**3GPP TSG-CT WG1 Meeting #132-eC1-215942**

**E-meeting, 11-15 October 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.174** | **CR** | **0030** | **rev** | **-** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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:*** | Transfer between federated UEs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MuDTran | | | | |  | ***Date:*** | | | 2021-09-28 |
|  |  | | | |  | |  | | |  |
| ***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 can be 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:*** | | The work performed in MuDe has provided means for a UE to recognize other UEs under the same subscription. This means that we now have standardized configuration to detect and identify these UEs. This can be used to transfer calls beetween UEs, in particular we now have the possibility to pull a session from another UE and push a session to another UE within the subscription.  It is proposed to use an extension of the Dialog event package to inform the UE about other UEs. This would allow the UE to receive the UE identity along with the call status of the other federated UEs. | | | | | | | | |
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| ***Summary of change:*** | | Specify UE and AS actions for Call Pull and Call Push. | | | | | | | | |
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| ***Consequences if not approved:*** | | Missing functionality. The procedures for the UE to initiate these transfers based on mechanisms in 24.174 remain unspecified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 3.2, 4.5.3.1, 4.5.3.1.1 (new), 4.5.3.1.2 (new), 4.5.3.1.3 (new), 4.5.3.2.x (new), 4.5.3.2.y (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | To MCC: TS 24.229 subclause 7.X in CR#6536 is referenced. So that CR needs to be implemented first. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[3] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[4] 3GPP TS 24.607: "Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[5] IETF RFC 3323: "A Privacy Mechanism for the Session Initiation Protocol (SIP)".

[6] IETF RFC 3325: "Private Extensions to the Session Initiation Protocol (SIP) for Network Asserted Identity within Trusted Networks".

[7] 3GPP TS 24.623: "Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services".

[8] IETF RFC 8946: "Personal Assertion Token (PASSporT) Extension for Diverted Calls".

[9] OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API-V1\_0-20181025-D: "CPM Message Store using RESTFul API, Draft Version 1.0 – 25 Oct 2018",  
<http://member.openmobilealliance.org/ftp/Public_documents/COM/COM-CPM/Permanent_documents/OMA-TS-Message_Storage_Using_RESTFul_API-V1_0-20181025-D.zip>.

[10] OMA-TS-REST\_NetAPI\_NMS-V1\_0-20190528-C: "RESTful Network API for Network Message Storage, Candidate Version 1.0 – 28 May 2019",  
<http://member.openmobilealliance.org/ftp/Public_documents/ARCH/Permanent_documents/OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C.zip>.

[11] 3GPP TS 24.629: "Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[12] 3GPP TS 24.147: "Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".

[13] 3GPP TS 24.175: "Management Object (MO) for Multi-Device and Multi-Identity in IMS; Stage 3".

[14] 3GPP TS 23.003: "Numbering, addressing and identification".

[15] IETF RFC 3261: "SIP: Session Initiation Protocol".

[16] IETF RFC 4235: "An INVITE-Initiated Dialog Event Package for the Session Initiation Protocol (SIP)".

[17] 3GPP TS 24.628: "Common Basic Communication procedures using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

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

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**native identity**: an identity of form tel URI or SIP URI, used by the UE and which is associated with the IMSI which is currently used by the UE for IMS registration. The native identity is IMS registered by the UE.

**alternative identity**: an identity of form tel URI or SIP URI, used by the UE and which is not associated with the IMSI which is currently used by the UE for IMS registration and is associated with a different IMSI for the same IMS subscription owned by the same IMS network. The alternative identity can be IMS registered by the UE or can be configured in the service data of the UE's IMS subscription.

**call pull:** procedure in which a UE takes over an ongoing session from another UE in the set of federated UEs.

**call push:** procedure in which a UE pushes an ongoing session to another UE in the set of federated UEs.

**external alternative identity**: an identity of form tel URI or SIP URI, used by the UE and which is not associated with the IMSI which is currently used by the UE for IMS registration but is associated with a different IMSI for another IMS subscription owned by the same or a different IMS network. The external alternative identity is not IMS registered by the UE but is configured in the service data of the UE's IMS subscription.

**virtual identity**: an identity of form tel URI or SIP URI, used by the UE and which is not associated as native identity with any IMSI that is associated with ISIM or USIM in the UE. The virtual identity can be IMS registered by the UE or can be configured in the service data of the UE's IMS subscription.The virtual identity can be used by a single user only or by several users having IMS subscriptions in the same or different IMS networks.

**non-native identity**: an identity which is not the native identity. The non-native identity may be an alternative identity, external alternative identity or a virtual identity.

**federated UEs**: a group of UEs which are configured to use the same public user identity.

**user A:** user A is the originating user, in the present document user A calls user B, where A can be using the identity C.

**user B:** user B is the terminating user, in the present document user A calls user B, where B can be reached under the identity D.

**identity C:** identity C is a non-native identity that can be used by user A and is not registered by user A.

**identity D:** identity D is a non-native identity that can be used by user B and is not registered by user B.

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

3pcc Third party call control

AS Application Server

MiD Multi-iDentity

MuD Multi-Device

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

### 4.2.1 MuD service description

The MuD service enables a served user to use, in a communication, any of the UEs that are configured to use the same public user identity, i.e. any of the federated UEs.

The MuD service enables a synchronization of communication logs between the federated UEs which support communication log. The communication log provides lists of incoming and outgoing, missed, accepted and rejected calls. If the served user accepts or rejects call from one of the federated UEs or when a missed call notification has been read on one of the federated UEs, the communication logs of the other federated UEs are updated so the served user will see the same information on different federated UEs.

An outgoing call can be made from any of the federated UEs. A federated UE can indicate to the network which public user identities are (de)activated at the federated UE.

An incoming call towards the served user is sent to all federated UEs where that public user identity is active at the federated UE. The call can be accepted on any of the federated UEs which are alerting the served user of an incoming call. The federated UEs can synchronize the call logs by using the call log functionality in OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API [9] and OMA-TS-REST\_NetAPI\_NMS [10].

A federated UE can if authorized by the AS push a call to any other of the federated UEs. A federated UE can if authorized pull a call from any of the other federated UEs.

The number of UEs using the same public user identity is implementation specific.

NOTE: In case federated UEs use common implicit registration set, all federated UEs will subscribe to the registration-state event package and will receive notifications related to all public user identities in this implicit registration set.

If the user of the MuD service also subscribes to the MiD service then the user can use non-native identities in addition to native identities on federated UEs. A federated UE can indicate to the network which of these non-native identities are (de)activated at the federated UE.

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

### 4.5.3.1 Actions at the UE of user A

##### 4.5.3.1.1 General

If user A wishes to use a native identity, the UE shall include in the outgoing INVITE or MESSAGE request the From header field and may include the P-Preferred-Identity header field(s) as specified in TS 24.229 [3]. The From header field and the P-Preferred-Identity header field (if included) shall contain the native identity.

If user A wishes to use an alternative identity or a virtual identity that the UE has registered, the UE shall include in the outgoing INVITE or MESSAGE request the From header field and the P-Preferred-Identity header field. The P-Preferred-Identity header field and the From header field shall contain the alternative identity or the virtual identity.

If user A wishes to use the identity C, the UE shall include in any outgoing INVITE or MESSAGE requests, an Additional-Identity header field, defined in TS 24.229 [3], set to the selected identity and shall include the native identity in the From header field. The UE can learn the identity C by device configuration as specified in TS 24.175 [13] or by using the service configuration in clause 4.8.

The UE may support being configured with the identities to be used in the "MultiIdentity" leaf node of TS 24.175 [13].

When establishing an emergency session and performing the emergency related procedures defined in TS 24.229 [3], the UE shall only use the native identity.

A UE supporting the MuD service may synchronize the local call log with the network stored call log as specified in OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API [9] and OMA-TS-REST\_NetAPI\_NMS [10]. If the served user in the "From" header field is an identity not registered by the UE, the UE shall deduce that the call was originated using the Additional-Identity header field.

##### 4.5.3.1.2 Call pull handling

The UE may pull a session from another federated UE by performing the following steps:

a) the UE learns about the session to pull by subscribing to the dialog event package, specified in RFC 4235 [16];

b) the UE sends an INVITE request towards the far end populated as follows:

1) the Request-URI is set to the uri in the <target> element of the <remote> element;

2) a Replaces header field containing the dialog identifiers contained as attributes in the <dialog> element of the <dialog-info> element; and

3) any other header field or body as determined by the service logic; and

c) when the UE receives a response to the INVITE request above the UE follows general procedures in TS 24.229 [3].

##### 4.5.3.1.3 Call push handling

The UE may push a session to another federated UE by performing the following steps:

a) the UE learns the status and identities of the other federated UEs using the dialog event package, specified in RFC 4235 [16] and extended as specified in clause 7.X.2 in TS 24.229 [3]; and

b the UE sends a REFER request towards the target UE populated as follows:

1) the Request-URI is set to the own public user identity and includes a "gr" SIP URI parameter set to the value of the "identity" attribute for the target UE received in the <ue-info> element in the <dialog-info> element in the dialog event notification; and

NOTE: The value in the "identity" attribute has the same format as a GRUU, but is not a GRUU assigned by the S-CSCF. It only has local significance.

2) a Refer-to header field set to the SIP URI of the remote end and including in the headers portion of the SIP URI the headers and bodies determined by the service logic.

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

##### 4.5.3.2.x Call pull handling

An AS supporting call pull handling, when receiving an INVITE request as specified in clause 4.5.3.1.2 shall verify that the calling user is allowed to pull a call.

##### 4.5.3.2.y Call push handling

An AS supporting call pull handling, when receiving a REFER request as specified in clause 4.5.3.1.3 shall verify that the user is allowed to push a call and may start 3pcc procedures to transfer the originating leg from the originator of the REFER request to the REFER target. The AS shall use the "gr" SIP URI parameter in the Request-URI to identify the REFER target UE. If the AS knows that the content of the "gr" SIP URI parameter is not a GRUU assigned by the S-CSCF the AS shall remove the "gr" SIP URI parameter from the Request-URI before forwarding the request.

The AS may start 3pcc procedures to transfer the originating leg to the target UE using 3pcc procedures as specified in TS 24.628 [17].

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

#### 4.5.3.5 Actions at the AS serving user B

Upon receiving an INVITE or MESSAGE request not containing an Additional-Identity header field and if the terminating user is subscribed to the MuD service, the AS shall when sending the request to the UEs verify whether the identity in the Request-URI is activated by the MiD service and on the target UE. The AS shall only send the request to a target UE if the identity is active both in the MiD service and on the target UE. If the user does not subscribe to the MiD service, but the user has the received identity configured in the implicit registration set, the AS considers the identity to be activated by the MiD service.

Upon receiving an INVITE or MESSAGE request containing an Additional-Identity header field and if the terminating user is subscribed to the MuD and the MiD service, the AS shall when sending the request to the UEs verify whether the identity in the Additional-Identity header field is activated by the MiD service and on the target UE. The AS shall only send the request to a target UE if the identity is active both in the MiD service and on the target UE. The AS may refrain from the invocation of other MMTel services configured for the user of the native identity.

If the AS updates the Call Log as specified in OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API [9] the AS shall populate the "To" attribute of the call log object with the value in the Additional-Identity header field, provided the user is authorized to use this identity.

An AS supporting call pull and call push handling, uses the procedures specified in clauses 4.5.3.2.x and 4.5.3.2.y.

#### 4.5.3.6 Actions at the UE of user B

A UE supporting the MiD service shall support the receipt of the Additional-Identity header field, defined in TS 24.229 [3], in SIP requests initiating a dialog or standalone transaction.

NOTE: The UE finds a targeted external alternative identity in the Additional-Identity header field.

A UE supporting the MuD service may synchronize the local call log with the network stored call log as specified in OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API [9] and OMA-TS-REST\_NetAPI\_NMS [10]. If the served user in the "To" header field is an identity not registered by the UE, the UE shall deduce that the call was originated using the Additional-Identity header field.

A UE supporting call pull and call push handling uses the procedures specified in 4.5.3.1.2 and 4.5.3.1.3.

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