Source:	**TSG CN WG 1**
Title:	**CRs to Rel-5 on Work Item IMS-CCR towards 23.218**
Agenda item:	**8.1**
Document for:	**APPROVAL**

Introduction:

This document contains **5** CRs on **Rel-5 to** Work Item **"IMS-CCR"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #17 for approval.

Spec	CR #	Rev	CAT	Rel	Tdoc Title	Meeting	TDoc #	C_Version
23.218	021	1	F	Rel-5	Service profiles and implicitly registered public user identities	N1-25	N1-021828	5.1.0
23.218	022	2	F	Rel-5	Clarification on specialized charging server	N1-25	N1-021859	5.1.0
23.218	025	1	F	Rel-5	Clarification on location information for IMS	N1-25	N1-021829	5.1.0
23.218	026	1	F	Rel-5	Proposed change of term SPI to SPT	N1-25	N1-021830	5.1.0
23.218	027	1	F	Rel-5	Support of originating requests from Application Servers	N1-25	N1-021831	5.1.0

CR-Form-v7

CHANGE REQUEST

⌘ **23~~4~~.2~~18~~29** CR **021** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

Title: ⌘	Service profiles and implicitly registered public user identities	
Source: ⌘	Lucent Technologies	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ August 1, 2002

Category: ⌘ **F**	***Release:*** ⌘ Rel-5

Use one of the following categories:
   F *(correction)*
   A *(corresponds to a correction in an earlier release)*
   B *(addition of feature),*
   C *(functional modification of feature)*
   D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change: ⌘	23.228 indicates in clause 4.3.3.4 that implicitly registered public user identities may belong to different service profiles. This should mean that all the related service profiles are downloaded from the HSS for those implicitly registered public user identities. 23.218 currently states in clause 6.3 that the relevant service profile is downloaded, implying only one. Clause 6.9.1 also only discusses a single service profile. 23.218 should be updated to be consistent with 23.228.
Summary of change: ⌘	Expand on the statement in clause 6.3 to make it clear that it is possible to receive more than one service profile as part of the registration activity. This means it is possible to receive multiple sets of filter criteria. It will depend upon configuration options as to whether the set of implicitly registered public user identities spans more than one service profile. Also, clarify in clause 6.9.1 that more than one set of filter criteria may be downloaded from the HSS at registration time.
Consequences if not approved: ⌘	There will be inconsistencies between the specifications. Further, without the clarification it could be interpreted that only one service profile may downloaded during registration because only those public user identities associated with the same profile may be implicitly registered. This would mean that USIM-only devices can only have one service profile.

Clauses affected: ⌘	6.3, 6.9.1

	Y	N		
Other specs affected: ⌘	X		Other core specifications ⌘	24.229
		X	Test specifications	
			O&M Specifications	

| *Other comments:* | ⌘ | Corresponding changes made to 24.229 with CR 146 (Tdoc N1-021570).Modified as requested. |

How to create CRs using this form:

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Start of first changes

6.3 Handling of IP multimedia registration

Upon receiving the initial registration request from the user, the S-CSCF shall authenticate the user and upon receiving a subsequent registration request containing valid authentication credentials, request the HSS to send the relevant service profile(s) for ~~of~~ the user's subscription. More than one service profile may be sent, depending on configuration options for identifying implicitly registered public user identities. For further detailed information on registration, profile download and authentication procedures see 3GPP TS 24.229 [5] and 3GPP TS 33.203 [11].

The initial filter criteria (subset of the profile) is stored locally at the S-CSCF, as specified in 3GPP TS 24.229 [5].

The S-CSCF shall verify if the triggers match, from the highest to the lowest priority (see subclause 5.2).

After a successfully authenticated registration, the S-CSCF shall download from the HSS all the implicitly registered public user identities associated with the registered public user identity. The S-CSCF shall then verify, in their order of priority, if the triggers downloaded from the HSS match. If the registration request from the user matches a trigger, the S-CSCF performs a third party registration to the application servers which are interested to be informed about the user registration event of these public user identities. This may trigger services to be executed by an AS.

The important information carried in the third party REGISTER request is the public user identity, the S-CSCF address and the expiration time. It shall be possible based on operator configuration to use one of the implicitly registered public user identities as the public user identity in the To header of the third party REGISTER request sent to the Application Server. Additional application server specific data, which is associated with the Filter Criteria and obtained from the HSS, is added to the REGISTER request body. This data should include the IMSI for an Application Server that supports CAMEL services or the private user identity for other Application Servers as received from the HSS.

This third party registration will include an expiration time that is equal to the expiration time sent to the UE by the S-CSCF in the 200 OK response to the incoming REGISTER request

On receiving a failure response to one of the REGISTER requests, the S-CSCF shall apply the "default handling" related with the initial Filter Criteria's trigger used (see subclauses 5.2, 6.9.2.2).
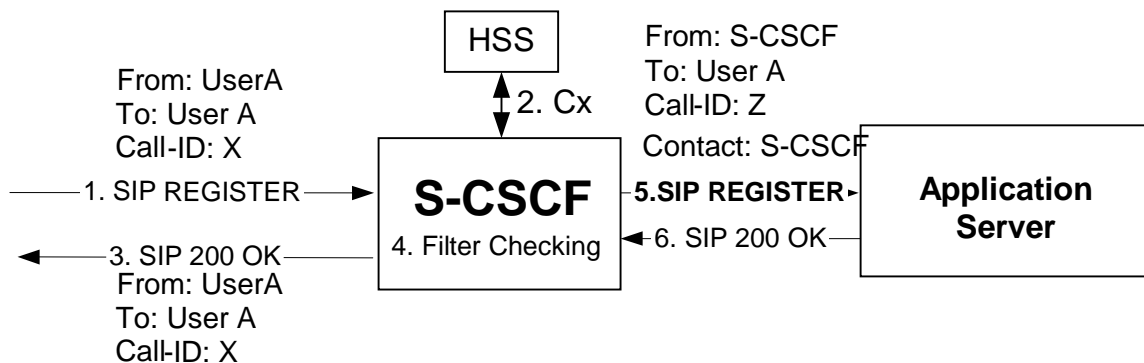
See figure 6.3.1:

Figure 6.3.1: S-CSCF handling registration

Application Servers can in addition subscribe to the S-CSCF Registration Event Package. This provides a mechanism for the Application Server to discover all the implicitly registered public user identities without requiring multiple Register requests to be sent to the Application Server. The S-CSCF will send NOTIFY requests to the Application Server that has subscribed to the registration event package for the registered public user identity.

More information on these procedures is contained in 3GPP TS 24.229 [5].

6.4 Handling of mobile originated IP multimedia sessions

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

The initial filter criteria (subset of the profile) has already been downloaded from the HSS and is stored locally at the S-CSCF, as specified in 3GPP TS 24.228 [4], and 3GPP TS 24.229 [5].

When such a session request comes in, the S-CSCF shall first check its trigger points (i.e. this is a mobile originating request or a mobile terminating request). This clause describes the requirements for the S-CSCF when this request is a mobile originating request. So the S-CSCF shall:

- check whether this request matches the initial filter criteria with the highest priority for that user by checking the service profile against the public user identity, which was used to place this request;

- if this request matches the initial filter criteria, the S-CSCF shall forward this request to that application server, then check for matching of the next following filter criteria of lower priority, and apply the filter criteria on the SIP method received from the previously contacted application server;

- if this request does not match the highest priority initial filter criteria, check for matching of the following filter criteria priorities until one applies;

- if no more (or none) of the initial filter criteria apply, the S-CSCF shall forward this request downstream based on the route decision;

- in any instance, if the contact of the application server fails, the S-CSCF shall use the "default handling" associated with the initial Filter Criteria to determine if it shall either terminate the call or let the call continue based on the information in the filter criteria; if the filter criteria does not contain instruction to the S-CSCF regarding the failure of the contact to the application server, the S-CSCF shall let the call continue as the default behaviour.

6.5 Handling of mobile terminated IP multimedia sessions

6.5.1 Handling of mobile terminated IP multimedia sessions, registered user

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

When such a request comes in, the S-CSCF shall first check this is an originating request or a terminating request. This clause describes the requirements for the S-CSCF when this request is a terminating request. So, if this request is a terminating request, the S-CSCF shall:

- if unavailable, download the relevant subscriber profile including the initial filter criteria from the HSS.

- use the initial Filter Criteria for the Mobile Termination;

- the subsequent requirements for the S-CSCF are the same as those for handling originating sessions.

It may be possible that originating UE and terminating UE shares the same S-CSCF and AS, therefore the shared application server may interact with the S-CSCF twice in one transaction but in originating and terminating procedures respectively.

6.5.2 Handling of mobile terminated IP multimedia sessions, unregistered user

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

When such a request comes in, the S-CSCF shall first check this is an originating request or a terminating request. This clause describes the requirements for the S-CSCF when this request is a terminating request. So, if this request is a terminating request, the S-CSCF shall:

- if unavailable, download the relevant subscriber profile including the initial filter criteria from the HSS;

- use the initial Filter Criteria for the Mobile Termination for unregistered user;

- the subsequent requirements for the S-CSCF are the same as those for handling originating sessions.

It may be possible that originating UE and terminating UE shares the same S-CSCF and AS, therefore the shared application server may interact with the S-CSCF twice in one transaction but in originating and terminating procedures respectively.

End of first changes

Start of second changes

6.9 Description of subscriber data

6.9.1 Application Server subscription information

The Application Server Subscription Information is the set of all Filter Criteria that are stored within the HSS for service profile for a specific user. This information shall be sent by the HSS to the S-CSCF via the Cx Interface during registration. More than one set of Filter Criteria may be sent during registration if implicitly registered public user identities belong to multiple different service profiles. Filter Criteria shall also be sent after registration via the Cx interface when requested, as specified in 3GPP TS 29.228 [8].

6.9.2 Filter Criteria

This clause defines the contents of the Filter Criteria. This information is part of the Application Server Subscription Information. For further information about the XML modelling see 3GPP TS 29.228 [8].

Filtering is done for initial SIP request messages only.

The S-CSCF shall apply filter criteria to determine the need to forward SIP requests to Application Servers. These filter criteria will be downloaded from the HSS.

Initial Filter Criteria (iFC) are stored in the HSS as part of the user profile and are downloaded to the S-CSCF upon user registration, or upon a terminating initial request for an unregistered user if unavailable. They represent a provisioned subscription of a user to an application. After downloading the User Profile from the HSS, the S-CSCF assesses the filter criteria. Initial Filter Criteria are valid throughout the registration lifetime of a user or until the User Profile is changed.

Subsequent Filter Criteria (sFC) are not used in this version of this specification.

6.9.2.1 Application Server address

Address to be used to access the Application Server for a particular subscriber.

6.9.2.2 Default handling

The default handling procedure indicates whether to abandon matching of lower priority triggers and to release the dialogue, or to continue the dialogue and trigger matching.

Use of the default handling procedure by the AS is not supported in this version of this specification.

6.9.2.3 Trigger point

Trigger Points are the information the S-CSCF receives from the HSS that defines the relevant SPIs for a particular application. They define the subset of initial SIP requests received by the S-CSCF that should be sent or proxied to a particular application. When the S-CSCF receives an initial SIP request, it evaluates the filter criteria one by one. If the initial SIP request matches the filter criteria, the S-CSCF proxies the SIP request to the corresponding SIP AS/IM-SSF/OSA SCS.

6.9.2.4 iFC Priority

If there are multiple initial Filter Criteria assigned for one subscriber, the priority shall describe the order in which the S-CSCF shall assess them, and then contact the Application Servers when the SIP request matches the initial filter criteria. In this case, the S-CSCF shall interact with the application server associated with the initial matching filter criteria, starting from the filter criteria which has the highest priority.

6.9.2.5 Service Information

Service Information is transparent information, and is not processed by the HSS or the S-CSCF. Service Information is optionally part of an initial Filter Criteria. If it is available from the initial Filter Criteria the S-CSCF shall include it into the body of the SIP request which is sent from the S-CSCF to the AS to which the initial Filter Criteria is pointing to.

6.9.3 Authentication data

This clause defines the Authentication Data. This data shall be sent by the HSS to the S-CSCF via the Cx Interface during registration.

For definition of authentication data see specification 3GPP TS 23.008 [10]. For the handling of authentication data, see 3GPP TS 33.203 [11].

End of second changes

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.218** CR **025** | ⌘rev | **-1** | ⌘ | Current version: | **5.1.0** | ⌘ |

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

Title: ⌘	Clarification on location information for IMS	
Source: ⌘	NEC Corporation	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ ~~23/7~~1/8/2002
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change: ⌘	At the last SA2#25 meeting, it is clarified that Le interface is used instead of Sh interface regarding seaching user location for LCS in 23.228 because of authorization and privacy check. Consequently, there is misalignment between 23.228 and 23.218regarding Sh interface for location service.
Summary of change: ⌘	In 7.2.2, it is clearly described that Le interface is used for privacy check when SIP AS requests user location for LCS, being aligned with 23.228.
Consequences if not approved: ⌘	Discrepancy may be remained between 23.218 and 23.228 and causes readeres misleading to wrong implementation.

Clauses affected: ⌘	2, 3.2, 7.2.2

Other specs affected: ⌘	Y	N		
	X		Other core specifications ⌘	23.228
			Test specifications	
			O&M Specifications	

Other comments: ⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Start of first change

2   References

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

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

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

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

[1]   Void.

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

[3]   3GPP TS 23.228: " IP multimedia subsystem; Stage 2".

[4]   3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP; stage 3".

[5]   3GPP TS 24.229: "IP multimedia call control protocol based on SIP and SDP; stage 3".

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

[7]   3GPP TR 29.998-4-4: "Open Service Access (OSA); Application Programming Interface (API) Mapping for Open Service Access (OSA); Part 4: Call Control Service Mapping; Subpart 4: Multiparty Call Control SIP".

[8]   3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx Interface; Signalling flows and message contents".

[9]   3GPP TS 23.278: "Customised Applications for Mobile network Enhanced Logic (CAMEL); IP Multimedia System (IMS) interworking; Stage 2".

[10]   3GPP TS 23.008: "Organisation of subscriber data".

[10A]   ~~3GPP TS 23.271: "Technical Specification Group Services and System Aspects, Functional stage 2 description of LCS".~~

-[11]   3GPP TS 33.203: "Access security for IP based services".

[12]   3GPP TS 29.198: "Open Service Access (OSA); Application programming Interface (API)".

[13]   IETF RFC 3265: "Session Initiation Protocol (SIP) Event Notification".

[14]   3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3; CAMEL Application Part (CAP) specification".

[15]   IETF RFC 3264: "An Offer/Answer Model with Session Description Protocol".

[16]   3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[17]   3GPP TS 29.229: "Cx Interface based on the Diameter protocol".

[18]   3GPP TS 29.328: "IP Multimedia Subsystem (IMS) Sh Interface; Signalling flows and message contents".

[19]   3GPP TS 29.329: "Sh Interface based on the Diameter protocol".

End of first change

Start of second change

3.2   Abbreviations

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

API	Application Programming Interface
AS	Application Server
AS-ILCM	Application Server Incoming Leg Control Model
AS-OLCM	Application Server Outgoing Leg Control Model
B2BUA	Back-to-Back User Agent
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CCF	Charging Collection Function
CDR	Charging Data Records
CF	Call Forwarding
CFonCLI	Call Forwarding on Calling Line Identification
CGI	Common Gateway Interface
CPL	Call Processing Language
CLI	Calling Line Identification
CSCF	Call Session Control Function
CSE	CAMEL Service Environment
FC	Filter Criteria
~~GMLC~~	~~Gateway Mobile Location Centre~~
GPRS	General Packet Radio Service
GPRS CID	GPRS Charging IDentifiers
gsmSCF	gsm Service Control Function
HPLMN	Home PLMN
HSS	Home Subscriber Server
IETF	Internet Engineering Task Force
I-CSCF	Interrogating CSCF
ICID	IMS Charging ID
iFC	Initial Filter Criteria
ILCM	Incoming Leg Control Model
IM	IP Multimedia
IM-CSI	IP Multimedia CAMEL Subscription Information
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IM-SSF	IP Multimedia Service Switching Function
IOI	Inter Operator Identifier
IP	Internet Protocol
ISC	IP multimedia Service Control
~~LCS~~	~~Location Service~~
MAP	Mobile Application Part
MGCF	Media Gateway Control Function
MO	Mobile Originating
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MT	Mobile Terminating
O-IM-CSI	Originating IP Multimedia CAMEL Subscription Information
OLCM	Outgoing Leg Control Model
OSA	Open Service Access
PLMN	Public Land Mobile Network
P-CSCF	Proxy CSCF
RFC	Request For Comments
SCIM	Service Capability Interaction Manager
SCS	Service Capability Server

SDP	Session Description Protocol
sFC	Subsequent Filter Criteria
SIP	Session Initiation Protocol
S-CSCF	Serving CSCF
SPI	Service Points of Interest
STP	Service platform Trigger Points
T-IM-CSI	Terminating IP Multimedia CAMEL Subscription Information
UA	User Agent
UE	User Equipment
URL	Uniform Resource Locator

End of second change

Start of third change

7.2 Interfaces defined for HSS

7.2.1 HSS – CSCF (Cx) interface

This interface is used to send subscriber data to the S-CSCF, including Filter Criteria (and their priority); which indicates which SIP requests should be proxied to which Application Servers.

The protocol used between the HSS and CSCF (Cx Interface) is specified in 3GPP TS 29.228 [8] and 3GPP TS 29.229 [17].

7.2.2 HSS - Application Server (Sh) interface

The Sh interface is between the HSS and the SIP Application Servers and the OSA SCS and may be used for transferring User Profile such as user service related information or user location information. ~~Before providing information relating to the location of user, SIP Application Server can perform privacy checks using the Le interface to the GMLC instead of using Sh interface as described in 3GPP TS 23.271 [10A]~~Requirements for the Sh interface are specified in 3GPP TS 23.228 [3].

The protocol used between the HSS and AS (Sh Interface) is specified in 3GPP TS 29.328 [18] and 3GPP TS 29.329 [19].

7.2.3 HSS – CSE interface

The protocol used on the interface between the HSS and the CAMEL Service Environment (CSE) is the MAP protocol [16].

7.2.4 HSS – IM-SSF Application Server (Si) interface

The Si interface is between the HSS and the IM-SSF Application Server and is used for transferring IMS CAMEL specific information.

The protocol used between the HSS and IM-SSF (Si Interface) is specified in 3GPP TS 23.278 [9] and 3GPP TS 29.002 [16].

End of third change

CHANGE REQUEST

| ⌘ | **23.218** CR **026** | ⌘**rev** | **-1** | ⌘ | Current version: | **5.1.0** | ⌘ |

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

Title: ⌘	Proposed change of term SPI to SPT	
Source: ⌘	NEC Corporation	
Work item code:⌘	IMS-CCR	**Date:** ⌘ ~~23/7~~1/8/2002
Category: ⌘	**F**	**Release:** ⌘ Rel-5

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  R96   (Release 1996)
  R97   (Release 1997)
  R98   (Release 1998)
  R99   (Release 1999)
  Rel-4 (Release 4)
  Rel-5 (Release 5)
  Rel-6 (Release 6)

Reason for change: ⌘	At the last SA #16 plenary in June, it was discussed that SPI is double defined in 23.218 and IETF and shall be changed to other term. It was clarified that term SPI in IETF is already defined several years ago and can not be changed to other term. It was recommended that SPI should be changed to other term in 23.218
Summary of change:⌘	It is proposed that term SPI (Service Points of Interest) is changed to term SPT (Service ~~Points of~~Point Trigger).
Consequences if not approved: ⌘	SPI is remained as double defined and readers will be confused and misunderstood.

Clauses affected: ⌘	3.1, 3.2, 5.2, 6.9.2, Annex C

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

Other comments: ⌘	

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Start of first change

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [2] and the following apply:

Application Server Incoming Leg Control Model (AS-ILCM): models AS behaviour for handling SIP information for an incoming leg.

Application Server information (AS-info): AS-info contains individualized information concerning one particular Application Server entry.
This information contains e.g. Application Server Address (6.9.1.1) and it's corresponding Default IP Multimedia Handling information (6.9.1.2).

Application Server Outgoing Leg Control Model (AS-OLCM): models AS behaviour for handling SIP information for an outgoing leg.

Combined ILSM OLSM – Incoming/outgoing Leg State Model: models the behaviour of an S-CSCF for handling SIP messages on an incoming and outgoing session leg.

Filter Criteria (FC): the information which the S-CSCF receives from the HSS or the AS that defines the relevant ~~SPIs~~ SPTs for a particular application.
They define the subset of SIP requests received by the S-CSCF that should be sent or proxied to a particular application.

Incoming Leg Control Model (ILCM): models the behaviour of an S-CSCF for handling SIP information sent to and received from an AS for an incoming session leg.

Initial Filter Criteria (iFC): filter criteria that are stored in the HSS as part of the user profile and are downloaded to the S-CSCF upon user registration.
They represent a provisioned subscription of a user to an application.

IP Multimedia Service Switching Function (IM-SSF): functional entity that interfaces SIP to CAP.

IP Multimedia CAMEL Subscription Information (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 the present document.

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

Outgoing Leg Control Model (OLCM): models the behaviour of an S-CSCF for handling SIP information received from and sent to an AS for an outgoing session leg.

Private User Identity: a unique global identity defined by the Home Network Operator, as defined in 3GPP TS 23.228[3].

Public User Identity: the public user identity/identities are used by any user for requesting communications to other users and are in the form of a SIP URL or TEL URL as defined in 3GPP TS 23.228[3].

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

Service ~~Points of~~Point ~~Interest~~ Trigger (~~SPI~~SPT): the points in the SIP signalling that may cause the S-CSCF to send/proxy the SIP message to an SIP AS/OSA SCS/IM-SSF.

The subset of all possible ~~SPIs~~ SPTs which are relevant to a particular application are defined by means of Filter Criteria.

Service Platform Trigger Points (STP): the points in the SIP signalling that instruct the SIP AS, OSA SCS and IM-SSF to trigger the service logic.
For the IM-SSF the IP Multimedia Camel Subscriber Information (IM-CSI) defines them.

Subsequent Filter Criteria (sFC): filter criteria that are signalled from the SIP AS/OSA SCS/IM-SSF to the S-CSCF. They allow for dynamic definition of the relevant ~~SPIs~~ SPTs at application execution time.

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

3.2   Abbreviations

3.2   Abbreviations

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

API	Application Programming Interface
AS	Application Server
AS-ILCM	Application Server Incoming Leg Control Model
AS-OLCM	Application Server Outgoing Leg Control Model
B2BUA	Back-to-Back User Agent
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CCF	Charging Collection Function
CDR	Charging Data Records
CF	Call Forwarding
CFonCLI	Call Forwarding on Calling Line Identification
CGI	Common Gateway Interface
CPL	Call Processing Language
CLI	Calling Line Identification
CSCF	Call Session Control Function
CSE	CAMEL Service Environment
FC	Filter Criteria
GPRS	General Packet Radio Service
GPRS CID	GPRS Charging IDentifiers
gsmSCF	gsm Service Control Function
HPLMN	Home PLMN
HSS	Home Subscriber Server
IETF	Internet Engineering Task Force
I-CSCF	Interrogating CSCF
ICID	IMS Charging ID
iFC	Initial Filter Criteria
ILCM	Incoming Leg Control Model
IM	IP Multimedia
IM-CSI	IP Multimedia CAMEL Subscription Information
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IM-SSF	IP Multimedia Service Switching Function
IOI	Inter Operator Identifier
IP	Internet Protocol
ISC	IP multimedia Service Control
MAP	Mobile Application Part
MGCF	Media Gateway Control Function
MO	Mobile Originating
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MT	Mobile Terminating

O-IM-CSI	Originating IP Multimedia CAMEL Subscription Information
OLCM	Outgoing Leg Control Model
OSA	Open Service Access
PLMN	Public Land Mobile Network
P-CSCF	Proxy CSCF
RFC	Request For Comments
SCIM	Service Capability Interaction Manager
SCS	Service Capability Server
SDP	Session Description Protocol
sFC	Subsequent Filter Criteria
SIP	Session Initiation Protocol
S-CSCF	Serving CSCF
~~SPI~~SPT	Service ~~Points of~~Point ~~Interest~~Trigger
STP	Service platform Trigger Points
T-IM-CSI	Terminating IP Multimedia CAMEL Subscription Information
UA	User Agent
UE	User Equipment
URL	Uniform Resource Locator

End of first change

Start of second change

5.2   Service interaction with IP multimedia subsystem

Service ~~Points of~~Point ~~Triggers~~Interest (~~SPIs~~SPTs) are those points in the SIP signalling on which Filter Criteria can be set. The following ~~SPIs~~ SPTs are defined:

- any initial known or unknown SIP method (e.g. REGISTER, INVITE, SUBSCRIBE, MESSAGE);

- presence or absence of any header;

- content of any header;

- direction of the request is with respect to the served user – either mobile originated (MO) or mobile terminated (MT) to registered user; or mobile terminated to unregistered user;

NOTE 1: REGISTER is considered part of the Mobile Origination.

NOTE 2: The S-CSCF shall verify if the end user is barred before checking if any trigger applies for that end user.

- session description information.

A Filter Criteria triggers one or more ~~SPIs~~ SPTs in order to send the related request to one specific application server. The set of Filter Criteria that is stored for a service profile of a specific user is called "Application Server Subscription Information". In order to allow the S-CSCF to handle the different Filter Criteria in the right sequence, a priority shall be assigned to each of them. If the S-CSCF can not reach the AS, the S-CSCF shall apply the default handling associated with the trigger. This default handling shall be :

- To continue verifying if the triggers of lower priority in the list match; or

- To abandon verification of matching of the triggers of lower priority in the list; and to release the dialogue.

Therefore a Filter Criteria shall contain the following information:

- address of the Application Server to be contacted;

- priority of the Filter Criteria providing the sequence in which the criteria shall be applied;

- registered, unregistered, or both (i.e., registered and unregistered) trigger Points, which indicated the Service Points of~~Point~~ ~~Interest~~ Triggers (~~SPIs~~SPTs) triggered by this Filter Criteria. The ~~SPIs~~ SPTs may be linked by means of logical expressions (AND, OR, NOT, etc.);

- default handling (as described above);

- optional Service Information that shall be added to the message body before it is sent to the AS (as an example this may include the IMSI for the IM-SSF).

The same priority shall not be assigned to more than one initial Filter Criteria for a given end user.

The S-CSCF shall request from the HSS the relevant set of iFCs that applies to the end user (i.e., registered, unregistered, or both). If the S-CSCF has a set of iFCs that is deemed valid (e.g., from a previous request), the S-CSCF need not request a new set.

In the case that multiple Filter Criteria are sent from the HSS to the S-CSCF when the S-CSCF receives a message via the Mw interface, the S-CSCF shall check the filter criteria one by one according to their indicated priority, i.e. the S-CSCF shall:

1. set up the list of filter criteria for that request according to their priority – the sequence of the filter criteria shall not be changed until the request finally leaves the S-CSCF via the Mw interface again;

2. parse the received request in order to find out the Service ~~Points of~~Point ~~Interest~~ Triggers (~~SPIs~~SPTs) that are included in it;

3. check whether the trigger points of the filter criteria with the next highest priority are matched by the ~~SPIs~~ SPTs of the request and

    a) if it does not match the S-CSCF shall immediately proceed with step 4;

    b) if it matches the S-CSCF shall:

        i) add an indication to the request which will allow the S-CSCF to identify the message on the incoming side, even if its dialog identification has been changed e.g. due to the AS performing third party call control;

        ii) forward the request via the ISC interface to the AS indicated in the current filter criteria. The AS then performs the service logic, may modify the request and may send the request back to the S-CSCF via the ISC interface;

        iii) proceed with step 4 if the request was received again from the AS via the ISC interface;

4. repeat the above steps 2 and 3 for every filter criteria which was initially set up (in step 1) until the last filter criteria has been checked;

5. route the request based on normal SIP routing behaviour.

If an Application Server decides to locally terminate a request and sends back a final response for that request via the ISC interface to the S-CSCF, the S-CSCF shall abandon verification of the matching of the triggers of lower priority in the list. The final response shall include the indicator defined in step 3 b) i) above, so that the S-CSCF can correlate the messages.
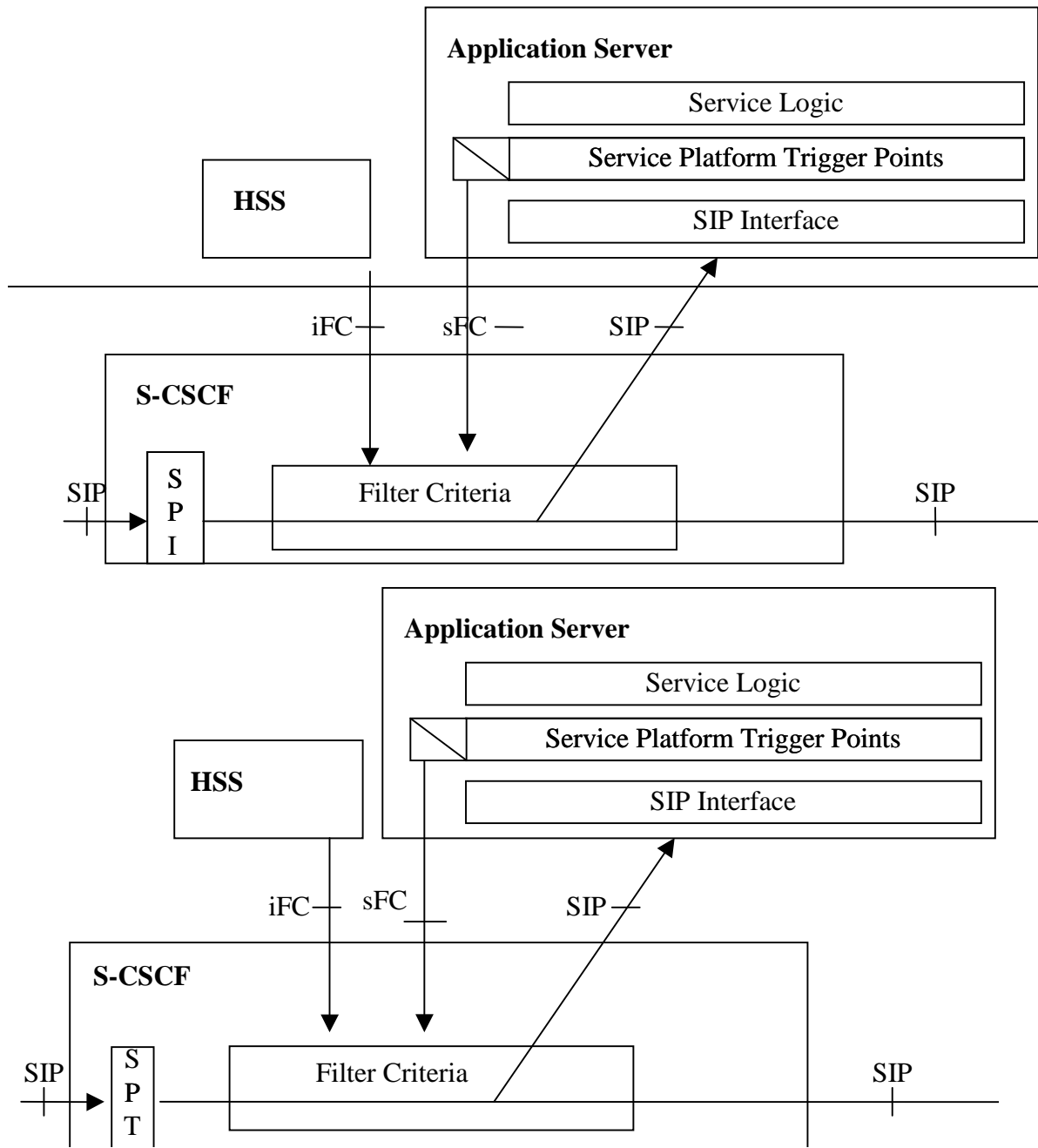
Figure 5.2.1: Application triggering architecture

Each invoked Application Server/service logic may decide not to be engaged with the invoked session by indicating that during the very first SIP transaction when the Record-Route/Route is generated for subsequent SIP requests. The denial shall mean that subsequent requests shall not be routed to such Application Servers/service logic any more during the lifetime of that session. Any Application Server, which has determined that it will not receive subsequent requests for a session cannot revoke this determination by means of Initial Filter Criteria (iFC).

End of second change

Start of third change

6.9.2   Filter Criteria

This clause defines the contents of the Filter Criteria. This information is part of the Application Server Subscription Information. For further information about the XML modelling see 3GPP TS 29.228 [8].

Filtering is done for initial SIP request messages only.

The S-CSCF shall apply filter criteria to determine the need to forward SIP requests to Application Servers. These filter criteria will be downloaded from the HSS.

Initial Filter Criteria (iFC) are stored in the HSS as part of the user profile and are downloaded to the S-CSCF upon user registration, or upon a terminating initial request for an unregistered user if unavailable. They represent a provisioned subscription of a user to an application. After downloading the User Profile from the HSS, the S-CSCF assesses the filter criteria. Initial Filter Criteria are valid throughout the registration lifetime of a user or until the User Profile is changed.

Subsequent Filter Criteria (sFC) are not used in this version of this specification.

6.9.2.1   Application Server address

Address to be used to access the Application Server for a particular subscriber.

6.9.2.2   Default handling

The default handling procedure indicates whether to abandon matching of lower priority triggers and to release the dialogue, or to continue the dialogue and trigger matching.

Use of the default handling procedure by the AS is not supported in this version of this specification.

6.9.2.3   Trigger point

Trigger Points are the information the S-CSCF receives from the HSS that defines the relevant ~~SPIs~~ SPTs for a particular application. They define the subset of initial SIP requests received by the S-CSCF that should be sent or proxied to a particular application. When the S-CSCF receives an initial SIP request, it evaluates the filter criteria one by one. If the initial SIP request matches the filter criteria, the S-CSCF proxies the SIP request to the corresponding SIP AS/IM-SSF/OSA SCS.

6.9.2.4   iFC Priority

If there are multiple initial Filter Criteria assigned for one subscriber, the priority shall describe the order in which the S-CSCF shall assess them, and then contact the Application Servers when the SIP request matches the initial filter criteria. In this case, the S-CSCF shall interact with the application server associated with the initial matching filter criteria, starting from the filter criteria which has the highest priority.

6.9.2.5   Service Information

Service Information is transparent information, and is not processed by the HSS or the S-CSCF. Service Information is optionally part of an initial Filter Criteria. If it is available from the initial Filter Criteria the S-CSCF shall include it into the body of the SIP request which is sent from the S-CSCF to the AS to which the initial Filter Criteria is pointing to.

End of third change

Start of fourth change

Annex C (informative):
Example for filter criteria triggering

This example applies for call originating and terminating procedure both. But we assume this is a call originating procedure. User has registered with the network. Its filter criteria and addresses of the assigned application servers have been downloaded to its S-CSCF during registration via Cx interface. And its application server specific data may also have been downloaded to application server during registration via Sh interface.
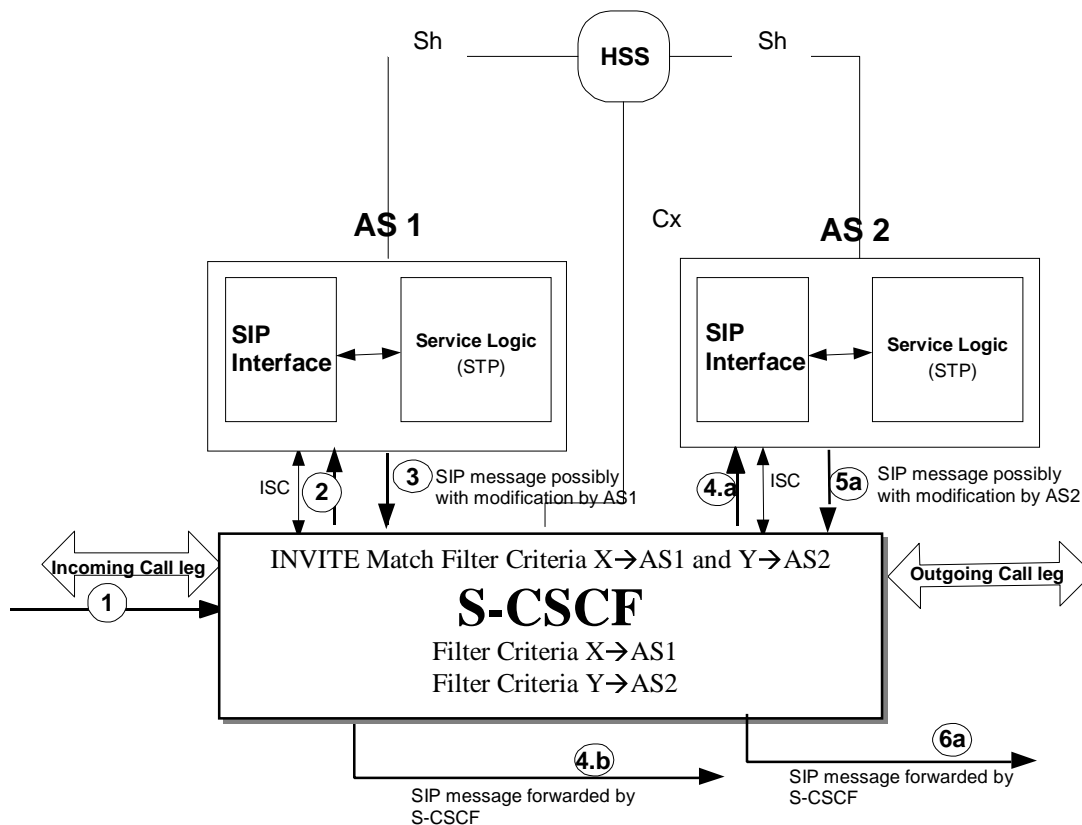

Figure C.1: Filter Criteria Triggering Example

There is a flow example in figure C.1:

In this example, two application servers are assigned to provide additional services to a subscriber and they are showed as AS1 and AS2 in this example.

1. User initiates a SIP session by sending a SIP initial request to its S-CSCF.

2. On receiving this request, the S-CSCF evaluates the ~~SPIs~~ SPTs and checks if they match the initial filter criteria X for AS1. If they match, the S-CSCF forwards this request to AS1.

3. The AS1 performs any needed service control based on the STP (Service Platform Triggering Points) and proxies the SIP request possibly with service related modification back to the S-CSCF.

4.a On receiving the request from the AS, the S-CSCF evaluates the ~~SPIs~~ SPTs and checks if they match the initial filter criteria Y for AS2. If they match the S-CSCF forwards the request to the associated Application Server AS2.

4.b If the request doesn't match any further filter criteria, the S-CSCF forwards this request to the next hop based on the route decision.

5.a The AS2 performs any needed service control based on the STP (Service Platform Triggering Points) and proxies the SIP request possibly with service related modification back to the S-CSCF.

6.a The S-CSCF checks the request sent by AS2 and finds that no initial criteria is matched, then the S-CSCF forwards this request to next hop based on the route decision.

End of fourth change

CR-Form-v7

CHANGE REQUEST

⌘	**23.218** CR	**027**	⌘ **rev**	**1-**	⌘	Current version:	**5.1.0**	⌘

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

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

Title: ⌘	Support of originating requests from Application Servers	
Source: ⌘	Dynamicsoft, Lucent	
Work item code: ⌘	IMS-CCR	**Date:** ⌘ July 18, 2002
Category: ⌘ **F**		**Release:** ⌘ Rel-5

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

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

Reason for change: ⌘	Confusion regarding applicability of 23.218 procedures to SIP requests that do not establish sessions.
Summary of change: ⌘	Terminology has been improved throughout to clarify that filter criteria apply to all initial requests not just those that create dialogs and initiate sessions. Definitions of Initial Request, Subsequent Request and Standalone Transaction have been added in clause 3.1
Consequences if not approved: ⌘	Inconsistent behaviour in S-CSCF implementations for SIP requests

Clauses affected: ⌘	3.1, 6.3, 6.4, 6.5.1, 6.5.2, 6.6, 9.4.1, 9.4.2, 9.4.3, 9.4.4, 9.4.5

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

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [2] and the following apply:

Application Server Incoming Leg Control Model (AS-ILCM): models AS behaviour for handling SIP information for an incoming leg.

Application Server information (AS-info): AS-info contains individualized information concerning one particular Application Server entry.
This information contains e.g. Application Server Address (6.9.1.1) and it's corresponding Default IP Multimedia Handling information (6.9.1.2).

Application Server Outgoing Leg Control Model (AS-OLCM): models AS behaviour for handling SIP information for an outgoing leg.

Combined ILSM OLSM – Incoming/outgoing Leg State Model: models the behaviour of an S-CSCF for handling SIP messages on an incoming and outgoing session leg.

Filter Criteria (FC): the information which the S-CSCF receives from the HSS or the AS that defines the relevant SPIs for a particular application.
They define the subset of SIP requests received by the S-CSCF that should be sent or proxied to a particular application.

Incoming Leg Control Model (ILCM): models the behaviour of an S-CSCF for handling SIP information sent to and received from an AS for an incoming session leg.

Initial Filter Criteria (iFC): filter criteria that are stored in the HSS as part of the user profile and are downloaded to the S-CSCF upon user registration.
They represent a provisioned subscription of a user to an application.

Initial Request: a SIP request that either initiates the creation of a new dialog or is part of a standalone transaction.

IP Multimedia Service Switching Function (IM-SSF): functional entity that interfaces SIP to CAP.

IP Multimedia CAMEL Subscription Information (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 the present document.

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

Outgoing Leg Control Model (OLCM): models the behaviour of an S-CSCF for handling SIP information received from and sent to an AS for an outgoing session leg.

Private User Identity: a unique global identity defined by the Home Network Operator, as defined in 3GPP TS 23.228[3].

Public User Identity: the public user identity/identities are used by any user for requesting communications to other users and are in the form of a SIP URL or TEL URL as defined in 3GPP TS 23.228[3].

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

Service Points of Interest (SPI): the points in the SIP signalling that may cause the S-CSCF to send/proxy the SIP message to an SIP AS/OSA SCS/IM-SSF.
The subset of all possible SPIs which are relevant to a particular application are defined by means of Filter Criteria.

Service Platform Trigger Points (STP): the points in the SIP signalling that instruct the SIP AS, OSA SCS and IM-SSF to trigger the service logic.
For the IM-SSF the IP Multimedia Camel Subscriber Information (IM-CSI) defines them.

Subsequent Filter Criteria (sFC): filter criteria that are signalled from the SIP AS/OSA SCS/IM-SSF to the S-CSCF. They allow for dynamic definition of the relevant SPIs at application execution time.

Subsequent Request: a SIP request which is part of an existing dialog. This also includes target refresh requests as defined in RFC 3261 [6].

Standalone Transaction: a SIP transaction that is not part of an existing dialog and does not initiate the creation of a new dialog.

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

NEXT MODIFICATION

6.3 Handling of SIP ~~multimedia~~ registration

Upon receiving the initial registration request from the user, the S-CSCF shall authenticate the user and upon receiving a subsequent registration request containing valid authentication credentials, request the HSS to send the relevant profile of the user. For further detailed information on registration, profile download and authentication procedures see 3GPP TS 24.229 [5] and 3GPP TS 33.203 [11].

The initial filter criteria (subset of the profile) is stored locally at the S-CSCF, as specified in 3GPP TS 24.229 [5].

The S-CSCF shall verify if the triggers match, from the highest to the lowest priority (see subclause 5.2).

After a successfully authenticated registration, the S-CSCF shall download from the HSS all the implicitly registered public user identities associated with the registered public user identity. The S-CSCF shall then verify, in their order of priority, if the triggers downloaded from the HSS match. If the registration request from the user matches a trigger, the S-CSCF performs a third party registration to the application servers which are interested to be informed about the user registration event of these public user identities. This may trigger services to be executed by an AS.

The important information carried in the third party REGISTER request is the public user identity, the S-CSCF address and the expiration time. It shall be possible based on operator configuration to use one of the implicitly registered public user identities as the public user identity in the To header of the third party REGISTER request sent to the Application Server. Additional application server specific data, which is associated with the Filter Criteria and obtained from the HSS, is added to the REGISTER request body. This data should include the IMSI for an Application Server that supports CAMEL services or the private user identity for other Application Servers as received from the HSS.

This third party registration will include an expiration time that is equal to the expiration time sent to the UE by the S-CSCF in the 200 OK response to the incoming REGISTER request

On receiving a failure response to one of the REGISTER requests, the S-CSCF shall apply the "default handling" related with the initial Filter Criteria's trigger used (see subclauses 5.2, 6.9.2.2).
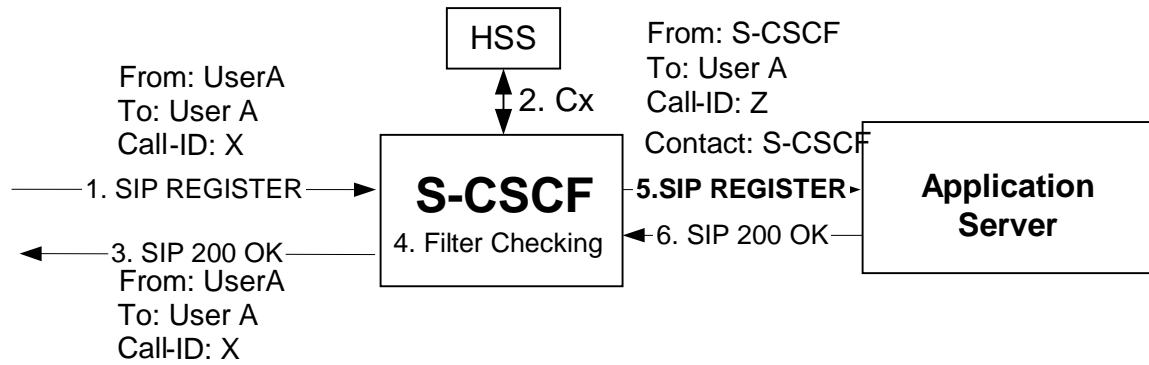
See figure 6.3.1:

Figure 6.3.1: S-CSCF handling registration

Application Servers can in addition subscribe to the S-CSCF Registration Event Package. This provides a mechanism for the Application Server to discover all the implicitly registered public user identities without requiring multiple Register requests to be sent to the Application Server. The S-CSCF will send NOTIFY requests to the Application Server that has subscribed to the registration event package for the registered public user identity.

More information on these procedures is contained in 3GPP TS 24.229 [5].

6.4 Handling of mobile originating requests ~~ed IP multimedia sessions~~

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

The initial filter criteria (subset of the profile) has already been downloaded from the HSS and is stored locally at the S-CSCF, as specified in 3GPP TS 24.228 [4], and 3GPP TS 24.229 [5].

When such a session request comes in, the S-CSCF shall first check its trigger points (i.e. this is a mobile originating request or a mobile terminating request). This clause describes the requirements for the S-CSCF when this request is a mobile originating request. So the S-CSCF shall:

- check whether this request matches the initial filter criteria with the highest priority for that user by checking the service profile against the public user identity, which was used to place this request;

- if this request matches the initial filter criteria, the S-CSCF shall forward this request to that application server, then check for matching of the next following filter criteria of lower priority, and apply the filter criteria on the SIP method received from the previously contacted application server;

- if this request does not match the highest priority initial filter criteria, check for matching of the following filter criteria priorities until one applies;

- if no more (or none) of the initial filter criteria apply, the S-CSCF shall forward this request downstream based on the route decision;

- in any instance, if the contact of the application server fails, the S-CSCF shall use the "default handling" associated with the initial Filter Criteria to determine if it shall either terminate the call or let the call continue based on the information in the filter criteria; if the filter criteria does not contain instruction to the S-CSCF regarding the failure of the contact to the application server, the S-CSCF shall let the call continue as the default behaviour.

6.5 Handling of mobile terminating requests~~ed IP multimedia sessions~~

6.5.1 Handling of mobile terminating~~ed~~ requests~~IP multimedia sessions~~, registered user

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

When such a request comes in, the S-CSCF shall first check this is an originating request or a terminating request. This clause describes the requirements for the S-CSCF when this request is a terminating request. So, if this request is a terminating request, the S-CSCF shall:

- if unavailable, download the relevant subscriber profile including the initial filter criteria from the HSS.

- use the initial Filter Criteria for the Mobile Terminating request~~on~~;

- the subsequent requirements for the S-CSCF are the same as those for handling originating requests~~sessions~~.

It may be possible that originating UE and terminating UE shares the same S-CSCF and AS, therefore the shared application server may interact with the S-CSCF twice in one transaction but in originating and terminating procedures respectively.

6.5.2 Handling of mobile terminating~~ed~~ requests~~IP multimedia sessions~~, unregistered user

The S-CSCF shall verify if the public user identity is barred. If so, it shall respond with a 4xx error code and stop further session processing.

The S-CSCF only looks for initial filter criteria when receiving an initial request.

When such a request comes in, the S-CSCF shall first check this is an originating request or a terminating request. This clause describes the requirements for the S-CSCF when this request is a terminating request. So, if this request is a terminating request, the S-CSCF shall:

- if unavailable, download the relevant subscriber profile including the initial filter criteria from the HSS;

- use the initial Filter Criteria for the Mobile Terminating request~~ion for~~to unregistered user;

- the subsequent requirements for the S-CSCF are the same as those for handling originating ~~sessions~~requests.

It may be possible that originating UE and terminating UE shares the same S-CSCF and AS, therefore the shared application server may interact with the S-CSCF twice in one transaction but in originating and terminating procedures respectively.

6.6 Handling of IP multimedia session release requests

In handling session release, the S-CSCF may either proxy the release request or initiates a release request.

NEXT MODIFICATION

9.4 Procedures for multimedia session handling with a SIP based Application Server

9.4.1 Application Server handling of mobile originating requests~~ed IP multimedia calls~~

The functional mode of application server is shown in figure 9.1.1.

For an originating request, the AS-ILCM may interact with the application logic reporting call state information. Depending on the service that is being provided, the application logic may instruct the AS-OLCM to modify the request if needed (e g. by inserting itself in the Record-Route etc). After processing the request the AS-OLCM may send this request back to the S-CSCF.

When the AS acts as a B2BUA, the application server shall maintain and correlate the multiple dialogues that it creates. It shall be responsible for correlating the dialogue identifiers and shall decide when to translate a message from one dialog to the other, or when to perform other functions based on the instruction from the application logic.

9.4.2 Application Server handling of mobile terminating~~ed~~ requests~~IP multimedia calls~~

The handling of mobile terminating requests is similar with the handling of mobile originating requests as defined in clause 9.4.1.

9.4.3 Application Server handling of SIP ~~multimedia~~ registration

When the user is registered with the network and has been assigned a S-CSCF, the application servers, which are interested to know about the user registration events, should get a third party registration request generated by the S-CSCF. When the application server receives the request, the AS may perform a service triggered by a REGISTER. If the application server doesn't support this mechanism, it shall send back an error response to the S-CSCF. If the application server supports this mechanism, it shall treat this request as a notification from the network about the user's registration event and extract the important information from this request.

The application server will also expect to receive REGISTER requests indicating reregistration or deregistration events from the S-CSCF, so that the application server can update or release user's registration information.

The important information carried in the third party registration request are, the public user identity, the S-CSCF address, and the expiration time. The third party registration request may also carry the user' implicitly registered public identities.

The application server can also extract user specific data from the REGISTER request, e.g. the IMSI for an Application Server that supports CAMEL services.

Application Servers can also subscribe to the S-CSCF Registration Event Package after receiving the third party registration request. After subscribing to the event package with the S-CSCF, the application will expect to receive the notifications from the S-CSCF, which may carry the user's implicitly registered public user identities and user's registration event information.

The application server can also obtain the user's implicitly registered public identities by accessing the HSS via Sh or Si interface.

An application server will require knowledge of a user's IMS subscription information if they are to correctly apply services. This information can be provided to the application server in two ways, either:

   a) Manually by provisioning. This is outside of the scope of this specification.

   b) Automatically from the HSS via the Sh and Si interfaces.

More information on these procedures is contained in 3GPP TS 24.229 [5].

9.4.4 Application Server handling of IP multimedia session release <u>requests</u>

9.4.4.1 Session release request terminated at the Application Server

When the application server receives a session release request, if the application server is acting as a user agent or a B2BUA, it shall send 200 OK to the entity that initiated the session release request.
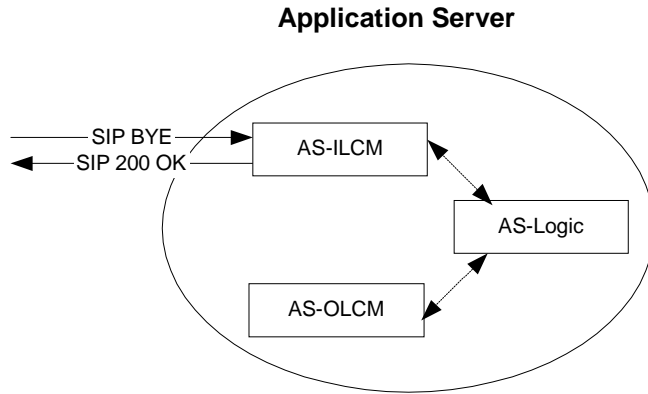
Application Server

SIP BYE → AS-ILCM

SIP 200 OK ← AS-ILCM

AS-ILCM ↔ AS-Logic

AS-OLCM ↔ AS-Logic

Figure 9.4.4.1.1: Release request terminated at the Application Server

9.4.4.2 Session release request proxied by the Application Server

When receiving a session release request, the application server may proxy the release request based on the route information in that request. This handling is typically used when the application server is in proxy mode.
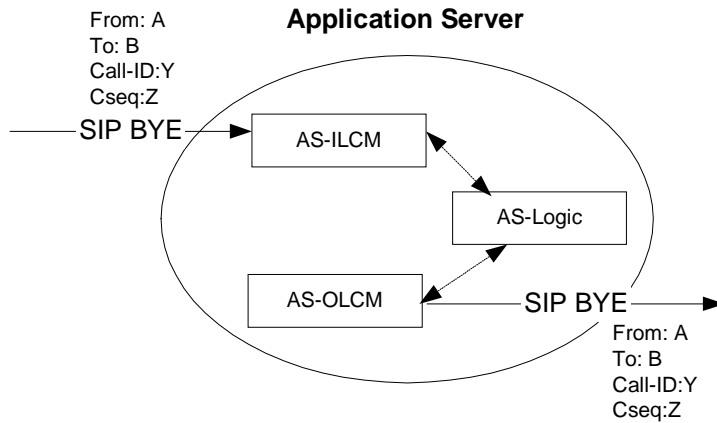
From: A
To: B
Call-ID:Y
Cseq:Z

Application Server

SIP BYE → AS-ILCM

AS-ILCM ↔ AS-Logic

AS-OLCM ↔ AS-Logic

AS-OLCM → SIP BYE

From: A
To: B
Call-ID:Y
Cseq:Z

Figure 9.4.4.2.1: Release request proxied by the Application Server

9.4.4.3 Session release request initiated by the Application Server

If needed, the application server may initiate release requests to the entities involved in the dialogs the application server manages. Application servers may initiate release requests in either user agent or B2BUA mode.
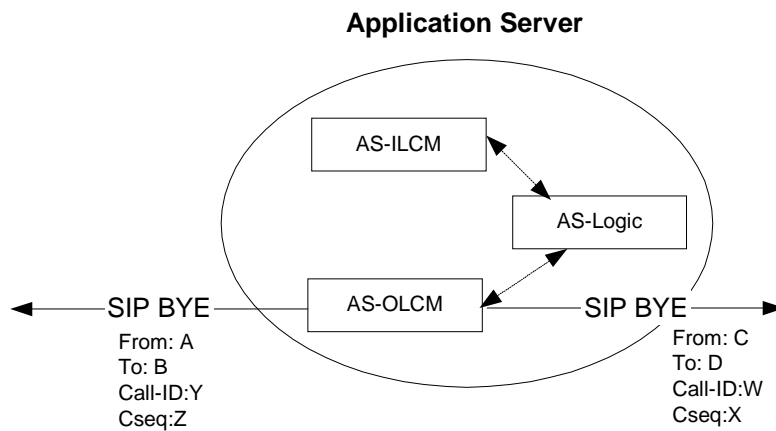
Application Server

Figure 9.4.4.3.1: Release request initiated by the Application Server

9.4.5 Application server handling of IP multimedia ~~session~~ charging

If an application server receives a third party REGISTER from the S-CSCF carrying the ICID, IOI and charging function addresses, the application server may store these parameters for charging purposes.

In a<u>n</u> ~~session~~ originating case, when processing an incoming initial request carrying the ICID, IOI, GPRS charging information and charging function addresses for this session, the application server shall pass these parameters in the outgoing message and may store the parameters for charging purposes.

In a ~~session~~ terminating case, when processing an incoming initial request carrying the ICID, IOI, GPRS charging information and charging function addresses for this session, the application server shall pass these parameters in the outgoing message and may store the parameters for charging purposes.

When the application server is acting as an originating user agent as described in clause 9.1.1.2 and initiates a session or a stand alone transaction, it shall generate ICID itself.

For detailed information on transporting charging parameters between IMS entities using SIP, see 3GPP TS 24.229 [5].

CR-Form-v7

CHANGE REQUEST

⌘	**23.218** CR **022**	⌘rev	- ~~1~~ **2**	⌘ Current version:	**5.1.0**	⌘

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

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

Title: ⌘	Clarification on specialized charging server	
Source: ⌘	NEC Corporation	
Work item code:⌘	IMS-CCR	***Date:*** ⌘ ~~23/7~~1/8/2002
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

Use one of the following categories:
*   **F** (correction)*
*   **A** (corresponds to a correction in an earlier release)*
*   **B** (addition of feature),*
*   **C** (functional modification of feature)*
*   **D** (editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

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

Reason for change: ⌘	The proposed change is based on LS from SA5(S5-024245). It is stated that there is a case that a SIP Application Server acts as specialized online charging server and communicate with content server (SIP AS) by Diameter protocol.	
Summary of change:⌘	In 5.1 of 23.218, it is added that there is a case that a SIP Application Server acts as specialized online charging server and communicate with content server (SIP AS) by Diameter protocol.	
Consequences if not approved: ⌘	IMS online charging mechanism may be implemented wrongly in Rel 5.	

Clauses affected: ⌘	2, 3.2, 5.1, ~~6.9~~12	

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

Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Start of first change

2 References

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

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

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

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

[1]   Void.

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

[3]   3GPP TS 23.228: " IP multimedia subsystem; Stage 2".

[4]   3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP; stage 3".

[5]   3GPP TS 24.229: "IP multimedia call control protocol based on SIP and SDP; stage 3".

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

[7]   3GPP TR 29.998-4-4: "Open Service Access (OSA); Application Programming Interface (API) Mapping for Open Service Access (OSA); Part 4: Call Control Service Mapping; Subpart 4: Multiparty Call Control SIP".

[8]   3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx Interface; Signalling flows and message contents".

[9]   3GPP TS 23.278: "Customised Applications for Mobile network Enhanced Logic (CAMEL); IP Multimedia System (IMS) interworking; Stage 2".

[10]   3GPP TS 23.008: "Organisation of subscriber data".

[11]   3GPP TS 33.203: "Access security for IP based services".

[12]   3GPP TS 29.198: "Open Service Access (OSA); Application programming Interface (API)".

[13]   IETF RFC 3265: "Session Initiation Protocol (SIP) Event Notification".

[14]   3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3; CAMEL Application Part (CAP) specification".

[15]   IETF RFC 3264: "An Offer/Answer Model with Session Description Protocol".

[16]   3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[17]   3GPP TS 29.229: "Cx Interface based on the Diameter protocol".

[18]   3GPP TS 29.328: "IP Multimedia Subsystem (IMS) Sh Interface; Signalling flows and message contents".

[19]   3GPP TS 29.329: "Sh Interface based on the Diameter protocol".

[~~19A~~20]   3GPP TS 32.200: "Telecommunication management; Charging management; Charging principles".

[~~19B~~21]   3GPP TS 32.225: "Telecommunication management; Charging management; Charging data description for the IP Multimedia subsystem".

End of first Change

Start of second change

3.2   Abbreviations

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

API	Application Programming Interface
AS	Application Server
AS-ILCM	Application Server Incoming Leg Control Model
AS-OLCM	Application Server Outgoing Leg Control Model
B2BUA	Back-to-Back User Agent
CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CCF	Charging Collection Function
CDR	Charging Data Records
CF	Call Forwarding
CFonCLI	Call Forwarding on Calling Line Identification
CGI	Common Gateway Interface
CPL	Call Processing Language
CLI	Calling Line Identification
CSCF	Call Session Control Function
CSE	CAMEL Service Environment
ECF	Event Charging Function
FC	Filter Criteria
GPRS	General Packet Radio Service
GPRS CID	GPRS Charging IDentifiers
gsmSCF	gsm Service Control Function
HPLMN	Home PLMN
HSS	Home Subscriber Server
IETF	Internet Engineering Task Force
I-CSCF	Interrogating CSCF
ICID	IMS Charging ID
iFC	Initial Filter Criteria
ILCM	Incoming Leg Control Model
IM	IP Multimedia
IM-CSI	IP Multimedia CAMEL Subscription Information
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IM-SSF	IP Multimedia Service Switching Function
IOI	Inter Operator Identifier
IP	Internet Protocol
ISC	IP multimedia Service Control
MAP	Mobile Application Part
MGCF	Media Gateway Control Function
MO	Mobile Originating
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MT	Mobile Terminating
O-IM-CSI	Originating IP Multimedia CAMEL Subscription Information
OLCM	Outgoing Leg Control Model
OSA	Open Service Access

PLMN	Public Land Mobile Network
P-CSCF	Proxy CSCF
RFC	Request For Comments
SCF	Session Charging Function
SCIM	Service Capability Interaction Manager
SCS	Service Capability Server
SDP	Session Description Protocol
sFC	Subsequent Filter Criteria
SIP	Session Initiation Protocol
S-CSCF	Serving CSCF
SPI	Service Points of Interest
STP	Service platform Trigger Points
T-IM-CSI	Terminating IP Multimedia CAMEL Subscription Information
UA	User Agent
UE	User Equipment
URL	Uniform Resource Locator

End of second change

Start of third change

6.9   Description of subscriber data

6.9.1   Application Server subscription information

The Application Server Subscription Information is the set of all Filter Criteria that are stored within the HSS for service profile for a specific user. This information shall be sent by the HSS to the S-CSCF via the Cx Interface during registration. Filter Criteria shall also be sent after registration via the Cx interface when requested, as specified in 3GPP TS 29.228 [8].

6.9.2   Filter Criteria

This clause defines the contents of the Filter Criteria. This information is part of the Application Server Subscription Information. For further information about the XML modelling see 3GPP TS 29.228 [8].

Filtering is done for initial SIP request messages only.

The S-CSCF shall apply filter criteria to determine the need to forward SIP requests to Application Servers. These filter criteria will be downloaded from the HSS.

Initial Filter Criteria (iFC) are stored in the HSS as part of the user profile and are downloaded to the S-CSCF upon user registration, or upon a terminating initial request for an unregistered user if unavailable. They represent a provisioned subscription of a user to an application. After downloading the User Profile from the HSS, the S-CSCF assesses the filter criteria. Initial Filter Criteria are valid throughout the registration lifetime of a user or until the User Profile is changed.

Subsequent Filter Criteria (sFC) are not used in this version of this specification.

6.9.2.1   Application Server address

Address to be used to access the Application Server for a particular subscriber. ~~There is a case that specific charging server is allocated as application server address for every subscriber requesting on line charging service.~~

6.9.2.2   Default handling

The default handling procedure indicates whether to abandon matching of lower priority triggers and to release the dialogue, or to continue the dialogue and trigger matching.

Use of the default handling procedure by the AS is not supported in this version of this specification.

6.9.2.3   Trigger point

Trigger Points are the information the S-CSCF receives from the HSS that defines the relevant SPIs for a particular application. They define the subset of initial SIP requests received by the S-CSCF that should be sent or proxied to a particular application. When the S-CSCF receives an initial SIP request, it evaluates the filter criteria one by one. If the initial SIP request matches the filter criteria, the S-CSCF proxies the SIP request to the corresponding SIP AS/IM-SSF/OSA SCS.

6.9.2.4   iFC Priority

If there are multiple initial Filter Criteria assigned for one subscriber, the priority shall describe the order in which the S-CSCF shall assess them, and then contact the Application Servers when the SIP request matches the initial filter criteria. In this case, the S-CSCF shall interact with the application server associated with the initial matching filter criteria, starting from the filter criteria which has the highest priority.

End of third change

Start of fourth change

11 IP multimedia session handling with an OSA-Service Capability Server

This clause describes the functional architecture needed to support interactions with the S-CSCF in the IP Multimedia Subsystem and the OSA-SCS. The OSA-Service Capability Server is a SIP Application Server which interfaces SIP to the OSA framework. The generic SIP Application Server behaviour of the OSC-SCS is specified in clause 9 of the present document.

12. IP multimedia session handling with an Charging Server

This clause describes the functional architecture needed to support interactions with the S-CSCF in the IP Multimedia Subsystem and Charging Server. The Charging Server is a specific SIP Application Server that performs the role of online charging mechanism for the Event Charging Function (ECF) and Session Charging Function (SCF).

The detailed procedures for Charging Server are specified in 3GPP TS 32.200 [19A20] and 3GPP TS 32.225[19B21].

End of fourth change