**3GPP TSG-RAN5 Meeting #94-e *R5-22***

**, ,** **21st Feb - 4th Mar 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **34.229-5** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **16.1.0** |  |
|  |
| *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 |  | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | Corrections to A.9 |
|  |  |
| ***Source to WG:*** | ROHDE & SCHWARZ |
| ***Source to TSG:*** | R5 |
|  |  |
| ***Work item code:*** | 5GS\_NR\_LTE-UEConTest |  | ***Date:*** | 2022-02-17 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | On A.9.2, R5-211437 was written and agreed by RAN5#90-e when there was uncertainty about UE behavior after EPS fallback, especially regarding the use of preconditions and UPDATE. Later, CT1 responded in liaison R5-214167 that UPDATE will be used in precondition scenarios, and otherwise not.With this understanding the ambiguities in Annex A.9.2 can be relieved.On A.9.1, there is a need to differentiate between scenarios where UE uses vs does not use preconditions. |
|  |  |
| ***Summary of change:*** | Rewrote the A.9.2 such that:* Optional REGISTER is moved to the front of the sequence
* UPDATE is made conditional, depending on precondition usage
* 180 Ringing is moved back to where it belongs in the sequence
* Call init sequence is completed

Added precondition difference to A.9.1 |
|  |  |
| ***Consequences if not approved:*** | Faulty resp incomplete test spec |
|  |  |
| ***Clauses affected:*** | A.9.1, A.9.2 |
|  |  |
|  | **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:*** |  |

\*\*\* 1st Change \*\*\*

# A.9 EPS Fallback for Voice Call / 5GS

## A.9.1 EPS Fallback for Voice Call / steps before fallback / 5GS

Expected sequence

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Message/Procedure | Comment |
|  | UE | SS |  |  |
| 1 | 🡪 | INVITE | UE sends INVITE including an SDP offer. |
| 2 | 🡨 | 100 Trying | SS sends a 100 Trying provisional response. |
| 3 | 🡨 | 183 Session Progress | SS sends 183 Session Progress including an SDP answer. |
| 4 | 🡪 | PRACK | UE acknowledges reception of 183 Session Progress. |
| 5 | 🡨 | 200 OK | SS sends 200 OK for PRACK. |

Specific message contents

INVITE (Step 1)

Use the default message "INVITE for MO Call Setup" in Annex A.2.1 of TS 34.229-1 [2] with conditions A1, A3, A4, and A28 and the following exceptions:

|  |  |
| --- | --- |
| Header/param | Value/Remark |
| **Message-body** | SDP body present but contents not checked |

100 Trying (Step 2)

Use the default message "100 Trying for INVITE" in Annex A.2.2 of TS 34.229-1 [2] with condition A1.

183 Session Progress (Step 3)

Use the default message "183 Session Progress for INVITE" in Annex A.2.3 of TS 34.229-1 [2] with condition A1 and the following exceptions:

|  |  |
| --- | --- |
| Header/param | Value/Remark |
| Require | present if UE is configured to use preconditions |
|  option-tag | *precondition* |
| **Message-body** | The following SDP types and values.Session description:*- v=0**- o=- 1111111111 1111111111 IN* (addrtype) (unicast-address for SS)- *s=-**- c=IN* (addrtype) (connection-address for SS)*- b=AS:37*Time description:*- t=0 0*Media description:*- m=audio* (transport port) *RTP/AVP* (fmt) [Note 1, 4]*- b=AS:3*7*- b=RS:0**- b=RR:2000*Attributes for media:*- a=rtpmap:* (payload type) *AMR-WB/16000/1* [Note 1]*- a=fmtp:* (format) *mode-change-capability=2; max-red=220* [Note 1]*- a=ecn-capable-rtp: leap ect=0* [Note 2]*- a=rtcp-fb:\* nack ecn* [Note 2]*- a=rtcp-xr:ecn-sum* [Note 2]*- a=ptime:20**- a=maxptime:240*Attributes for media security mechanism:*- a=3ge2ae: requested* [Note 3]*- a=crypto:1 AES\_CM\_128\_HMAC\_SHA1\_80inline:PS1uQCVeeCFCanVmcjkpPywjNWhcYD0mXXtxaVBR|2^20|1:4* [Note 3]**Attributes for preconditions: [Note 5]***a=curr:qos local none**a=curr:qos remote none**a=des:qos mandatory local sendrecv**a=des:qos mandatory remote sendrecv**a=conf:qos remote sendrecv*Note 1: The value for fmt, payload type (AMR) and format is copied from Step 1.Note 2: Attributes for ECN Capability are present if the UE supports Explicit Congestion Notification.Note 3: Attributes for media plane security are present if the use of end-to-access-edge security is supported by UE.Note 4: transport port is the port number of the SS (see RFC 3264 clause 6).Note 5: present if UE is configured to use preconditions |

PRACK (Step 4)

Use the default message "PRACK" in Annex A.2.4 of TS 34.229-1 [2] with conditions A1 and A7.

200 OK (Step 5)

Use the default message "200 OK for requests other than REGISTER or SUBSCRIBE" in Annex A.3.1 of TS 34.229-1 [2] with conditions A10 and A22.

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

## A.9.2 EPS Fallback for Voice Call / steps after fallback / 5GS

Expected sequence

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Direction | Message/Procedure | Comment |
|  | UE | SS |  |  |
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| 1 |  | SS starts a timer (5 seconds) to wait for an optional REGISTER request from UE.NOTE: if the UE does not send REGISTER and is configured to use preconditions, it may send UPDATE right away. In that case, the timer is stopped upon arrival of UPDATE. |  |
| - |  | EXCEPTION: Steps 2a1-2a2 describes behaviour that depends on UE implementation.The “lower case letter” identifies a step sequence that takes place if such implementation was applied. |  |
| 2a1 | --> | REGISTER | Optional step: the UE may register for IMS on EPS. |
| 2a2 | <-- | 200 OK | Conditional step: if the UE sent REGISTER, the SS responds with 200 OK. |
| - | - | EXCEPTION: Steps 3a1 to 3a2 describe behaviour that depends on UE configuration; the “lower case letter” identifies a step sequence that takes place if such configuration was conducted. | - |
| 3a1 | --> | IF the UE is configured to use preconditions THEN the UE sends UPDATE | UPDATE contains a second SDP offer. |
| 3a2 | <-- | 200 OK for UPDATE | Conditional step: if the UE sent UPDATE, the SS sends 200 OK for UPDATE containing a second SDP answer. |
| 4 | <-- | 180 Ringing | 180 Ringing is sent unreliably. |
| 5 | <-- | SS sends 200 OK for INVITE | - |
| 6 | --> | ACK | - |

Specific message contents

REGISTER (Step 2a1)

Use the default message "REGISTER" in Annex A.1.1 of TS 34.229-1 [2] applying conditions A2 and A31.

200 OK (Step 2a2)

Use the default message "200 OK for REGISTER" in Annex A.1.3 of TS 34.229-1 [2] with condition A2.

UPDATE (Step 3a1)

Use the default message "UPDATE" in Annex A.2.5 of TS 34.229-1 [2] with conditions A1 and A5 and the following exceptions:

|  |  |
| --- | --- |
| Header/param | Value/Remark |
| **Message-body** | The following SDP types and values shall be present.Session description:*- v=0**- o=*(username) (sess-id) (sess-version) IN (addrtype) (unicast-address for UE) [Note 2]*- s=*(session name)*- c=IN* (addrtype) (connection-address for UE) [Note 1]*- b=AS:* (bandwidth-value)Time description:*- t=0 0*Media description:*- m=audio* (transport port) *RTP/AVP* (fmt) [Note 2]*- c=IN* (addrtype) (connection-address for UE) [Note 1]*- b=AS:* (bandwidth-value)*- b=RS:* (bandwidth-value)*- b=RR:* (bandwidth-value)Attributes for media:*- a=rtpmap:* (payload type) *AMR-WB/16000* [Note 2] [Note 4]*- a=fmtp:* (format) [Note 2, 3]**Attributes for preconditions:***a=curr:qos local sendrecv**a=curr:qos remote none**a=des:qos mandatory local sendrecv**a=des:qos optional remote sendrecv* or *a=des:qos mandatory remote sendrecv*Note 1: At least one "c=" field shall be present.Note 2: The value for fmt, payload type and format is not checkedNote 3: Parameters for the AMR codec are not checkedNote 4: The AMR channel number shall be “/1” or omitted. |

200 OK (Step 3a2)

Use the default message "200 OK for requests other than REGISTER or SUBSCRIBE" in Annex A.3.1 of TS 34.229-1 [2] with conditions A1, A10 and A21 and the following exceptions:

|  |  |
| --- | --- |
| **Header/param** | **Value/remark** |
| **Content-Type** |  |
|  media-type | *application/sdp*  |
| **Content-Length** |  |
|  Value | length of message-body |
| **Message-body** | SDP body of the 200 OK response copied from the received UPDATE and modified as follows:- IP address on "c=" lines and transport port on "m=" lines changed to indicate to which IP address and port the UE should start sending the media;*-* "o=" line identical to previous SDP sent by SS except that sess-version is incremented.*-* Attributes for preconditions: *a=curr:qos remote sendrecv* |

180 Ringing (Step 4)

Use the default message "180 Ringing for INVITE" in Annex A.2.6 of TS 34.229-1 [2] with conditions A1 and A13.

200 OK (Step 5)

Use the default message "200 OK for requests other than REGISTER or SUBSRIBE" in Annex A.3.1 of TS 34.229-1 [2] with conditions A1, A10, A19, and A21.

ACK (Step 6)

Use the default message "ACK" in Annex A.2.7 of TS 34.229-1 [2] with condition A1.

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