**3GPP TSG-CT WG1 Meeting #130-eC1-213086**

**Electronic meeting, 20-28 May 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **24.229** | **CR** | **6523** | **rev** | **-** | **Current version:** | **17.2.0** |  |
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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 | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Correction on UE SDP handling for EPS Fallback |
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| ***Source to WG:*** | China Mobile |
| ***Source to TSG:*** | C1 |
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| ***Work item code:*** | IMSProtoc17 |  | ***Date:*** | 2021-05-12 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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:*** | During the deployment of EPS Fallback or RAT Fallback, an issue of UE SDP handling for EPS Fallback is identified. EPS Fallback procedure involves simultaneously IMS setup procedure and inter-RAT handover procedure, but if the two procedures is not able to synchronize well, the EPS Fallback call may be put in situation that only one direction of voice stream is available, which has serious impact on user experience.The procedure of the issue is as follows:1. When a terminating call is targeting an EPS Fallback UE, after the UE reply 183 with first SDP answer, P-CSCF initiates PCC procedure to establish voice bearer in 5GS, which further triggers fallback preparation of the UE.
2. The IMS procedure continues. The originating UE sends UPDATE message with updated SDP offer, which is received by the terminating UE still in fallback preparation phase and still camping in 5G NR.
3. Since the bearer establishement is rejected due to fallback procedure and the terminating UE has no voice bearer being established, when the terminating UE responds the UPDATE message, the SDP in 200 OK response includes the SDP answer which indicates the media component for voice from is not available, e.g. with line “a=curr: qos local none”.
4. After the UE fallback to e-UTRA, it does not initiate another SDP negotiation to update its media bearer status. The ressources for media component of this voice call is seen as unabailable by the network.
5. The voice call establishes successfully with no media component available.

It is not clear in current specification how the UE handle such case, therefore it is proposed that when the UE sends 180 response after EPS fallback procedure and the resrouce becomes available, the 180 response is taken as the implicit indication that the resources is available and sufficient.  |
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| ***Summary of change:*** | If the terminating UE has indicated the resources are not available or sufficient as specified in clause U.2A.2, the terminating UE shall send 180 (Ringing) response after the resource is available as an implicit indication that the resources of terminating side becomes available and sufficient. |
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| ***Consequences if not approved:*** | EPS fallback voice call may be set up with no media component available in terminating UE, which has serious impact on voice service user experience. |
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| ***Clauses affected:*** | 5.1.2A.2 |
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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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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

5.1.2A.2 UE-terminating case

The procedures of this subclause are general to all requests and responses, except those for the REGISTER method.

Where a security association or TLS session exists, the UE shall discard any SIP request that is not protected by the security association or TLS session and is received from the P-CSCF outside of the registration and authentication procedures. The requirements on the UE within the registration and authentication procedures are defined in subclause 5.1.1.

If an initial request contains an Accept-Contact header field containing the g.3gpp.icsi-ref media feature tag with an ICSI value, the UE should invoke the IMS application that is the best match for the ICSI value.

If an initial request contains an Accept-Contact header field containing the g.3gpp.iari-ref media feature tag with an IARI value the UE should invoke the IMS application that is the best match for the IARI value.

The UE can receive multiple ICSI values, IARI values or both in an Accept-Contact header field. In this case it is up to the implementation which of the multiple ICSI values or IARI values the UE takes action on.

NOTE 1: The application verifies that the contents of the request (e.g. SDP media capabilities, Content-Type header field) are consistent with the ICSI value in the g.3gpp.icsi-ref media feature tag and IARI value contained in the g.3gpp.iari-ref media feature tag.

If an initial request does not contain an Accept-Contact header field containing a g.3gpp.icsi-ref media feature tag or a g.3gpp.iari-ref media feature tag the UE shall invoke the application that is the best match based on the contents of the request (e.g. SDP media capabilities, Content-Type header field, media feature tag).

The UE can indicate privacy of the P-Asserted-Identity that will be generated by the P-CSCF in accordance with RFC 3323 [33], and the additional requirements contained within RFC 3325 [34].

NOTE 2: In the UE-terminating case, this version of the document makes no provision for the UE to provide a P-Preferred-Identity in the form of a hint.

NOTE 3: A number of header fields can reveal information about the identity of the user. Where, privacy is required, implementers should also give consideration to other header fields that can reveal identity information. RFC 3323 [33] subclause 4.1 gives considerations relating to a number of header fields.

The UE shall not include its "+sip.instance" header field parameter in the Contact header field in its non-register requests and responses except when the request or response is guaranteed to be sent to a trusted intermediary that will remove the "+sip.instance" header field parameter prior to forwarding the request or response to the destination.

NOTE 4: Such trusted intermediaries include an AS that all such requests as part of an application or service traverse. In order to ensure that all requests or responses containing the "+sip.instance" header field parameter are forwarded via the trusted intermediary the UE needs to have first verified that the trusted intermediary is present (e.g first contacted via a registration or configuration procedure). Including the "+sip.instance" header field parameter containing an IMEI URN does not violate RFC 7254 [153] even when the UE requests privacy using RFC 3323 [33].

If the response includes a Contact header field, and the response is sent within an existing dialog, and the Contact address previously used in the dialog was a GRUU, then the UE should insert the previously used GRUU value in the Contact header field as specified in RFC 5627 [93].

If the response includes a Contact header field, and the response is not sent within an existing dialog, the Contact header field is populated as follows:

1) if a public GRUU value ("pub-gruu" header field parameter) has been saved associated with the public user identity from the P-Called-Party-ID header field, and the UE does not indicate privacy of the contents of the P-Asserted-Identity header field, then the UE should insert the public GRUU ("pub-gruu" header field parameter) value as specified in RFC 5627 [93];

2) if a temporary GRUU value ("temp-gruu" header field parameter) has been saved associated with the public user identity from the P-Called-Party-ID header field, and the UE does indicate privacy of the P-Asserted-Identity, then should insert the temporary GRUU ("temp-gruu" header field parameter) value in the Contact header field as specified in RFC 5627 [93];

NOTE 5: The above items 1 and 2 are mutually exclusive.

3) if the request is related to an IMS communication service that requires the use of an ICSI then the UE shall include in a g.3gpp.icsi-ref media feature tag as defined in subclause 7.9.2 and RFC 3841 [56B] the ICSI value (coded as specified in subclause 7.2A.8.2), for the IMS communication service and then the UE may include the IARI value for any IMS application that applies for the dialog, (coded as specified in subclause 7.2A.9.2), that is related to the request in a g.3gpp.iari-ref media feature tag as defined in subclause 7.9.3 and RFC 3841 [56B]. The UE may also include other ICSI values that the UE is prepared to use for all dialogs with the originating UE(s) and other IARI values for the IMS application that is related to the IMS communication service; and

4) if the request is related to an IMS application that is supported by the UE when the use of an ICSI is not needed, then the UE may include the IARI value (coded as specified in subclause 7.2A.9.2), that is related to any IMS application and that applies for the dialog, in a g.3gpp.iari-ref media feature tag as defined in subclause 7.9.3 and RFC 3841 [56B].

After the dialog is established the UE may change the dialog capabilities (e.g. add a media or request a supplementary service) if defined for the IMS communication service as identified by the ICSI value using the same dialog. Otherwise, the UE shall initiate a new initial request to the other user.

If the UE did not insert a GRUU in the Contact header field then the UE shall include a contact address that has been previously registered with contact parameters used for registration removed and a port in the address in the Contact header field as follows:

- if IMS AKA or SIP digest with TLS is being used as a security mechanism, the protected server port value as in the initial registration; or

- if SIP digest without TLS is being used as a security mechanism, the port value of an unprotected port where the UE expects to receive subsequent mid-dialog requests. The UE shall set the unprotected port value to the port value used in the initial registration.

If the UE receives a Resource-Priority header field in accordance with RFC 4412 [16] in an initial request for a dialog, then the UE shall include the Resource-Priority header field in all requests associated with that dialog.

NOTE 6: For certain national implementations, signalling of a Resource-Priority header field to and from a UE is not required.

If available to the UE (as defined in the access technology specific annexes for each access technology), the UE shall insert a P-Access-Network-Info header field into any response to a request for a dialog, any subsequent request (except CANCEL requests) or response (except CANCEL responses) within a dialog or any response to a standalone method (see subclause 7.2A.4).

The terminating UE shall not include the P-Early-Media header field in any SIP messages, unless the terminating UE is a UE performing the functions of an external attached network that is allowed to send early media.

If a request or response is sent on a dialog for which logging of signalling is in progress, the UE shall check whether a trigger for stopping logging of SIP signalling has occurred, as described in RFC 8497 [140] and configured in the trace management object defined in 3GPP TS 24.323 [8K].

a) If a stop trigger event has occurred, the UE shall stop logging of signalling; or

b) if a stop trigger event has not occurred, the UE shall:

- in any requests or responses sent on this dialog, append a "logme" header field parameter to the SIP Session-ID header field; and

- log the request or response.

The UE shall not support RFC 7090 [209] (see table A.4, item A.4/116) and, in this version of the specification, the UE shall not perform any specific procedures beyond those defined in RFC 3261 [26] for the Priority header field.

NOTE 7: The mechanism specified in RFC 7090 [209] is based on the presence of a trust domain for the Priority header field in the operator's network. The UE is not aware whether a trust domain for the Priority header field exists in the operator's network.

If the terminating UE needs to retrieve the last service access number when the AS applies a number translation as described in subclause 5.7.1.22; the terminating UE can find the requested service access number in the hi-entry within the History-Info header field having a hi-index that match the "mp" or "rc" header field parameter value of the last hi-entry containing a "cause" SIP URI parameter, defined in RFC 4458 [68], set to the value "380" defined in RFC 8119 [230]. If no "mp" or "rc" header field parameter is received in the concerned hi-entry, the service access number can be found in the hi-entry preceding the hi-entry with the "cause" SIP URI parameter set to "380".

If the terminating UE

a) supports calling number verification status determination;

b) during registration determined that the home network supports calling number verification using signature verification as and attestation information, as defined in subclause 3.1; and

c) receives initial INVITE request for a dialog or a MESSAGE request containing a P-Asserted-Identity header field or a From header field with a "verstat" tel URI parameter in a tel URI or a SIP URI with a user=phone parameter;

then the terminating UE shall:

a) determine the calling number verification status based on the "verstat" tel URI parameter value; and

b) if unable to determine the calling number verification status based on the "verstat" parameter value, discard the parameter and treat the P-Asserted-Identity header field and the From header field in the same way as if the parameter would not have been included.

If the terminating UE supports the precondition mechanism and has indicated the resources are not available or sufficient as specified in clause U.2A.2, the terminating UE shall send 180 (Ringing) response after the resource is available as an implicit indication that the resources of terminating side becomes available and sufficient.

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