI type for IRI messages

|  |  |
| --- | --- |
| IRI message | IRI type |
| HSSServingSystemMessage | REPORT |
| HSSStartOfInterceptionWithRegisteredTarget | REPORT |
| EPCHSSSubscriberRecordChange | REPORT |

When an additional warrant is activated on a target and the LIPF uses the same XID for the additional warrant, the MDF2 shall be able to generate and deliver the IRI message containing the HSSStartOfInterceptionWithRegisteredTarget record to the LEMF associated with the additional warrant without receiving a corresponding xIRI. The payload of the HSSStartOfInterceptionWithRegisteredTarget record is specified in table 7.2.3.3.3-1.

END OF FOURTH CHANGE

START OF FIFTH CHANGE

### 7.2.4 LI at the IMS-HSS

#### 7.2.4.1 General

The IMS-HSS provides the support functions in the mobility management, session setup, user authentication, and access authorization to the IMS.

When the IMS-HSS is capable of exchanging information related to the target with the 5GC (e.g. via the Nhss\_ims SBI) as described in TS 29.562 [XX], the xIRIs defined in clause 7.2.4.3 of the present document are applicable for stage 3 reporting of such events.

#### 7.2.4.2 Provisioning over LI\_X1

The IRI-POI present in the IMS-HSS is provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2 of the present document.

The IRI-POI in the IMS-HSS shall support the target identifiers specified in TS 33.127 [5]:

- IMSI (using the IMSI target identifier format from ETSI TS 103 221-1 [7]).

- MSISDN (using the E164Number target identifier format from ETSI TS 103 221-1 [7]).

- IMEI (using the IMEI target identifier format from ETSI TS 103 221-1 [7]).

- IMPU (using the IMPU target identifier format from ETSI TS 103 221-1 [7]).

- IMPI (using the IMPI target identifier format from ETSI TS 103 221-1 [7]).

#### 7.2.4.3 Generation of xIRI over LI\_X2

##### 7.2.4.3.1 General description

The IRI-POI present in the IMS-HSS shall send xIRI over LI\_X2 for each of the events listed in TS 33.127 [5] clause 7.2.2.3 the details of which are described in the following clauses.

##### 7.2.4.3.2 Serving system

The IRI-POI in the IMS-HSS shall generate an xIRI containing the IMSHSSServingSystemMessage record when it detects the following events:

- When the IMS-HSS receives the Roaming Status Update from the UDM as part of the Nhss\_UEContextManagement\_RoamingStatusUpdate service operation (see TS 29.563 [100] clause 5.4.2.4).

The IMSHSSServingSystem xIRI is also generated when the IMSHSS deregisters the target due to a Nhss\_ims UECM\_DeregistrationRequest or updates the roaming status of the target based on a Nhss\_imsUECM\_AuthorizationRequest which includes a visitedNetworkIdentifier.

Table 7.2.4.3.2-1: Payload for IMSHSSServingSystemMessage record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| iMSI | IMSI | 1 | IMSI associated with the target UE, See TS 29.563 [100] clause 6.3.6.2.5. | M |
| oldPLMNID | PLMNID | 1 | Includes the old PLMN for which the UE was previously registered.  | M |
| authorizationRequest | AuthorizationRequest | 1 | Provides information related to the targets authorization to the IMS-HSS when attempting to register via a visited network. See TS 29.562 [101] clause 6.1.6.2.2. | M |
| roamingIndicator | RoamingIndicator | 1 | Indicates if the serving PLMNID is different than the HPLMN or EHPLMN. | M |
| responseCode | UTF8String | 1 | Includes the response code as sent from HSS to UDM in the POST response. See TS 29.563 [100] clause 6.3.4.4.2 for details of this structure. | M |
| deregistrationData | SBIType | 0..1 | Includes information related to the deregistering target. Include if UECM service operation is triggered by deregistration. Encoded according to TS 29.562 [101] clause 6.1.6.2.13 (schema definition reference TS29562\_Nhss\_ims\_UECM.yaml. | C |

##### 7.2.4.3.3 Start of Interception with target registered at the IMS-HSS

The IRI-POI in the IMS-HSS shall generate an xIRI containing the IMSHSSStartOfInterceptionWithRegisteredTarget record when the IRI-POI present in the IMS-HSS detects that interception is activated for a UE that has already been registered at the IMS-HSS.

The IMS-HSS may have stored target subscription data for both EPC and IMS. In such a case, a single HSS Start of Interception with Registered Target xIRI shall be generated containing the target context.

Table 7.2.4.3.3-1: Payload for IMSHSSStartOfInterceptionWithRegisteredTarget record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSSIdentities | SEQUENCE OF HSSIdentities | 1 | Indicates the identifiers for which the subscription data sets apply. Shall include one or more subscriber identifier. See TS 29.562 [101] clause 6.2.3.1. | M |
| iMSProfileData | SBIType | 0..1 | Includes current subscription information for the target UE stored at the HSS. Encoded according to TS 29.562 [101] clause 6.2.6.2.4. The SBIReference for this parameter shall be populated with 'TS29562\_Nhss\_imsSDM.yaml#/components/schemas/ImsProfileData'. | C |
| iMSRegistrationStatus | IMSRegistrationStatus | 1 | Provides the current state of the target or IMPU as know at the HSS. See TS 29.562 [101] clause 6.2.6.3.5. | M |

##### 7.2.4.3.4 Subscriber record change at the IMS-HSS

The IRI-POI in the IMS-HSS shall generate an xIRI containing the IMSHSSSubscriberRecordChange record when the IRI-POI present in the IMS-HSS detects that the IMS Subscriber Data Management information has been updated for the target at the IMS-HSS (see TS 29.562 [xx] clause 6.2.6). Accordingly, example triggers for this record include:

- The IMS-HSS receives an Nhss\_imsSubcriberDataManagement Update for which the IMS-HSS observes a change to the target’s:

- MSISDN List

- Public Identities

- IMEI

- Private Identities

- The IMS-HSS sends a Nhss\_imsSubscriberDataManagement Notification which includes a change to the target’s:

- MSISDN List

- Public Identities

- IMEI

- Private Identities

Table 7.2.4.3.4-1: Payload for IMSHSSSSubscriberRecordChange record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field name | Type | Cardinality | Description | M/C/O |
| hSSIdentities | SEQUENCE OF HSSIdentities | 1 | Indicates the identifiers for which the subscription data sets apply. Shall include one or more subscriber identifier. See TS 29.562 [101] clause 6.2.3.1. | M |
| subscriptionDataSets | SBIType | 0..1 | Includes current subscription information for the target UE stored at the HSS. Encoded according to TS 29.562 [101] clause 6.2.6.2.4. The SBIReference for this parameter shall be populated with 'TS29562\_Nhss\_imsSDM.yaml#/components/schemas/ImsProfileData'. | C |
| mSISDNs | SEQUENCE (SIZE(1..MAX) OF MSISDN | 0..1 | Includes a list of MSISDNs currently associated with the target. See TS 29.562 [101] clause 6.2.3.3.3.1. | C |
| iMEI | IMEI | 0..1 | Indicates the current IMEI associated with the target. Include if record is generated from Nhss\_UEContextManagement IMEIUpdateInfo service procedure. See TS 29.563 [100] clause 6.3.6.2.3. | C |
| previousIMEI | IMEI | 0..1 | Indicates the IMEI previously associated with the target provided in the Nhss\_UEContextManagement IMEIUpdateResponse. See TS 29.563 [100] clause 6.3.6.2.4. | C |

#### 7.2.4.4 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the IMS-HSS, the MDF2 shall generate the corresponding IRI message and deliver it over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received in the xIRI over LI\_X2.

The IRI messages shall include an IRI payload encoded according to TS 33.108 [12] clause B.9. The MDF2 shall encode the correct value of LIID in the IRI message, replacing the value "LIIDNotPresent" given in the xIRI (see clause 7.2.3.3 above).

The IRI messages shall omit the CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The IRI messages shall be delivered over LI\_HI2 according to ETSI TS 102 232-7 [10] clause 10.

Table 7.2.4.4-1: IRI type for IRI messages

|  |  |
| --- | --- |
| IRI message | IRI type |
| IMSHSSServingSystemMessage | REPORT |
| IMSHSSStartOfInterceptionWithRegisteredTarget | REPORT |
| IMSHSSSubscriberRecordChange | REPORT |

When an additional warrant is activated on a target and the LIPF uses the same XID for the additional warrant, the MDF2 shall be able to generate and deliver the IRI message containing the IMSHSSStartOfInterceptionWithRegisteredTarget record to the LEMF associated with the additional warrant without receiving a corresponding xIRI. The payload of the IMSHSSStartOfInterceptionWithRegisteredTarget record is specified in table 7.2.3.3.3-1.

END OF FIFTH CHANGE

END OF MAIN DOCUMENT CHANGES

START OF ATTACHMENT CHANGES

 START OF CHANGE 1

---a/33128/r19/TS33128Payloads.asn
+++b/33128/r19/TS33128Payloads.asn

@@ -278,7 +278,15 @@ XIRIEvent ::= CHOICE

278 278 uDMProSeTargetAuthentication [160] UDMProSeTargetAuthentication,

279 279

280 280 -- IP Packet Report, see clause 6.2.3.9.5

281 - iPIRIPacketReport [161] IPAccessPDU.IPIRIPacketReport

 281 + iPIRIPacketReport [161] IPAccessPDU.IPIRIPacketReport,

 282 +

 283 + -- HSS events, see clause 7.2.3.3

 284 + ePCHSSSubscriberRecordChange [162] EPCHSSSubscriberRecordChange,

 285 +

 286 + -- IMS HSS events, see clause 7.2.4.3

 287 + iMSHSSServingSystemMessage [163] IMSHSSServingSystemMessage,

 288 + iMSHSSStartOfInterceptionWithRegisteredTarget [164] IMSHSSStartOfInterceptionWithRegisteredTarget,

 289 + iMSHSSSubscriberRecordChange [165] IMSHSSSubscriberRecordChange

282 290 }

283 291

284 292 -- ==============

@@ -538,9 +546,17 @@ IRIEvent ::= CHOICE

538 546

539 547 -- UDM events, see clause 7.2.2.3, continued from tag 124

540 548 uDMProSeTargetIdentifierDeconcealment [159] UDMProSeTargetIdentifierDeconcealment,

541 - uDMProSeTargetAuthentication [160] UDMProSeTargetAuthentication

 549 + uDMProSeTargetAuthentication [160] UDMProSeTargetAuthentication,

542 550

543 551 -- Tag 161 is reserved because there is no equivalent IP Packet Report in IRIEvent.

 552 +

 553 + -- HSS events, see clause 7.2.3.3

 554 + ePCHSSSubscriberRecordChange [162] EPCHSSSubscriberRecordChange,

 555 +

 556 + -- IMS HSS events, see clause 7.2.4.3

 557 + iMSHSSServingSystemMessage [163] IMSHSSServingSystemMessage,

 558 + iMSHSSStartOfInterceptionWithRegisteredTarget [164] IMSHSSStartOfInterceptionWithRegisteredTarget,

 559 + iMSHSSSubscriberRecordChange [165] IMSHSSSubscriberRecordChange

544 560 }

545 561

546 562 IRITargetIdentifier ::= SEQUENCE

@@ -5827,6 +5843,12 @@ HSSStartOfInterceptionWithRegisteredTarget ::= SEQUENCE

5827 5843 pSUserState [3] SBIType

5828 5844 }

5829 5845

 5846 + EPCHSSSubscriberRecordChange ::= SEQUENCE

 5847 + {

 5848 + hSSIdentities [1] SEQUENCE OF HSSIdentities,

 5849 + subscriberRecordChangePayload [2] SubscriberRecordChangePayload OPTIONAL

 5850 + }

 5851 +

5830 5852 HSSIdentities ::= SEQUENCE

5831 5853 {

5832 5854 ePSSubscriberIDs [1] EPSSubscriberIDs OPTIONAL,

@@ -5838,6 +5860,86 @@ SubscriptionDataSets ::= CHOICE

5838 5860 iMSSubscriptionData [1] SBIType

5839 5861 }

5840 5862

 5863 + -- =======================

 5864 + -- IMS HSS definitions

 5865 + -- =======================

 5866 +

 5867 + IMSHSSServingSystemMessage ::= SEQUENCE

 5868 + {

 5869 + iMSI [1] IMSI,

 5870 + oldPLMNID [2] PLMNID,

 5871 + authorizationRequest [3] AuthorizationRequest,

 5872 + roamingIndicator [4] RoamingIndicator,

 5873 + responseCodes [5] UTF8String,

 5874 + deregistrationData [6] SBIType OPTIONAL

 5875 + }

 5876 +

 5877 + IMSHSSStartOfInterceptionWithRegisteredTarget ::= SEQUENCE

 5878 + {

 5879 + hSSIdentities [1] SEQUENCE OF HSSIdentities,

 5880 + iMSProfileData [2] SBIType OPTIONAL,

 5881 + iMSRegistrationStatus [3] IMSRegistrationStatus

 5882 + }

 5883 +

 5884 + IMSHSSSubscriberRecordChange ::= SEQUENCE

 5885 + {

 5886 + hSSIdentities [1] SEQUENCE OF HSSIdentities,

 5887 + iMSProfileData [2] SBIType OPTIONAL,

 5888 + mSISDNs [3] SEQUENCE (SIZE(1..MAX)) OF MSISDN OPTIONAL,

 5889 + iMEI [4] IMEI OPTIONAL,

 5890 + previousIMEI [5] IMEI OPTIONAL

 5891 + }

 5892 +

 5893 + IMSRegistrationStatus ::= ENUMERATED

 5894 + {

 5895 + initialRegistration(1),

 5896 + reregistration(2),

 5897 + timeoutDeregistration(3),

 5898 + userDeregistration(4),

 5899 + administrativeDeregistration(5),

 5900 + authenticationFailure(6),

 5901 + authenticationTimeout(7),

 5902 + unregisteredUser(8)

 5903 + }

 5904 +

 5905 + AuthorizationRequest ::= SEQUENCE

 5906 + {

 5907 + authorizationType [1] AuthorizationType,

 5908 + iMPI [2] IMPI,

 5909 + visitedNetworkIdentifier [3] UTF8String

 5910 + }

 5911 +

 5912 + AuthorizationType ::= ENUMERATED

 5913 + {

 5914 + registration(1),

 5915 + deregistration(2)

 5916 + }

 5917 +

 5918 + SubscriberRecordChangePayload ::= CHOICE

 5919 + {

 5920 + iMEIUpdateInfo [1] IMEIUpdateInfo,

 5921 + iMEIUpdateResponse [2] IMEIUpdateResponse,

 5922 + roamingStatusUpdateInfo [3] RoamingStatusUpdateInfo

 5923 + }

 5924 +

 5925 + IMEIUpdateInfo ::= SEQUENCE

 5926 + {

 5927 + iMSI [1] IMSI OPTIONAL,

 5928 + iMEI [2] IMEI OPTIONAL,

 5929 + iMEISV [3] IMEISV OPTIONAL

 5930 + }

 5931 +

 5932 + IMEIUpdateResponse ::= SEQUENCE

 5933 + {

 5934 + previousIMEI [1] IMEI OPTIONAL,

 5935 + previousIMEISV [2] IMEISV OPTIONAL

 5936 + }

 5937 +

 5938 + RoamingStatusUpdateInfo ::= SEQUENCE

 5939 + {

 5940 + iMSI [1] IMSI OPTIONAL,

 5941 + pLMNID [2] PLMNID OPTIONAL

 5942 + }

5841 5943 -- =================

5842 5944 -- Common Parameters

5843 5945 -- =================

 END OF CHANGE 1

END OF ATTACHMENT CHANGES

END OF ALL CHANGES