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Foreword

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Contents

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

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Introduction

IMS based services can be provided with use of PS bearers and CS bearers for the media. When using CS bearer for media transport of IMS sessions, interworking solutions for IMS Centralized Services as specified in TS 23.292 [5] are used. ICS allows IMS sessions using CS bearers to be treated as standard IMS sessions for the purpose of IMS Service Continuity. ICS defines signalling mechanisms between the UE and IMS for transport of information as needed for service continuity when using CS access for media transport.

Both IMS Centralized Services and IMS Service Continuity specify functions which are provided by a SIP application server.

1 Scope

The present document specifies the architectural requirements and procedures for delivery of IMS Service Continuity.

TS 23.206 [3] is migrated to this specification.

The scope of the specification includes:

- PS-CS service continuity using IMS Centralized Services (see TS 23.292 [5]);
- PS-PS service continuity;
- PS-PS service continuity in conjunction with PS-CS service continuity;
- Adding and/or removing media flows to support service.

The solution is restricted to service continuity using IMS procedures, i.e. mobility mechanisms on the IP-CAN level are not within the scope of this specification.

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 22.258: "Service requirements for the AIPN".

[3] 3GPP TS 23.206: "Voice Call Continuity between CS and IMS".

[4] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[5] 3GPP TS 23.292: "IP Multimedia Subsystem (IMS) centralized services; Stage 2".

[6] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[7] OMA-ERELD-DM-V1_2-20060602-C: "Enabler Release Definition for OMA Device Management, Candidate Version 1.2".

[8] RFC 3261 (June 2002): "SIP: Session Initiation Protocol".

[9] 3GPP TS 22.101: "Service aspects; Service principles".

[10] 3GPP TS 23.216: " Single Radio Voice Call Continuity (SRVCC); Stage 2".

[11] 3GPP TS 33.102: "3G security; Security architecture".

[12] 3GPP TS 33.203: "Access security for IP-based services".

[13] 3GPP TS 23.218: "IP Multimedia (IM) session handling; IM call model; Stage 2".

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

[15] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions in TR 21.905 [1] and the following apply.

Access Leg: This is the call control leg between the UE and the SCC AS; also see TS 23.292 [5] for the definition of Access Leg for IMS sessions which use the CS media.

Access Transfer: Transfer at the IMS-level of one or more media paths of an ongoing IMS session on one UE between PS to CS access; or transfer at the IMS-level of both the signalling and the media path of an ongoing IMS session on a UE between different IP-CANs.

Correlation MSISDN: An MSISDN used for correlation of sessions. See TS 23.003 [14] for more information.

IMS Service Continuity: A service of the IMS which supports the use of Session Transfer mechanisms to maintain service continuity in the event of terminal mobility and/or mobility between terminals for the case when such events are not hidden from the IMS session layer and thus service continuity could not otherwise be maintained.

Inter-UE Transfer: Transfer at the IMS-level of all or some of the media flows and associated signalling between UEs under the control of the same user.

NOTE 1: The transfer of all media flows and the control signalling from one device to another is also known as Session Mobility as defined in TS 22.258 [2].

NOTE 2: Inter-UE Transfer is not specified as part of the present release.

IP Multimedia Routing Number (IMRN): An IP Multimedia Routeing Number (IMRN) is a routable number that points to an SCC AS in the IM CN subsystem. See TS 23.003 [14] for more information.

Local Operating Environment Information: This is a set of parameters, which can include access network(s) conditions and other parameters implementation specific, which describe the local environment in which the UE is operating.

Remote Leg: This is the call control leg between the SCC AS and the remote party from the subscriber's perspective; also see TS 23.292 [5] for the definition of Remote Leg for IMS sessions which use the CS media.

Session Transfer: Transfer at the IMS-level of one or more of the session signalling paths and/or associated media flow paths of an ongoing IMS session while maintaining service continuity. Session Transfer incorporates Access Transfer and / or Inter-UE Transfer.

Session Transfer Identifier (STI): An identifier used by the UE to request the SCC AS to perform Session Transfer. The STI is either statically configured on the UE or dynamically assigned. See TS 23.003 [14] for more information.

Session Transfer Number (STN): A number used by the UE to request the SCC AS to perform Session Transfer from PS to CS access. The STN is statically configured on the UE. See TS 23.003 [14] for more information.

Session Transfer Number for SRVCC (STN-SR): A STN used for SRVCC procedures as specified in TS 23.216 [10]. STN-SR is configured for the subscriber at the time of SRVCC service provisioning. See TS 23.003 [14] for more information.

Source Access Leg: The Access Leg that exists in the transferred-out access before executing Access Transfer procedures.

Target Access Leg: The Access Leg that is established in the transferred-in access during Access Transfer procedures.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

3pcc	3rd party call control
C-MSISDN	Correlation MSISDN
iFC	Initial Filter Criteria
IMRN	IP Multimedia Routing Number.
OCS	Online Charging System
SC	Service Continuity
SCC AS	Service Centralization and Continuity Application Server
SRVCC	Single Radio Voice Call Continuity
STI	Session Transfer Identifier
STN	Session Transfer Number
STN-SR	Session Transfer Number - Single Radio

4 High level principles and architectural requirements

4.1 Basic Assumptions

- The UE may be capable of transmitting and receiving simultaneously in multiple Access Networks or may be capable of transmitting and receiving in only one Access Network at a time.

4.1.1 PS-CS Service Continuity

The following assumptions apply for PS-CS service continuity:

- Functions of IMS Centralized Services and IMS Service Continuity are collocated in a single application server in this release. Not all functions are always required.

- IMS Centralized Services specifies functions and procedures for use of CS bearer for the media of the IMS sessions.

- If both UE and network supports the ICS UE capabilities described in TS 23.292 [5], these capabilities are used for communication of required information if needed for enablement of PS-CS service continuity of IMS multimedia sessions. During access transfer, the UE may decide to retain the use of the Gm reference point for service control of the real time media flow(s) in the old PS access (if available) or may decide to transfer the Gm service control for the real time media flow(s) to a new PS access.

- If the UE or the network do not support the ICS UE capabilities described in TS 23.292 [5], PS-CS service continuity is only possible for a single active speech session.

- When using the CS bearer for the media of the IMS session(s), multiple sessions can exist, but only one active session can be transferred over the CS bearer; one or more inactive sessions can be transferred.

- PS-CS service continuity with UE-based conferencing is not specified in this release.

4.1.2 PS-PS Service Continuity

If a UE has an ongoing multimedia session over an access system and moves to a different access system but its IMS contact address and its serving P-CSCF remain the same, then there is no need to activate any IMS Service Continuity mechanisms to transfer its multimedia session. The UE may update the session (e.g. remove media type(s) not supported by the target access system) based on the normal IMS procedures specified in TS 23.228 [4].

When the Evolved Packet System mobility with IP address preservation is used, the assumption above also applies.

NOTE: If an ICS UE has an ongoing session using CS bearer and Gm reference point over an IP-CAN and performs an Access Transfer to a different IP-CAN, the Service Control Signalling Path can be transferred from the old IP-CAN to the new IP-CAN while retaining the media flow(s) in the CS access network, so that service continuity of the session is maintained.

4.2 Architectural Requirements

- It shall be possible to perform multimedia session transfer between access systems regardless of whether network layer mobility is deployed or not.

NOTE: The mechanism to avoid potential conflict between PS-PS Service Continuity and underlying network layer mobility (e.g. Evolved Packet System mobility, etc.) is not specified within this Release of the specification.

- It shall be possible to provide IMS Service Continuity when the user is moving between 3GPP access systems.
- It shall be possible to provide IMS Service Continuity when the user is moving between 3GPP and non-3GPP access systems.
- It shall be possible to provide IMS Service Continuity when the user is moving between non-3GPP access systems.
- It shall be possible to provide IMS Service Continuity between an Access Network that supports real-time media on the CS domain and non-real-time media on the PS domain, and an IP-CAN that supports transport of all media types.
- The service disruption when session transfer occurs shall be minimized.
- There shall be no impact on the radio and transport layers and on the PS core network.
- UEs that do not support the functionality described in this specification shall not be impacted.
- All media flow(s) within a multimedia session or a subset of media flow(s) within a multimedia session could be subject to session transfer procedures. If it is not possible or not desired (e.g. due to user preferences and/or operator policies) to transfer all the media flow(s), then a subset of the media flow(s) shall be transferred (if possible) and the remaining flow(s) will be released or kept in the transferred out access.
- It shall be possible for the UE to add or remove one or more media flow(s) to/from an ongoing multimedia session that it controls during Access Transfer.
- It shall be possible to register a Public User Identity with multiple contact addresses (at the same or via separate UEs) via IMS registration procedures as defined in TS 23.228 [4], clause 5.2.1. The number of allowed simultaneous registrations is defined by home operator policy.
- It shall be possible to perform correlation of charging data from different access networks when service continuity between these networks is performed.
- It shall be possible to provide IMS Service Continuity when the P-CSCF changes.
- It shall be possible for the UE to use IMS mechanisms to transfer its ongoing multimedia sessions to a target Access Network without requiring any new functionality on the remote party.
- It shall be possible for the UE to initiate an Access Transfer procedure based on operator policy provided by the network which may include restrictions of Access Transfer.
- It shall be possible for the SCC AS to update the operator policy in the UE.
- The UE shall be IMS registered before invoking any Session Transfer procedures.
- The filter criteria shall contain a condition that a 3rd-party registration is performed via the ISC interface for the SCC AS.

4.3 Service Continuity

4.3.1 Session Transfer concepts

4.3.1.1 General

When an UE is active in an IMS session, the Session Transfer procedures provide service continuity between Access Networks.

The initial and all subsequent Session Transfer procedures are initiated by the UE and are executed and controlled by the same SCC AS.

The SCC AS generates charging information for all Session Transfers for an IMS session for the purpose of billing and charging.

The UE sends information required by the SCC AS in order to execute Session Transfer procedures.

4.3.1.2 Access Transfer concepts

4.3.1.2.1 General Access Transfer concepts

IMS sessions from and to an UE are anchored at the SCC AS in the home IMS to provide service continuity for the user during transition between two Access Networks. Sessions are anchored at the SCC AS in the home IMS, based on iFC. A 3pcc (3rd party call control) function is employed at the SCC AS to facilitate inter-Access Network mobility through the use of Access Transfers between the two Access Networks. Access Transfers may be enabled in one or both directions as per network configuration requirements. The SCC AS has the capability to perform Access Transfers for a UE's sessions multiple times.

Initiation of Access Transfer procedures for ongoing multimedia session may be based on the operator policy received from the SCC AS.

4.3.1.2.2 Access Transfer (PS – CS) concepts

IMS sessions established in CS or PS Access Networks are anchored at the SCC AS. IMS sessions using CS bearer are established at session setup or upon Access Transfer using procedures specified in TS 23.292 [5].

PS-CS Access Transfer shall be provided according to the requirements specified in clause 22.3, Service Continuity, of TS 22.101 [9].

When using a UE that does not have, or that is unable to use, ICS UE capabilities as specified in TS 23.292 [5], Access Transfer of one active bi-directional speech session shall be provided when transferring voice media flow between CS and PS access. For PS to CS (not CS to PS) access transfer, if the UE has more than one anchored active bi directional speech session, the session that was most recently made active shall be transferred.

When using a UE that is able to use ICS capabilities as specified in TS 23.292 [5], Access Transfer of one active bi directional speech session and zero or more inactive bi directional speech sessions shall be provided using the Gm reference point of ICS to transport required information, as specified in TS 23.292 [5], when transferring speech media flow between CS and PS access.

4.3.2 Regulatory aspects

IMS Session Transfer for emergency session is not supported in this release.

4.3.3 Information used for IMS Service Continuity

The following information may be provided between SCC AS and the UE.

Depending on the IMS Service Continuity scenario, the Session Transfer request may contain the following:

- session transfer indicator to indicate that this new session is for session transfer;

- details about the access and the media flow(s) being transferred / kept / released;
- optionally, an IMS Communication Service Identifier defined in TS 23.228 [4];
- which session is required to be replaced or updated;
- whether to merge the session(s).

The above addressed information are carried in various SIP/SDP and CS call control messages (specified in the applicable information flows), which provides the necessary details to enable IMS Service Continuity. The SCC AS and the UE analyze the included information and determine if and how a Session Transfer operation needs to be performed.

5 Architecture model and reference points

5.1 Overview

IMS Service Continuity is a home network based IMS application which provides intra-device transfers of one or more components of IMS multi media sessions across different Access Networks.

5.2 Reference Architecture

IMS Service Continuity requires a Service Centralization and Continuity (SCC) AS, which is an Application Server as described in TS 23.228 [4], and a UE with SC capabilities. For the support of IMS sessions with CS media, refer to the reference architecture in TS 23.292 [5], clause 5.2; the functions of ICS and SC are specified as optional functions co-located in the SCC AS in this release.

OMA Device Management [7] is used between the SCC AS and the UE for provisioning of operator policy for Access Transfer.

5.3 Functional Entities

5.3.1 SCC AS

The SCC AS provides IMS-based mechanisms for enabling service continuity of multimedia sessions.

For IMS Service Continuity, the SCC AS implements the following functionalities:

- **Access Transfer**: The SCC AS uses the ISC reference point towards the S-CSCF for execution of the Access Transfer. The SCC AS performs the following for enablement and execution of Access Transfers:
  - analyzes the information required for Access Transfer as described in the procedure section and decides which Access Transfer scenario should be executed; it rejects the Access Transfer request if it is not aligned with the operator policy;
  - may retrieve from the HSS after third party registration the C-MSISDN bound to the IMS Private User Identity stored in the user profile in the HSS;
  - correlates the Access Transfer request with the anchored session, using information provided in the incoming SIP INVITE;
  - executes the transfer of the IMS session between different access networks;
  - implements 3rd Party Call Control (3pcc) upon session establishment;
  - provides Access Transfer specific charging data;
  - decides based on analysis of the various service continuity related input factors, whether to update provisioned operator policy for Access Transfer;

- generates and updates operator policy by sending operator policy to the UE via OMA DM [7] including the priority between the operator policy and user preferences that could be used also to initiate Access Transfer procedure for ongoing sessions.

- **Terminating Access Domain Selection (T-ADS):** In addition to T-ADS specified in TS 23.292 [5].

  for a terminating session, the SCC AS may select more than one contact amongst multiple registered contacts for each selected UE of the SC User and may split the session into sessions directed to the selected contacts.

  For multiple contacts in the PS domain, the SCC AS shall be able to select one or more types of access networks through which the session shall be terminated. In this case, the SCC AS includes additional information within the session request(s) to ensure that the corresponding session is terminated via the selected access network type(s).

- **Handling of multiple media flows:** The SCC AS provides functionality to combine and/or split media flows over one or more Access Networks as needed for Session Transfers, session termination, or upon request by the UE to add media flows over an additional Access Network during the setup of a session, or upon request by the UE to add and/or delete media flows over one or more Access Networks to existing sessions.

  When handling media flows of an IMS session, the SCC AS takes into account the services associated with the session.

5.3.2 IMS Service Continuity UE

For IMS Service Continuity the UE provides the following functions:

- Stores and applies operator policy for Access Transfer.

- Initiates Access Transfer procedure based on trigger criteria including the current operator policy, user preferences and the Local Operating Environment Information, providing the necessary details for conducting an Access Transfer operation to the SCC AS.

5.4 Signalling and bearer paths for IMS Service Continuity

5.4.1 General

The SCC AS is inserted in the signalling path of all the IMS user's sessions; the SCC AS behaves as a SIP-AS as described in TS 23.228 [4] to set up a 3pcc to control the bearer path of the session for enablement and execution of Session Transfer.

5.4.2 Sessions with PS media flow(s)

Figure 5.4.2-1 shows 3pcc at the SCC AS, for enablement and execution of Session Transfers, when the media flow(s) for the Access Leg is established via IP-CAN.

The figure is for illustration of the 3pcc at the SCC AS and its use for Session Transfer, hence it only shows the signalling and bearer components relevant to the enablement and execution of Session Transfers.

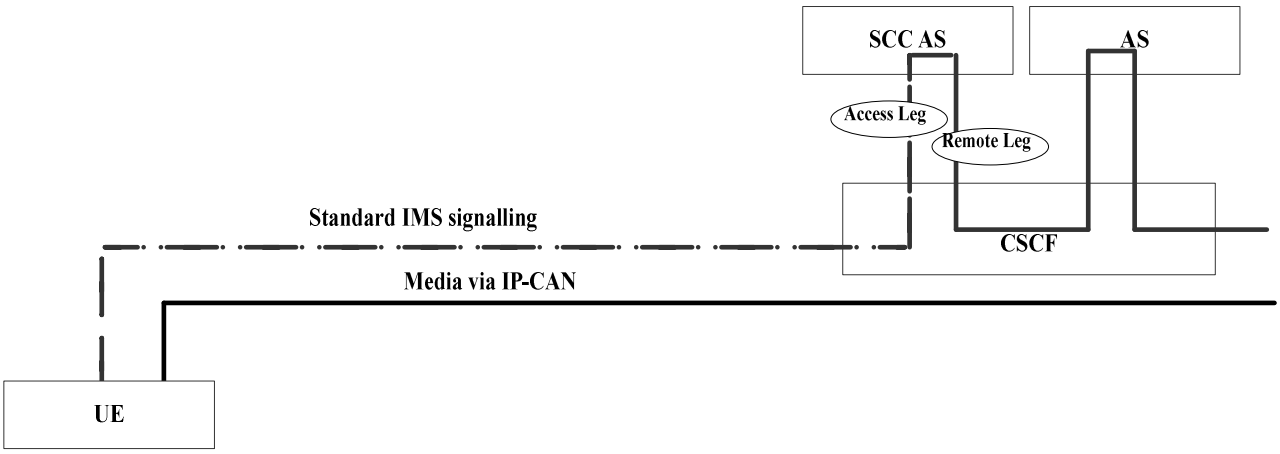

Figure 5.4.2-1: Signalling and bearer paths for sessions with PS media

5.4.3 Sessions with CS media

For details of signalling and bearer paths when the media for the Access Leg is established via the CS access, see TS 23.292 [5], clause 7.1.1. For illustration of 3pcc at the SCC AS, for enablement and execution of Session Transfers, with use of the Gm reference point and when not using Gm for service control signalling respectively, refer to figures 7.1.1-1, 7.1.1-2 and 7.1.2-1, in TS 23.292 [5], clause 7.1.

6 Procedures and flows

6.0 Introduction

Some of the following figures contain a box labelled CS/IMS Intermediate Nodes. This is abstraction for CS/IMS functional elements that exist between the UE and the SCC AS which could include amongst others MSC Server enhanced for ICS, MSC Server enhanced for SRVCC or an MGCF and an MSC Server not enhanced for ICS.

6.1 Registration

Whenever the UE acquires IP connectivity via an IP-CAN, the UE registers in the IMS as defined in TS 23.228 [4]. The user profile contains a C-MSISDN which is bound to the IMS Private User Identity. The S-CSCF follows the procedures defined in TS 23.218 [13] for performing 3rd party registration towards the SCC AS.

When using CS access for media, the UE may be registered in IMS as specified in TS 23.292 [5].

When the SCC AS receives a 3rd party registration per procedures defined in TS 23.218 [13], the SCC AS shall obtain the C-MSISDN from the HSS. If the C-MSISDN is associated with any ongoing session(s), the SCC AS shall bind all the unique identities associated with the SIP Registration e.g. GRUUs, contact address, etc. with the session identifier of the ongoing session.

6.2 Origination and Termination

6.2.1 Origination

6.2.1.1 Origination Procedures

UE initiated multimedia sessions are anchored at the SCC AS in order to enable IMS Service Continuity. Originating iFC for the SC subscriber results in routing of the session to the SCC AS in the home IMS network, where the SCC AS uses 3rd party call control as per TS 23.228 [4] to initiate a session to the remote party on behalf of the subscriber.

The SCC AS shall be the first Application Server of any Application Servers that need to remain in the path of the call after Session Origination.

6.2.1.2 Originating sessions that use CS media

The UE originates sessions that use CS media by following the procedures specified in TS 23.292 [5], clause 7.3.2 Originating sessions that use CS media.

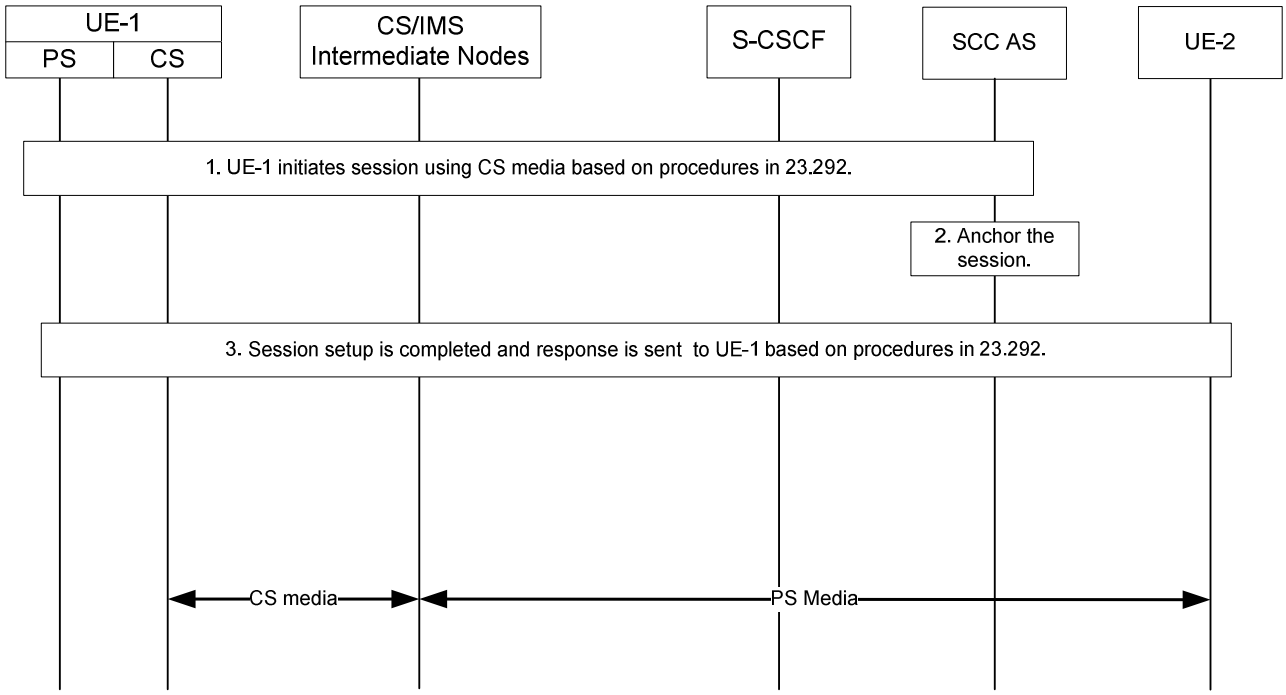

Figure 6.2.1.2-1: Originating session that uses CS media

1. UE-1 initiates a multimedia session to UE-2 and makes use of CS media. UE-1 sends the request to the SCC AS following the procedures specified in TS 23.292 [5], clause 7.3.2 Originating sessions that use CS media, for setting up CS bearer, anchoring the session at the SCC AS, merging multiples legs if necessary, and forwarding the combined session request to UE-2.

2. The SCC AS anchors the session. A dynamic STI is assigned for the anchored session.

3. The SCC AS completes session setup to UE-2 and sends a response to UE-1 based on the procedures specified in TS 23.292 [5]. The dynamic STI is communicated between the SCC AS and UE-1 if possible.

   The session is set up with CS media. The session may also include PS media flow(s).

6.2.1.3 Originating sessions that use only PS media flow(s)

Existing Mobile Origination procedures described in TS 23.228 [4] are used to establish a session.

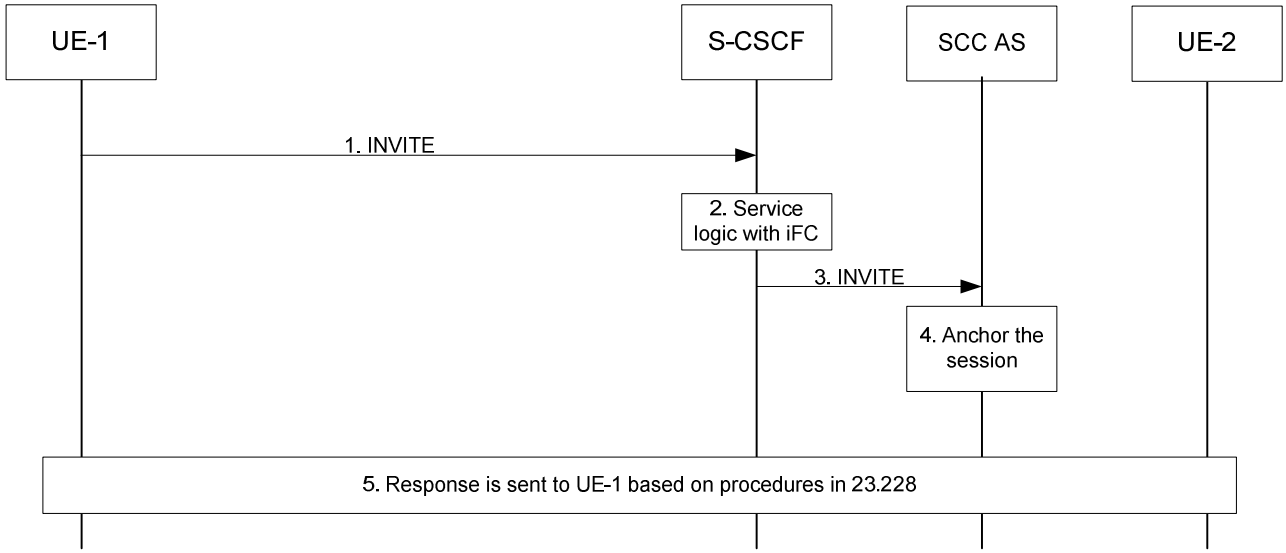

Figure 6.2.1.3-1: Originating session that uses only PS media

1. UE-1 initiates an IMS multimedia session to UE-2 and uses only PS media flow(s). The request is forwarded to S-CSCF following normal IMS session set up procedures.

2~3. The service logic with iFC causes the request to be forwarded to the SCC AS for anchoring the sessions to enable Session Transfer.

4. The SCC AS anchors the session. An STI is assigned for the anchored session.

5. The SCC AS completes the session setup to UE-2 and sends a response to UE-1.

6.2.2 Termination

6.2.2.1 Termination Procedures

IMS multimedia sessions towards SC subscribers in the PS or in the CS domain are anchored at the SCC AS to enable IMS Service Continuity. The execution of terminating iFC results in routing of the sessions to the SCC AS in the home IMS network, where the SCC AS uses 3rd party call control as per TS 23.228 [4] to terminate the session to the SC subscriber. The sessions may be delivered to the UE via the PS or CS access.

The SCC AS shall be the last Application Server of any Application Servers that need to remain in the path of the call after Session Termination.

6.2.2.2 Terminating sessions that use CS media

The procedures specified in TS 23.292 [5], clause 7.4.2 Terminating sessions that use CS media shall be followed to terminate sessions that use CS media to the SC subscriber.

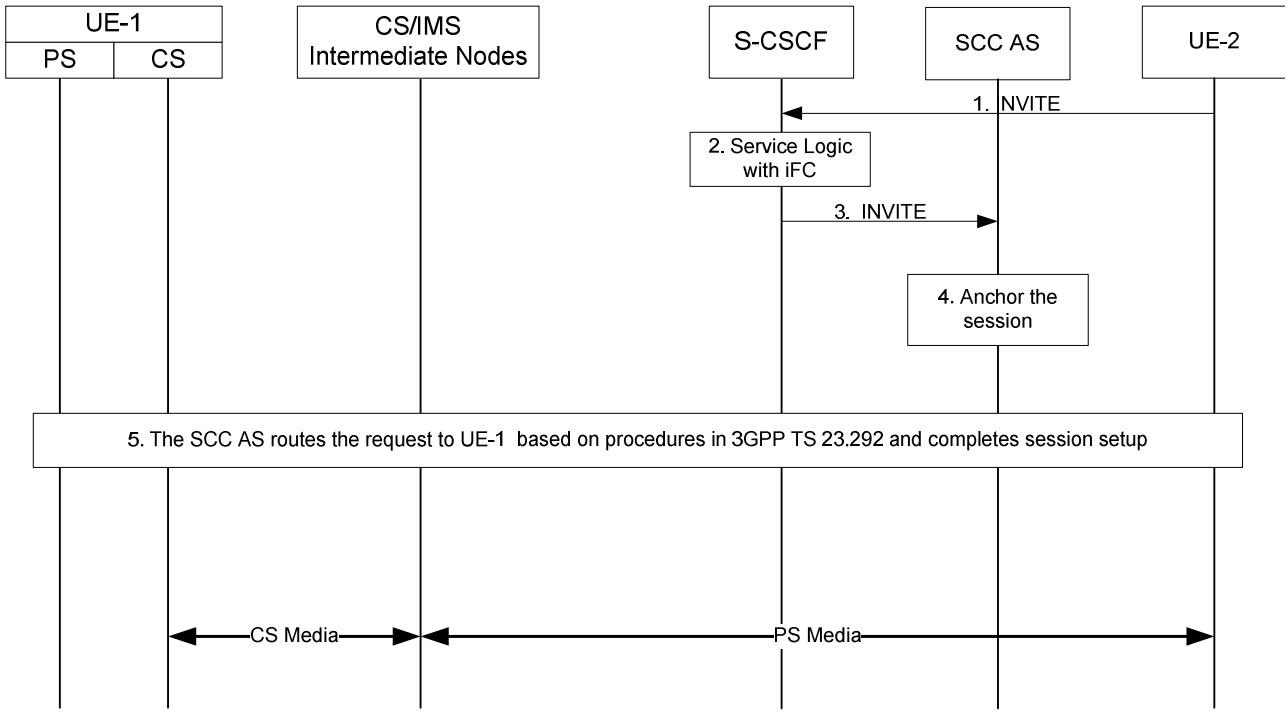

Figure 6.2.2.2-1: Terminating session that uses CS media

1. A request is received at S-CSCF serving UE-1 following standard IMS session set up procedures.

2 ~ 3. The service logic with iFC causes the request to be forwarded to the SCC AS so that the session is anchored for enabling Session Transfer.

4. The SCC AS anchors the incoming session. A dynamic STI is assigned for the anchored session.

5. The SCC AS forwards the request to UE-1 based on the procedures specified in TS 23.292 [5] for setting up CS bearer and splitting the media flow(s) if necessary. The dynamic STI is communicated between the SCC AS and the UE if possible. If the SCC AS decided to split the non-speech media and speech media for a certain UE, the T-ADS in the SCC AS delivers the split session only to this particular UE. The SCC AS uses the C-MSISDN for correlation.

   The session is set up with CS media. The session may also include PS media flow(s).

6.2.2.3 Terminating sessions that use only PS media flow(s)

Existing Mobile Termination procedures described in TS 23.228 [4] are used to establish a session towards a SC subscriber.

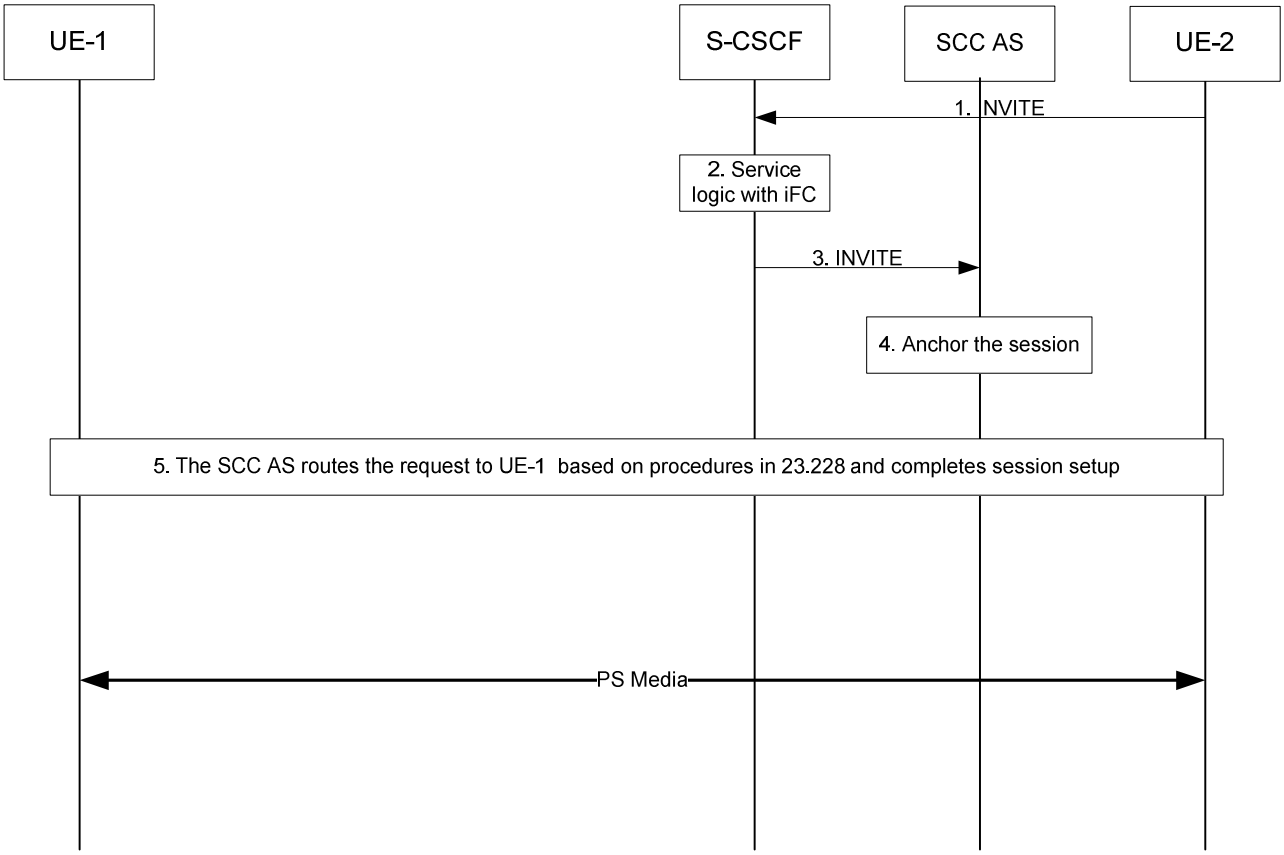

Figure 6.2.2.3-1: Terminating session that uses only PS media

1. The request is received at S-CSCF following normal IMS session set up procedures.

2 ~ 3. The service logic with iFC causes the request to be forwarded to the SCC AS so that the session can be anchored for potential session transfer.

4. The SCC AS anchors the session. An STI is assigned for the anchored session.

5. The SCC AS determines that the session is terminated to UE-1 with PS media flow(s) only and routes the request to UE-1.

6.2.2.4 Terminating sessions over Gm where speech media is not accepted by the UE

If the SCC AS includes only bi-directional speech media, the procedures specified in TS 23.292 [5], clause 7.4.3 shall be followed.

If the SCC AS includes non-speech media in the request, in addition to bi-directional speech or CS media and if the UE decides to only accept the non-speech media, the UE returns a response to IMS that only bi-directional speech or CS media is rejected. The SCC AS, upon reception of the response, splits the non speech media from the bi-directional speech or CS media for this UE. The T-ADS in the SCC AS re-attempts the terminating call setup directly towards the same UE over CS domain if possible. The SCC AS uses the C-MSISDN for correlation.

6.3 Session Transfer

6.3.1 Session Transfer Procedure

6.3.1.1 Introduction

Session Transfer procedures enable service continuity between Access Networks. All Session Transfer procedures associated with a session, including initial and subsequent transfers, are executed and controlled in the user's home IMS network by the SCC AS upon the UE's request.

NOTE: In order to support Access Transfer and Media Adding/Deleting procedures that involve the use of the Gm reference point on two IP-CANs, the UE and IMS network both have to support multiple simultaneous registrations of the UE and the UE has to be able to establish and maintain simultaneous connections to both IP-CANs at least for the duration of the Access Transfers or Media Adding/Deleting procedures.

The STN and STI are used during the execution of Session Transfers. The STN and STI are stored in the UE.

6.3.1.2 Access Transfer Procedures

When the UE determines that Access Transfer is desirable and possible, a registration in IMS is performed by the UE via the transferring-in Access Network if the user is not already registered via that network.

If the UE does not have or is unable to use its ICS capabilities, then prior to the dual radio PS to CS Access Transfer, the UE releases all but the most recently active bi-directional speech sessions.

A new Access Leg is established by the UE toward the SCC AS, if needed. Signalling and bearer resources are allocated in the transferring-in Access Network and the user's sessions are transferred from the transferring-out Access Network. The SCC AS executes Access Transfer procedures. Resources in the transferring-out Access Network are subsequently released.

When the UE wants to perform Access Transfer and determines that there is a PS Access Leg in the transferring-in Access Network for the same session, the UE can use the existing PS Access Leg in the transferring-in Access Network, instead of establishing a new Target Access Leg, to execute Access Transfer. No new signalling resources need to be allocated in the transferring-in Access Network.

Based on UE and Access Network capabilities, the UE may also maintain some of the media flows in the transferring-out Access Network while transferring the other media flows to the transferring-in Access Network.

6.3.1.3 Enablement of Session Transfer procedures

A 3pcc (3rd party call control) function is employed to anchor IMS sessions at the SCC AS upon session establishment for enablement of Session Transfer. The SCC AS is invoked as part of originating or terminating iFC execution at the subscriber's S-CSCF. The SCC AS inserts itself in the signalling path of the SC subscriber's IMS sessions by implementing a 3pcc (3rd party call control) function. For an originating IMS session, the SCC AS terminates an Access Leg from the user and establishes a Remote Leg toward the remote end. For a terminating IMS session, the SCC AS terminates a Remote Leg from the remote end and establishes an Access Leg toward the user. The SCC AS subsequently coordinates the session control signalling exchange between the Access Leg and the Remote Leg associated with the anchored IMS session.

For 3pcc at the SCC AS when the Access Leg is established with CS media, refer to clause 5.4.3. For 3pcc at the SCC AS when the Access Leg is established with media flow over IP-CAN to illustrate its use as preparation for Access Transfer procedures, refer to clause 5.4.2.

An STI and STN for Access Transfer between CS and PS access shall be statically configured on the UE regardless of its ICS capabilities.

If the Gm reference point is used for the originating or terminating session, an STI is dynamically assigned for the Access Leg. An STI shall also be dynamically assigned for each new Access Leg established during session transfer.

NOTE: The dynamically assigned STI needs to be different from the STI and STN that are statically configured on the UE.

The statically configured STI shall be used for CS to PS Access Transfers only when no dynamically assigned STI was provided to the UE.

The STN is used for PS to CS Access Transfers when no Gm reference point is available.

The STN-SR as specified in TS 23.216 [10] is used for PS to CS Access Transfer using Single Radio VCC.

6.3.1.4 Execution of Session Transfer procedures

Upon detection of conditions requiring Session Transfer, the UE establishes a Target Access Leg with the SCC AS via the transferred-in Access Network to request Session Transfer to the transferred-in Access Network. When the UE initiates a Session Transfer request, it includes the STI and/or the STN.

The SCC AS executes the Session Transfer procedure by replacing the Source Access Leg currently communicating to the Remote Leg with the Target Access Leg. If no media flow is retained in the transferred-out access, the Source Access Leg is released as specified in clause 6.3.1.6. If the UE chooses to retain some media flow(s) in the transferred-out access, the Source Access Leg is updated to indicate which media flow(s) is retained in the transferred-out access. If such update is not done, the SCC AS releases the Source Access Leg as specified in clause 6.3.1.6 and updates the Remote Leg if necessary. When the switch of the Source Access Leg to the Target Access Leg is executed, the Remote Leg is also updated in order to forward the media flow(s) to the transferred-in Access Network.

6.3.1.5 Remote Leg Update

Upon receiving a request for execution of Session Transfer, the SCC AS performs the Remote Leg Update by switching the Access Leg communicating with the Remote Leg from transferring-out access to transferring-in access.

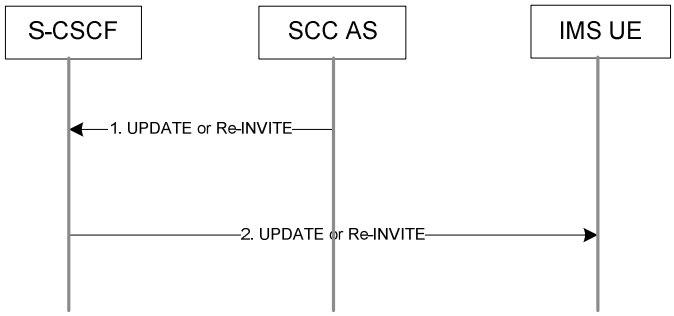

Figure 6.3.1.5-1: Remote Leg Update

The remote end in figure 6.3.1.5-1 represents a UE supporting terminations per TS 23.228 [4] (i.e. including NI-T).

1-2. The SCC AS updates the Remote Leg by communicating the SDP of the Access Leg established in the transferring-in access to the remote end via the user's S-CSCF. Remote Leg Update happens according to SIP session modification procedures (see RFC 3261 [8]).

The remote end in figure 6.3.1.5-2 represents an MGCF for CS/PSTN Remote Party.

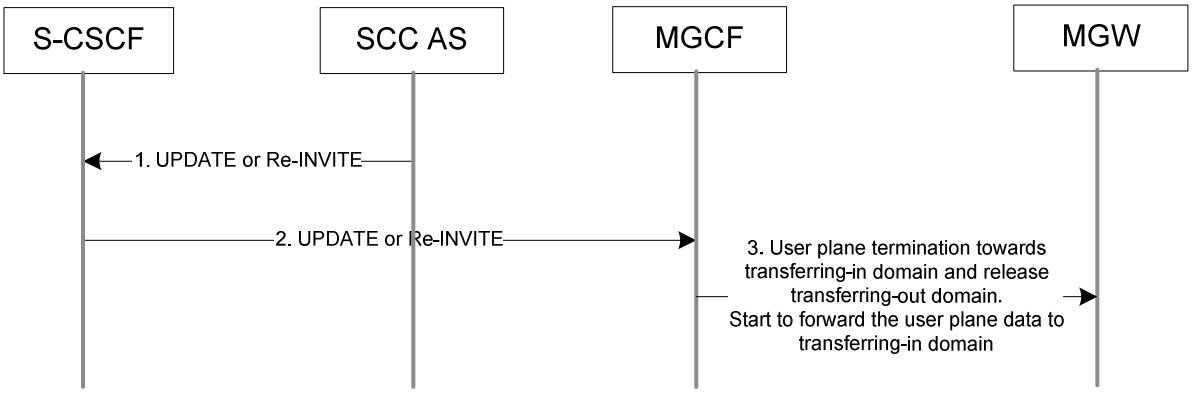

Figure 6.3.1.5-2: Remote Leg Update

1-2. These steps are the same procedures described in figure 6.3.1.5-1.

3. MGCF instructs MGW to update a termination towards the access leg of the transferred in domain to the context, and to release the termination for the access leg of the transferred out domain from the context.

6.3.1.6 Source Access Leg Release

When the session modification procedures are complete, the Source Access Leg Release is executed by initiating a session release. This is done for the Source Access Leg using the AS/UE session release procedures per TS 23.228 [4]. The UE and the SCC AS shall initiate the Session Release procedure when the switch to the transferred-in Access Network is complete.

6.3.2 Session Transfer Information flows

6.3.2.1 PS – CS Access Transfer

6.3.2.1.1 PS – CS Access Transfer: PS to CS

Figure 6.3.2.1.1-1 PS – CS Access Transfer: PS to CS, provides an information flow for Access Transfer of an IMS session in PS to CS direction. The flow requires that the user is active in an IMS originating or terminating session using PS media flow(s) at the time of initiation of Access Transfer to CS.

NOTE: This flow assumes the PS domain does not have any non real time media flow(s). If the PS domain has other non real time media flow(s), then the call flow in clause 6.3.2.3.1 applies.

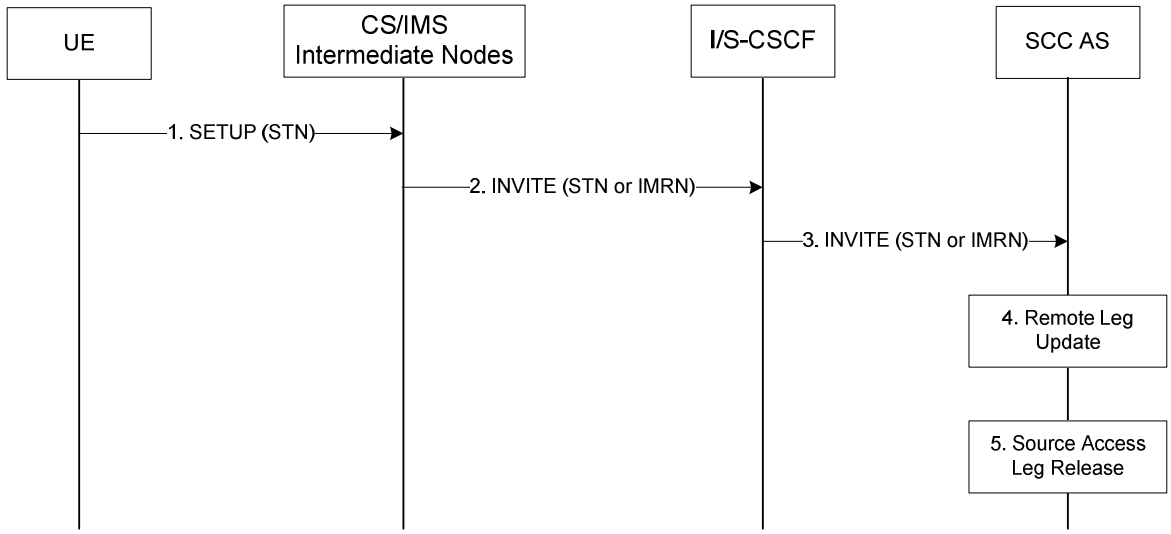

Figure 6.3.2.1.1-1: PS – CS Access Transfer: PS to CS

1. If the user is not attached to the CS domain at the time when the UE determines a need for Access Transfer to CS, the UE performs a CS Attach as specified in TS 23.292 [5], clause 7.2.1. It subsequently originates a session that uses CS media using the STN to establish an Access Leg via the CS access and requests Access Transfer of the IMS session to CS access using the procedures described in TS 23.292 [5], clause 7.3.2 Originating Sessions that use CS media.

2. Standard procedures as specified in TS 23.292 [5], clause 7.3.2 Originating Sessions that use CS media are used in CS and IMS intermediate nodes which results in routing of the INVITE with the STN or an IMRN to the I/S-CSCF. The MSC Server enhanced for ICS includes the Instance ID into the session transfer request if the user is registered in the IMS by the MSC Server enhanced for ICS as specified in TS 23.292 [5]. If the user is not registered in IMS then CS/IMS Interworking Nodes includes the C-MSISDN as calling party number into the session transfer request.

3. Standard procedures are used at I/S-CSCF for routing of the INVITE to the SCC AS.

4. The SCC AS completes the establishment of the Access Leg via the CS access. The SCC AS may retrieve the C-MSISDN from the HSS. The SCC AS is able to identify the correct anchored session using either the C-MSISDN or the Instance ID for session identification. The SCC AS performs the Access Transfer by updating the Remote Leg with the connection information of the newly established Access Leg using the Remote Leg Update procedure as specified in clause 6.3.1.5. The SCC AS completes the session setup towards UE according to procedures defined in TS 23.228 [4].

5. The Source Access Leg (which is the Access Leg previously established over PS access) is released as specified in clause 6.3.1.6

NOTE: Steps 4 and 5 consist of a sequence of messages, some of which may occur in parallel.

6.3.2.1.2 PS – CS Access Transfer: CS to PS

Figure 6.3.2.1.2-1 PS – CS Access Transfer: CS to PS, provides an information flow for Access Transfer of an IMS session in the CS to PS direction. The flow requires that the user is active in an IMS originating or terminating session that uses CS media at the time of initiation of Access Transfer to PS.

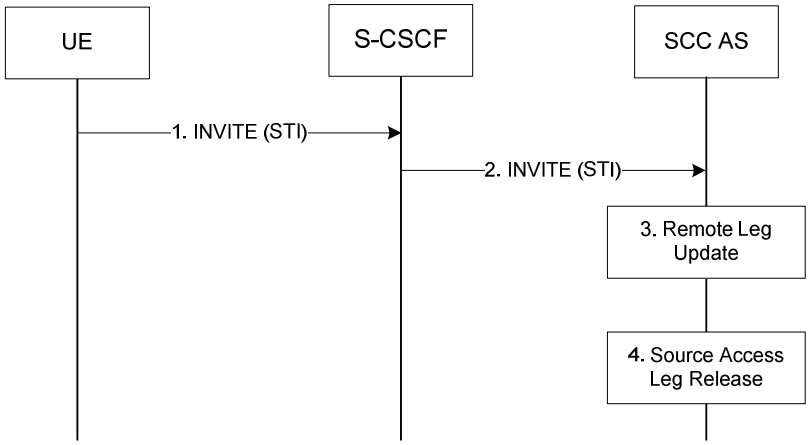

Figure 6.3.2.1.2-1: PS – CS Access Transfer: CS to PS

1. When the UE determines a need for Access Transfer, the UE initiates registration with IMS (if not already registered in IMS) as specified in clause 6.1. It subsequently initiates an IMS originated session toward the SCC AS using a STI to establish an Access Leg via PS access and requests Access Transfer of the IMS session that is using CS media to PS access. The statically configured STI is used if no dynamically assigned STI has been provided to the UE during session establishment. Please refer to clause 6.2.1 - IMS Originating Sessions for details on IMS origination procedure.

2. Standard procedures are used at S-CSCF for routing of the INVITE to the SCC AS.

3. The SCC AS performs the Access Transfer by updating the Remote Leg with connection information of the newly established Access Leg (see the Remote Leg Update procedure, clause 6.3.1.5). The SCC AS completes the establishment of the Access Leg according to procedures defined in TS 23.228 [4].

4. The source Access Leg which is the Access leg previously established over CS is subsequently released (see clause 6.3.1.6).

NOTE: Steps 3 and 4 consist of a sequence of messages, some of which may occur in parallel.

6.3.2.1.3 Subsequent Access Transfers

Procedures for subsequent Access Transfers to CS and PS access are the same as procedures for initial Access Transfers specified in clause 6.3.2.1.1 for PS to CS access and clause 6.3.2.1.2 for CS to PS access.

6.3.2.1.4 PS – CS Access Transfer: PS to CS – Single Radio

Figure 6.3.2.1.4-1 PS-CS: PS to CS – Single Radio, provides an information flow for Access Transfer of media flow(s) of an IMS session in PS to CS direction for Access Transfers within 3GPP access networks as specified in TS 23.216 [10].

The flow requires that the user is active in an IMS originating or terminating session; procedures and capabilities specified in TS 23.216 [10], clause 6.2.1 are used for the switching of access networks at the transport layer.

NOTE 1: See TS 23.216 [10] for initiation of handover of only one voice PS bearer at EPC.

NOTE 2: The UE capable of procedures as specified in TS 23.216 [10] does not need to support session and access transfer procedures as specified in clauses 6.3.2.1.1 and 6.3.2.3 to support PS to CS Access Transfer.

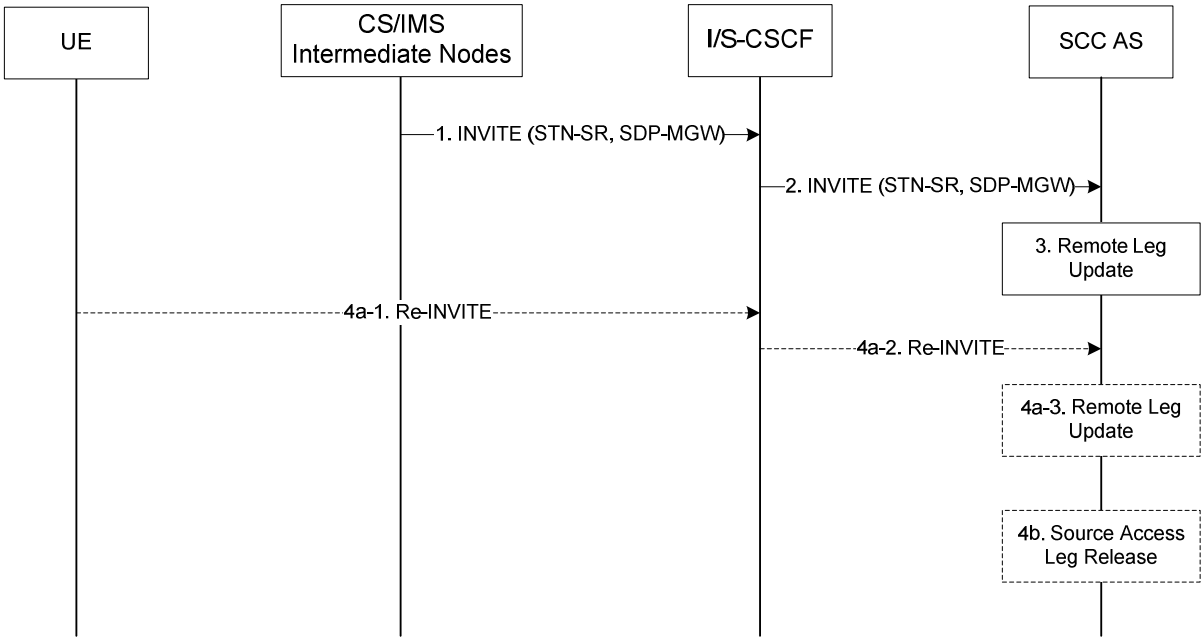

Figure 6.3.2.1.4-1: PS-CS: PS to CS – Single Radio

1. Procedures specified in TS 23.216 [10], clause 6.2.2.1 result in an INVITE to be sent with an STN-SR indicating use of SRVCC procedures for Access Transfer to CS access. The MSC Server enhanced for SRVCC includes the C-MSISDN as calling party number.

2. Standard procedures are used at S-CSCF for routing of the INVITE to the SCC AS.

3. The SCC AS uses the STN-SR to determine that Access Transfer using SRVCC is requested. The SCC AS may retrieve the C-MSISDN from the HSS. The SCC AS is able to identify the correct anchored session. The SCC AS proceeds with the Access Transfer of the active session with bi-directional speech for the UE by updating the Remote Leg with the media description and other information using the Remote Leg Update procedure as specified in clause 6.3.1.5.

NOTE 3: Please refer to clause 4.3.1.2.2 for the behaviour of the SCC AS when the SCC AS finds multiple active sessions with bi-directional speech anchored for the UE.

4a. If the Gm reference point is retained upon PS handover procedure then

4a-1. The UE sends a Re-INVITE via the PS access to update the remaining non-voice media flow(s) associated with the recently added active session. If the UE is using ICS capabilities, this Re-INVITE also adds Gm service control to the active session and the UE subsequently sends Re-INVITEs for any remaining inactive bi-directional speech sessions that are to be transferred.

4a-2. Standard procedures are used at S-CSCF for routing of the Re-INVITE(s) to the SCC AS.

4a-3. The SCC AS processes the Re-INVITE(s) and updates the Remote Leg if needed.

4b. If the Gm reference point is not retained upon PS handover procedure, or if there was no other non-voice media flow(s) in the IMS session than the voice which was transferred to the target access, then the Source Access Leg is released as specified in clause 6.3.1.6.

NOTE 4: Some or all of the steps between steps 3 and 4b may consist of a sequence of messages, some of which may occur in parallel.

6.3.2.2 PS – PS Access Transfer

NOTE: If a PS-PS session transfer occurs and there is a change in IP address, TCP-based media flow(s) using transferring-out access will break. Recovery procedures from broken TCP connections are application specific.

6.3.2.2.1 PS-PS Access Transfer with full media transfer

UE-1 is attached to one IP-CAN and it registers to the S-CSCF. UE-1 establishes an active multimedia session with UE-2 via this IP-CAN. After changing to a new IP-CAN, obtaining new signalling and media addresses, and completing the Access Transfer procedures, UE-1 continues the multimedia session with UE-2 via the new IP-CAN.

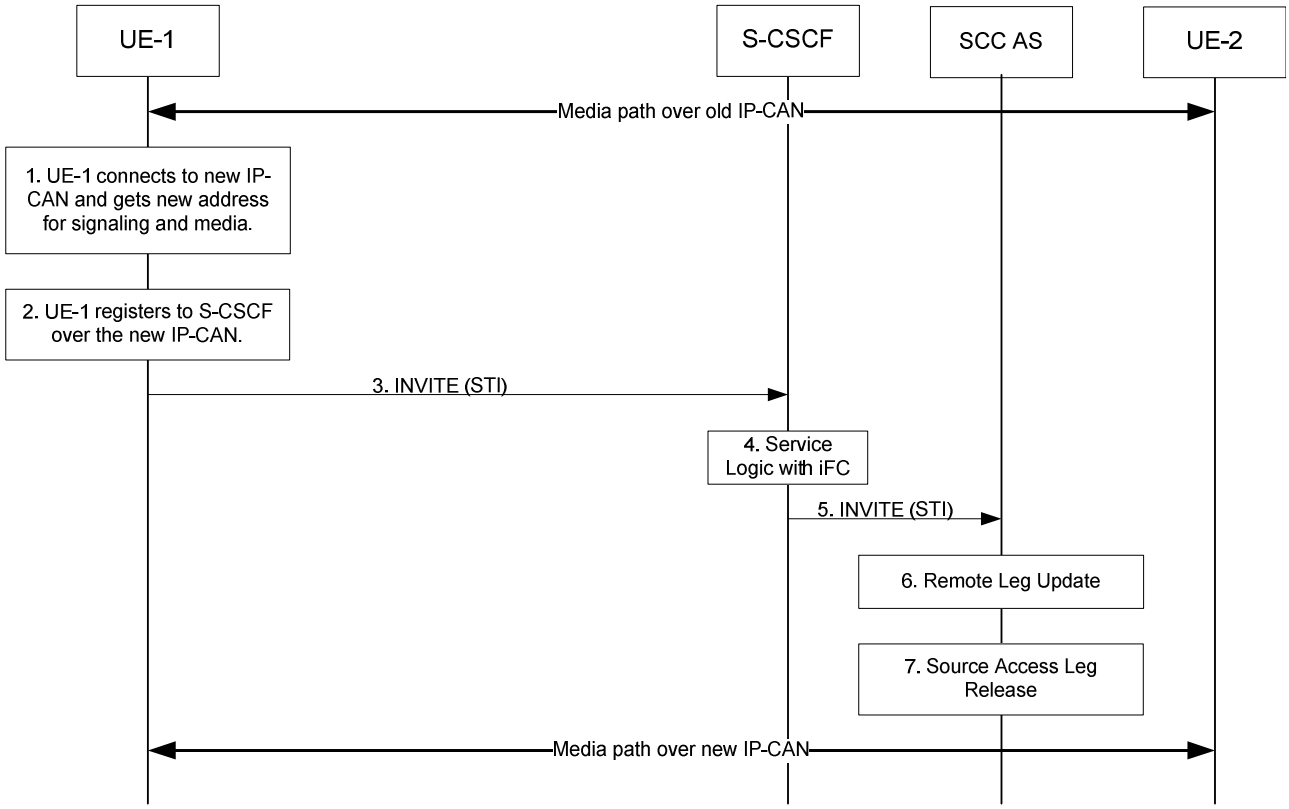

Figure 6.3.2.2.1-1: Information flow for PS-PS Access Transfer

1. UE-1 connects to a new IP-CAN and receives new IP address(es). UE-1 decides to perform PS to PS Access Transfer based on SC policy information.

2. UE-1 registers to the S-CSCF via the new IP-CAN. This registration may go through the same P-CSCF or a different P-CSCF.

3 ~ 5. UE-1 sends an INVITE message on the new IP-CAN towards the SCC AS. The INVITE message includes the STI identifying the session to be transferred. The INVITE message also indicates to the SCC AS that it performs Access Transfer with full media transfer.

6. The SCC AS identifies the session based on STI and updates the session over the remote access leg (see clause 6.3.1.5).

7. The SCC AS completes session setup with UE-1 on the new access leg and releases old session based on the standard IMS procedures.

6.3.2.2.2 PS-PS Access Transfer with partial media transfer

UE-1 is on an active multimedia session with UE-2 via one IP-CAN. After changing to a new IP-CAN and obtaining new signalling and media addresses, UE-1 transfers part of the multimedia session with UE-2 to the new IP-CAN and keeps the remaining part on the original IP-CAN. UE-1 is attached to both the new and old IP-CANs after the Access Transfer procedures. The call flow is the same as shown in clause 6.3.2.2.1. The only difference is that in Step 3, the INVITE needs to indicate that the request is for a partial transfer and instead of releasing the old session in step 7, the UE updates session information over the old access leg. In this case, the INVITE message sent in step 3 shall indicate the media flow(s) which need to be transferred to the new IP-CAN.

6.3.2.3 PS - PS in conjunction with PS - CS Access Transfer

6.3.2.3.1 PS - PS in conjunction with PS - CS Access Transfer: PS to CS for UEs not using ICS capabilities

It is required that the UE has a single ongoing IMS session containing speech and other media with the remote end. After the Access Transfer, the two sessions are treated as independent sessions on the transferring-in Access Legs for mid-call service (e.g. hold of PS or CS media).

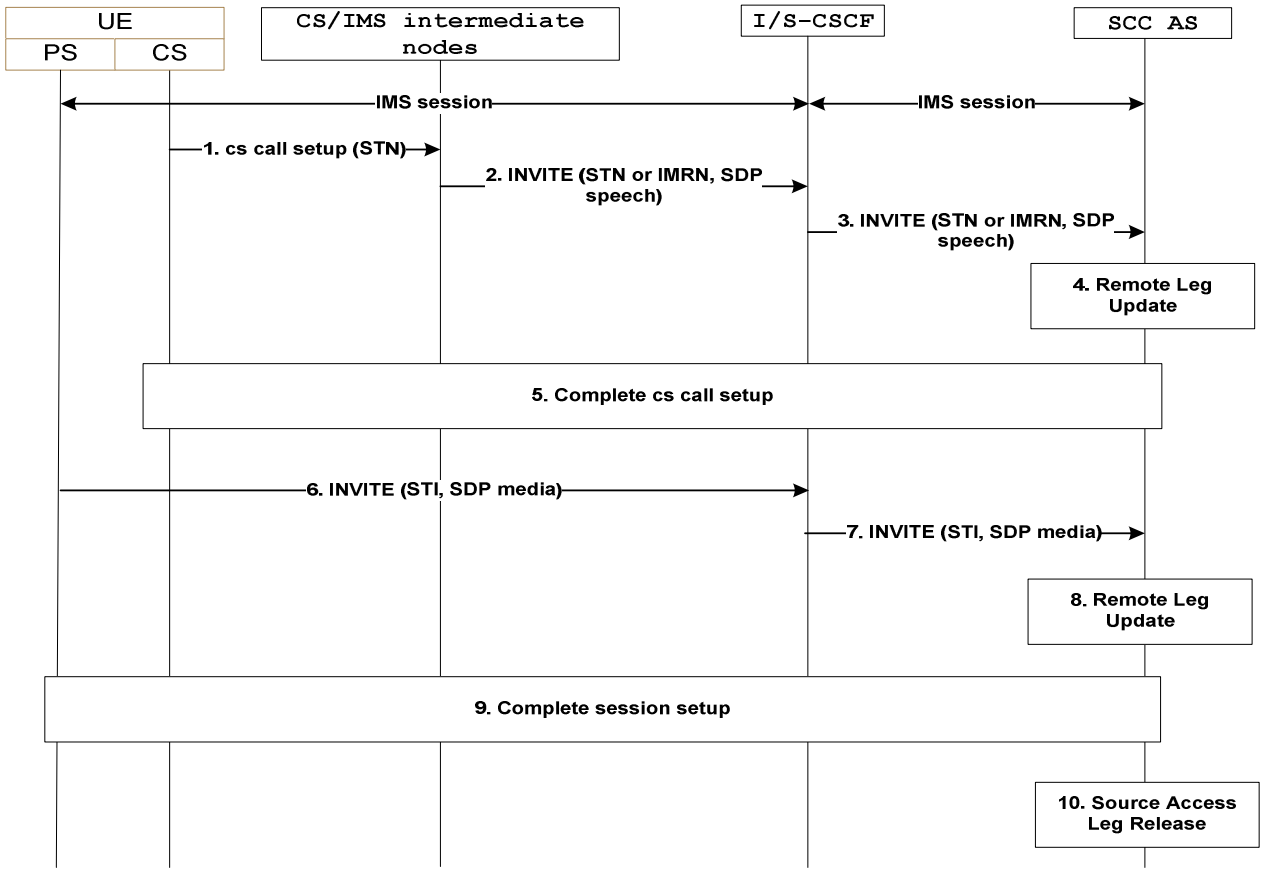

Figure 6.3.2.3.1-1: PS-PS in conjunction with PS-CS Access Transfer: PS to CS

1. When the UE determines a need for Access Transfer, the UE attaches to CS (if not already attached). It subsequently initiates the PS–CS Access Transfer by sending a CS call setup including the STN to establish the Access Leg via the CS access. A static STN preconfigured to the UE is used.

2. An INVITE is routed to the S-CSCF.

3. An INVITE is routed to the SCC AS.
4. The SCC AS performs the Remote Leg update by using procedures defined in clause 6.3.1.5. The SCC AS updates the speech media in the session towards the Remote Leg.
5. The SCC AS completes the session setup towards UE according to procedures defined in TS 23.228 [4].
6. The UE initiates registration with IMS via the new PS access (if not already registered) as specified in clause 6.1. It subsequently initiates the PS–PS Access Transfer by sending an INVITE including the SDP for the non speech media flow(s) and STI to establish the Access Leg via the PS access. A dynamic STI allocated at the time of IMS session creation is used.
7. An INVITE is routed to the SCC AS.
8. The SCC AS identifies the session to be transferred using the STI. The SCC AS performs the Remote Leg update by using procedures defined in clause 6.3.1.5. The SCC AS updates the non speech media flow(s) in the session towards the Remote Leg.
9. The SCC AS completes the session setup towards UE according to procedures defined in TS 23.228 [4].
10. Source Access Leg Release is performed according to the procedures defined in clause 6.3.1.6.

NOTE: Steps 1-5 can be performed in reversed order with steps 6-8.

6.3.2.3.2 PS - PS in conjunction with PS - CS Access Transfer: CS to PS for UEs not using ICS capabilities

It is required that the UE has an ongoing CS call and a related IMS session with the remote end.

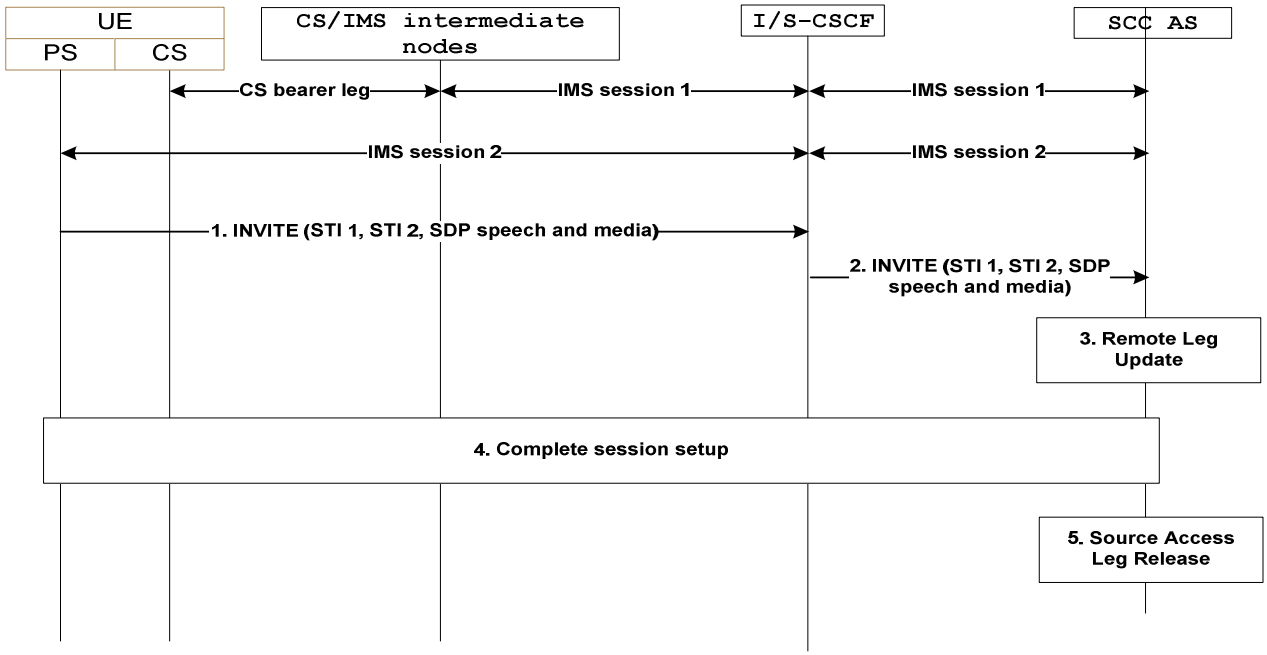

Figure 6.3.2.3.2-1: PS-PS in conjunction with PS-CS Access transfer: CS to PS

1. When the UE determines a need for Access Transfer, the UE initiates registration with IMS via the new PS access (if not already registered) as specified in clause 6.1. It subsequently initiates the Access Transfer by sending an INVITE to establish the Access Leg via the PS access. The INVITE includes the SDP for speech and non-speech media flow(s) and STI-1 and STI-2 respectively for the IMS session using CS and the IMS session using PS to be transferred. For STI-1 a static STI preconfigured to the UE is used. For STI-2 a dynamic STI allocated at the time of IMS session creation is used. STI-1 and STI-2 are never the same.
2. Standard procedures are used at S-CSCF for routing of the INVITE to the SCC AS.

3. The SCC AS identifies the session to be transferred using the STI-1 and STI-2. The SCC AS performs the Remote Leg Update by using procedures defined in clause 6.3.1.5. The SCC AS updates the combined session towards the Remote Leg.

4. The SCC AS completes the session setup towards UE-1 according to procedures defined in TS 23.228 [4].

5. Source Access Leg Release is performed according to the procedures defined in clause 6.3.1.6.

6.3.2.3.3 PS – PS in conjunction with PS - CS Access Transfer: PS to CS for UEs with ICS capabilities - Using Gm reference point

Figure 6.3.2.3.3-1 PS-PS in conjunction with PS–CS Access Transfer: PS to CS for UEs with ICS capabilities, provides an information flow for Access Transfer of real time media flow(s) of an IMS session in PS to CS direction and zero or more non real time media flow(s) in PS to PS direction. The UE may choose to retain some of the non real time media flow(s) in the original PS access.

The flow requires that the user is active in an IMS originating or terminating session; the Gm reference point of ICS is used for control of IMS sessions that use CS media.

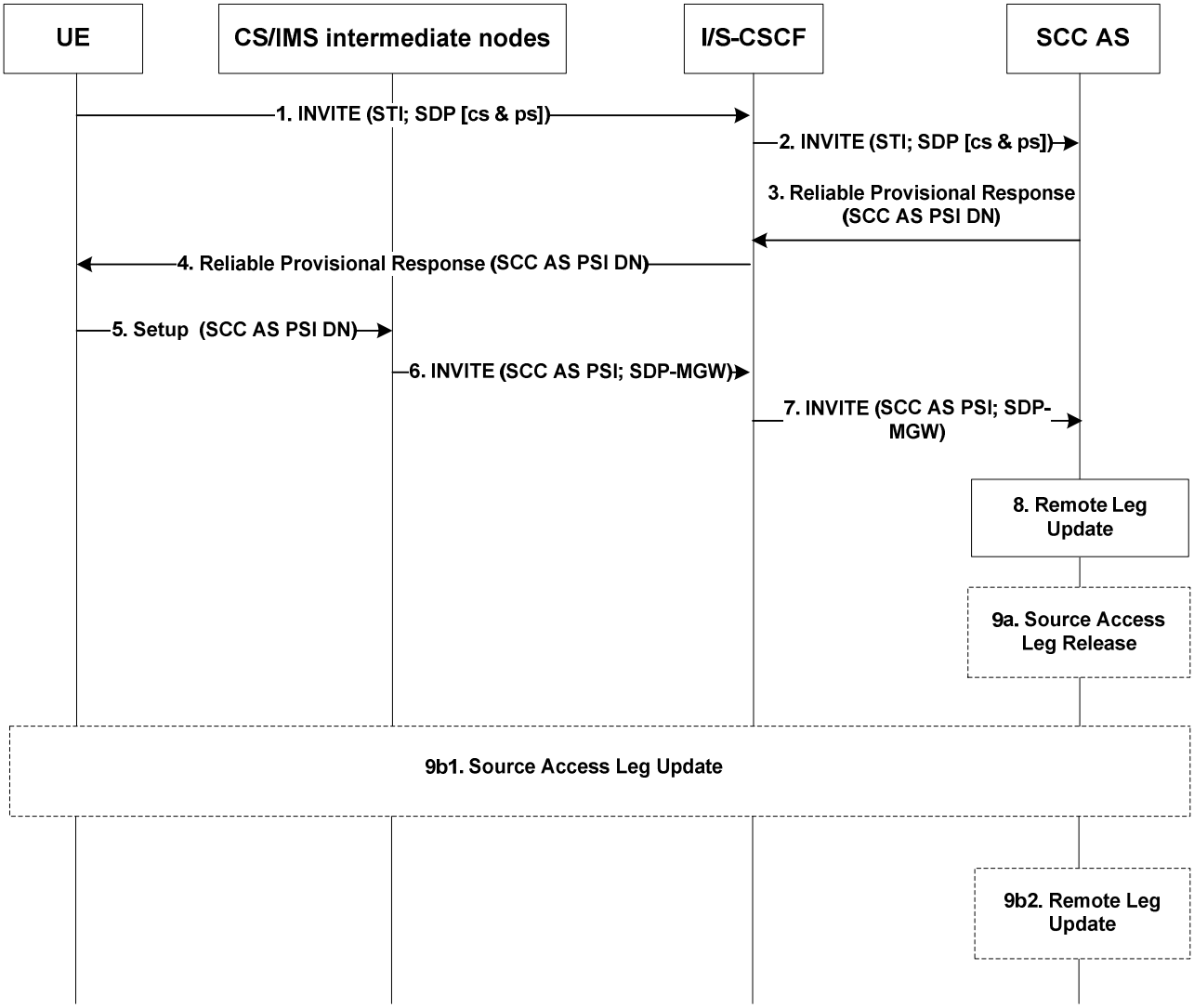

Figure 6.3.2.3.3-1: PS-PS in conjunction with PS-CS Access transfer: PS to CS for UEs with ICS capabilities

1. When the UE determines a need for Access Transfer, the UE initiates registration with IMS via the new PS access (if not already registered) as specified in clause 6.1. It subsequently initiates the "Originations with CS media using the Gm reference point" procedure as specified in TS 23.292 [5], clause 7.3.2.2.4 by sending an INVITE including the STI to establish the Access Leg via the PS access. The INVITE also includes an indication

to use a CS bearer for the real time media and a description of non real time media flow(s) that are to be transferred to the new PS access if any non real time media is present at the time of initiation of Access Transfer.

2. Standard procedures are used at S-CSCF for routing of the INVITE to the SCC AS.

3. The SCC AS identifies the session to be transferred using the STI and the media flow(s), and continues the "Originations with CS media using the Gm reference point" procedure for completion of the setup of CS media for the Access Leg by allocating a SCC AS PSI DN and sending it in a reliable provisional response to the S-CSCF (see TS 23.292 [5] for SCC AS PSI DN).

4. The S-CSCF forwards the provisional response (containing the SCC AS PSI DN) to the UE.

5. The UE continues the "Originations with CS media using the Gm reference point" procedure by sending a Setup message including the SCC AS PSI DN to establish the CS media for the Access Leg.

6. The "Originations with CS media using Gm reference point procedure" is used at the CS and IMS intermediate nodes, resulting in routing of an INVITE to the I/S-CSCF.

7. The I/S-CSCF extends the INVITE with the SCC AS PSI and SDP of the MGW as part of the "Originations with CS media using the Gm reference point" procedure.

8. The SCC AS uses the SCC AS PSI to correlate the incoming session via the CS access with the Access Transfer request previously received via the PS access.

   The SCC AS completes the establishment of the Access Leg by combining the description of the media established via the CS access with the description of the media flow(s) established via the PS access for the signalling associated with the Access Leg.

   The SCC AS performs the Access Transfer by updating the Remote Leg with the media description and other information of the newly established Access Leg using the Remote Leg Update procedure as specified in clause 6.3.1.5.

9a. If the UE transfers all the non real time media flow(s) to the new PS access, the Source Access Leg (which is the Access Leg previously established over PS access) is released as specified in clause 6.3.1.6.

9b. If the UE chooses to retain some media flow(s) in the original PS access, then:

   9b1. the UE sends an INVITE to the SCC AS (as part of the existing dialog) to update the session information over the Source Access Leg; and

   9b2. the SCC AS performs the Remote Leg update (if necessary) by using procedures defined in clause 6.3.1.5. The Source Access Leg is not released in this case.

NOTE: Steps 8 and 9 consist of a sequence of messages, some of which may occur in parallel.

6.3.2.3.4 PS - PS in conjunction with PS - CS Access Transfer: CS to PS for UEs with ICS capabilities - Using Gm reference point

The information flow for Access Transfer of real time media of an IMS session in CS to PS direction, and zero or more non real time media flow(s) in PS to PS direction is the same as the information flow for PS–CS Access Transfer: CS to PS access, as specified in clause 6.3.2.1.2.

The flow requires that the user is active in an IMS originating or terminating session; the Gm reference point of ICS is used for control of IMS sessions that use CS media; and a dynamic STI is associated with each session.

6.3.2.3.5 PS – PS in conjunction with PS – CS Access Transfer: Active/Held sessions - Using Gm reference point

Figure 6.3.2.3.5-1 PS–PS in conjunction with PS–CS Access Transfer: Active/Held sessions, provides an information flow for Access Transfer of real time media flow(s) of one active and one or more held sessions between PS and CS, any of which may have zero or more non real time media flow(s) which is transferred within the PS access.

The flow requires that the user is active in IMS originating and/or terminating sessions; the Gm reference point of ICS is used for control of IMS sessions that use CS media; and a dynamic STI is associated with each session.

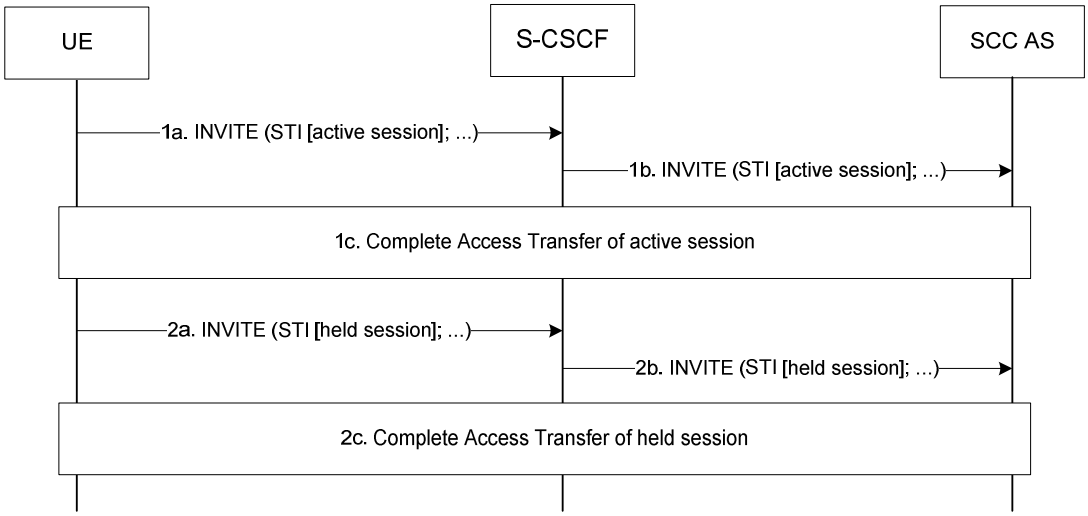

Figure 6.3.2.3.5-1: PS-PS in conjunction with PS-CS Access transfer: Active/Held sessions

1a, 1b. When the UE determines a need for Access Transfer, the UE initiates the Access Transfer of the active session as specified in clause 6.3.2.3.3 PS–PS in conjunction with PS–CS Access Transfer: PS to CS for UEs with ICS capabilities, or clause 6.3.2.3.4 PS–PS in conjunction with PS-CS Access Transfer: CS to PS for UEs with ICS capabilities, based on the direction of the Access Transfer of the real time media. The STI of the active session is used by SCC AS to identify the active session.

1c. The UE and the SCC AS complete the Access Transfer of the active session.

2a, 2b. The UE initiates the Access Transfer of the first held session using the same procedures as identified in steps 1a and 1b with a difference that for transfer to CS access, the CS media is not established for the held session; the media established upon the transfer of the currently active session is reused for the held session when it is resumed. The STI of the held session is used by SCC AS to identify the held session.

2c. The UE and the SCC AS complete the Access Transfer of the held session.

Steps 2a, 2b and 2c are repeated for the remaining held sessions.

NOTE: Steps 1c and 2c consist of a sequence of messages, which may occur in parallel.

6.3.2.3.6 PS – PS in conjunction with PS – CS Access Transfer: Explicit Communication Transfer - Using Gm reference point

Prior to consultative transfer, the transferor UE may have one session with the transferee UE and one session with the transfer target UE. If the transferor UE performs Access Transfer in this case, the information flow for PS–PS in conjunction with PS–CS Access Transfer: Explicit Communication Transfer is the same as the information flow in clause 6.3.2.3.5 PS–PS in conjunction with PS–CS Access Transfer: Active/held sessions.

For all other cases in ECT service, there is only one session at the UE. Depending on the direction of the Access transfer, the following information flows apply:

- the information flow in clause 6.3.2.3.3 for PS-PS in conjunction with PS-CS Access Transfer: PS to CS; or,
- the information flow in clause 6.3.2.3.4 for PS-PS in conjunction with PS-CS Access Transfer: CS to PS.

The flow requires that the user is active in IMS originating and/or terminating sessions with the Explicit Communication Transfer service; the Gm reference point of ICS is used for control of IMS sessions that use CS media; and a dynamic STI is associated with each session.

6.3.2.3.7 PS – PS in conjunction with PS – CS Access Transfer: Conferencing - Using Gm reference point

The information flows for PS–PS in conjunction with PS–CS Access Transfer: Conferencing in PS to CS and CS to PS directions, are the same as the information flows in clause 6.3.2.3.3 PS–PS in conjunction with PS–CS Access Transfer:

PS to CS for UEs with ICS capabilities, and clause 6.3.2.3.4 PS–PS in conjunction with PS–CS Access Transfer: CS to PS for UEs with ICS capabilities respectively.

The flow requires that the user is active in IMS originating and/or terminating sessions with the Conferencing service; the Gm reference point of ICS is used for control of IMS sessions that use CS media.

6.3.2.3.8 Void

6.3.2.3.9 Void

6.3.2.3.10 Void

6.3.2.3.11 Void

6.3.3 Media Adding/Deleting

6.3.3.1 Local End Initiation case: Adding new PS media to existing CS session

The call flow in figure 6.3.3.1-1 presents a scenario where UE-1 adds PS media flow(s) (e.g. video) to an existing multimedia session that only contains CS media. As a post condition the UE-1 has an ongoing CS call and a related IMS session with the remote end.

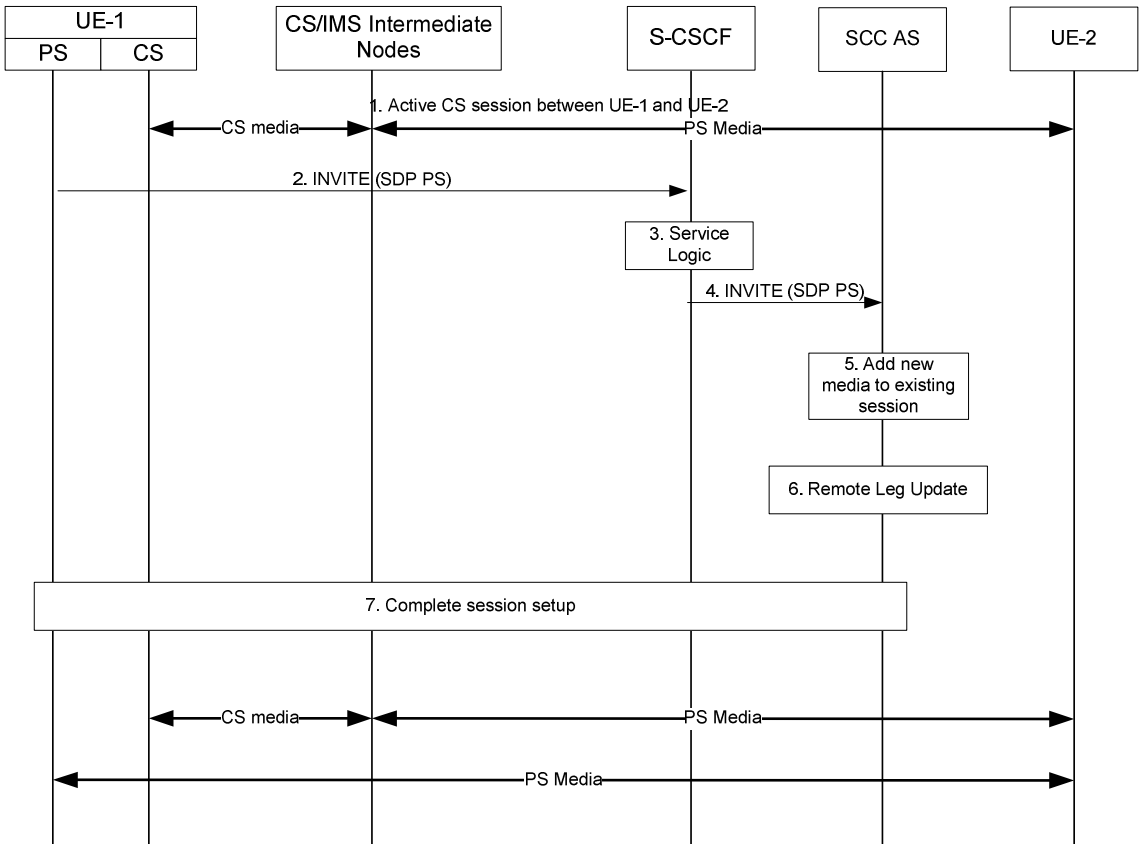

Figure 6.3.3.1-1: Local End Initiation case: Adding new PS media to existing CS session

1. A multimedia session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] clauses 7.3.2.1 and 7.4.2.1, respectively i.e. UE-1 is not using the ICS capability and therefore not using the Gm reference point during the session establishment.

2. UE-1 requests to add one or more PS media component(s) to the existing CS Call by sending an INVITE containing description of the new PS media towards SCC AS to establish a new Access Leg. UE-1 provides description of the new media and the information necessary for the SCC AS to identify the existing session.

3. The S-CSCF executes any service logic as appropriate.

4. The S-CSCF sends the INVITE to the SCC AS.

5. The SCC AS determines that the INVITE is related to an existing session using the information provided by UE-1 and decides to add the new media flow to the session.

NOTE: If SCC AS decides that the request is not related to an existing session, it handles the INVITE as a new session as described in clause 6.2.1.3 Session origination using PS media flow(s) only.

6. The SCC AS performs the Remote Leg Update using procedures defined in clause 6.3.1.5.

7. The SCC AS completes the session setup towards UE-1 according to procedures defined in TS 23.228 [4].

6.3.3.2 Local End Initiation case: Incorporating existing CS media in new IMS Session and Gm Service Control

The call flow in figure 6.3.3.2-1 presents a scenario where UE-1 adds PS media component(s) (e.g. video) and Gm Service Control Signalling to an existing multimedia session that only contains CS media. Following this scenario the session is controlled using ICS capability.

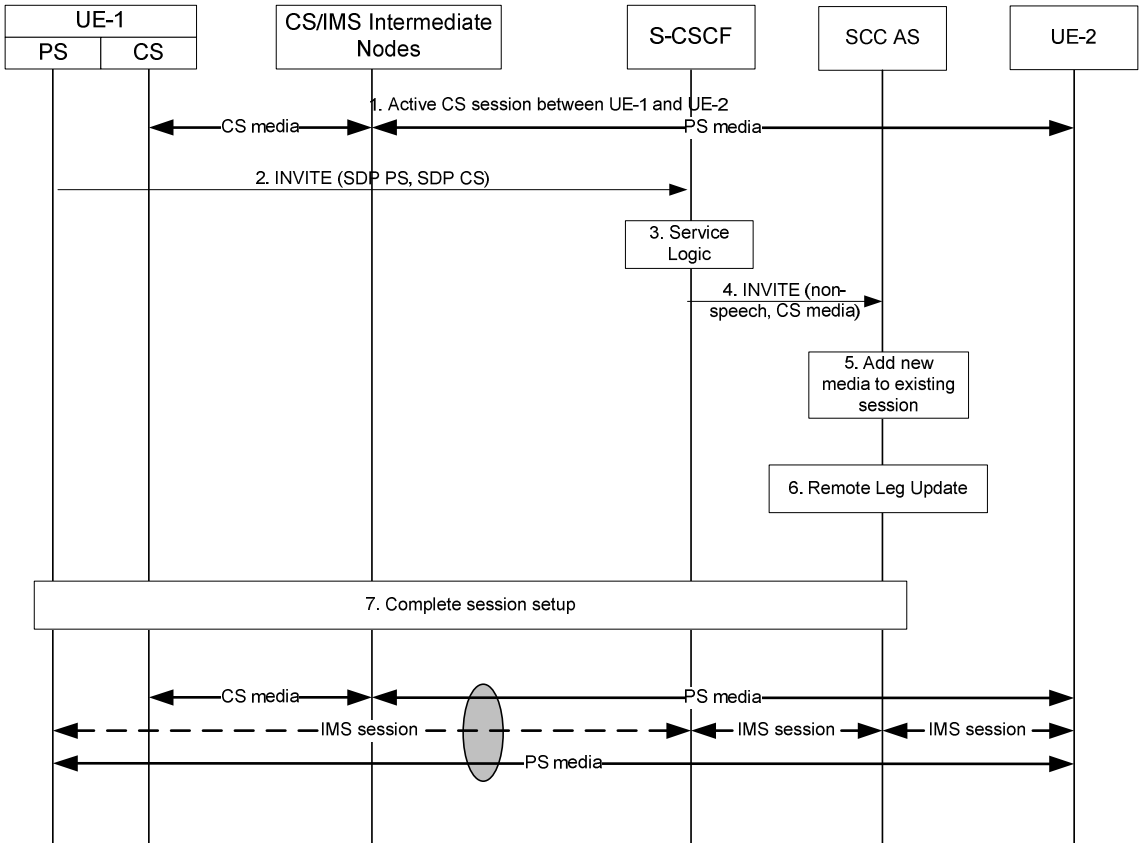

Figure 6.3.3.2-1: Local End Initiation case: Incorporating existing CS media in new IMS Session and Gm Service Control

1. A multimedia session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] clauses 7.3.2.1 and 7.4.2.1, respectively i.e. UE-1 is not using the ICS capability and therefore not using the Gm reference point during the session establishment.

2. UE-1 requests to add one or more PS media component(s) and to control the CS media using ICS capabilities by an INVITE towards SCC AS to establish a new session. The request contains the description of the new PS media and indicates that control of the existing CS media is transferred to the new session. UE-1 provides information necessary for the SCC AS to identify the existing session and to request addition of the media flow to the existing session.

3. The S-CSCF executes any service logic as appropriate.

4. The S-CSCF sends the INVITE to the SCC AS.

5. The SCC AS determines that the INVITE is related to an existing session using the information provided by UE-1 and adds the new media flow to the session.

6. The SCC AS performs the Remote Leg update using procedures defined in clause 6.3.1.5.

7. The SCC AS completes the session setup towards UE-1 according to procedures defined in TS 23.228 [4].

6.3.3.3 Local End Initiation case: Adding PS media to IMS session with CS media

The call flow in figure 6.3.3.3-1 presents a scenario where UE-1 adds PS media component(s) (e.g. video) to an existing multimedia session that contains CS media and is controlled using ICS capability.

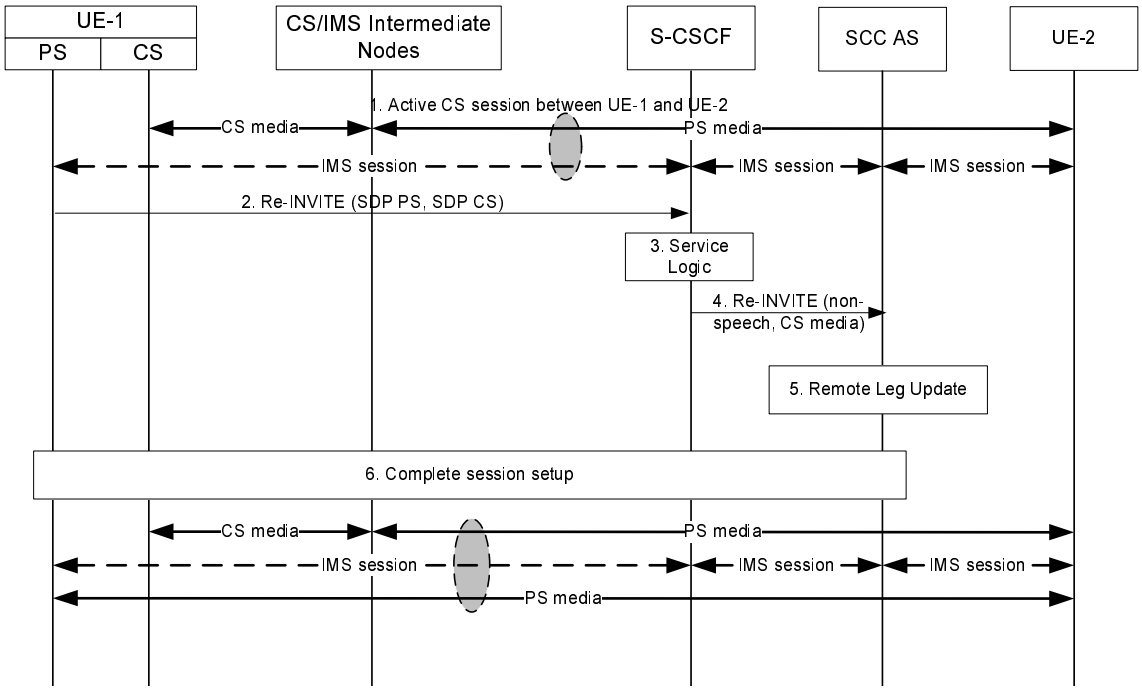

Figure 6.3.3.3-1: Local End Initiation case: Adding PS media to IMS session with CS media

1. An IMS session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] clauses 7.3.2.2.4 and 7.4.2.2.2.2, respectively i.e. UE-1 is using the ICS capability and therefore the Gm reference point during the session establishment.

2. UE-1 initiates a request to add the PS media flow(s) to the existing IMS session.

3. The S-CSCF executes any service logic as appropriate.

4. The S-CSCF sends the INVITE to the SCC AS.

5. The SCC AS performs the Remote Leg Update using procedures defined in clause 6.3.1.5.

6. The SCC AS completes the session setup towards UE-1 according to procedures defined in TS 23.228 [4].

6.3.3.4 Remote End Initiation case: Adding new PS media to existing CS session

The call flow in figure 6.3.3.4-1 presents a scenario where UE-1 has an existing CS session with UE-2 and UE-2 adds new media flow(s) to the session and the new media flow is delivered via PS access towards UE-1.

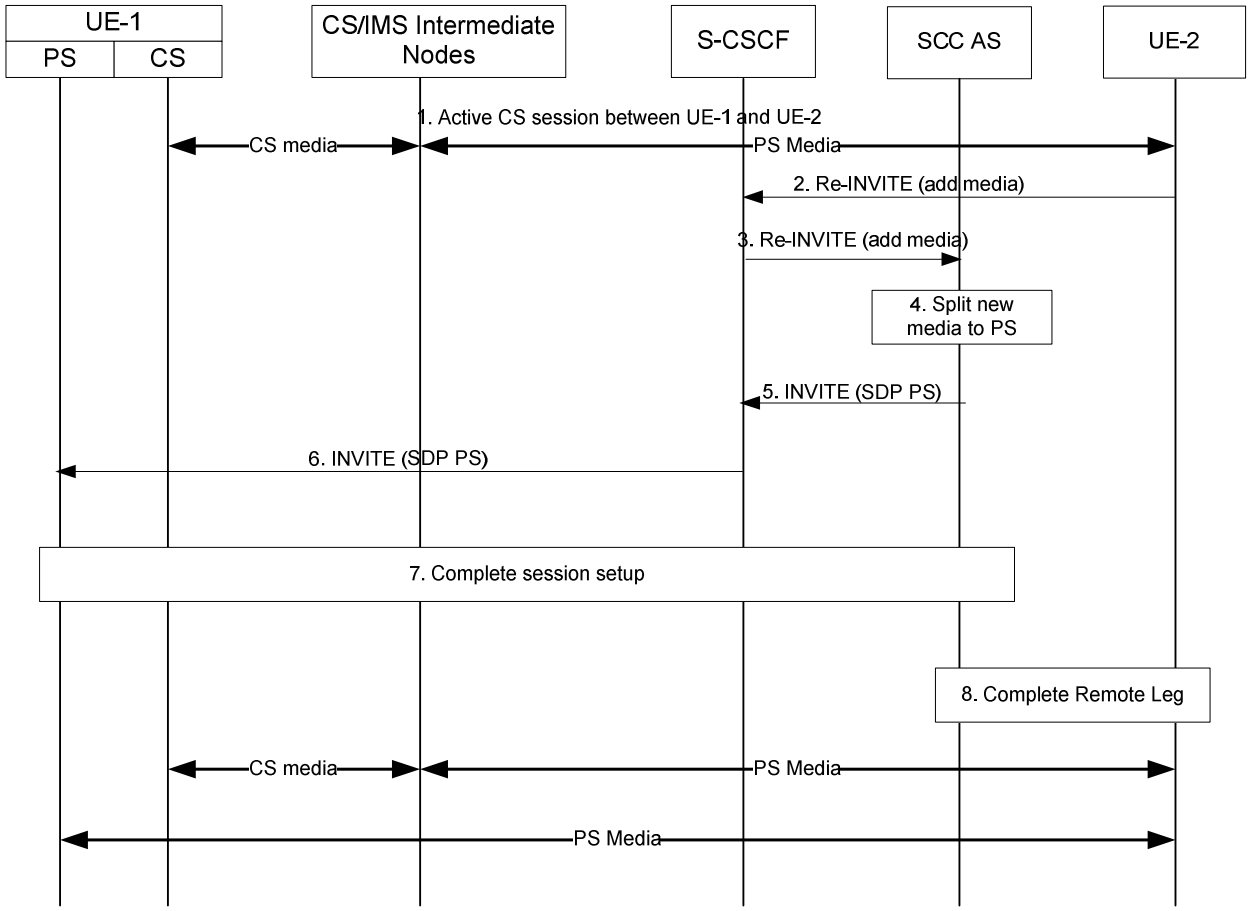

Figure 6.3.3.4-1: Remote End Initiation case: Adding new PS media to existing CS session

1. A CS session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] clauses 7.3.2.1 and 7.4.2.1, respectively, i.e. UE-1 is not using the ICS capability and therefore not using the Gm reference point during the session establishment.

2. S-CSCF receives a request from UE-2 to add new PS media flow(s) (e.g. video) to the existing session.

3. S-CSCF forwards the request to SCC AS, which is anchored on the session path.

4. The T-ADS function in the SCC AS decides that the new media flow is delivered to UE-1 via PS access and therefore splits the session. T-ADS in the SCC AS uses the C-MSISDN for correlation, and then ensures the split session is delivered only to UE-1, and not delivered to other UEs of the user.

5-6. SCC AS initiates a new session towards UE-1. The request includes the new PS media flow. The SCC AS includes enough information within the session request to allow UE-1 to correlate this new session with the existing CS session.

7. UE-1 accepts the new session and completes the session setup via PS access.

8. The SCC AS completes the Remote Leg towards UE-2 according to procedures defined in TS 23.228 [4].

6.3.3.5 Remote End Initiation case: Incorporating existing CS media in new IMS Session and Gm Service Control

The call flow in figure 6.3.3.5-1 presents a scenario where UE-1 has an existing CS session with UE-2 and UE-2 adds new media flow(s) to the session. The new media flow(s) is delivered via PS access towards UE-1 and Gm Service Control Signalling is added. Following this scenario the session is controlled using ICS capability.

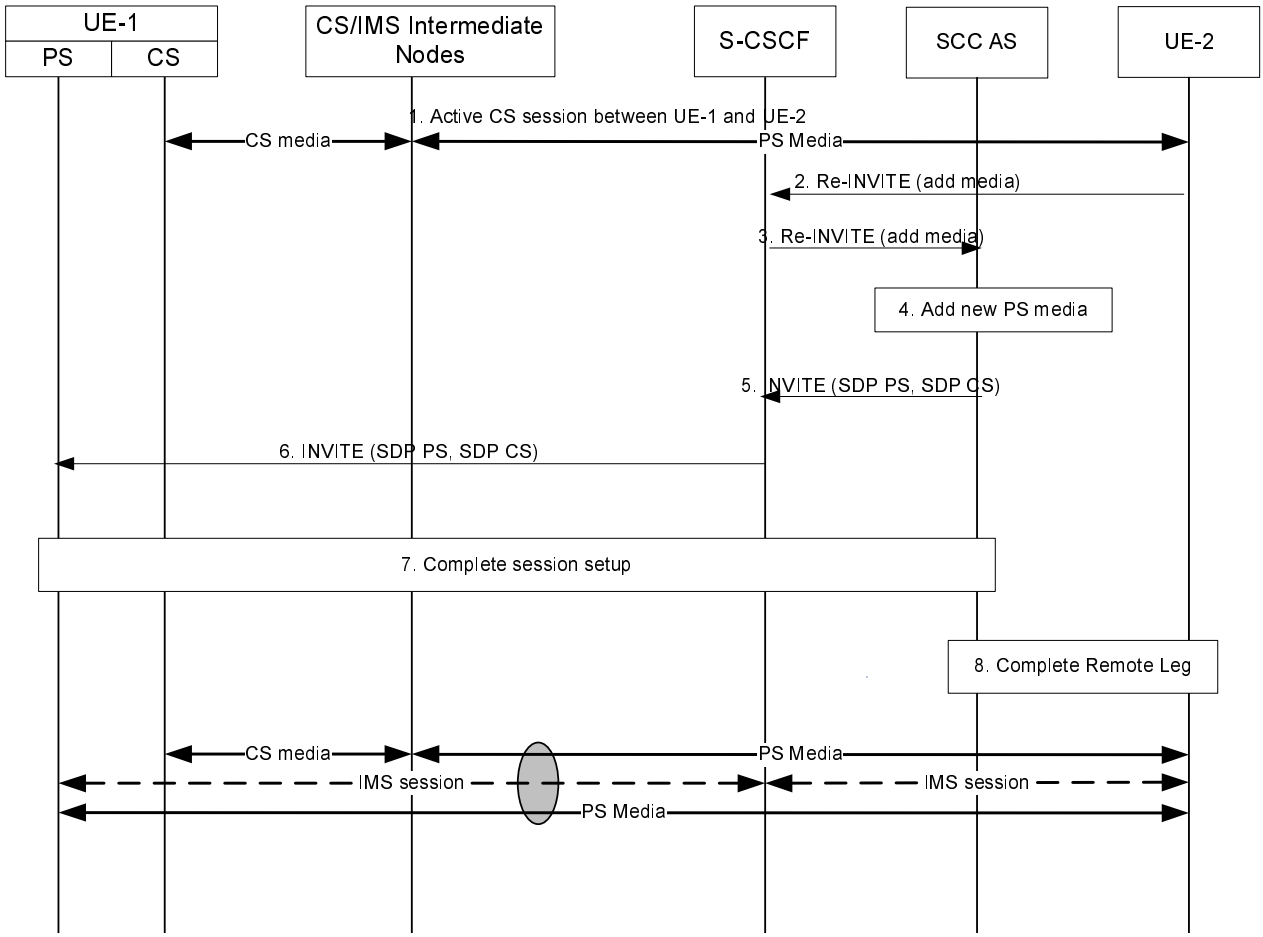

Figure 6.3.3.5-1: Remote End Initiation case: Incorporating existing CS media in new IMS Session and Gm Service Control

1. A CS session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] sections 7.3.2.1 and 7.4.2.1, respectively i.e. UE-1 is not using the ICS capability and therefore not using the Gm reference point during the session establishment.

2. S-CSCF receives a request from UE-2 to add new PS media flow (e.g. video) to the existing session.

3. S-CSCF forwards the request to SCC AS, which is anchored on the session path.

4. The T-ADS function in the SCC AS decides that the new media flow is delivered to UE-1 via PS access and therefore initiates a new session using the Gm reference point using ICS capabilities as specified in TS 23.292 [5]. SCC AS decides to establish the Gm Service Control Signalling together with the media addition using the ICS capability. T-ADS in the SCC AS uses the C-MSISDN for correlation, and then ensures the new session is delivered only to UE-1, and not delivered to other UEs of the user.

5-6. SCC AS initiates a new session towards UE-1. The request includes the new PS media and indicates that the existing CS media is moved to and controlled over this session.

7. UE-1 accepts the new session and completes the session setup via PS access.

8. The SCC AS completes the Remote Leg towards UE-2 according to procedures defined in TS 23.228 [4].

6.3.3.6 Remote End Initiation case: Adding PS media to IMS session with CS media

The call flow in figure 6.3.3.6-1 presents a scenario where UE-1 has an existing session that contains CS media and Gm Service Control Signalling with UE-2 and UE-2 adds new media to the session. The new media is delivered together with the Gm Service Control Signalling towards UE-1.

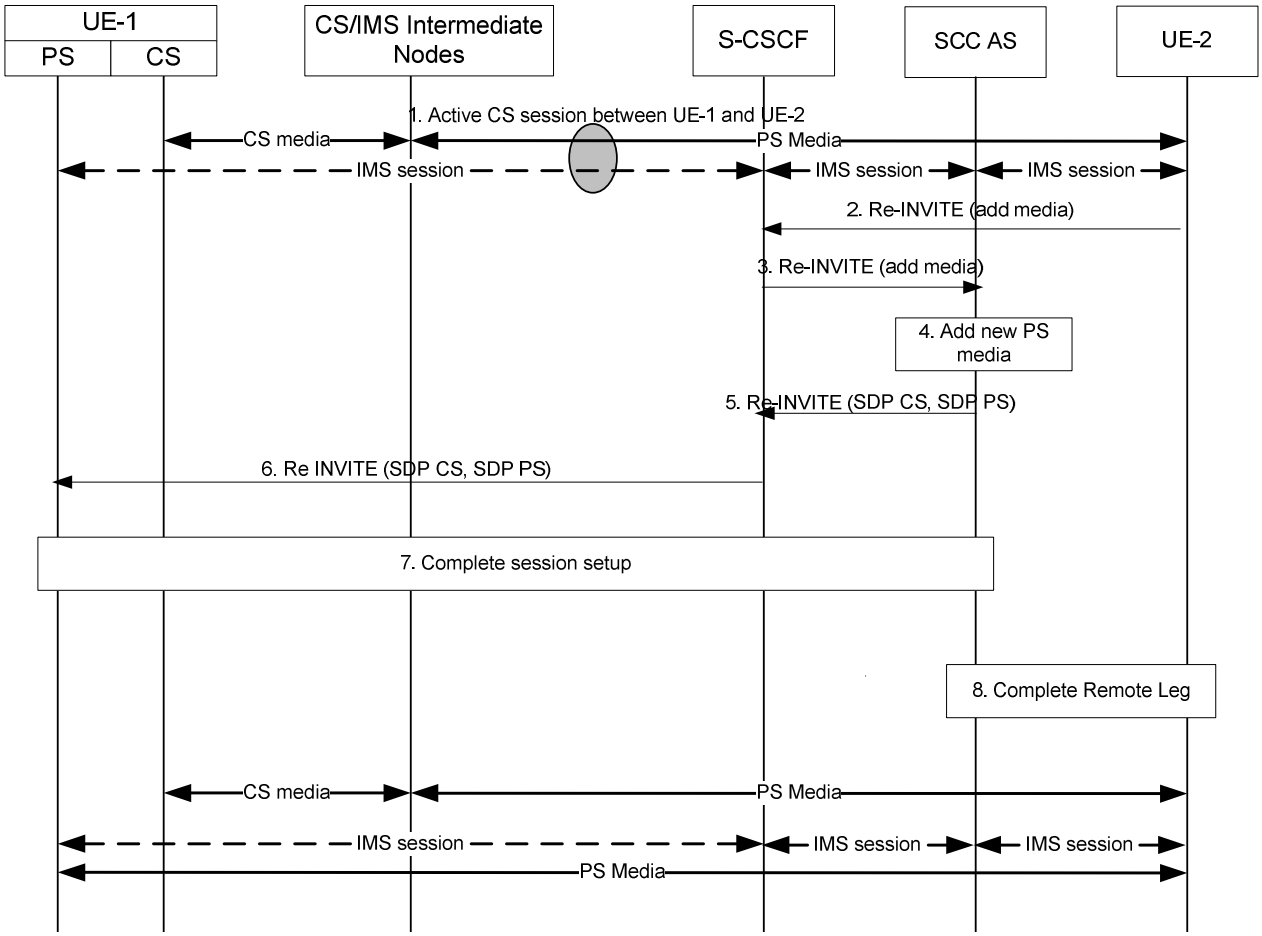

Figure 6.3.3.6-1: Remote End Initiation case: adding PS media to IMS session with CS media

1. A CS session between UE-1 and UE-2 is established as either originated or terminated session with CS media as described in TS 23.292 [5] clauses 7.3.2.2.4 and 7.4.2.2.2.2, respectively i.e. UE-1 is using the ICS capability and therefore the Gm reference point during the session establishment.

2. S-CSCF receives a request from UE-2 to add new PS media flow(s) (e.g. video) to the existing session.

3. S-CSCF forwards the request to SCC AS, which is anchored on the session path.

4. The T-ADS function in the SCC AS decides that the new media flow is delivered to UE-1 via PS access. The SCC decides to add the PS media to the existing Service Control Signalling that is established via Gm.

5-6. SCC AS initiates a request to add the PS media to the existing Service Control Signalling Path towards UE-2.

7. UE-1 accepts the new session and completes the session setup via PS access.

8. The SCC AS completes the Remote Leg towards UE-2 according to procedures defined in TS 23.228 [4].

6.3.3.7 Local End Initiation case – Removing media from split CS and PS sessions

The call flow in figure 6.3.3.7-1 presents a scenario where UE-1 has a CS call and an IMS multimedia session with the remote end in a manner that they are presented to UE-2 as one IMS session by the SCC AS and then removes PS media flow(s) by releasing the PS Access Leg.

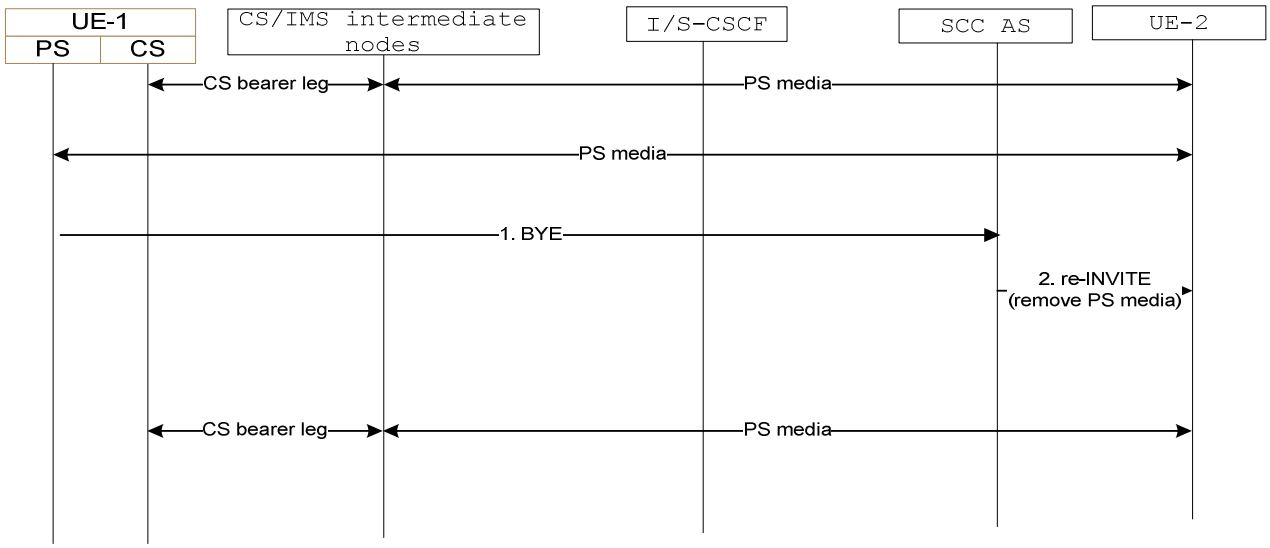

Figure 6.3.3.7-1: Local End Initiation case – Removing media from split CS and PS sessions

1. UE-1 uses standard IMS procedures defined in TS 23.228 [4] to remove one or more PS media flows from the session.

2. SCC AS sends a re-INVITE to UE-2 to remove the associated PS media flow(s) from the session. The SCC AS terminates the Source Access Leg as defined in 6.3.1.6.

6.3.3.8 Remote End Initiation case – Removing media from split CS and PS sessions

The call flow in figure 6.3.3.8-1 presents a scenario where UE-1 has a CS call and an IMS multimedia session with the remote end in a manner that they are presented to UE-2 as one IMS session by the SCC AS and where as a result of UE-2 requesting to remove PS media flow(s), the SCC AS terminates the Access Leg associated with the PS media flow(s).

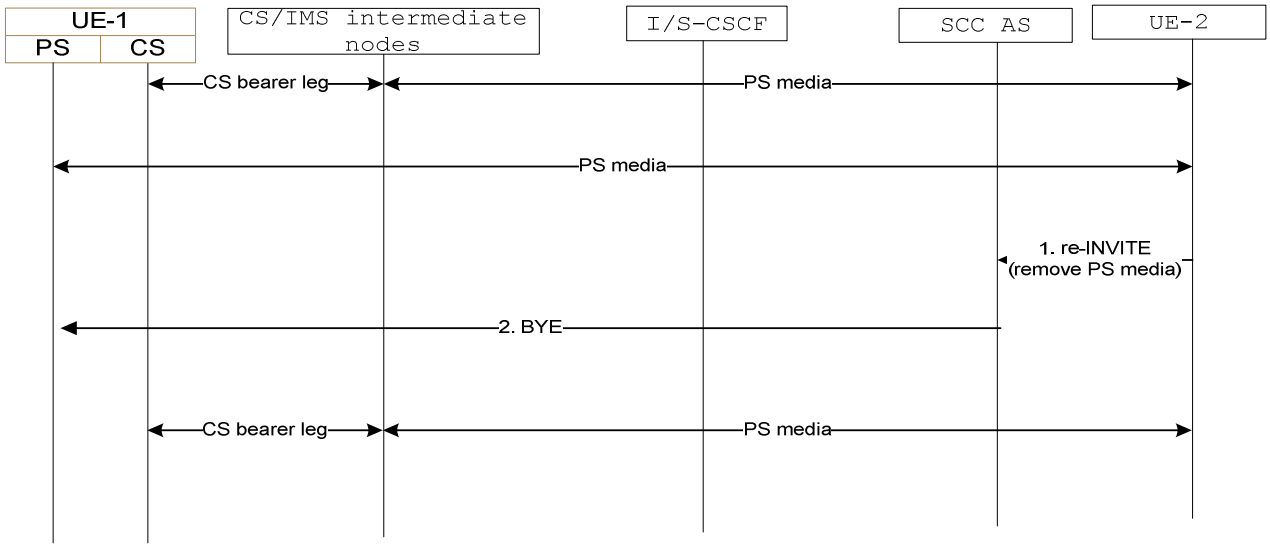

Figure 6.3.3.8-1: Remote End Initiation case – Removing media from split CS and PS sessions

1. UE-2 uses standard IMS procedures defined in TS 23.228 [4] to remove one or more PS media flow(s) from the session.

2. SCC AS identifies the session from UE-2 as being split into two legs to UE-1. It determines the appropriate Access Leg over which to send the updated session information from UE-2. Since there is only a single PS media flow associated with the session, the SCC AS terminates the Access Leg associated with the PS media flow.

6.3.3.9 Local End Initiation case: Adding new PS media to existing PS session

This clause covers the scenario where UE 1 adds PS media flow(s) (e.g. video) over a new IP-CAN, IP-CAN2, to an existing multimedia session that uses PS media over IP-CAN1. As a post condition the UE 1 has an ongoing multimedia session with the remote end.

The call flow is the same as in figure 6.3.3.3-1 except that both the original media and the added media are on PS accesses and no CS intermediate nodes are involved.

6.3.3.10 Remote End Initiation case: Adding new PS media to existing PS session

This clause covers the scenario where UE 1 has an existing PS session with UE 2 using PS media over IP-CAN1 and UE 2 adds new media to the session and the new media flow is delivered using PS media over IP-CAN2 towards UE-1.

The call flow is the same as in clause 6.3.3.4 *Remote End Initiation case: Adding new PS media to existing CS session*, except that both the original media flow and the added media flows are on PS accesses and no CS intermediate nodes are involved. Consequently:

- in step 4. of the call flow, the T-ADS function in the SCC AS decides that the new media is delivered to UE 1 via PS through the access networks type corresponding to IP-CAN2;

- in step 5. of the call flow, the SCC AS includes enough information within the session request to ensure that the S-CSCF establishes the new session via the selected access networks type.

6.3.3.11 Local End Initiation case: Removing media from split PS sessions

This clause covers the scenario where local end UE-1 removes media flows from split PS sessions. As a precondition, UE-1 has an IMS multimedia session with the remote end. As a post-condition, UE-1 removes the PS session over one IP-CAN and continues IMS multimedia session with the remote end over the other IP-CAN.

The call flow is the same as in figure 6.3.3.7-1 except that all the media components are on PS accesses and no CS intermediate nodes are involved.

6.3.3.12 Remote End Initiation case: Removing media from split PS sessions

This clause covers the scenario where remote end UE-2 removes media flow(s) from split PS sessions. As a precondition, UE-1 has an IMS multimedia session with the remote end. As a post-condition, the PS session over one IP-CAN is removed and UE-1 continues IMS multimedia session with the remote end over the other IP-CAN.

The call flow is the same as in figure 6.3.3.8-1 except that all the media components are on PS accesses and no CS intermediate nodes are involved.

6.3.4 Void

6.4 Operator Policy and User Preferences

Operator Policy is provisioned in the network by the operator, and should be communicated to the UE during initial provisioning or via OMA Device Management [7]. Operator policy should be communicated to the UE, via OMA Device Management, whenever the policy is updated by the operator.

Operator policy shall indicate, for each supported type of media or group of media:

- a list of access networks that are restricted for originating sessions and Access Transfer;

- a list of preferred access networks (in order of priority) to be used by the UE with SC capabilities for originating sessions and Access Transfer, when those access networks become available and Access Transfer is possible;

- whether the UE with SC capabilities "shall"/"should"/"may" start transferring media flow(s) to target access networks with higher priorities than the current access network, when the target access networks become available and Access Transfer is possible;

- by indicating "shall" the operator mandates the UE to start Access Transfer according to the home operator's list of preferred access networks as soon as possible;
- by indicating "should" the operator recommends the UE to start Access Transfer according to the home operator's list of preferred access networks, if Access Transfer is possible and desirable after having taken into account the Local Operating Environment Information;
- by indicating "may" the operator leaves the UE free to decide whether or not to start Access Transfer in accordance with user preferences (when configured), if Access Transfer is possible and desirable after having taken into account the Local Operating Environment Information. Whenever user preferences are not configured, the UE shall to take into account the home operator's list of preferred access networks;

- whether to keep or drop non transferable media flow(s) in the case of partial Access Transfer.

NOTE 1: Operator policy for Access Transfer needs to be consistent with operator policy for T-ADS.

User preferences may indicate for example:

- preferred access.

The Local Operating Environment Information is implementation specific and may comprise of such items as, radio environment information, quality of IP connection (jitter, delay and packet loss), application specific requirements, memory considerations, power considerations, etc.

The UE shall take in account operator policy, user preferences and the Local Operating Environment Information when deciding which access to use for outgoing sessions or before considering initiating Access Transfer.

NOTE 2: User preferences are not transferred to the network.

6.5 Execution of Supplementary Services

The execution of supplementary services, as defined in TS 22.173 [15], for a session split into multiple Access Legs due to IMS Service Continuity procedures, is not specified in this Release.

7 Security

7.1 General

There are no impacts on existing security mechanisms for the CS Domain or for IMS as a result of Session Transfers.

7.2 Access security for CS Domain

TS 33.102 [11] describes the Security Architecture for GSM and UMTS subscribers, SC places no additional requirements upon the CS domain security than those already in the detailed access specific specification e.g., above those described in TS 33.102 [11].

7.3 Access security for IMS

TS 33.203 [12] specifies the security features and mechanisms for secure access to the IM subsystem (IMS). SC places no additional requirements upon the IMS above those described in TS 33.203 [12].

8 Charging

8.1 Charging strategy

To ensure the completeness and correctness of charging during Session Transfer procedure, and to avoid possible double billing in IMS and CS, the following strategy should be applied:

- Provide cohesive charging records with a complete service continuity history for the whole duration of a SC subscriber multimedia session by the SCC AS.
- For cases of CS origination and CS termination, correlate the charging records generated in CS and IMS for the subscriber multimedia session, to avoid double billing to the subscriber.
- Treat the charging records generated in the transferring-in access network for the call(s)/session(s) established during the Session Transfer as subsequent Access Legs, and therefore do not impact the direction of the initial call(s)/session(s) for the purpose of charging.
- Keep the start of charging in the transferring-in access network align with the stop of charging in the transferring-out access network, to avoid double billing to the subscriber during the Session Transfer.

For SC online charging, the following strategies shall be ensured:

- Completeness and correctness of charging;
- Avoid possible double billing in IMS and CS domains.

To avoid online charging correlation in IMS and CS domain, the SC online charging should be performed only in IMS, i.e. prepaid service logic in CS domain should not be invoked for anchored CS origination/termination call and subsequent CS origination call established for performing Session Transfer. In addition, the SCC AS should report information related to the initial multimedia session establishment as well as the information related to the Session Transfer procedure to OCS for correct credit control purpose.

8.2 Accounting strategy

To assist in performing the settlement between operators, the following strategy shall be applied:

- Provide cohesive charging records with a complete service continuity history for the whole duration of a SC subscriber multimedia session by the SCC AS.
- Use the charging records for subsequent Access Legs generated in CS/IMS domain and the charging records generated in MGCF performing CS-IMS interworking, taking the complete service continuity history described above as reference, to perform the settlement between the providers of CS domain and IMS.
- Use the access network information in IMS charging records, taking the complete service continuity history described above as reference, to perform the settlement between the providers of IP-CAN and IMS Core.

Annex A:
Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**Old**	**New**
2008-06	-	-	-	-	-	MCC Editorial update after TSG Approval to version 8.0.0 (Rel-8)	1.0.0	8.0.0
2008-09	SP-41	SP-080575	0001	2	F	Third party registration at SCC AS	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0002	1	F	Clarifications when remote end adds new PS media to CS session	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0003	2	F	Add or remove PS media in PS session	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0004	4	F	Corrections on STI assignment conditions	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0005	2	F	Overall corrections for TS 23.237 v8.0.0	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0006	3	F	Overall corrections related to operator policy and user preferences descriptions consistency for TS 23.237 v8.0.0	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0008	1	F	Clarifications to clauses describing establishment of session that use CS media.	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0009	1	F	Add definitions for Source Access Leg and Target Access Leg	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0010	2	F	Align the terminology regarding Remote Leg	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0013	4	F	Correct STN in the information flow in clause 6.3.2.3.1	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0014	3	F	Correction of SRVCC in 23.237	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0015	1	F	Removal of UE-UE transfer text	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0016	-	F	Correction of requirement on session transfer	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0017	1	F	General corrections of 23.237	8.0.0	8.1.0
2008-09	SP-41	SP-080570	0019	-	F	STI and STN definition correction	8.0.0	8.1.0
2008-09	SP-41	SP-080575	0020	-	F	Remove text related to CS-video from 3GPP TS 23.237	8.0.0	8.1.0
2008-09	SP-41	SP-080570	0027	-	F	Clarification of 23.237 - replacement of the terms "precondition" and "preconditions"	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0029	2	F	UE and SCC AS handling of remaining media	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0030	-	F	Remove UE awareness of merge	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0033	2	F	Operator policy	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0035	1	F	General cleanups to 23.237	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0036	1	F	Minor clarification to scenarios within information flows	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0037	2	F	Minor STI usage clarification	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0038	1	F	Fixed the scope clause to include addition/deletion of media flows	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0040	1	F	Remove unused abbreviations	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0042	2	F	Clean up of incorrect terms used in the specification	8.0.0	8.1.0
2008-09	SP-41	SP-080576	0045	1	F	Clarification of the session that is transferred for SR-VCC	8.0.0	8.1.0
2008-12	SP-42	SP-080806	0051	-	D	Removing misalignment and other editorial errors	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0054	2	F	Clarify requirements regarding usage of ICS UE capabilities	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0056	2	F	Clarification on basic assumptions pertaining to PS-PS continuity	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0057	3	F	Clarification to operator policy	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0058	1	F	Clarifications to ECT flow	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0059	1	F	Static and dynamic use of STN and STI	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0061	2	F	Support for multiple registrations for access transfers	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0062	2	F	Minor clarification of active session transfer for SR-VCC	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0064	1	F	PS-CS handover clarification	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0065	1	F	Adding STN-SR statement	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0066	2	F	Corrections on PS - CS Access Transfer: PS to CS - Single Radio	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0067	1	F	Corrections to clause 6	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0068	5	F	Solution for correlation requirement in the T-ADS in case the user is registered using multiple devices	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0069	2	F	Clarify flow for originating sessions using CS media	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0070	1	F	Clarify flow for terminating sessions using CS media	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0071	2	F	Correlation of session transfer requests	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0072	1	F	Clarifications and corrections for step numbering for service continuity	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0081	-	D	Correction for the usage of "SC UE"	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0083	2	F	Clarification on Access Transfer Procedures.	8.1.0	8.2.0
2008-12	SP-42	SP-080806	0085	1	F	Correction to the specification with correct definition of media flow	8.1.0	8.2.0
2008-12	SP-42	SP-080805	0087	2	F	Clarification of T-ADS functionalities and related procedures, for the support of multiple IP-CANs	8.1.0	8.2.0
2009-03	SP-43	SP-090120	0089	1	F	Clarification on the use of IMS SC with EPS	8.2.0	8.3.0

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**Old**	**New**
2009-03	SP-43	SP-090120	0090	1	F	Using EPC mobility and IMS PS-PS Service continuity	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0096	1	F	Source Access Leg release for PS-CS Access Transfer	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0098	-	F	Error in text for procedure "PS - PS in conjunction with PS - CS Access Transfer: Active/Held sessions - Using Gm reference point".	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0099	1	F	Clarification on procedure for PS-PS transfer in conjunction with PS-CS transfer for UEs with ICS Capabilities.	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0100	3	F	PS-PS in conjunction with PS-CS real-time media transfer with service control retained on original source access.	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0101	1	F	Terminology alignment with TS 23.003	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0103	2	C	Remove I1 interface from 23.237 to form Rel-8 specification	8.2.0	8.3.0
2009-03	SP-43	SP-090120	0104	1	F	Clarification on Service Control Signalling Path transfer for ICS session continuity during PS-PS transfer	8.2.0	8.3.0
2009-06	SP-44	SP-090323	0118	2	F	Interaction of session transfer and supplementary services	8.3.0	8.4.0
2009-06	SP-44	SP-090323	0120	2	F	Correlation CS anchored call with IMS Registration	8.3.0	8.4.0
2009-06	SP-44	SP-090323	0141	1	F	Mid-call service support for Single Radio VCC where the Gm reference point is retained upon PS-level handover.	8.3.0	8.4.0
2009-06	SP-44	SP-090323	0144	-	F	Clarify terminology regarding Access Transfer and Session Transfer	8.3.0	8.4.0
2009-09	SP-45	SP-090604	0214	1	F	Clarifications on UE release of sessions prior to session transfer for non ICS UE	8.4.0	8.5.0
2009-12	SP-46	SP-090768	0234	2	F	Correcting terminations section inline with TS 23.292	8.5.0	8.6.0
2010-03	SP-47	SP-100124	0254	1	F	Correction on media splitting case	8.6.0	8.7.0

History

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