3GPP TSG CN Plenary Meeting #18 **NP-020552**
4th - 6th December 2002. New Orleans, USA.

Source: **TSG CN WG 1**

Title: **CR to Rel-5 on Work Item IMS-CCR towards 23.218,- pack 1**

Agenda item: **8.1**

Document for: **APPROVAL**

Introduction:

This document contains **5** CRs, **Rel-5** Work Item **"IMS-CCR"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #18 for approval.

Spec	CR #	Rev	CAT	Rel	Tdoc Title	Meeting	TDoc #	C_Version
23.218	029	1	F	Rel-5	Clarification on CCF/ECF addresses	N1-26	N1-022142	5.2.0
23.218	031	1	F	Rel-5	Support of originating requests from Application Servers	N1-26	N1-022144	5.2.0
23.218	033		F	Rel-5	Addition of Request-URI as SPT	N1-27	N1-022297	5.2.0
23.218	034	1	F	Rel-5	Clarifications on Annex C (Informative)	N1-27	N1-022469	5.2.0
23.218	038	1	F	Rel-5	Clarification to use of Service Information	N1-27	N1-022475	5.2.0

3GPP TSG-CN1 Meeting #26 ***Tdoc N1-022142***
Miami Beach, Florida, USA, 23 – 27 September

CR-Form-v7

CHANGE REQUEST

⌘ **23.218** **CR** **029** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

*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 CCF/ECF addresses
Source:	⌘	NEC Corporation
Work item code:	⌘	IMS-CCR
Date:	⌘	17/9/2002
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 SA Plenary in September, TS 32.225 is approved as Rel 5. According to TS 32.225, there is a case that charging addresses (CCF/ECF addresses) are localy preconfigured address regardless of existence of Cx interface.
Summary of change:	⌘	In 6.8. and 9.4.5, it is added that there is a case that CCF and/or ECF addresses are allocated as locally preconfigured addresses.
Consequences if not approved:	⌘	IMS charging mechanism may be implemented wrongly in Rel 5.

Clauses affected:	⌘	6.8, 9.4.5

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	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

6.8 S-CSCF handling IMS charging

In registration processing, a S-CSCF may send a third party REGISTER to an application server, where the ICID, IOI and charging function addresses are included in the message.

During a session, the S-CSCF shall generate the CDR for charging purposes.

In a session originating case, when receiving an incoming initial request, this request will carry the ICID generated by the upstream P-CSCF, which is serving the originating user; the S-CSCF shall store the ICID for this session and handle this request based on filter criteria. After processing this request the S-CSCF shall include the ICID and the charging function addresses received from the HSS in the outgoing message. The charging function addresses identify on-line, and off-line charging entities in the home network. It is implementation dependent how IMS related entities such as P-CSCF in the visited network get the local CCF addresses in the case that the P-CSCF is located in the visited network. ~~Note that there is a case that c~~Charging function addresses ~~are~~may be allocated as locally preconfigured addresses ~~regardless of existence of Cx interface~~. If this message is sent outside the mobile network, S-CSCF shall include Inter Operator Identifier (IOI) that identifies the home network into the message. IOI is globally unique identifier for using inter operator accounting purposes. The response to the outgoing message may contain a separate IOI that identifies the home network of the called party. The S-CSCF shall retain either IOI in the message when contacting the Application Servers. The S-CSCF will receive GPRS charging information from subsequent requests and responses, the S-CSCF shall store these parameters and shall remove them from the outgoing message if this message is sent to the terminating UE's home network or the originating UE's visited network. The GPRS charging information may be sent to application servers.

In a session terminating case, when receiving an incoming initial request, this request will carry the ICID generated by the originating UE's P-CSCF; the S-CSCF shall store the ICID for this session and handle this request based on filter criteria. After processing this request the S-CSCF shall include the ICID and the charging function addresses received from the HSS in the outgoing message. The charging function addresses identify on-line and off-line charging entities in the home network. IOI may be received from another network or is inserted by the MGCF to identify the originating PSTN/PLMN. If IOI is received at the S-CSCF, the S-CSCF shall store the IOI value for the network that sent the request. The response to the incoming message may contain a separate IOI that identifies the home network of the S-CSCF. The S-CSCF shall retain either IOI in the message when contacting the Application Servers. Afterwards, the S-CSCF shall remove the IOI of the requesting network from the message before sending the message further within the network. The S-CSCF will receive GPRS charging information from subsequent requests and responses, the S-CSCF shall store these parameters and removes them from the outgoing message if this message is sent to the terminating UE's visited network or the originating UE's home network. The GPRS charging information may be sent to application servers.

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

End of first change

Start of second change

9.4.5 Application server handling of IP multimedia session charging

9.4.5 Application server handling of IP multimedia 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 an 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 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 standalone transaction, it shall generate ICID itself. ~~Note that there is a case that c~~Charging function addresses ~~are~~may be allocated as locally preconfigured addresses ~~regardless of existence of Cx interface~~.

End of second change

Tdoc N1-022144

CR-Form-v7

CHANGE REQUEST

⌘ 23.218 CR 031 ⌘rev 1 ⌘ Current version: 5.2.0 ⌘

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

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

Title:	⌘	Support of originating requests from Application Servers
Source:	⌘	Dynamicsoft
Work item code:	⌘	IMS-CCR
Date:	⌘	September 26, 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)*

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Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	TS 23.218 clearly specifies that Application Servers may originate requests however it is not clearly stated that Filter Criteria should be evaluated when the S-CSCF receives an initial request from an Application Server. SA2 have agreed in a CR 188 to TS 23.228 (that was approved at TSG SA#17) that a mobile terminating request originated from an Application Server should cause the S-CSCF to determine if other Application Servers should be contacted.
Summary of change:	⌘	Modified clauses 6.5.1 and 6.5.2 to clarify that a terminating initial request may originate from an Application Server via the ISC interface and that this may also cause filter criteria to be evaluated.
Consequences if not approved:	⌘	Inconsistent behaviour in S-CSCF implementations for initial request received from application servers and failures of application server originated session requests. TS 23.228 and TS 23.218 to not be consistent.

Clauses affected:	⌘	5.2, 6.5.1, 6.5.2

Other specs affected: ⌘	Y	N		⌘
	X		Other core specifications	TS 24.229 (CR 179)
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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FIRST MODIFICATION

5.2 Service interaction with IP multimedia subsystem

Service Point Triggers (SPTs) are those points in the SIP signalling on which Filter Criteria can be set. The following 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 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 Point Triggers (SPTs) triggered by this Filter Criteria. The 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 Point Triggers (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 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.

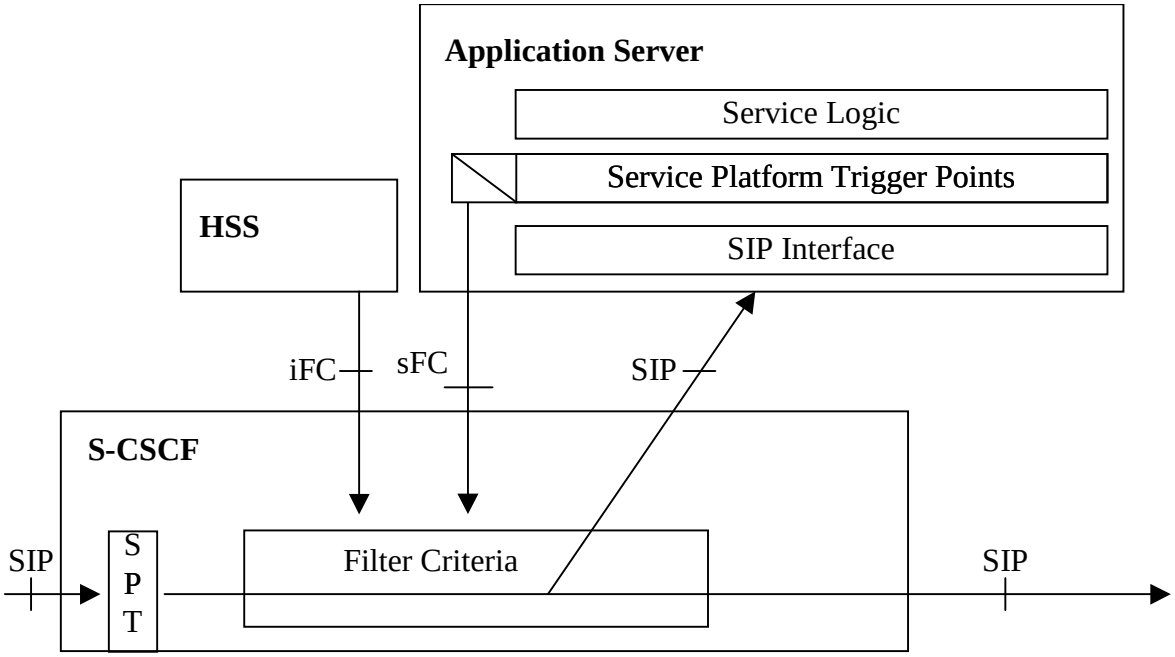

Figure 5.2.1: Application triggering architecture

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).

NOTE: Care should be taken in design of the Initial Filter Criteria when designing services to avoid unintended loops being setup, where requests from an Application Server may be sent back to the same Application Server. This does not imply that it is not allowed for requests to be sent back to the same Application Server when that is intended behaviour as part of the design of the service and the Application Server is able to handle this correctly. Special care should be taken for the case when an Application Server may act as an originating UA or B2BUA and may originate an initial request causing evaluation of Initial Filter Criteria.

NEXT MODIFICATION

6.5 Handling of mobile terminating requests

6.5.1 Handling of mobile terminating requests, 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. A terminating initial request may also originate from an Application Server via the ISC interface. Terminating Initial requests from an Application Server via the ISC interface also cause the S-CSCF to look for initial filter criteria.

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 to registered user;
- the subsequent requirements for the S-CSCF are the same as those for handling originating 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.

6.5.2 Handling of mobile terminating requests, 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. A terminating initial request may also originate from an Application Server via the ISC interface. Terminating Initial requests from an Application Server via the ISC interface also cause the S-CSCF to look for initial filter criteria.

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 to unregistered user;
- the subsequent requirements for the S-CSCF are the same as those for handling originating 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.

END MODIFICATION

3GPP TSG-CN1 Meeting #27 ***Tdoc N1-022297***
Bangkok, Thailand, 11 – 15 November 2002

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CHANGE REQUEST

⌘ **23.218** **CR** **033** ⌘ **rev** **-** ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘	Addition of Request-URI as SPT
Source:	⌘	Nokia
Work item code:	⌘	IMS-CCR
Date:	⌘	30/11/2002
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)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Content of any SIP header field can be as SPT but Request-URI is not explicitly mentioned
Summary of change:	⌘	Explicit mentioning of Request-URI as SPT
Consequences if not approved:	⌘	Misleading specification whether Request-URI can be used as SPT or not

Clauses affected:	⌘	5.2			
Other specs affected:	⌘	**Y**	**N**		⌘
		☐	☐	Other core specifications	
		☐	☐	Test specifications	
		☐	☐	O&M Specifications	
Other comments:	⌘				

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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 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 :

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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.

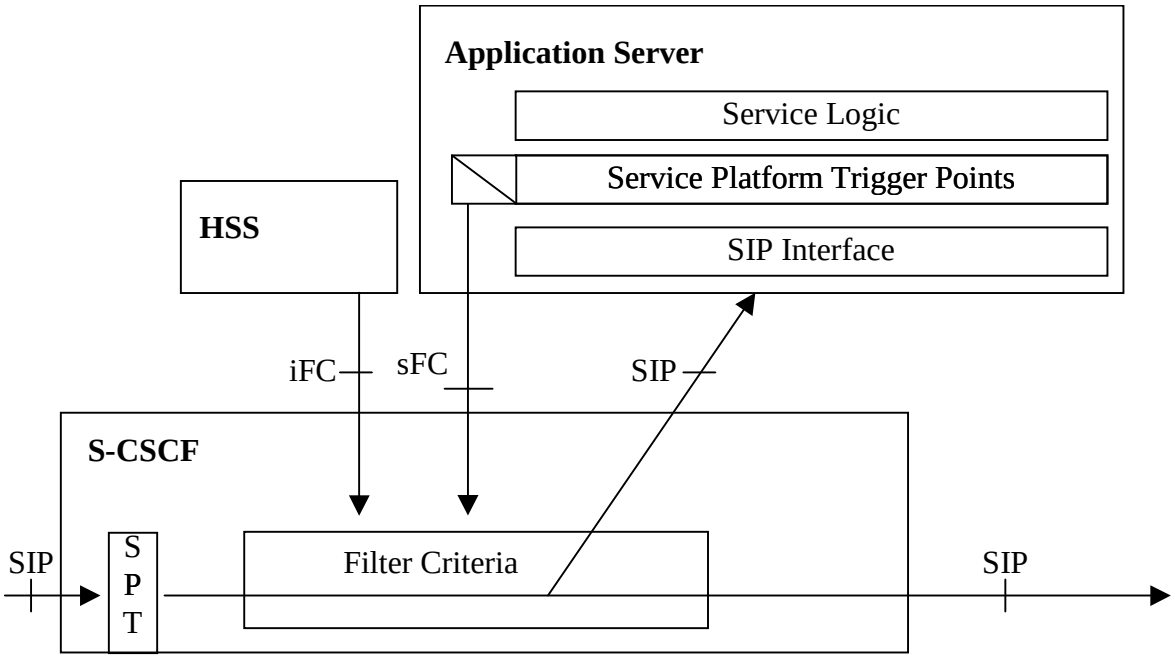

Figure 5.2.1: Application triggering architecture

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).

3GPP TSG-CN1 Meeting #27 ***Tdoc N1-022469***
Bangkok, Thailand, 11 – 15 November 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.218** **CR** **034** ⌘ **rev** **1** ⌘ Current version: **5.2.0** ⌘

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

Title:	⌘	Clarifications on Annex C (Informative)
Source:	⌘	NEC Corporation
Work item code:	⌘	IMS-CCR
Date:	⌘	04/11/2002
Category:	⌘	**F**
Release:	⌘	Rel 5

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R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	1. The subsequent filter criteria is not supported in Rel 5 so that SPT is not resided in AS. 2. The filter criteria should be changed to initial filter criteria. 3. Other minor editorial should be done.
Summary of change:	⌘	It is proposed to change the above points in Annex C.
Consequences if not approved:	⌘	The contents of Annex is remained being misaligned with the main body of 23.218

Clauses affected:	⌘	Annex C

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

Other comments:	⌘	

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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 change

3 Annex C (informative): Example for Initial 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~~ Also, ~~its~~ the application server specific data may ~~also~~ have been downloaded via the Sh interface to the application server during registration ~~via Sh interface~~.

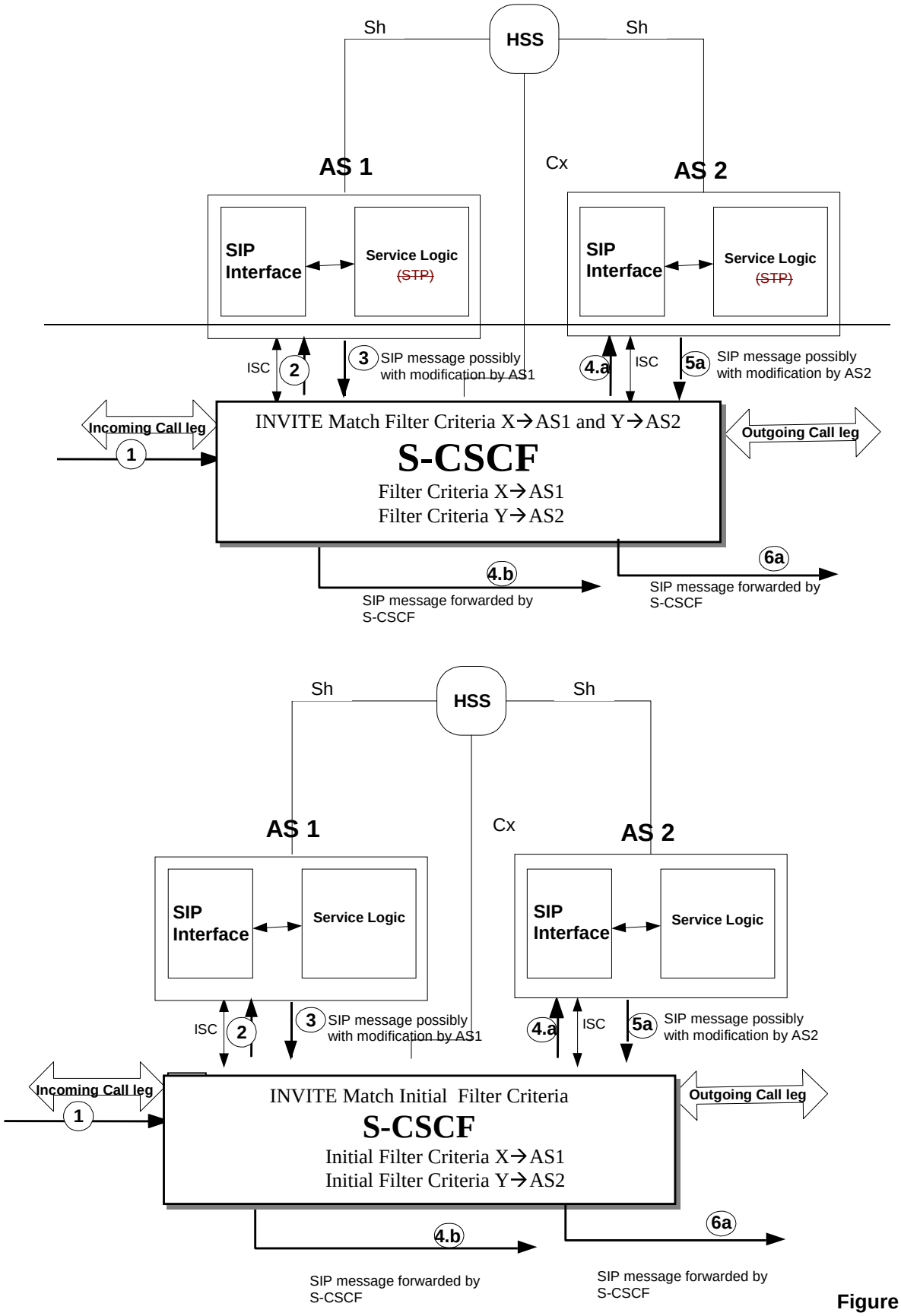

Figure C.1:

Initial 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 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~~logic based on the ~~STP (Service Platform Triggering Points)~~Service Key and ~~proxies~~ sends 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 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~~ logic based on the ~~STP (Service Platform Triggering Points)~~Service Key and ~~proxies~~ sends 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 third change

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.
Service Information ~~shall~~is only ~~be~~ included by the S-CSCF in~~for~~ REGISTER requests where the S-CSCF acts as a ~~User Agent Client~~UAC.