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IP Multimedia (IM) Session Handling;
IP Multimedia (IM) call model
(Release 5)

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Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

This 3GPP Technical Specification (TS) specifies the IP Multimedia (IM) Call Model for handling of an IP multimedia session origination and termination for an IP Multimedia subscriber.

This specification includes interactions between the Service Platform and IP multimedia sessions.

The IP Multimedia (IM) Subsystem stage 2 is specified in 3GPP TS 23.228 [8] and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3GPP TS 24.228 [9].

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.

This specification may contain references to pre-Release-4 GSM specifications. These references shall be taken to refer to the Release 5 version where that version exists. Conversion from the pre-Release-4 number to the Release 4 (onwards) number is given in subclause 6.1 of 3GPP TR 41.001.

[<seq>] <doctype> <#>[([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

[1] 3GPP TR 41.001: "GSM Release specifications".

[2] 3GPP TR 21.905: " Vocabulary for 3GPP Specifications ".

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

[4] 3GPP TS 23.060: "General Packet Radio Service; Service description; Stage 2".

[5] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3; Stage 2".

[6] 3GPP TR 21.978: "Feasibility Technical Report – CAMEL Control of VoIP Services".

[7] 3GPP TS 23.097: "Multiple Subscriber Profile (MSP) - Stage 2 ".

[8] 3GPP TS 23.228: "IP Multimedia (IM) Subsystem –Stage 2".

[9] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP".

[10] 3GPP TS 24.229: "IP multimedia call control protocol based on SIP and SDP ".

[11] 3GPP TS 29.078: "CAMEL Application Part (CAP) specification - Phase 3".

[12] IETF RFC 2543bis "SIP: Session Initiation Protocol".

3 Definitions, symbols and abbreviations

Delete from the above heading those words which are not applicable.

Subclause numbering depends on applicability and should be renumbered accordingly.

3.1 Definitions

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

IP Service Switching Function (ipSSF): functional entity that interfaces the CSCF to the gsmSCF. The concept of ipSSF is derived from the IN SSF, but uses different triggering mechanisms because of the nature of the mobile network. The ipSSF is similar to the gsmSSF and gprsSSF concepts defined for CAMEL (3GPP TS 23.078[5])

IP Multimedia Basic Call State Model (IM-BCSM): IM-BCSM provides a high-level model of CSCF activities required to establish and maintain communication paths for users. As such, it identifies a set of basic call activities in a CSCF and shows how these activities are joined together to process a basic call.

IP Multimedia CAMEL Subscription Information (IM-CSI): IM-CSI identifies the subscriber as having IP Multimedia CAMEL services.

IP Multimedia session: IP Multimedia session and IP Multimedia call are treated as equivalent in this specification.

Originating IP Multimedia Basic Call State Model (O-IM-BCSM): originating half of the IM-BCSM. The O-IM-BCSM corresponds to that portion of the IM-BCSM associated with the originating party.

Originating IP Multimedia CAMEL Subscription Information (O-IM-CSI): O-IM-CSI identifies the subscriber as having originating IP Multimedia CAMEL services.

Point In Association (PIA): PIAs identify CSCF activities associated with one or more basic association/connection states of interest to OSS service logic instances.

Service Key: Service Key identifies to the gsmSCF the service logic. The Service Key is administered by the HPLMN, and is passed transparently by the CSCF to the gsmSCF. The Service Key is a part of the T/O-IM-CSI.

Service Platform Gateway (SP GW): functional entity that interfaces the CSCF to an external Service Platform.

Terminating IP Multimedia Basic Call State Model (T-IM-BCSM): terminating half of the IM-BCSM. The T-IM-BCSM corresponds to that portion of the IM-BCSM associated with the terminating party.

Terminating IP Multimedia CAMEL Subscription Information (T-IM-CSI): T-IM-CSI identifies the subscriber as having terminating IP Multimedia CAMEL services.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

Symbol format

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BCSM	Basic Call State Model
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CSCF	Call State Control Function
DP	Detection Point
EDP	Event Detection Point
FTN	Forwarded To Number
GPRS	General Packet Radio Service
gprsSSF	GPRS Service Switching Function
gsmSCF	GSM Service Control Function
gsmSRF	GSM Specialised Resource Function

gsmSSF	GSM Service Switching Function
HPLMN	Home PLMN
HSS	Home Subscriber Server
IE	Information Element
IF	Information Flow
IP	Internet Protocol
I-CSCF	Interrogating CSCF
ipSSF	Internet Protocol Service Switching Function
IM	IP Multimedia
IM-BCSM	IP Multimedia Basic Call State Model
IM-CSI	IP Multimedia CAMEL Subscription Information
IPLMN	Interrogating PLMN
MGCF	Media Gateway Control Function
MO	Mobile Originating
MT	Mobile Terminating
NNI	Network Node Interface
O-IM-BCSM	Originating IP Multimedia Basic Call State Model
O-IM-CSI	Originating IP Multimedia CAMEL Subscription Information
OSA	Open Service Architecture
PIC	Point In Call
PLMN	Public Land Mobile Network
P-CSCF	Proxy CSCF
SIP	Session Initiation Protocol
S-CSCF	Serving CSCF
T-IM-BCSM	Terminating IP Multimedia Basic Call State Model
T-IM-CSI	Terminating IP Multimedia CAMEL Subscription Information
TDP	Trigger Detection Point
UNI	User Network Interface
VPLMN	Visited PLMN

4 Architecture and information flows for IM Multimedia session

Subclauses 4.1 and 4.2 show the architecture for handling a basic MO multimedia session and a basic MT multimedia session. A basic mobile-to-mobile multimedia session is treated as the concatenation of a MO multimedia session and a MT multimedia session.

Subclauses 4.3, 4.4 and 4.5 show the information flows for handling a basic MO multimedia session and a basic MT multimedia session.

4.1 Architecture for a Mobile Originated IP Multimedia session

This is specified in 3GPP TS 23.228 [8].

4.2 Architecture for a Mobile Terminated IP Multimedia session

This is specified in 3GPP TS 23.228 [8].

4.3 Information flow for a Mobile Originated IP Multimedia session

The information flow for a MO multimedia session is specified in 3GPP TS 24.228 [9].

4.4 Information flow for retrieval of routeing information for MobileTerminated IP Multimedia session

The information flow for retrieval of routeing information for a MT multimedia session is specified in 3GPP TS 24.228 [9]

4.5 Information flow for an Mobile Terminated IP Multimedia session

The information flow for a MT multimedia session is specified in 3GPP TS 24.228 [9].

5 Functional requirements of network entities

Editor's Note : The entities involved and the interfaces between them will be described in this clause.

The protocol used between the MS and CSCF is based on Session Initiation Protocol, which is specified in 3GPP TS 24.229[10].

The protocol used between two CSCF is also based on Session Initiation Protocol, which is specified in 3GPP TS 24.229[10].

Editor's Note: The protocol used between the CSCF and HSS is for further study.

Editor's Note: The protocol used between the CSCF and Service platform (e.g. CAMEL gsmSCF) is for further study.

Editor's Note: clause 6 of this document assumes a CAP interface between the CSCF and the Service Platform:

Editor's Note: clause 7 of this document assumes a SIP interface between the CSCF and the Service Platform:

Editor's Note: clause 8 of this document assumes a OSA API interface between the CSCF and the Service Platform:

5.1 Mobile Originated IP Multimedia session

5.1.1 Functional requirements of serving CSCF

Editor's Note : The functional behaviour of the CSCF will be specified here.

5.1.2 Functional requirements of proxy CSCF

Editor's Note : The functional behaviour of the CSCF will be specified here.

5.2 Retrieval of routeing information for Mobile Terminated IP Multimedia session

5.2.1 Functional requirements of Interrogating CSCF

5.2.2 Functional requirements of HSS

5.3 Mobile Terminated IP Multimedia session

5.2.1 Functional requirements of serving CSCF

5.2.2 Functional requirements of proxy CSCF

6 IP Multimedia session handling with a CAP based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a CAP interface as a potential candidate for the CSCF to service platform interface. This assumes that the service platform is CAMEL gsmSCF .

Editor's Note : This clause applies when the Service Platform is based on CAMEL gsmSCF and supports the CAP interface

6.1 Architecture

This subclause describes the functional architecture needed to support CAMEL interactions with the CSCF in the IP Multimedia Subsystem

6.1.1 Functional Entities used for CAMEL at IP Multimedia Registration

Figure 6.1 shows the functional entities involved when an MS registers for IP Multimedia session requiring CAMEL support.

Subscriber data is transferred from the HSS to the CSCF during the SIP Registration. The subscriber data includes CAMEL related information.

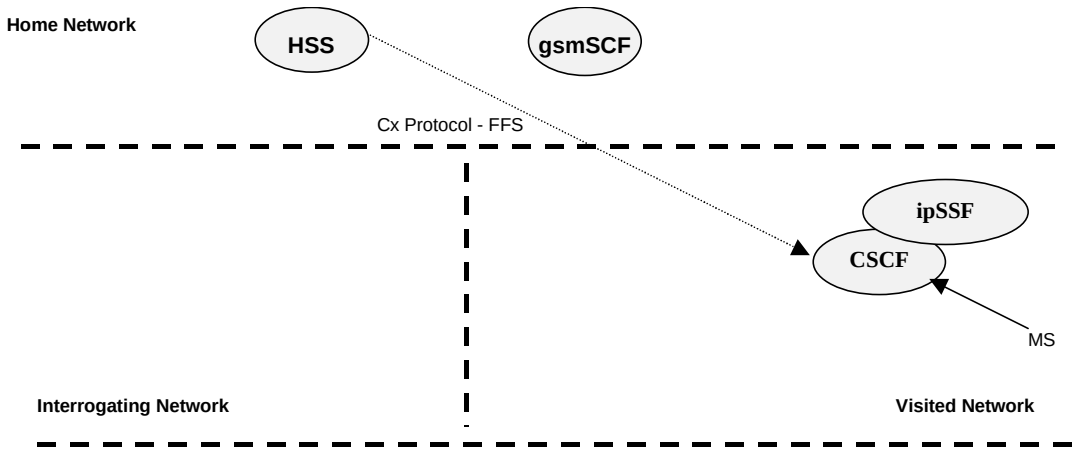

Figure 6.1: Functional architecture for support of CAMEL when mobile registers for IP Multimedia session

6.1.2 Functional Entities used for CAMEL for MO IP Multimedia session

Figure 6.2 shows the functional entities involved in a Mobile Originated IP Multimedia session requiring CAMEL support.

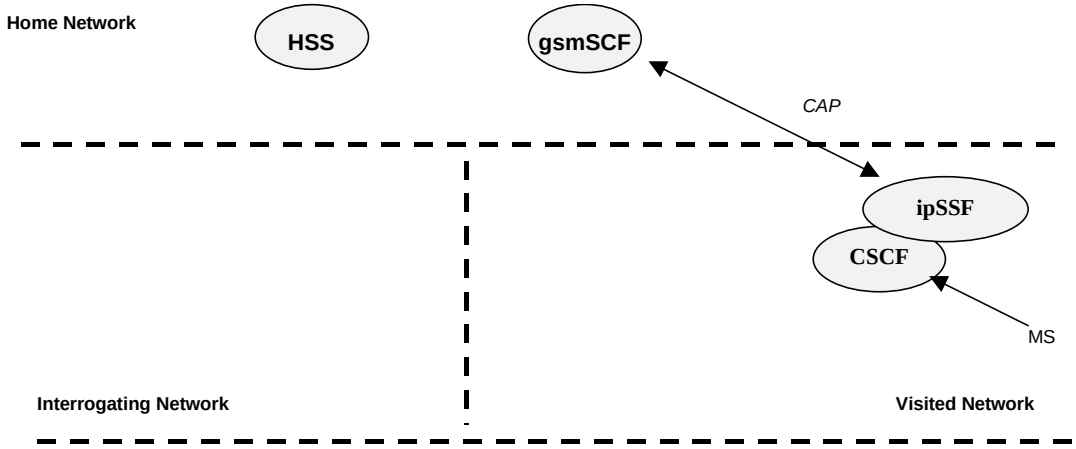

Figure 6.2: Functional architecture for support of CAMEL control of a MO IP Multimedia session

6.1.3 Functional Entities used for CAMEL for MT IP Multimedia session

Figure 6.3 shows the functional entities involved in a Mobile Terminated IP Multimedia session requiring CAMEL support.

6.2 Interfaces defined for a CAP based Service Platform

6.2.1 CSCF - ipSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of DPs (arming/disarming of DPs, DP processing etc.).

6.2.2 ipSSF - gsmSCF interface

This interface is used by the gsmSCF to control an IP Multimedia session in a certain ipSSF. Relationships between the ipSSF and the gsmSCF on this interface are opened as a result of the ipSSF sending a request for instructions to the gsmSCF. This interface shall be based on 3GPP TS 29.078[11].

6.2.3 HSS – CSCF interface

This interface is used to send CAMEL related subscriber data to a CSCF, e.g. IM-CSI.

6.3 Detection Points (DPs)

Certain basic call events may be visible to the GSM Service Control Function (gsmSCF). The DPs are the points in call at which these events are detected.

. Editor's Note: The DPs for Mobile Originated IP Multimedia session and Mobile Terminated IP Multimedia session will be described here

6.4 Description of CAMEL Subscriber Data

6.4.1 IP Multimedia CAMEL Subscription Information (IM-CSI)

This subclause defines the contents of the IP Multimedia CAMEL Subscription Information. This information shall be sent by the HSS to the CSCF via the Cx Interface.

6.4.1.1 gsmSCF Address

Address to be used to access the gsmSCF for a particular subscriber. The address shall be an E.164 number to be used for routeing.

6.4.1.2 Service Key

The Service Key identifies to the gsmSCF the service logic that shall apply.

6.4.1.3 Default IP Multimedia Handling

The Default IP Multimedia Handling indicates whether the IP Multimedia session shall be released or continued as requested in case of error in the ipSSF to gsmSCF dialogue.

6.4.1.4 TDP List

The TDP List indicates on which detection point triggering shall take place.

6.4.1.5 CAMEL Capability Handling

CAMEL Capability Handling indicates the phase of CAMEL which is asked by the gsmSCF for the service.

6.5 Description of CAMEL State Models

Editor's Note: This subclause is for further study.

IP Multimedia sessions are handled in the CSCF and the behaviour of the IP Multimedia sessions is modelled by a state model.

6.5.1 General Handling

The IP Multimedia Basic Call State Model (IM-BCSM) is used to describe the actions in a CSCF during processing of IP Multimedia sessions for originating or terminating calls

The IP Multimedia Basic Call State Model (IM-BCSM) identifies the points in basic IP Multimedia call processing when Operator Specific Service (OSS) logic instances (accessed through the gsmSCF) are permitted to interact with basic IP Multimedia session control capabilities.

6.5.2 Originating IP Multimedia Basic Call State Model (O-IM-BCSM)

6.5.2.1 Description of the O-IM-BCSM

Editor's Note: The O-IM-BCSM will be described here.

6.5.3 Relationship with SIP Call Model and CAMEL O-BCSM

Editor's Note: The relationship of the O-IM-BCSM with the SIP call model defined in IETF RFC2543bis[12] and the CAMEL O-BCSM specified in 3GPP TS 23.078[5] will be described here.

6.5.3.1 Description of the SIP Call Model

6.5.3.2 Description of the CAMEL O-BCSM

This is specified in 3GPP TS 23.078[5].

6.5.4 Terminating IP Multimedia Basic Call State Model (T-IM-BCSM)

6.5.4.1 Description of the T-IM-BCSM

Editor's Note: The T-IM-BCSM will be described here.

6.5.5 Relationship with SIP Call Model and CAMEL O-BCSM

Editor's Note: The relationship of the T-IM-BCSM with the SIP call model defined in IETF RFC2543bis[12] and the CAMEL T-BCSM specified in 3GPP TS 23.078[5] will be described here.

6.5.5.1 Description of the SIP Call Model

6.5.5.2 Description of the CAMEL T-BCSM

This is specified in 3GPP TS 23.078[5].

6.6 Procedures for Multimedia Session Handling with a CAP based Service Platform

6.6.1 Overall Architecture

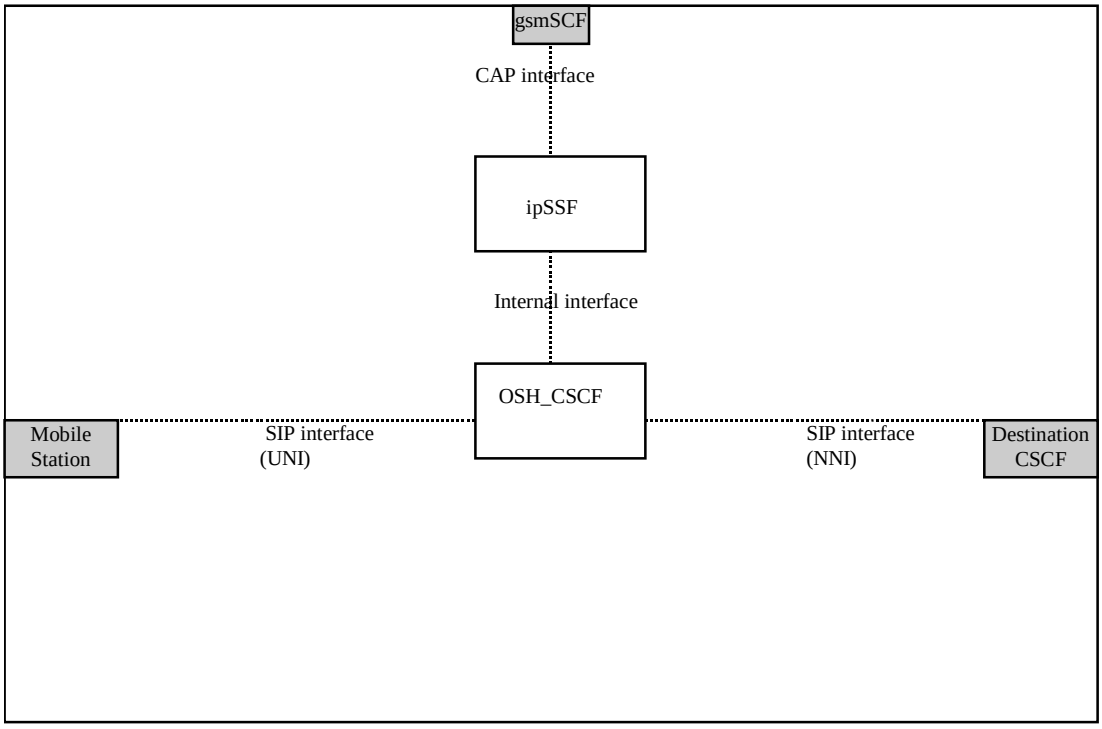

Figure 6.4: Mobile Originated case

6.6.2 Handling of mobile originated IP Multimedia calls

6.6.2.1 Handling of mobile originated IP Multimedia calls in the CSCF

6.6.3 Retrieval of routeing information

6.6.3.1 Handling of mobile terminated IP Multimedia calls in the CSCF

6.6.3.1 Handling of mobile terminated IP Multimedia calls in the HSS

6.6.4 Handling of mobile terminated IP Multimedia calls

6.6.4.1 Handling of mobile terminated IP Multimedia calls in the CSCF

6.6.5 CAMEL specific handling of SIP Registration and data restoration

Editor's Note: This subclause is for further study.

When requesting SIP registration or data restoration the CSCF shall indicate to the HSS which CAMEL phases it supports.

When SIP registration has been completed, the CSCF in which the subscriber is registered after the SIP registration process, shall check the IM-CSI. If a IP Multimedia registration notification to the gsmSCF is required for this subscriber, then the CSCF shall now send the notification to the gsmSCF.

6.7 Cross phase compatibility

To avoid a case by case fallback between the ipSSF and the gsmSCF, the gsmSSF shall use the CAP phase corresponding to the CAMEL phase negotiated on the HSS-CSCF interface when it opens a dialogue with the gsmSCF. The HSS-CSCF negotiation of CAMEL phase is per subscriber.

6.8 Description of CAMEL information flows message contents

The CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as appropriate.

Note: CAMEL Information flow in TS23.078[5] refers to the message name and a list of Information Element the message contains.

6.8.1 ipSSF to gsmSCF information flows message contents

The gsmSSF to gsmSCF CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as the ipSSF to gsmSCF CAMEL information flows. The ipSSF shall provide an equivalent capability to the gsmSSF.

Information flows associated with charging shall apply between ipSSF and gsmSCF as specified in 3GPP TS 23.078[5].

6.8.2 gsmSCF to ipSSF information flows message contents

The gsmSCF to gsmSSF CAMEL information flows are specified in 3GPP TS 23.078[5]. These shall apply to IP Multimedia sessions as the gsmSCF to ipSSF CAMEL information flows. The ipSSF shall provide an equivalent capability to the gsmSSF.

Information flows associated with charging shall apply between ipSSF and gsmSCF as specified in 3GPP TS 23.078[5].

7 IP Multimedia session handling with a SIP based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a SIP interface as a potential candidate for the CSCF to service platform interface. This assumes that the service platform is not a CAMEL gsmSCF.

Editor's Note : This clause applies when the Service Platform supports the SIP interface

7.1 Architecture

This subclause describes the functional architecture needed to support interactions with the CSCF in the IP Multimedia Subsystem and the Service Platform.

7.1.1 Functional Entities used with a SIP based Service Platform at IP Multimedia Registration

Figure 7.1 shows the functional entities involved when a MS registers for IP Multimedia session requiring CAMEL support.

Subscriber data is transferred from the HSS to the CSCF during the SIP Registration. The subscriber data includes Service Platform related information.

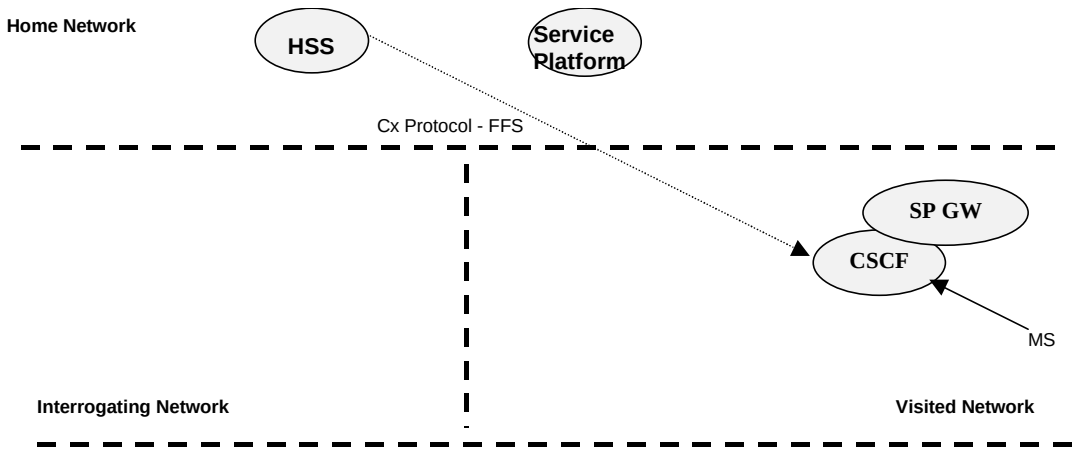

Figure 7.1: Functional architecture for support of a SIP based Service Platform when a mobile registers for IP Multimedia session

7.1.2 Functional Entities used with a SIP based Service Platform for MO IP Multimedia session

Figure 7.2 shows the functional entities involved in a Mobile Originated IP Multimedia session requiring CAMEL support.

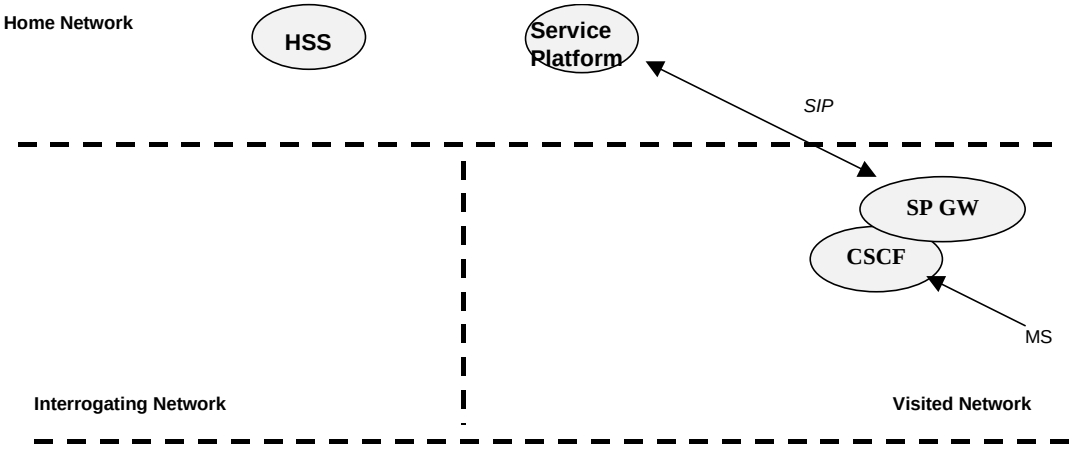

Figure 7.2: Functional architecture for a SIP based Service Platform for control of a MO IP Multimedia session

7.1.3 Functional Entities used for SIP for MT IP Multimedia session

Figure 7.3 shows the functional entities involved in a Mobile Terminated IP Multimedia session requiring support form a SIP based Service Platform

7.2 Interfaces defined for a SIP based Service Platform

7.2.1 CSCF – "SP G/W" interface

This is an internal interface. The CSCF needs to terminate the SIP interface to the external Service Platform. The functionality required for managing this is labelled "SP GW"(Service Platform Gateway).

Editor's Note: This is for further study.

7.2.2 CSCF – Service Platform interface

This interface is used by the external Service Platform to control a IP Multimedia session in a certain CSCF. Relationships between the CSCF and the external Service Platform on this interface are opened as a result of the CSCF sending a request for instructions to the Service Platform. This interface is based on SIP.

7.2.3 HSS – CSCF interface

This interface is used to send external Service Platform related subscriber data to a CSCF.

7.3 SIP Session Detection Points (DPs)

Certain basic call events may be visible to the Service Platform. The DPs are the points in call at which these events are detected.

Editor's Note : The DPs for Mobile Originated IP Multimedia session and Mobile Terminated IP Multimedia session will be described here.

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7.4 Description of Service Platform related Subscriber Data

7.4.1 Service Platform Subscription Information

This subclause defines the contents of the Service Platform related Subscription Information. This information shall be sent by the HSS to the CSCF via the Cx Interface.

7.4.1.1 Service Platform Address

Address to be used to access the service platform for a particular subscriber.

7.4.1.2 Service Key

The Service Key identifies to the Service Platform the service logic that shall apply.

7.4.1.3 Default IP Multimedia Handling

The Default IP Multimedia Handling indicates whether the IP Multimedia session shall be released or continued as requested in case of error in the CSCF to Service Platform dialogue.

7.4.1.4 TDP List

The TDP List indicates on which detection point triggering shall take place.

7.4.1.5 Service Platform Capability Handling

Service Platform Capability Handling indicates the capability/version of SIP is asked by the Service Platform for the service.

7.5 Description of SIP Call State Models

Editor's Note: This subclause is for further study.

IP Multimedia sessions are handled in the CSCF and the behaviour of the IP Multimedia sessions is modelled by a call state model.

7.5.1 General Handling

The SIP call state model is used to describe the actions in a CSCF during processing of IP Multimedia sessions for originating or terminating calls.

The SIP call state model identifies the points in basic IP Multimedia call processing when Operator Specific Service (OSS) logic instances (accessed through the Service Platform) are permitted to interact with basic IP Multimedia session control capabilities.

7.5.2 Originating SIP Call State Model

7.5.2.1 Description of the Originating SIP State Call Model

Editor's Note: The Originating SIP Call State Model will be described here.

7.5.3 Terminating SIP Call State Model

7.5.3.1 Description of the Terminating SIP Call State Model

Editor's Note: The Terminating SIP Call State Model will be described here.

7.5 Procedures for Multimedia Session Handling with a SIP based Service Platform

7.5.1 Overall Architecture

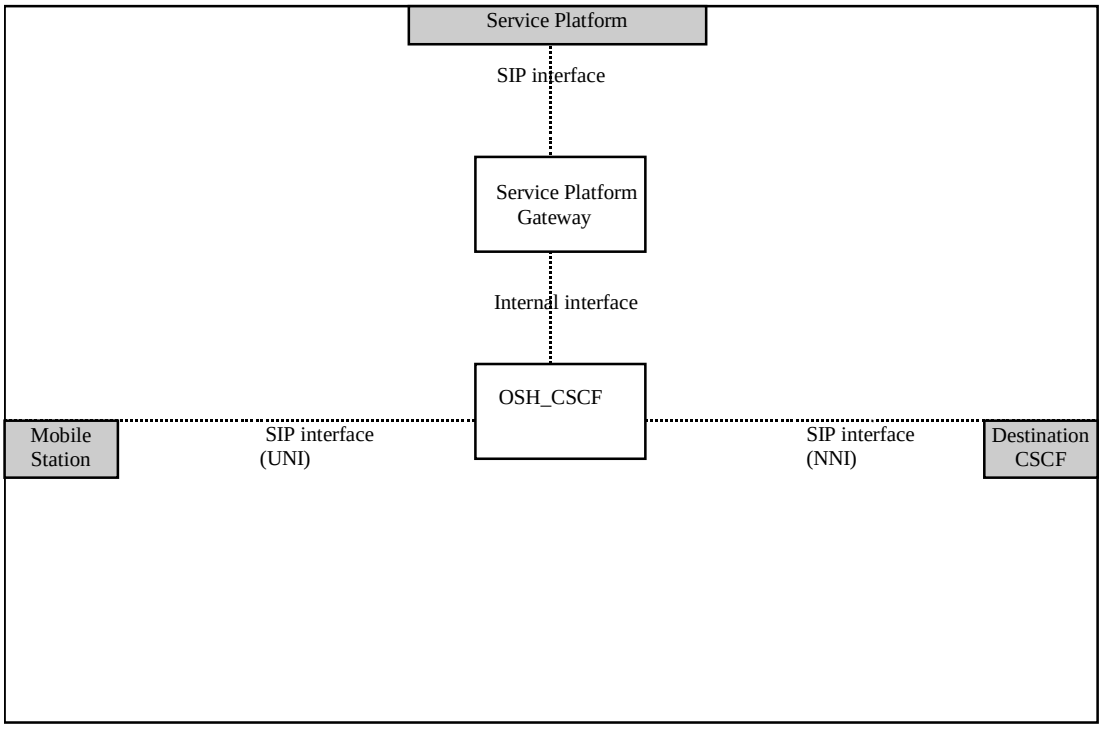

Figure 7.4: Mobile Originated case

7.5.2 Handling of mobile originated IP Multimedia calls

7.5.2.1 Handling of mobile originated IP Multimedia calls in the CSCF

7.5.3 Retrieval of routeing information

7.5.3.1 Handling of mobile terminated IP Multimedia calls in the CSCF

7.5.3.1 Handling of mobile terminated IP Multimedia calls in the HSS

7.5.4 Handling of mobile terminated IP Multimedia calls

7.5.4.1 Handling of mobile terminated IP Multimedia calls in the CSCF

7.5.5 Service Platform specific handling of SIP Registration and data restoration

Editor's Note: This subclause is for further study.

When requesting SIP registration or data restoration the CSCF shall indicate to the HSS which SIP version/phases it supports.

When SIP registration has been completed, the CSCF in which the subscriber is registered after the SIP registration process, shall check the Service Platform Subscription Information. If a IP Multimedia registration notification to the Service Platform is required for this subscriber, then the CSCF shall now send the notification to the Service Platform.

7.6 Cross phase compatibility

To avoid a case by case fallback between the CSCF and the Service Platform, the CSCF shall use the SIP version/phase corresponding to the SIP version/phase negotiated on the HSS-CSCF interface when it opens a dialogue with the Service Platform. The HSS-CSCF negotiation of the SIP version/phase is per subscriber.

7.7 Description of Service Platform information flows message contents

The CSCF - Service Platform information flows (the messages and associated Information Elements the message contains.) need to be specified. These shall apply to IP Multimedia sessions as appropriate.

Editor's Note: These are for further study.

7.7.1 CSCF to Service Platform information flows message contents

Information flows associated with charging shall apply between the CSCF and Service Platform. These shall provide the same level of functionality provided by the charging related information flows specified in 3GPP TS 23.078[5].

Editor's Note : The CSCF to Service Platform information flows need to be specified.

7.7.2 Service Platform to CSCF information flows message contents

Information flows associated with charging shall apply between the CSCF and Service Platform. These shall provide the same level of functionality provided by the charging related information flows specified in 3GPP TS 23.078[5].

Editor's Note : The Service Platform to CSCF information flows need to be specified.

8 IP Multimedia session handling with a OSA API based Service Platform

Editor's Note : The current IM subsystem stage 2 (3GPP TS 23.228 v1.2.0) mentions a OSA API interface as a potential candidate for the CSCF to service platform interface. The API interface provides all applications that are independent from the underlying network technology, and are delivered via the use of an open standardised API. This API maybe based on the OSA API but with additional enhancements for the multimedia service control handling. It is assumed with this case that the API from the CSCF will still be linked via a service control platform to provide framework, security and other such features in linking to the actual OSA API for third parties usage. The mapping of the OSA API to the underlying network capabilities is not subject to standardisation.

Editor's Note : This clause applies when the Service Platform supports a standardised API interface.

8.1 Architecture

This subclause describes the functional architecture needed to support interactions with the CSCF in the IP Multimedia Subsystem and the Service Platform.

8.2 Interfaces defined for a OSA API based Service Platform

9 Mapping between SIP procedures and CAMEL procedures

Editor's Note : This clause applies when the Service Platform is based on CAMEL gsmSCF and supports the CAP interface

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9.1 Mapping between SIP Methods and CAMEL information flows

9.1.1 Mapping between SIP Invite Method and CAMEL Initial DP information flow

9.1.2 Mapping between SIP Ack Method and CAMEL Event Report BCSM information flow

9.1.3 Mapping between SIP Bye Method and CAMEL Event Report BCSM information flow

9.1.4 Mapping between SIP Response and CAMEL Event Report BCSM information flow

Editor's Note : The 183 (session Progress) response is used to convey information about the progress of the call. The Reason-Phrase may be used to convey more details about the call progress.

9.2 Mapping between CAMEL information flows and SIP Methods

9.2.1 Mapping between CAMEL Connect information flow and SIP Invite Method

9.2.2 Mapping between CAMEL Continue information flow and SIP Invite Method

9.2.3 Mapping between CAMEL Release Call information flow and SIP Bye Method

9.3 Mapping between SIP header fields and CAMEL information elements

9.3.1 Mapping between SIP Invite method header fields and CAMEL Initial DP information elements

9.4 Mapping between CAMEL information elements and SIP header fields

9.4.1 Mapping between CAMEL Connect information elements and SIP Invite header fields

Annexes are only to be used where appropriate:

Annex <A> (normative): <Normative annex title>

Annex <B> (informative): <Informative annex title>

Annexes are labeled A, B, C, etc. and designated either "normative" or "informative" depending on their content (informative annexes do not comprise requirements for the implementation of the specification).

B.1 Heading levels in an annex

Heading levels within an annex are used as in the main document, but for Heading level selection, the "A.", "B.", etc. are ignored. e.g. **B.1.2** is formatted using ***Heading 2*** style.

Bibliography

The Bibliography is optional. If it exists, it shall follow the last annex in the document.

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

Bibliography format

- <Publication>: "<Title>".

OR

<Publication>: "<Title>".

Annex <X> (informative): Change history

It is usual to include an annex (usually the final annex of the document) for specifications under TSG change control which details the change history of the specification using a table as follows:

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Nov 2000		N1-001300			First draft created. Presented to CN1meeting #14.		
21/11/00		N1-001352			V 0.1.0 created based on discussion in CN1#14. Additional clause on OSA API added.		
22/11/00		N1-001386			V 0.2.0 created based on discussion in CN1#14. The clause on scope modified.		
28/11/00		N1-001448			V 0.3.0 created based on discussion in CN1/SA2 joint meeting . The title modified.		