Technical Specification Group Services and System Aspects
Meeting #28, 06 - 08 June 2005,
Quebec, Canada

**TSGS#28(05)0338**

**Source:** SA WG2

**Title:** CRs to TS 23.228: Various Technical Corrections (Rel-6) and 1 Release 7 CR: Support of Access Network NAT traversal (Rel-7)

**Document for:** Approval

**Agenda Item:** 7.2.3

| SA Doc | TS No. | CR No | Rev | Rel | Cat | Subject | Vers Cur | SA2 Doc | WI | Clauses affected |
|---|---|---|---|---|---|---|---|---|---|---|
| SP-050338 | 23.228 | 0483 | 1 | Rel-6 | F | Alignment of Session-based Messaging flows with stage 3 | 6.9.0 | S2-050918 | IMS2 | 5.16.2.2.3 |
| SP-050338 | 23.228 | 0490 | 1 | Rel-6 | F | On AS forking | 6.9.0 | S2-050919 | IMS2 | 4.2.7.2 |
| SP-050338 | 23.228 | 0491 | - | Rel-6 | F | Corrections to wildcarded PSIs | 6.9.0 | S2-050988 | IMS2 | 4.3.6, 5.4.12 |
| SP-050338 | 23.228 | 0494 | 3 | Rel-6 | F | Clarification to the routing of SIP signalling within the IMS network | 6.9.0 | S2-051451 | IMS2 | Add a new subclause 4.3.3.3b, 5.6.3 |
| SP-050338 | 23.228 | 0496 | 1 | Rel-6 | F | Session setup with media set to inactive | 6.9.0 | S2-051359 | PoC | 5.4a, 5.7.4, 5.7a |
| SP-050338 | 23.228 | 0497 | - | Rel-6 | F | Correction to ENUM resolution for Infrastructure ENUM | 6.9.0 | S2-051282 | IMS2 | 4.3.5 |
| SP-050338 | 23.228 | 0498 | - | Rel-7 | F | Support of Access Network NAT traversal | 6.9.0 | S2-051419 | FBI | 4.12 |

**3GPP TSG-SA WG2 Meeting #45** **S2-050918**
**Beijing, China, 4th – 8th April 2005**

CR-Form-v7.1

# CHANGE REQUEST

⌘ **23.228** **CR** **0483** ⌘ **rev** **1** ⌘ Current version: **6.9.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Alignment of Session-based Messaging flows with stage 3 |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | IMS2 |
| ***Date:*** | ⌘ | 29/03/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*Ph2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | Currently the Session-based messaging flows in TS 23.228 do not align with those in the stage 3 TS 24.247 when intermediate nodes are used. CN1 determined that when an intermediate node is used that the intermediate node should then establish the TCP connection with the far end before the Inviting UE receives the 200 OK and establishes a TCP connection with the intermediate node. |
| ***Summary of change:*** | ⌘ | Aligns stage 2 Session-based messaging flows with those in TS 24.247. |
| ***Consequences if not approved:*** | ⌘ | Confusion between stage 2 and stage 3 possibly leading to interoperability problems in implementations |

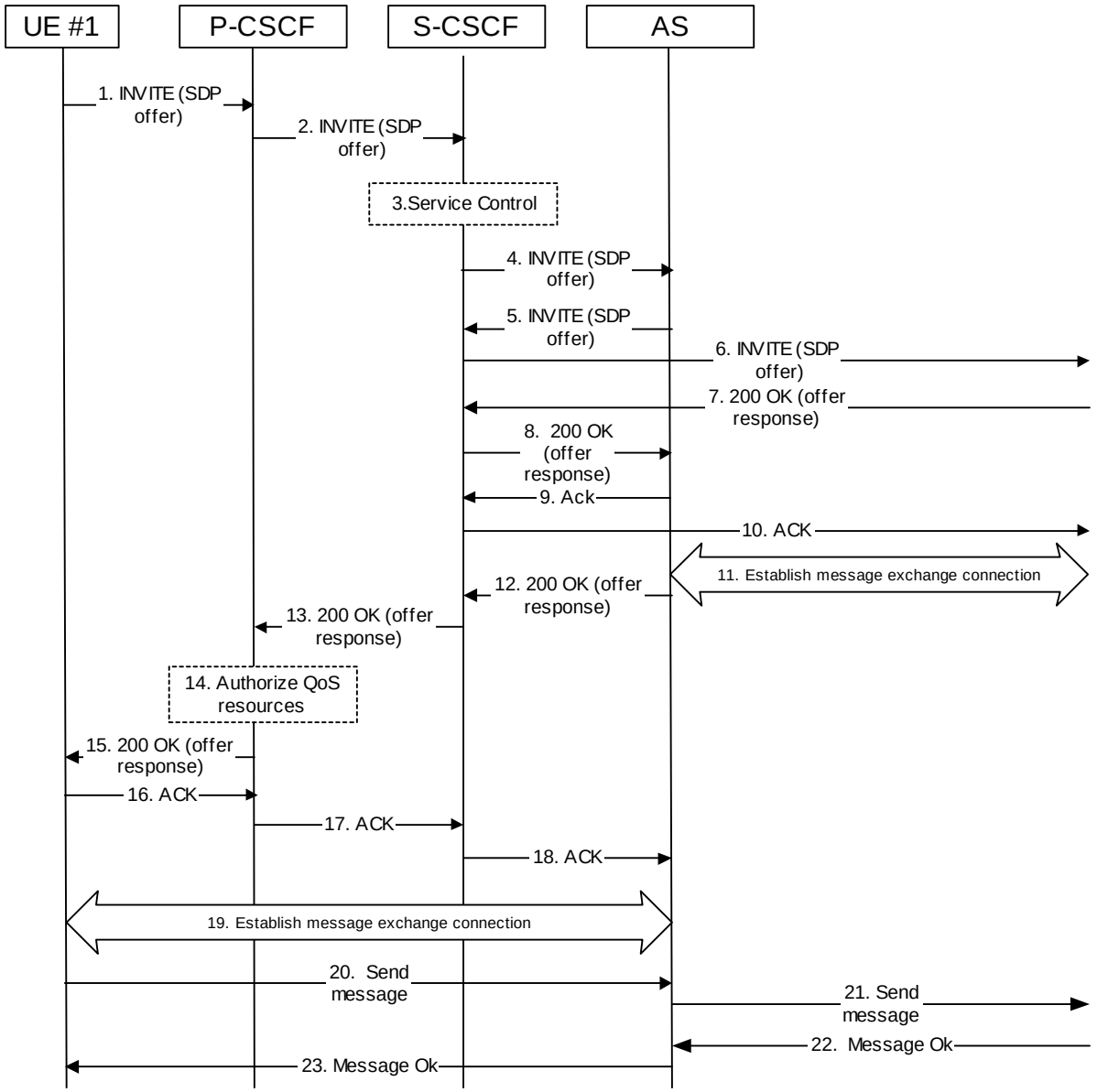
| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 5.16.2.2.3 |

| ***Other specs affected:*** ⌘ | Y | N | |
|---|---|---|---|
| | | X | Other core specifications ⌘ |
| | | X | Test specifications |
| | | X | O&M Specifications |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

### 5.16.2.2.3 Session based messaging procedure with an intermediate node

The following procedure shows the originating session based messaging involving an intermediate node. An optional ringing response from AS to the UE or vice versa is not shown in the following procedure.


UE #1
P-CSCF
S-CSCF
AS
1. INVITE (SDP offer)
2. INVITE (SDP offer)
3.Service Control
4. INVITE (SDP offer)
5. INVITE (SDP offer)
6. INVITE (SDP offer)
7. 200 OK (offer response)
8. 200 OK (offer response)
9. Ack
10. ACK
11. Establish message exchange connection
12. 200 OK (offer response)
13. 200 OK (offer response)
14. Authorize QoS resources
15. 200 OK (offer response)
16. ACK
17. ACK
18. ACK
19. Establish message exchange connection
20. Send message
21. Send message
22. Message Ok
23. Message Ok

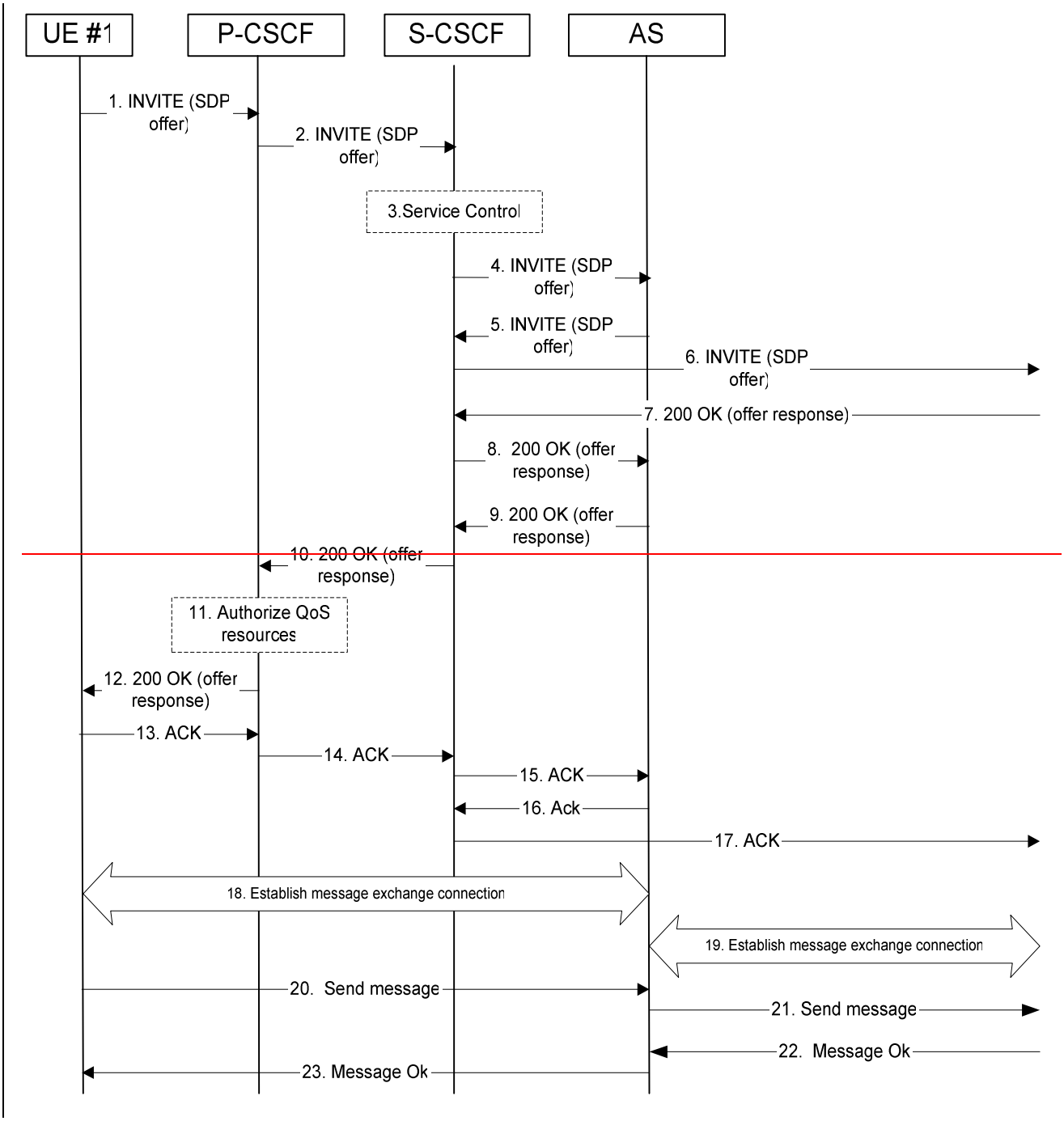



**Figure 5.48c: Session based messaging with an intermediate node**

1. UE#1 sends the SIP INVITE request addressed to UE#2, containing an initial SDP, to the P-CSCF. The SDP offer may indicate the maximum message size UE#1 accepts to receive.

2. The P-CSCF forwards the INVITE request to the S-CSCF along the path determined upon UE#1's most recent registration procedure.

3. Based on operator policy the S-CSCF may reject the INVITE request with an appropriate response. S-CSCF may invoke whatever service control logic is appropriate for this INVITE request. In this case the Filter Criteria trigger the INVITE request to be routed to an Application Server that acts as an intermediate node for the message session.

4. The S-CSCF forwards the INVITE request to the AS. The AS may modify the content of the SDP (such as IP address/port numbers). Based on operator policy the AS may either reject the session set-up or decrease the maximum message size indication.

5. The AS sends the INVITE request to the S-CSCF.

6. The S-CSCF forwards the INVITE request to the destination network. The destination network will perform the terminating procedure.

7–8. ~~The~~ UE#2 or AS in the terminating network accepts the INVITE request with a 200 OK response. The 200 OK response is forwarded by the S-CSCF to the AS. The 200 OK (Offer response) may indicate the maximum message size UE#2 accepts to receive, possibly decreased by the AS.

9. - 10.The AS acknowledges the 200 OK response from the terminating network with an ACK, which traverses back to UE#2 or AS in the terminating network via the S-CSCF.

11. The AS initiates the establishment of a reliable end-to-end connection with UE#2 or the AS in the terminating network to exchange the message media. This step can take place in parallel with step 12.

~~9~~12, ~~10~~ 13 and ~~12~~15.The AS accepts the message session with a 200 OK response. The 200 OK response traverses back to UE#1.

~~11~~14. Based on operator policy P-CSCF/PDF may authorize the resources necessary for this session. The media authorization token is generated at this step and sent in the 200 OK to UE#1.

~~13~~16. -~~15~~18. UE#1 acknowledges the 200 OK with an ACK, which traverses back to the AS.

~~16. 17. The AS acknowledges the 200 OK response from the terminating network with an ACK, which traverses back to the UE or AS in the terminating network via the S-CSCF. Based on AS implementation sending of the ACK may happen sometimes after step 8.~~

~~18~~19. UE#1 establishes a reliable end-to-end connection with the AS to exchange the message media.

~~19. The AS establishes a reliable end-to-end connection with the UE or AS in the terminating network to exchange the message media.~~

20. UE#1 generates the message content and sends it to the AS using the established message connection.

21. The AS forwards the message content using the established message connection with the terminating network.

22. ~~The~~ UE#2 or AS in the terminating network acknowledges the message with a response that indicates the reception of the message. The response traverses back to the AS.

23. The AS forwards the message response back to UE#1.

Further messages may be exchanged in either direction between UE#1 and the terminating network using the established message connection via the AS. The size of the messages exchanged within the session shall be within the size limits indicated by UE#1 and UE#2 respectively, possibly decreased by the AS.

**3GPP TSG-SA WG2 Meeting #45**
**Beijing, China, 4th April – 8th April 2005**

***Tdoc ⌘S2-050919***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **23.228** **CR** **0490** ⌘ **rev** **1** ⌘ Current version: **6.9.0** ⌘

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***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

| | | |
|---|---|---|
| ***Title:*** | ⌘ | On AS forking |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | IMS2 |
| ***Date:*** | ⌘ | 07/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*Ph2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | In chapter 4.2.7.2 on forking it is described that an AS may act as a forking proxy as defined in RFC 3261. The subsequent note states that the AS may subscribe to the registration event package to retrieve the contact address(es) of the UE. This may imply that the AS can fork requests based on the UE's contact address(es). However, only the S-CSCF should replace the public user id in the R-URI by the contact address(es) of the UE. |
| ***Summary of change:*** | ⌘ | The existing text in 4.2.7.2 is enhanced to clarify that an AS shall not use the UE's contact address(es) but the UE's public user ids to fork requests towards the S-CSCF. Forking of requests to the contact address(es) of an user should be done by the S-CSCF. |
| ***Consequences if not approved:*** | ⌘ | Existing text may be misunderstood and lead to incorrect AS and S-CSCF implementations. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 4.2.7.2 |

| ***Other specs affected:*** | ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|---|
| | | | X | Other core specifications | |
| | | | X | Test specifications | |
| | | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

BEGIN OF CHANGE

## 4.2.7 Support of SIP forking

### 4.2.7.1 SIP Forking

SIP forking is the ability of a SIP proxy server to fork SIP request messages to multiple destinations according to RFC 3261 [12].

### 4.2.7.2 Forking within and outside the IM CN Subsystem

The IM CN subsystem shall have the capability to fork requests to multiple destinations; this capability is subject to rules for forking proxies defined in RFC 3261 [12].

- The S-CSCF shall support the ability for a Public User Identity to be registered from multiple contact addresses, as defined in RFC 3261 [12]. The S-CSCF shall support forking so that an incoming SIP request addressed to a Public User Identity is proxied to multiple registered contact addresses. This allows forking across multiple contact addresses of the same Public User Identity.

- When multiple contact addresses have been registered, then the S-CSCF shall exhibit the following behaviour with regards to forking the incoming SIP request:

  1. If the UE has indicated capability information upon IMS registration in terms of SIP User Agent capabilities and characteristics described in RFC 3840 [38], then the S-CSCF shall use it to generate a target contact set using the matching mechanism described in RFC 3841 [42]. If the UE has not indicated any capabilities for the contact addresses upon registration, then the S-CSCF may still use the preference information, if indicated for the contact addresses upon registration, as described in the following bulletpoint below.

  2. If the UE has indicated preference information for contact addresses upon registration, then the S-CSCF shall use it to decide if parallel or sequential forking is used across the contact addresses that have matching callee capabilities, as described in RFC 3261 [12]. If the UE has not indicated any preference for the matching contact addresses upon registration, or if the preferences for the matching contact addresses have equal value, then it is up to the configuration of the S-CSCF if parallel or sequential forking is to be performed across the contact addresses that have matching callee capabilities.

- Application Servers in the IMS shall not ~~may~~ act as a forking proxy towards the S-CSCF in the sense of RFC 3261 [12].

NOTE 1: The AS may subscribe to the registration event package to retrieve the contact address(es) of the UE. Based on this information the AS may act as a forking proxy in the sense of RFC 3261 [12] towards other nodes than the S-CSCF.

Note 2: The AS may initiate multiple requests towards the registered Public User Identities of a user, however, this is not considered as forking in the sense of RFC 3261 [12].

~~S-CSCFs shall provide the necessary support for forking by Application Servers.~~

Additionally, other networks outside the IM CN Subsystem are able to perform SIP forking.

### 4.2.7.3 Support for forked requests

END OF CHANGE

**3GPP TSG-SA WG2 Meeting #46**
**Athens, Greece, 9th – 13th May 2005**

***Tdoc ⌘S2-050988***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **23.228** **CR** **0491** ⌘ **rev** **-** ⌘ Current version: **6.9.0** ⌘

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***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Corrections to wildcarded PSIs |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | IMS2 |
| ***Date:*** | ⌘ | 29/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
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***A*** *(corresponds to a correction in an earlier release)*
***B*** *(addition of feature),*
***C*** *(functional modification of feature)*
***D*** *(editorial modification)*
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*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The CT WG4 group have now updated 3GPP TS 23.003 (Numbering, Naming and Addressing spec) to describe Public Service Identities. Therefore, there is now overlap with PSI format definition in 23.228. |
| ***Summary of change:*** | ⌘ | Remove overlap with 3GPP TS 23.003. Also, a few grammatical improvements to the text have been made, as well as implementation of correct 3GPP terminology. |
| ***Consequences if not approved:*** | ⌘ | PSIs will be defined twice in the 3GPP specification set. This is bad as it will inevitably at some point in the future diverge and 3GPP will have conflicting definitions which lead to non-interoperability of equipment. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 4.3.6, 5.4.12 |

| ***Other specs affected:*** ⌘ | Y | N | | |
|---|---|---|---|---|
| | X | | Other core specifications | ⌘ CR 23.003-100 |
| | | X | Test specifications | |
| | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

****** First Modified Section ******

## 4.3.6 Public Service Identities

With the introduction of standardized presence, messaging, conferencing, and group service capabilities in IM CN subsystem, there is a need for Public Service Identities (PSIs). These identities are different from the Public User Identities in the respect that they identify services, which are hosted by Application Servers. In particular, Public Service Identities are used to identify groups, see clause 4.10. For example a chat-type service may use a Public Service Identity (e.g. sip:chatlist_X@example.com) to which the users establish a session to be able to send and receive messages from other session participants. As another example, local service may be identified by a globally routable Public Service Identity.

Public Service Identities shall take the form ~~of SIP URI as defined in RFC 3261 [12] and RFC 2396 [13] or the "tel:" URI format as defined in RFC 3966 [15]~~as defined in 3GPP TS 23.003 [24].

The IM CN subsystem shall provide the capability for users to create, manage, and use Public Service Identities under control of AS. It shall be possible to create statically and dynamically a Public Service Identity.

Each Public Service Identity is hosted by an Application Server, which executes the service specific logic as identified by the Public Service Identity.

The IM CN Subsystem shall provide capability of routing IMS messages using Public Service Identity.

****** Next Modified Section ******

## 5.4.12 Configuration and Routing principles for Public Service Identities

### 5.4.12.0 General

Depending on the service nature, different mechanisms may be used for configuration and routing of PSIs according to operator preference.

When PSIs are created, the uniqueness of a PSI shall be ensured. Note that only the username part of a PSI is definable within a predefined hostname(s).

Whenever possible, routing to/from a Public Service Identity (PSI) should be provided using basic principles used for IMS routing.

### 5.4.12.1 PSIs on the originating side

The Application Server hosting the PSI may be invoked as an originating Application Server. This can be achieved by modifying the filter information within the subscription information of the users intending to use the service identified by the PSI. The PSI is then made available to these users.

The SIP requests are directed to the corresponding Application Server hosting the service according to the originating filtering rules in the S-CSCF of the user who is using the service.

Such statically pre-configured PSIs are only accessible internally from within the IMS of the operator's domain where the PSI is configured.

### 5.4.12.2 PSIs on the terminating side

The Application Server hosting the PSI may be invoked as a terminating Application Server via information stored in the HSS. Such PSIs are globally routable and can be made available to users within and outside the operator domain, and can take the following form:

- Distinct PSIs are defined in 3GPP TS 23.003 [24]~~(e.g. sip:my_service@example.com)~~. Distinct PSIs can be created, modified and deleted in the HSS by the operator via O&M mechanisms. Distinct PSIs can also be

created and deleted by users using the Ut interface using the means described in sub-clause 5.4.12.3 for subdomain-based PSIs. The distinct PSI may then be created in the HSS by the AS using the Sh interface.

- Wildcarded PSIs are defined in 3GPP TS 23.003 [24]~~(sip:chatlist_*@example.com):. A range of PSIs with the same domain part in the SIP URI is defined using a wildcard indication in the userpart of the SIP URI.~~ Wildcarded PSI ranges can be created, modified and deleted in the HSS by the operator via O&M mechanisms. Specific PSIs within a wildcarded range can be created and deleted by users using the Ut interface to the AS hosting the wildcarded range, or by the operator via O&M mechanisms.

For both the distinct PSIs and wildcarded PSIs, there are two ways to route towards the AS hosting the PSI:

a) The HSS maintains the assigned S-CSCF information and ISC Filter Criteria information for the "PSI user" to route to the AS hosting the PSI according to IMS routing principles. In this case, the I-CSCF receives SIP requests at the terminating side, queries the HSS and directs the request to the S-CSCF assigned to the "PSI user". The S-CSCF forwards the session to the Application Server hosting the PSI according to the terminating ISC Filter Criteria.

b) The HSS maintains the address information of the AS hosting the PSI for the "PSI user". In this case, the AS address information for the PSI is returned to the I-CSCF in the location query response, in which case the I-CSCF will forward the request directly to the AS hosting the PSI.

The AS hosting the PSI in combination with its entry in the HSS is referred to as "PSI user".

Figure 5. 19d depicts a routing example for incoming session where the session request is routed directly to the AS hosting the PSI.

Figure 5.19e depicts an example routing scenario where the basic IMS routing via S-CSCF is used to route the session.

### 5.4.12.3 Subdomain based PSIs

Subdomains defined for PSIs allow both operators and users to define specific PSIs within subdomains for specific applications. For this purpose, subdomains can be defined by the operator in the DNS infrastructure. Specific PSIs within a subdomain can be created and deleted by users using the Ut interface to the AS hosting the subdomain, or by the operator via O&M mechanisms.

Subdomain based PSIs are globally routable and can be made available to users within and outside the operator domain.

In this case, there are two ways to route towards the AS hosting the PSI:

a) When the subdomain name is defined in the global DNS, then the originating S-CSCF receives the IP address of the AS hosting the PSI, when it queries DNS. The principles defined in RFC 3263 [44] may be used. For example, a NAPTR query and then a SRV query may be used to get the IP address of the AS.

b) The PSI is resolved by the global DNS to an I-CSCF address in the domain where the AS hosting the PSI is located. The I-CSCF recognises the subdomain (and thus does not query the HSS). It resolves the same PSI to the address of the actual destination AS hosting the PSI using an internal DNS mechanism, and forwards the requests directly to the AS.

Figure 5.19f shows an example of DNS based routing of an incoming session from an external network. The routing from the external network leads to the entry point of the IMS subsystem hosting the subdomain of the PSI.

### 5.4.12.4 PSI configuration in the HSS

In order to support configuration of an AS hosting a PSI, the distinct PSIs and/or wildcarded PSI ranges hosted in the AS need to be configured in the HSS. The configuration shall include procedures to allow:

- • Distinct PSIs and wildcarded PSI ranges to be configured in the HSS via operation and maintenance procedures,

- • Authorization and verification of access as "PSI user" with the Public Service Identity hosted by the AS, e.g. for AS-originating requests,

- • Access to "PSI user" information (e.g. the S-CSCF assigned) over the Cx reference point from the CSCF nodes,

- • Defining the "PSI user" similar to the principle of IMS user, without requiring any subscription/access information (e.g. CS/PS domain data) that are required for IMS user.

Further functional requirements such as how S-CSCF is provisioned with the PSI data need to be studied.

Note that the PSI configuration in the HSS does not affect the filter criteria based access to an AS as defined in the user profiles.

### 5.4.12.5 Requests originated by the AS hosting the PSI

The AS hosting the PSI may originate requests with the PSI as the originating party. For such originating requests, the home IMS network shall be capable to perform the following functions:

- If~~n case~~ network configuration hiding is to be applied, the request shall be routed as per the principles described in sub-clause 4.6.2.1. This means that the last hop within the originating IMS is an I-CSCF (THIG), which processes the request further on and routes it towards the destination network.

- Network Domain Security, TS 33.210 [20], shall be used where applicable.

- Charging requirements such as providing appropriate accounting and charging functions via the charging entities shall be supported according to TS 32.200 [25].

- If~~n case~~ the target identity is a tel: URL, ENUM translation needs to be performed, and the request shall be routed based on the translation result.

Routing from the Originating AS hosting the PSI can be performed as follows:

a) The AS may forward the originating request to the destination network without involving an S-CSCF. If this option is applied where the target identity is a ~~t~~Tel~~:~~ URI~~L~~, the AS shall perform~~s~~ an ENUM query and route~~s~~ the request based on the translation result. ENUM support for an AS is optional~~.~~ therefore ~~I~~if an AS does not support ENUM and the target identity is a Tel URI, it shall be configured to use b) ~~at least in case of tel: URLs~~.

b) If~~n case~~ the PSI has an S-CSCF assigned, the AS forwards the originating request to this S-CSCF, which then processes the request as per regular originating S-CSCF procedures.

To prevent fraudulent or unsecure IMS traffic possibly caused by AS originated requests, security and authentication procedures may be performed towards the AS.

# 3GPP TSG SA WG2 Architecture — S2#46 S2-051451
# 9 - 13 May 2005, Athens, Greece

CR-Form-v7.1

## CHANGE REQUEST

⌘ 23.228 CR 0494 ⌘rev 3 ⌘ Current version: 6.9.0 ⌘

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***Proposed change affects:*** | UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Clarification to the routing of SIP signalling within the IMS network |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | IMS2 ***Date:*** ⌘ 13/05/2005 |
| ***Category:*** | ⌘ | F ***Release:*** ⌘ Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*

| | |
|---|---|
| *Ph2* | *(GSM Phase 2)* |
| *R96* | *(Release 1996)* |
| *R97* | *(Release 1997)* |
| *R98* | *(Release 1998)* |
| *R99* | *(Release 1999)* |
| *Rel-4* | *(Release 4)* |
| *Rel-5* | *(Release 5)* |
| *Rel-6* | *(Release 6)* |
| *Rel-7* | *(Release 7)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | In the current TS 23.228, only SIP URI or other (non SIP) AbsoluteURIs are mentioned. The routing of SIP singnalling in the IMS network using TEL URI is missing.<br><br>For a call originated from the circuit-swithced network and teminated in the IMS network, when the MGCF receives this CS call, as described in TS 24.229, the MGCF will generate a SIP signaling message with the Request-URI be set to a "tel" format URI using an E.164 address. |
| ***Summary of change:*** | ⌘ | Clarify how SIP signaling using TEL-URI is routed in the IMS network. |
| ***Consequences if not approved:*** | ⌘ | Routing of SIP singnalling in the IMS network using TEL URI is missing. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | Add a new subclause 4.3.3.3b, 5.6.3 |
| ***Other specs affected:*** | ⌘ | Y N<br>☐ ☒ Other core specifications<br>☐ ☒ Test specifications<br>☐ ☒ O&M Specifications ⌘ |
| ***Other comments:*** | ⌘ | |

*** The First Modification ***

#### 4.3.3.3b Termination of session with the TEL URI format public user identity

If a terminating session with a TEL URI is used, the HSS and the SLF (in the case that more than one independently addressable HSS is utilized by a network operator) shall support the TEL URI format Public User Identity.

*** The Second Modification ***

## 5.6.3 (PSTN-O) PSTN origination

The MGCF in the IM CN subsystem is a SIP endpoint that initiates requests on behalf of the PSTN and Media Gateway. The subsequent nodes consider the signalling as if it came from a S-CSCF. The MGCF incorporates the network security functionality of the S-CSCF. This MGCF does not invoke Service Control, as this may be carried out in the GSTN or at the terminating S-CSCF. This origination procedure can be used for any of the S-S procedures.

Due to routing of sessions within the PSTN, this origination procedure will only occur in the home network of the destination subscriber. However due to cases of session forwarding and electronic surveillance, the destination of the session through the IM CN subsystem may actually be another PSTN termination.

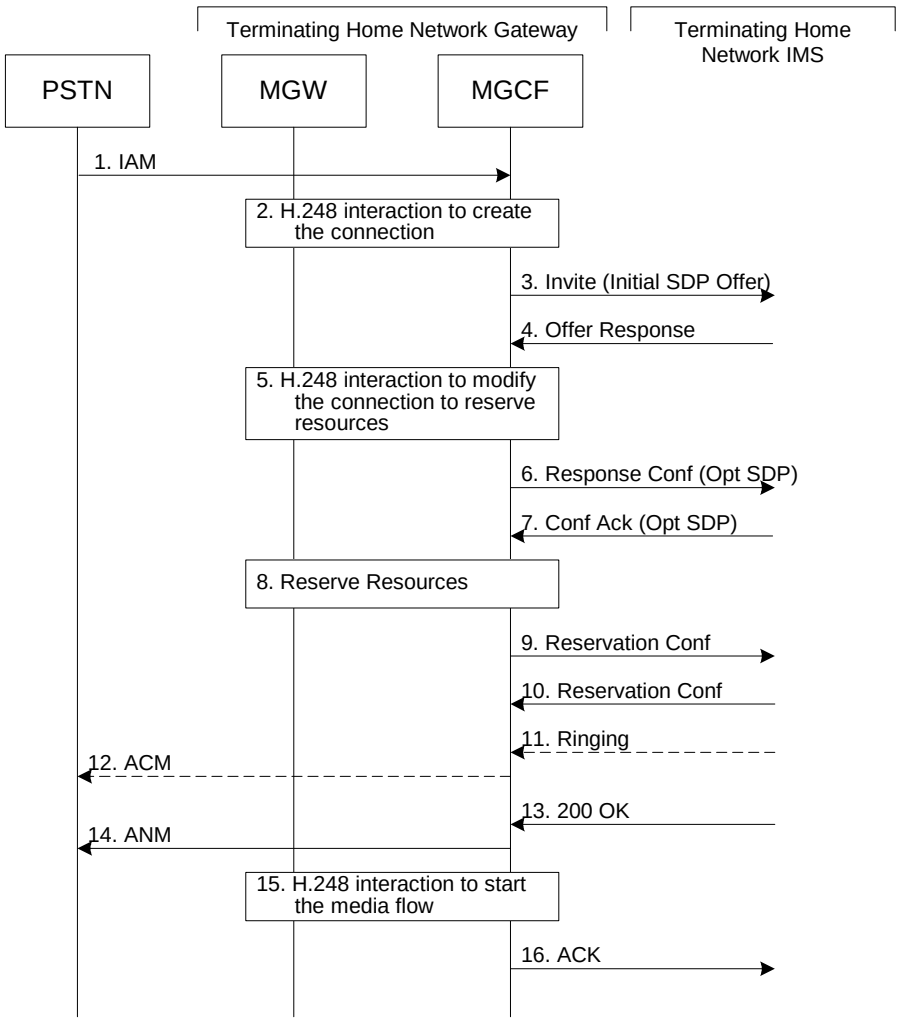


**Figure 5.16: PSTN origination procedure**

The PSTN Origination procedure is as follows:

1. The PSTN establishes a bearer path to the MGW, and signals to the MGCF with a IAM message, giving the trunk identity and destination information
2. The MGCF initiates a H.248 command, to seize the trunk and an IP port.
3. The MGCF initiates a SIP INVITE request, containing an initial SDP, including the TEL URI, and forwarding the INVITE to a configured I-CSCF, as per the proper S-S procedure.
4. The media stream capabilities of the destination are returned along the signalling path, per the S-S procedures.
5. MGCF initiates a H.248 command to modify the connection parameters and instruct the MGW to reserve the resources needed for the session.
6. MGCF decides the offered set of media streams for this session, confirms receipt of the Offer Response and sends the Response Confirmation per the S-S procedures.
7. Terminating end point responds to the Response Confirmation. If Optional SDP is contained in the Response Confirmation, the Confirmation Acknowledge will also contain an SDP response.
8. MGW reserves the resources needed for the session
9. When the resource reservation is completed, MGCF sends the successful Resource Reservation message to the terminating endpoint, per the S-S procedures.
10. Terminating end point responds to the successful media resource reservation.
11. The destination endpoint may optionally perform alerting. If so, it signals this to the originating party by a provisional response indicating Ringing. This message is sent to MGCF per the S-S procedure.
12. If alerting is being performed, the MGCF forwards an ACM message to PSTN
13. When the destination party answers, the terminating and S-S procedures result in a SIP 200-OK final response being sent to MGCF
14. MGCF forwards an ANM message to the PSTN
15. MGCF initiates a H.248 command to alter the connection at MGW to make it bi-6directional
16. MGCF acknowledges the SIP final response with a SIP ACK message

**3GPP TSG-SA2 Meeting #46**
**Athens, Greece, May 9th – May 13th, 2005**

***Tdoc ⌘S2-051359***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **23.228** **CR** **0496** ⌘**rev** **1** ⌘ Current version: **6.9.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Session setup with media set to inactive |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | POC |
| ***Date:*** | ⌘ | 11/05/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*Ph2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | OMA uses the 3GPP IMS enablers for the PoC service. OMA PoC doesn't use the precondition mechamism when setting up SIP sessions, but instead OMA PoC clients may set the media to inactive in case the PoC client does not want to receive media immediately. The following is stated in the PoC CP TS:<br>"if the PoC Client is not able/willing to receive media streams immediately then the PoC Client SHALL set the media to 'inactive' as specified in [RFC3108] when generating the SDP offer."<br>IMS does not make use of RFC3108, but instead uses the updated SDP specification that contain the usage of "inactive" (the updated SDP specification will obsolete RFC2327 when approved and available). |
| ***Summary of change:*** | ⌘ | The use of inactive/active is added as a valid option when setting up an IMS session. |
| ***Consequences if not approved:*** | ⌘ | 3GPP IMS will not contain sufficient enablers to support OMA PoC |

| | | | | | |
|---|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 5.4a, 5.7.4, 5.7a | | | |
| ***Other specs affected:*** | ⌘ | **Y** / **N** | Other core specifications | ⌘ | 24.229 |
| | | **X** / | Other core specifications | | |
| | | / **X** | Test specifications | | |
| | | / **X** | O&M Specifications | | |
| ***Other comments:*** | ⌘ | | | | |

********** First Change **********

## 5.4a Overview of session flow procedures

This section contains the overview description and list of individual procedures for the end-to-end session flows.

For an IP Multi-Media Subsystem session, the session flow procedures are shown in the following diagram.

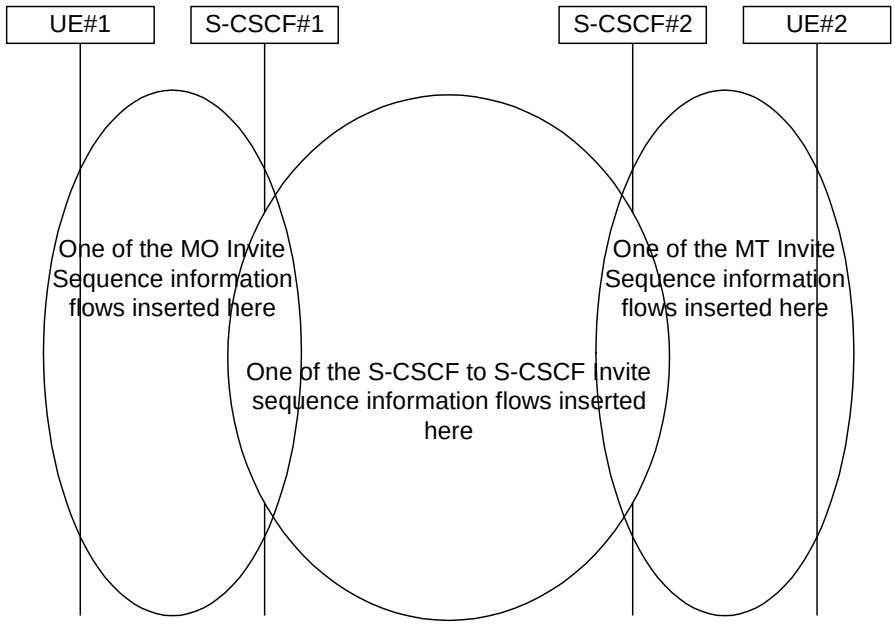


**Figure 5.9: Overview of Session Flow Sections**

The following procedures are defined:

For the origination sequences:

- (MO#1) Mobile origination, roaming , see subclause 5.6.1;
- (MO#2) Mobile origination, home, see subclause 5.6.2;
- (PSTN-O) PSTN origination, see subclause 5.6.3;
- (NI-O) Non-IMS network origination (external SIP client), see subclause 5.6.4;
- (AS-O) Application Server origination, see subclause 5.6.5.

For the termination sequences:

- (MT#1) Mobile termination, roaming, see subclause 5.7.1;
- (MT#2) Mobile termination, home, see subclause 5.7.2;
- (MT#3) Mobile termination, CS Domain roaming, see subclause 5.7.2a;
- (PSTN-T) PSTN termination, see subclause 5.7.3;
- (NI-T) Non-IMS network termination (external SIP client), see subclause 5.7.4;
- (AS-T#1) PSI based Application Server termination, direct, see subclause 5.7.5;
- (AS-T#2) PSI based Application Server termination, indirect, see subclause 5.7.6;
- (AS-T#3) PSI based Application Server termination, direct, using DNS, see subclause 5.7.7;
- (AS-T#4) PUI based Application Server termination, indirect, see subclause 5.7.8.

For Serving-CSCF/MGCF-to-Serving-CSCF/MGCF sequences:

- (S-S#1) Session origination and termination are served by different network operators, see subclause 5.5.1;
- (S-S#2) Session origination and termination are served by the same operator, see subclause 5.5.2;
- (S-S#3) Session origination with PSTN termination in the same network as the S-CSCF, see subclause 5.5.3;
- (S-S#4) Session origination with PSTN termination in a different network to the S-CSCF, see subclause 5.5.4.

The media being offered and acknowledged to can take multiple negotiation steps or only one negotiation may be used. In these flows, a minimum of two negotiations has been shown. But the subsequent responses may not carry any media information and just confirm the initial media set agreement.

For example, for a non-roaming user initiating a session to another non-roaming user, each a subscriber of the same network operator, it is possible to construct a complete end-to-end session flow from the following procedures:

- (MO#2) Mobile origination, home,
- (S-S#2) Single network operator,
- (MT#2) Mobile termination, home.

There are a large number of end-to-end session flows defined by these procedures. They are built from combinations of origination, serving to serving, and termination procedures, as determined from the following table. For each row of the table, any one of the listed origination procedures can be combined with any one of the serving-serving procedures, which can be combined with any one of the termination procedures. In addition, several of the procedures give alternatives for network configuration hiding (the number of such alternatives is shown in parentheses).

Service control can occur at any point during a session, based on the filter criteria.

Note that the flows show service control only for the initial INVITE for originating and terminating party as an example.

The flows assume precondition mechamism is used, but as shown in subclause 5.7a a UE may originate a session without using preconditions.

**Table 5.2: Combinations of session procedures**

| Origination Procedure (pick one) | Serving-CSCF-to-Serving-CSCF Procedure (pick one) | Termination Procedure (pick one) |
|---|---|---|
| MO#1 Mobile origination, roaming, home control of services (2).<br>MO#2 Mobile origination, located in home service area.<br>PSTN-O PSTN origination.<br>AS-O Application Server origination<br>NI-O Non-IMS network origination | S-S#1 Different network operators performing origination and termination, with home control of termination (2). | MT#1 Mobile termination, roaming, home control of services(2).<br>MT#2 Mobile termination, located in home service area.<br>MT#3 Mobile termination, CS Domain roaming.<br>AS-T#1,2,3 Application Server terminations<br>NI-T Non-IMS network termination |
| MO#1 Mobile origination, roaming, home control of services (2).<br>MO#2 Mobile origination, located in home service area.<br>PSTN-O PSTN origination.<br>AS-O Application Server origination | S-S#2 Single network operator performing origination and termination, with home control of termination. | MT#1 Mobile termination, roaming, home control of services(2).<br>MT#2 Mobile termination, located in home service area.<br>MT#3 Mobile termination, CS Domain roaming.<br>AS-T#1,2,3,4 Application Server terminations |
| MO#1 Mobile origination, roaming, home control of services (2).<br><br>MO#2 Mobile origination, located in home service area.<br>PSTN-O PSTN origination<br>AS-O Application Server origination | S-S#3 PSTN termination in the same network as the S-CSCF. | PSTN-T PSTN termination. |
| MO#1 Mobile origination, roaming, home control of services (2).<br>MO#2 Mobile origination, located in home service area.<br>PSTN-O PSTN origination<br>AS-O Application Server origination<br>NI-O Non-IMS network origination | S-S#4 PSTN termination in different network than the S-CSCF | PSTN-T PSTN termination. |

********** Second Change **********

## 5.7.4 (NI-T) Non-IMS Termination to an external SIP client

This sub clause describes the IMS session setup procedures towards external SIP clients that don't support the required IMS SIP extensions.

In this scenario (a UE may originate an IMS session without requiring the support for precondition capabilities, see subclause 5.7a), the UE originates an IMS session requiring the support for precondition capabilities towards an external SIP entity that does not support those capabilities. Based on the response indicating no support, the UE re-initiates the session by resetting the requirements and announcing its own support only. The UE sets all the media components to inactive until the media information has been negotiated at a later stage of the session. When both parties have agreed to the session and media parameters and the UE has established resources for the media, the UE initiates session modification setting the status of the media components to active and is thus enabling the media transfer to start. Figures 5.19a , 5.19b and 5.19c together illustrate session flows for one possible originating session establishment

towards a non-IMS client in an external network with QoS authorisation and service based local policy support. In this example the external SIP client does not support the Precondition extension of SIP.

For illustration purposes these session flows show the case of a non-roaming origination. This flow is a variant of MO#2 defined in sub clause 5.6.2. The same principles apply in roaming cases, i.e. analogous variants of MO#1 defined in sub clause 5.6.1 are also supported for interworking with SIP clients that do not support the required IMS procedures.

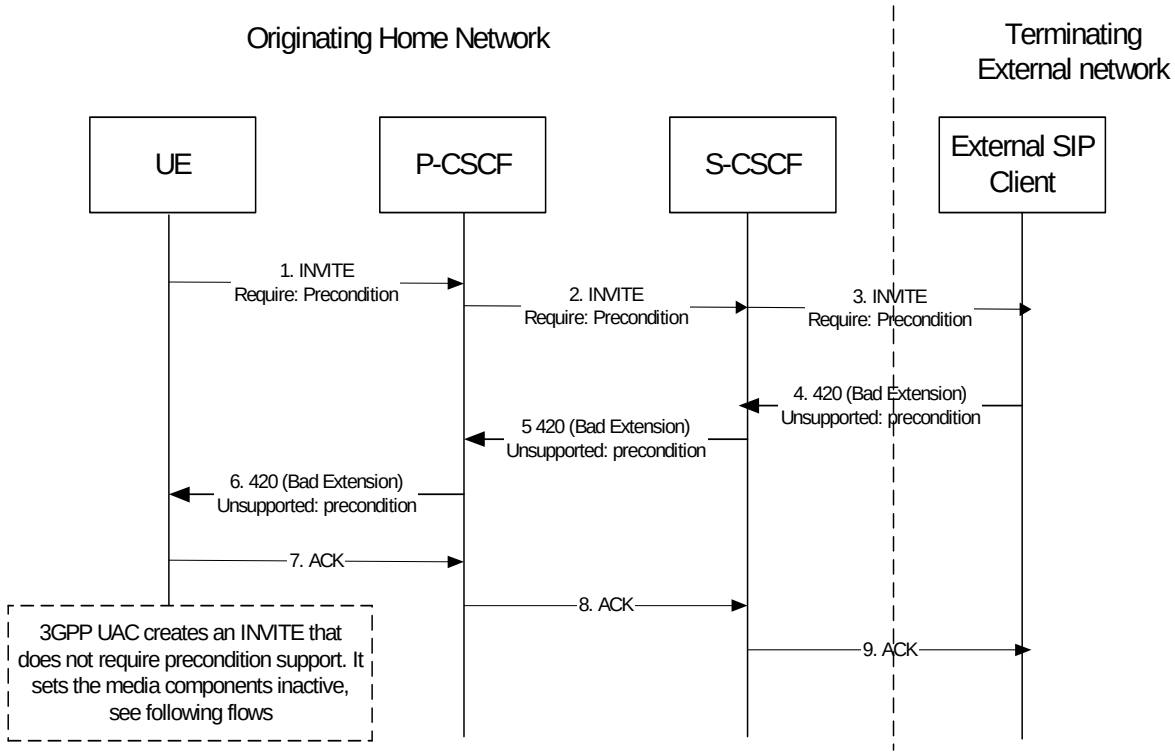


**Figure 5.19a: Terminating session towards external SIP client, detection phase**

The terminating IMS session detection phase is as follows:

1-3. The UE initiates an IMS session towards an external SIP client, and requires support for precondition capabilities in the session initiation.

4-6. The terminating party informs the UE that the precondition capability is not supported by the receiving entity.

7-9. Acknowledgement to the response is sent through the session path and the session setup procedure is terminated.

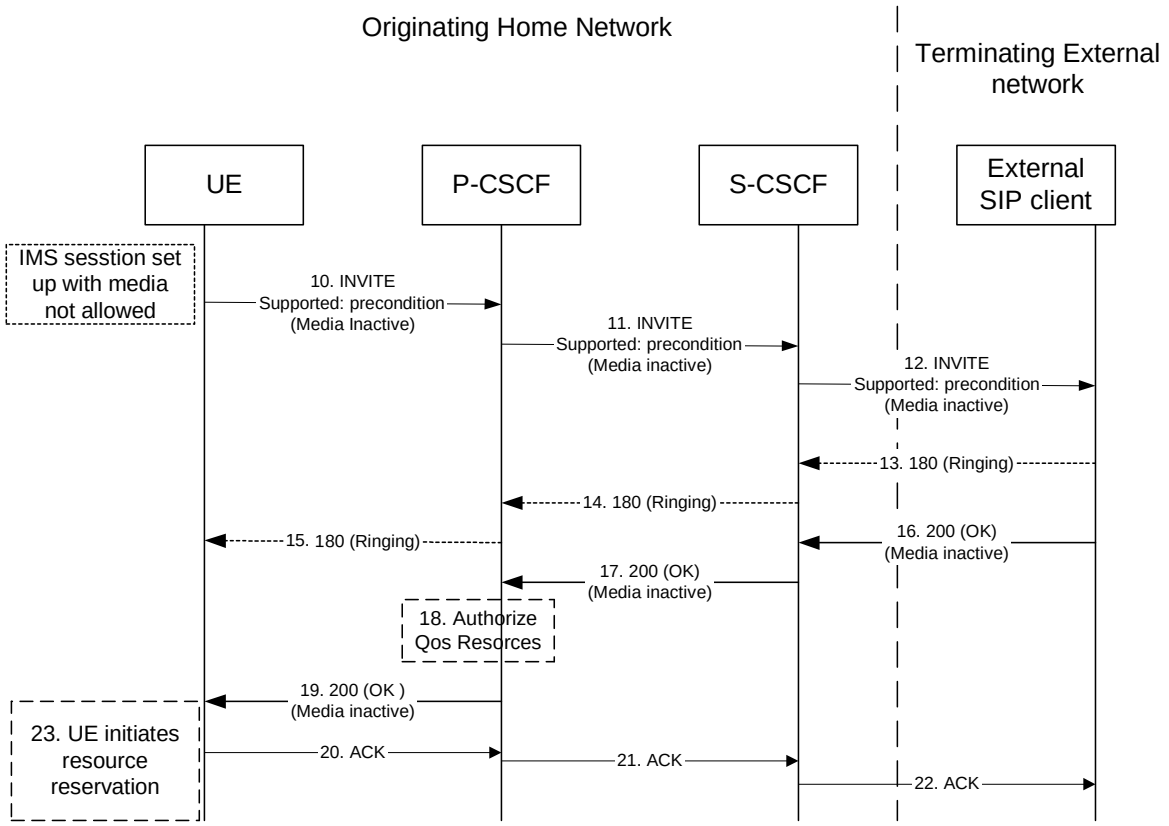


**Figure 5.19b: Terminating session towards external SIP client, re-initiate session set up not requiring precondition capabilities and with inactive media**

At this point, the UE IMS client may choose to retry setting up the session. For that purpose it initiates a new INVITE message, which indicates the support of the precondition capability (rather than the requirement of the precondition capability) and sets all media components to inactive state, as shown in figure s 5.19b & 5.19c .

10-12. UE initiates a new IMS session indicating the support of the precondition capability and setting all media components to inactive state.

13-15. Ringing from the terminating party is sent through the session path towards the originating UE.

16-17. Acknowledgement of the session and media parameters are sent from the terminating side to the P-CSCF.

18. The P-CSCF/PDF may at this point authorise the resources being negotiated.

19. The acknowledgement of the session and media parameters forwarded towards the originating UE.

20-22. The session is established, but media transfer is not allowed yet.

23. The UE starts the resource reservation for the media.

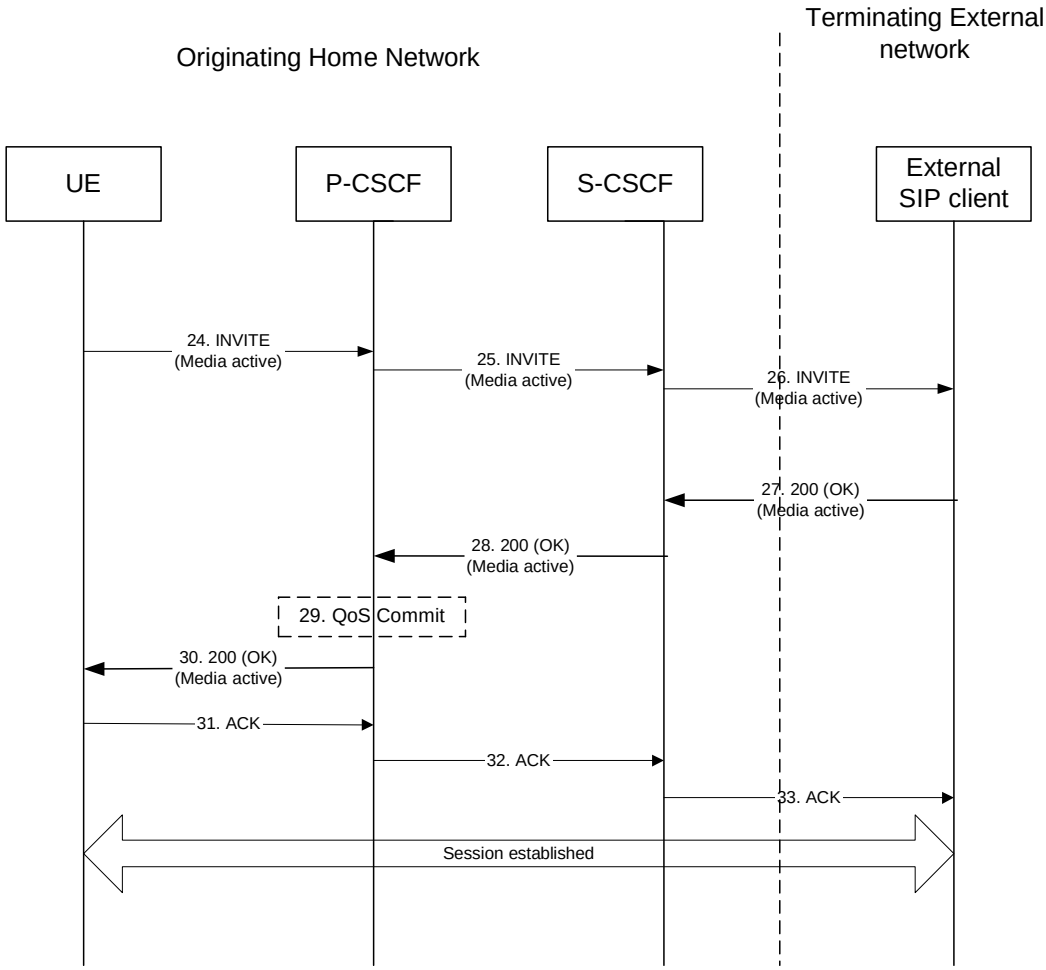


**Figure 5.19c: Continuation of terminating session towards external SIP client, session set up with active media**

Once the session parameters have been agreed and the UE has successfully reserved resources for the media components, the session set-up continues by setting the media components to active, as shown in session flow 5.19c.

24-26. UE initiates activation of media by initiating an INVITE procedure towards the terminating party.

27-28. The terminating party accepts media activation, and corresponding signaling is passed back towards the originating party along the session path.

29. The P-CSCF/PDF receives the acceptance of media activation. At this point, the P-CSCF/PDF may commit/approve the resources that have been authorised for the session

30. The P-CSCF/PDF forwards the signaling message to the originating UE indicating that the session setup can continue and activation of media is performed.

31-33. The Session establishment is then acknowledged through the session path.

At this point in time, the session is established between the two parties.

********** Last Change **********

# 5.7a Procedures for the establishment of sessions without preconditions

## 5.7a.1 General

These ~~is~~ subclauses present ~~s~~ the general end-to-end session flow procedures without preconditions. The ~~se~~ flow~~s~~ in subclause 5.7a.2 is ~~are~~ applicable to services without real-time QoS requirements before session becomes active, and thus do not need to set-up dedicated IP-CAN bearers but can use existing IP-CAN bearers, and to services which do not require that the terminating endpoint obtains a SIP-level notification when the originating endpoint's IP-CAN bearer becomes available. The flow in subclause 5.7a.3 is applicable to services with real-time QoS requirements before session becomes active.

Note that the flows in these ~~is~~ subclauses do not show the use of a THIG. If a THIG is used, the use is completely analogous to the use in subclauses 5.5, 5.6 and 5.7.

## 5.7a.2 Procedures for the establishment of sessions without preconditions – no resource reservation required before session becomes active

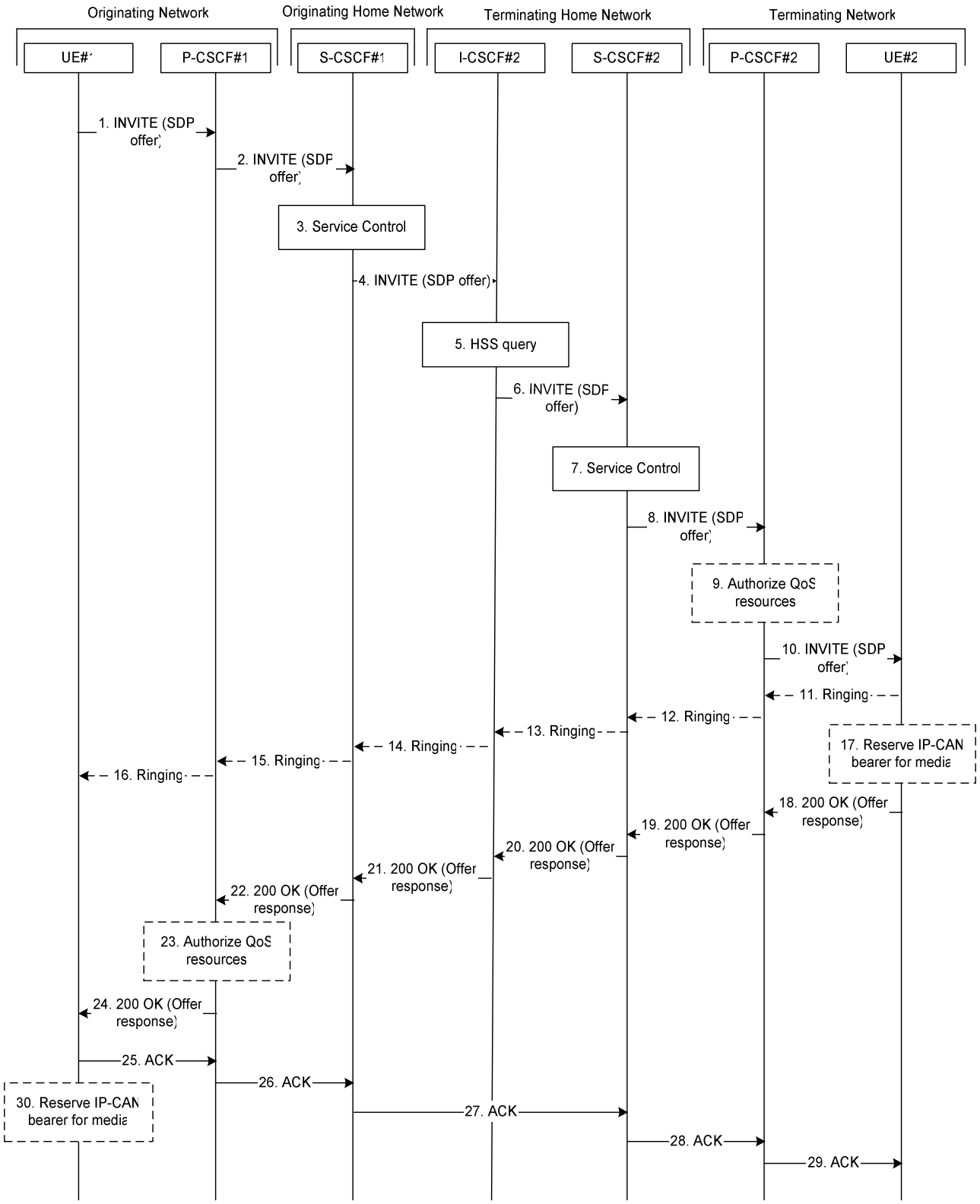


**Figure 5.19h: End-to-end session flow procedure without preconditions - no resource reservation required before session becomes active**

1. UE#1 sends the SIP INVITE request, containing an initial SDP, to the P-CSCF#1 determined via the P-CSCF discovery mechanism. The initial SDP may represent one or more media for a multi-media session. It should be

noted that a media offer without preconditions in general implies that the offering entity might expect to receive incoming media for any of the offered media as soon as the offer is received by the other endpoint. Therefore either an existing IP-CAN bearer is assumed to be available for use or the application is implemented such that incoming media is not expected until some later point in time.

2. P-CSCF#1 forwards the INVITE request to S-CSCF#1 along the path determined upon UE#1's most recent registration procedure.

3. Based on operator policy S-CSCF#1 validates the user's service profile and may invoke whatever service control logic is appropriate for this INVITE request. This may include routing the INVITE request to an Application Server, which processes the request further on.

4. S-CSCF#1 forwards INVITE request to I-CSCF#2.

5. I-CSCF#2 performs Location Query procedure with the HSS to acquire the S-CSCF address of the destination user (S-CSCF#2).

6. I-CSCF#2 forwards the INVITE request to S-CSCF#2.

7. Based on operator policy S-CSCF#2 validates the user's service profile and may invoke whatever service control logic is appropriate for this INVITE request. This may include routing the INVITE request to an Application Server, which processes the request further on.

8. S-CSCF#2 forwards the INVITE request to P-CSCF#2 along the path determined upon UE#2's most recent registration procedure.

9. Based on operator policy P-CSCF#2/PDF may authorize the resources necessary for this session. The media authorization token is generated at this step.

10. P-CSCF#2 forwards the INVITE request to UE#2. The INVITE request may contain the media authorization token.

11. - 16. UE#2 may optionally generate a ringing message towards UE#1.

17. UE#2 may reserve a dedicated IP-CAN bearer for media based on the media parameters received in the SDP offer. Note that the sequential ordering of 17 and 18. does not indicate that these steps are necessarily performed one after the other. If step 18 is performed before step 17 is finished, UE#2 shall use an existing IP-CAN bearer to send and receive media unless the application is such that a new bearer is not needed until some later point in time. If step 17 is performed successfully, media are sent and received by UE#2 on the dedicated IP-CAN bearer.

18. UE#2 accepts the session with a 200 OK response. The 200 OK response is sent to P-CSCF#2.

19. - 22. The 200 OK response traverses back to UE#1.

23. Based on operator policy P-CSCF#1/PDF may authorize the resources necessary for this session. The media authorization token is generated at this step.

24. P-CSCF#1 forwards the 200 OK response to UE#1. The 200 OK response may contain the media authorization token.

25. - 29. UE#1 acknowledges the 200 OK with an ACK, which traverses back to UE#2.

30. UE#1 may reserve a dedicated IP-CAN bearer for media based on the media parameters received in the SDP answer. Note that the sequential ordering of 25. and 30. does not indicate that these steps are necessarily performed one after the other. If step 30. is performed successfully, media are sent and received by UE#1 on the reserved dedicated IP-CAN bearer. UE#1 may also use an existing IP-CAN bearer to send and receive media.

## 5.7a.3 Procedures for the establishment of sessions without preconditions – resource reservation required before session becomes active

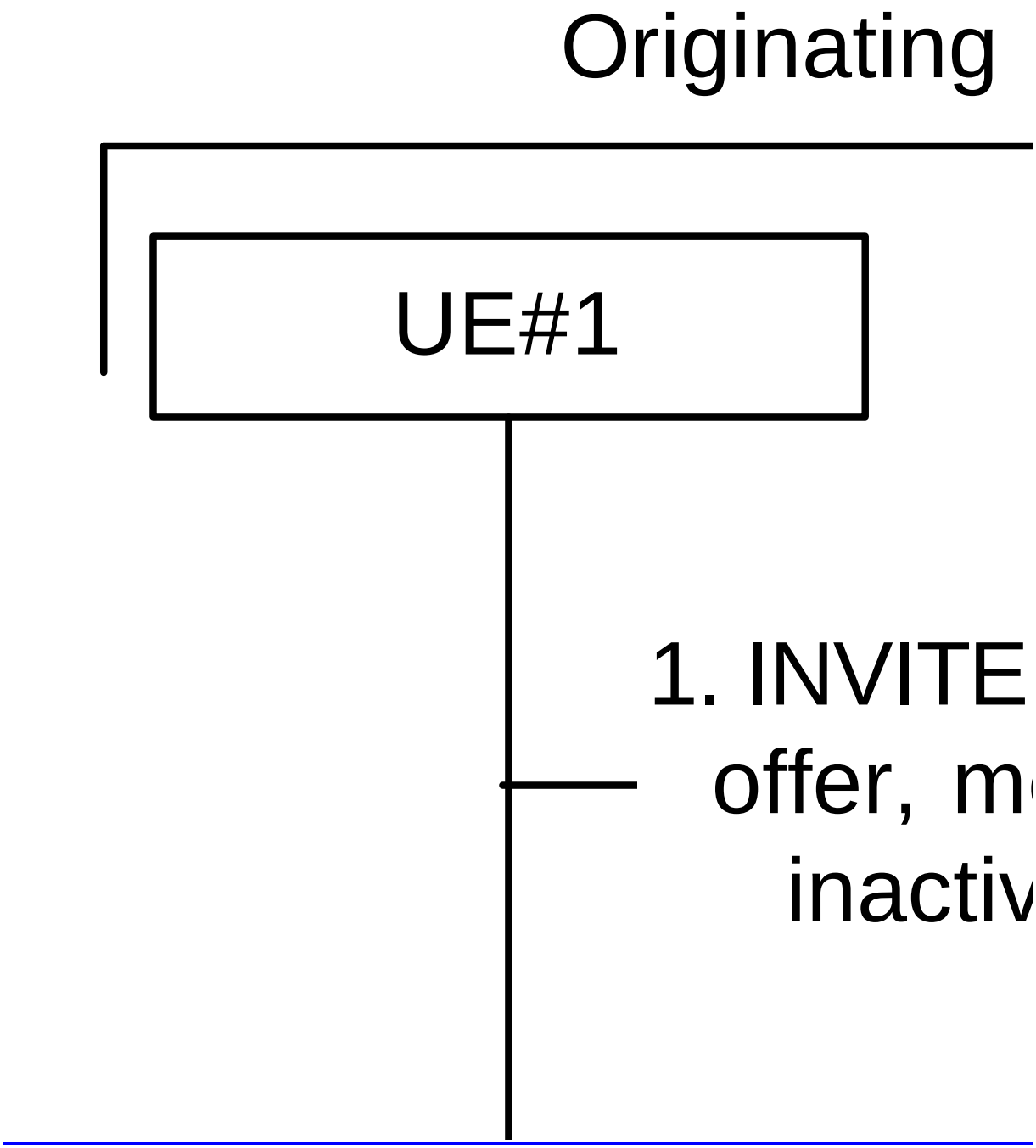


**Figure 5.xxa: End-to-end session flow procedure without preconditions - resource reservation required before session becomes active**

1. - 10. The first part of the flow is the same as the flow in subclause 5.7a.2, except that the media is set to inactive in the SDP offer

11. UE#2 may reserve a dedicated IP-CAN bearer for media based on the media parameters received in the SDP offer. Note that the sequential ordering of 17 and 18 does not indicate that these steps are necessarily performed one after the other, but to speed up the session setup UE#2 should perform step 12 before step 11 is finished. If required, UE#2 will then use an existing IP-CAN bearer to send and receive media related information.

12. – 18. UE#2 shall indicate that media is inactive in the SDP Offer response.

19. – 23. UE#1 acknowledges the 200 OK with an ACK, which traverses back to UE#2.

24. UE#1 reserves a dedicated IP-CAN bearer for media based on the media parameters received in the SDP answer. When step 30 is performed successfully, UE#1 continues with the flow in figure 5.xxxb below.

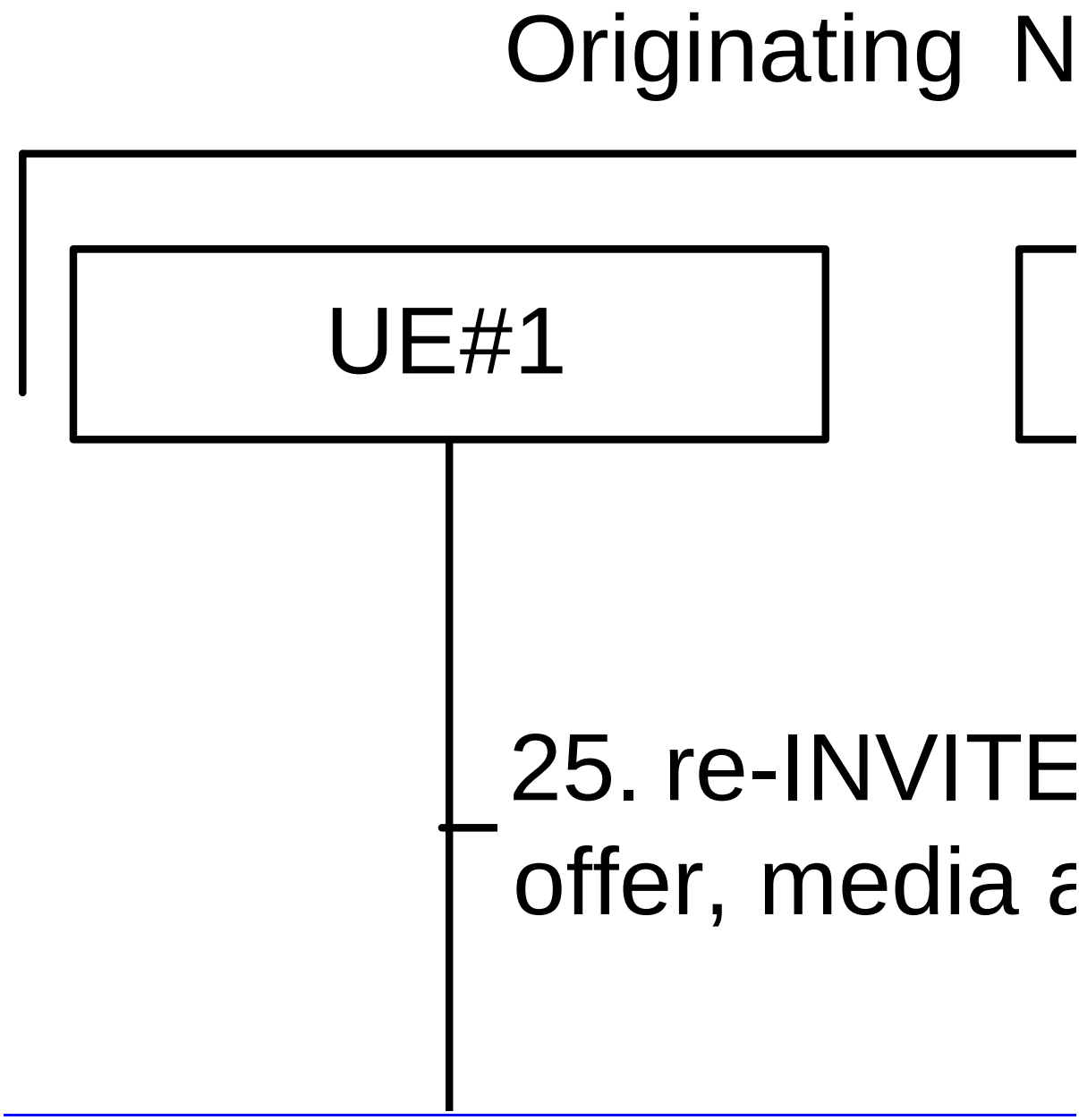


**Figure 5.xxb: End-to-end session flow procedure without preconditions - resource reservation required before session becomes active**

25. - 33. UE#1 sends a re-INVITE request; containing an SDP with the media set to active

34. - 39. UE#2 may optionally generate a ringing message towards UE#1.

40. If the dedicated IP-CAN bearer is not yet reserved UE#2 waits until the reservation procedure is finished.

41. – 47. UE#2 accepts the new offer with a 200 OK response with the media set to active in the SDP Offer response.

48. – 52. UE#1 acknowledges the 200 OK with an ACK, which traverses back to UE#2.

**3GPP TSG-SA WG2 Meeting #46**
**Athens, Greece, 9th – 13th May 2005**

***Tdoc ⌘S2-051282***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **23.228** **CR** **0497** ⌘**rev** **-** ⌘ Current version: **6.9.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Correction to ENUM resolution for Infrastructure ENUM |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | IMS2 |
| ***Date:*** | ⌘ | 29/04/2005 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*Ph2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | According to IETF RFC 3761 section 1.2, use of private ENUM implementations are not allowed to use the domain name of "e164.arpa.". |
| ***Summary of change:*** | ⌘ | Enable the domain name "e164.arpa." to be replaced with an alternative, operator configurable domain name to enable operators to use private ENUM implementations that do not break IETF guidelines (such as the Infrastructure ENUM currently being worked on by GSMA IREG ENUM TF and ETSI TISPAN WG4).<br><br>Note that it is not for 3GPP to define the alternative top level domain name for Infrastructure ENUM as this is currently under discussion in GSMA IREG and ETSI TISPAN. Once these groups have made their decision, operators can then set this domain name themselves. However, they need the functionality to do this.<br><br>General tidying-up of some text has also been done. |
| ***Consequences if not approved:*** | ⌘ | Operators will not be able to follow IETF guidelines and be "responsible IP citizens". |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 4.3.5 |

| ***Other specs affected:*** | ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|---|
| | | | X | Other core specifications | |
| | | | X | Test specifications | |
| | | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | Section 1.2 in IETF RFC 3761 states the following (interested text is highlighted in red):<br><br>1.2. Use for these mechanisms for private dialing plans<br><br>This document describes the operation of these mechanisms in the context of numbers allocated according to the ITU-T recommendation E.164. The same mechanisms might be used for private dialing plans. If these mechanisms are re-used, the suffix used for the private dialing plan MUST NOT be e164.arpa, to avoid conflict with this specification. Parties to the private dialing plan will need to know the suffix used by their private dialing plan for correct operation of these mechanisms. Further, the application unique string used SHOULD be the full number as specified, but without the leading '+', and such private use MUST NOT be called "ENUM". |

### 4.3.5 E.164 address to SIP- URI resolution in an IM CN subsystem

The S-CSCF shall support the ability to translate the E.164 address contained in a Request-URI in the non-SIP URI "tTel: URI" format IETF RFC 3966 [15] to a SIP routable SIP URI using an ENUM DNS translation mechanism with the format as specified in IETF RFC 2916 3761 [16], (E.164 number and DNS). If this translation fails, then the session may be routed to the PSTN or appropriate notification shall be sent to the mobile, depending on network operator configuration.

The actual ENUM/DNS database(s) used to perform the ENUM DNS address translations mechanisms are outside the scope of 3GPP and are therefore a matter for the IM operator. and this doesThere is not requirement that the Universal ENUM service on the Internet be used. Database aspects of ENUM are outside the scope of 3GPP. As such, it is possible that the ENUM/DNS mechanism uses a different top level domain to that of "e164.arpa." (as mandated in IETF RFC 3761 [16], section 1.2), therefore, the top level domain to be used for ENUM domain names shall be a network operator configurable option in all IMS nodes that can perform ENUM/DNS resolution.

**3GPP TSG-SA2 Meeting #46**
**Athens, Greece, May 9th – May 13th, 2005**

***Tdoc ⌘S2-051419***

*CR-Form-v7.1*

# CHANGE REQUEST

⌘ **23.228** **CR** **0498** ⌘ **rev** **-** ⌘ Current version: **6.9.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Support of Access Network NAT traversal |
| ***Source:*** | ⌘ | SA WG2 |
| ***Work item code:*** | ⌘ | FBI |
| ***Date:*** | ⌘ | 11/05/2005 |
| ***Category:*** | ⌘ | **B** |
| ***Release:*** | ⌘ | Rel-7 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*Ph2* *(GSM Phase 2)*
*R96* *(Release 1996)*
*R97* *(Release 1997)*
*R98* *(Release 1998)*
*R99* *(Release 1999)*
*Rel-4* *(Release 4)*
*Rel-5* *(Release 5)*
*Rel-6* *(Release 6)*
*Rel-7* *(Release 7)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The recent joint workshop between 3GPP and TISPAN (ftp://ftp.3gpp.org/workshop/2005-03-30_3GPP_TISPAN_Washington/Tdocs/) discussed some of the requirements on the support of telephony over a fixed broadband access. One of these was the support of NAT traversal when the UE consists of a network in itself. This CR reflects that need by introducing the requirement into 3GPP specifications. |
| ***Summary of change:*** | ⌘ | One new subclauses introducing the technical requirements for the support of traversing NATs between the IMS functionality of a UE and the P-CSCFS. |
| ***Consequences if not approved:*** | ⌘ | 3GPP IMS will not provided sufficient support for both fixed broadband access, and cellular access with similar characteristics as fixed broadband access networks. Introducing an area where divergence between 3GPP and TISPAN may occur at the IMS core level. |

| | | | | | |
|---|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 4.12 | | | |
| ***Other specs affected:*** | ⌘ | **Y** / **N** | | ⌘ | |
| | | X / | Other core specifications | | 24.229 |
| | | / X | Test specifications | | |
| | | / X | O&M Specifications | | |
| ***Other comments:*** | ⌘ | | | | |

********** First Change **********

## 4.12 Network Address Translation traversal in access network

It shall be possible to support the scenario where a NAT(-PT)/NAPT(-PT) residing between the IMS functionality in the UE and the P-CSCF has to be traversed for IMS communication. This shall include at least the types of NATs that are commonly deployed.

Note: The UE may be one piece of equipment, or it may be a network of elements located on a end-user´s physical premises.