Source: **TSG CN WG 1**

Title: **CRs to Rel-5 on Work Item IMS-CCR towards 24.229**

Agenda item: **8.1**

Document for: **APPROVAL**

Introduction:

This document contains **7** CRs on **Rel-5 on** Work Item **"IMS-CCR"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #16 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Version Current	Version-New	Meeting-2nd-Level	Doc-2nd-Level
24.229	113	1	Rel-5	SIP Default Timers	C	5.0.0	5.1.0	N1-24	N1-021465
24.229	114	1	Rel-5	Correction of the subscription to the registration event package	F	5.0.0	5.1.0	N1-24	N1-021436
24.229	115	1	Rel-5	Support for ISIMless UICC	B	5.0.0	5.1.0	N1-24	N1-021441
24.229	119	1	Rel-5	SIP procedures at UE	F	5.0.0	5.1.0	N1-24	N1-021452
24.229	121	2	Rel-5	New requirements in the P-CSCF	F	5.0.0	5.1.0	N1-24	N1-021509
24.229	122		Rel-5	SDP procedures at MGCF	F	5.0.0	5.1.0	N1-24	N1-021264
24.229	124	1	Rel-5	S-CSCF allocation	F	5.0.0	5.1.0	N1-24	N1-021443

CR-Form-v5

CHANGE REQUEST

⌘ **24.229 CR 113** ⌘**rev 1** ⌘ Current version: **5.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	SIP Default Timers	
Source: ⌘	Hutchison 3G	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 15th May 2002
Category: ⌘ **C**		***Release:*** ⌘ REL-5

Use <u>one</u> 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 <u>one</u> 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)

Reason for change: ⌘	<u>Rev 1</u> Modified recommended values for Timer 1, Timer 4, Timer D. Added column to table for P-CSCF facing UE. Note after table is deleted. Table number added. Text before table modified to refer to RFC3261 and clarify what the table contents are. <u>Rev 0</u> The delays to SIP messages on the air interface will cause some SIP messages to be unnecessarily retransmitted, utilising additional air interface bandwidth. The default values of the timers defined in SIP are modified to prevent this.
Summary of change: ⌘	A table is added to define 3GPP specific values for SIP timers.
Consequences if not approved: ⌘	Unnecesary retransmission of SIP messages over the air.

Clauses affected: ⌘	7.7 (new clause)

Other specs affected: ⌘	☐ 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/3G_Specs/CRs.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) 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.

7.6.3 DTD description

This section describes the elements of the 3GPP IMS Document Type Definition.

<ims-3gpp>: This is the root element of the 3GPP IMS XML body. It shall always be present. The version described in the present document is 1.

<vnid>: Visited network identifier. Optional element that describes the P-CSCF network name. The vnid value is a string of characters that identifies the P-CSCF network at the user's network home.

<cell-id>: This element describes the identity of the cell that is serving the user.

The <cell-id> element contains the <ran> attribute that identifies the coding of the cell-id, according to whether the cell-id was received from the GERAN or UTRAN.

The <cell-id> element comprises four children elements: <mcc>, <mnc>, <lac> and <ci>. They represent, respectively, the Mobile Country Code, Mobile Network Code, Location Area Code and Cell Identity, as described in [3].

<original-dialog-id>: The original dialog, as received by the S-CSCF. This element helps the S-CSCF to correlate dialogues when the Application Server is behaving as a B2BUA, and therefore, modifies then dialogue.

The original-dialog-id element comprises three children elements: <od-from>, <od-to>, <od-call-id>. Their values contain, respectively, a copy of the From, To and Call-ID header values as received in the SIP message at the S-CSCF.

<destination-public-user-id>: The destination public-user-id URL of the current session.

<access>: The access element, if present, identifies the access that the UE is utilized to connect to the network. The element contains two children elements: <ant> and <technology>.

The <access-type> child element describes the access type. The predefined values are:

- gprs: the user is accessing the network through a GRPS access;

- wlan: the user is accessing the network through a wireless local area network;

- fixed: the user is accessing the network through a fixed access.

The <technology> child element, if present, describes the access technology. The pre-defined values are:

- utran: UTRAN, as defined in [3];

- geran: GERAN, as defined in [3];

- 802.11a: wireless local area network according to the 802.11a technology;

- 802.11b: wireless local area network according to the 802.11b technology;

- sat: satellite access;

- adsl: asymmetric digital subscriber line.

<charging-vector>: the charging-vector element, if present, identifies charging correlation information. The element contains two children elements: <icid> and <gprs-charging-id>.

The <icid> child element contains an IMS charging identifier that is globally unique and is associated with the end-to-end session.

The <gprs-charging-id> child element, if present, contains GPRS charging identifiers comprised of the following: <ggsn> and <pdp-info>:

- <ggsn>: identifier of the GGSN;

- <pdp-info>: one or more instances of information for a PDP context, which is comprised of two children elements: <pdp-index> and <pdp-id>:

  - <pdp-index>: relative index of PDP context as it correlates to a media stream in the SDP;

  - <pdp-id>: unique identifier of the PDP context from the GGSN.

<service-info>: the transparent element received from the HSS for a particular Application Server are placed within this optional element.

<alternative-service>: in the present document, the alternative service is used as a response for an attempt to establish an emergency session within the IM CN subsystem. The element describes an alternative service where the call should success. The alternative service is described by the type of service information. A possible reason cause why an alternative service is suggested may be included.

The <alternative-service> element contains a <type> element that indicates the type of alternative service. In the present document, the <type> element contains only the value "emergency".

The <reason> element contains an explanatory text with the reason why the session setup has been redirected. A UE may use this information to give an indication to the user.

7.7 SIP Timers

The timers defined in RFC 3261 [20] need modifcation in some cases to accommodate the delays introduced by the air interface processing and transmission delays. Table 7.4 shows recommended values for 3GPP.

Table 7.4 lists in the first column, titled 'SIP Timer' the timer names as defined in RFC3261 [20].

The second column, titled '3GPP value to be applied between network elements' lists the values recommended for network elements e.g. P-CSCF, S-CSCF, MGCF, when communicating with each other i.e. when no air interface leg is included. These values are identical to those recommended by RFC3261 [20].

The third column, titled '3GPP value to be applied at the UE' lists the values recommended for the UE. These are modified when compared to RFC3261 [20] to accommodate the air interface delays.

The fourth column, titled '3GPP value to be applied at the P-CSCF toward a UE' lists the values recommended for the P-CSCF when an air interface leg is traversed. These are modified when compared to RFC3261 [20].

The final column reflects the timer meaning as defined in RFC3261 [20].

Table 7.4: SIP Timers

SIP Timer	3GPP value to be applied between network elements	3GPP value to be applied at the UE	3GPP value to be applied at the P-CSCF toward a UE	Meaning
T1	500ms default	2s default	2s default	RTT Estimate
T2	4s	16s	16s	The maximum retransmit interval for non-INVITE requests and INVITE responses
T4	5s	17s	17s	Maximum duration a message will remain in the network
Timer A	initially T1	initially T1	initially T1	INVITE request retransmit interval, for UDP only
Timer B	64*T1	64*T1	64*T1	INVITE transaction timeout timer
Timer C	> 3min	> 3 min	> 3 min	proxy INVITE transaction timeout
Timer D	> 32s for UDP 0s for TCP/SCTP	>128s 0s for TCP/SCTP	>128s 0s for TCP/SCTP	Wait time for response retransmits
Timer E	initially T1	initially T1	initially T1	non-INVITE request retransmit interval, UDP only
Timer F	64*T1	64*T1	64*T1	non-INVITE transaction timeout timer
Timer G	initially T1	initially T1	initially T1	INVITE response retransmit interval
Timer H	64*T1	64*T1	64*T1	Wait time for ACK receipt .
Timer I	T4 for UDP 0s for TCP/SCTP	T4 for UDP 0s for TCP/SCTP	T4 for UDP 0s for TCP/SCTP	Wait time for ACK retransmits
Timer J	64*T1 for UDP 0s for TCP/SCTP	64*T1 for UDP 0s for TCP/SCTP	64*T1 for UDP 0s for TCP/SCTP	Wait time for non-INVITE request retransmits
Timer K	T4 for UDP 0s for TCP/SCTP	T4 for UDP 0s for TCP/SCTP	T4 for UDP 0s for TCP/SCTP	Wait time for response retransmits

8 SIP compression

8.1 SIP compression procedures at the UE

CR-Form-v5.1

CHANGE REQUEST

⌘   **24.229** CR **114**   ⌘**rev** **1** ⌘   Current version: **5.0.0** ⌘

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

Proposed change affects: ⌘   (U)SIM ☐   ME/UE ☐   Radio Access Network ☐   Core Network **X**

Title:	⌘	Correction of subscription to the registration event package
Source:	⌘	Siemens AG
Work item code:	⌘ IMS-CCR	***Date:*** ⌘ 6th May 2002
Category:	⌘ **F**	***Release:*** ⌘ REL-5

Use <u>one</u> 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 <u>one</u> 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)*

Reason for change:	⌘	After registration, the UE subscribes to the registration event package in order to get notified of its implicitly registered public user ids and in order to enable the network to request re-authentication and notify the user about de-registered public user ids. Currently the presence event package is used for that purpose. However, this has not been described in 24.229 up to now. At the CN WG1 adhoc in Madrid it was decided that a separate event package shall be created for that purpose. An informational Internet Draft (draft-beckmann-sip-reg-event-01) was submitted to IETF. This CR adds a reference to that draft.
Summary of change:	⌘	1. Reference is added 2. Pointer to the draft describing the registration-state event package is added in the procedure description.
Consequences if not approved:	⌘	Ambiguous description of the procedure how to subscribe to the registration-state package.

Clauses affected:	⌘	2; 5.1.1.3; 5.2.3; 5.4.1.5; 5.4.2.1.2;
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	~~Please note that this CR does NOT reflect the decision from the CN WG1 adhoc in Madrid that P-CSCF no longer subscribes the registration state event.~~

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2 References

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

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

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

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

[1]   3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 23.002: "Network architecture".

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

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

[5]   3GPP TS 23.218: "IP Multimedia (IM) Session Handling; IM call model".

[6]   3GPP TS 23.221: "Architectural requirements".

[7]   3GPP TS 23.228: "IP multimedia subsystem; Stage 2".

[8]   3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network protocols; Stage 3".

[9]   3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[10]   3GPP TS 26.235: "Packet switched conversational multimedia applications; Default codecs".

[11]   3GPP TS 29.208: "End to end Quality of Service (QoS) signalling flows".

[12]   3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx Interface; Signalling flows and message contents".

[13]   3GPP TS 33.102: "3G Security; Security architecture".

[14]   3GPP TS 33.203: "Access security for IP based services".

[15]   3GPP TS 44.018: "Mobile radio interface layer 3 specification, Radio Resource Control Protocol".

[16]   RFC 2806: "URLs for Telephone Calls".

[17]   RFC 2833 (May 2000): "RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals".

[18]   RFC 2916: "E.164 number and DNS".

[19]   RFC 2976 (October 2000): "The SIP INFO method".

[20]   draft-ietf-sip-rfc2543bis-07 (January 2002): "SIP: Session Initiation Protocol".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[21]   draft-ietf-sip-100rel-05 (February 2002): "Reliability of provisional responses in SIP".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[22]   draft-sip-manyfolks- resource-03 (November 2001): "Integration of resource management and SIP".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[23]   draft-ietf-sip-events-02.txt (February 2002): "SIP-Specific Event Notification".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[24]   draft-ietf-sip-callerprefs-05 (November 2001): "SIP caller preferences and callee capabilities".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[25]   draft-ietf-sip-refer-02 (October 2001): "The REFER method".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[26]   draft-ietf-sip-session-timer-08 (October 2001): "The SIP session timer".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[27]   draft- sip-privacy-03 (November 2001): "SIP extensions for caller identity and privacy".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[28]   draft- sip-state-02 (August 2001): "SIP extensions for supporting distributed call state".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[29]   draft- sip-call-auth-03 (November 2001): "SIP extensions for media authorization".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[30]   draft-ietf-mmusic-sdp-new-04 (November 2001): "SDP: Session Description Protocol".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[X]   draft-beckmann-sip-reg-event-01 (May 2002): "Registration event package".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

NEXT CHANGE – UE

5.1.1.3   Initial subscription to the registration-state event package

Upon receipt of a 2xx response to the initial registration, the UE shall subscribe to the users registration-state event package for the public user identity registered as described in subclause 5.1.1.2 at the users registrar (S-CSCF). The registration-state event package is described in draft-beckmann-sip-reg-event-01[X]. Therefore the UE shall generate a SUBSCRIBE request with the following elements:

- a Request URI set to the resource to which the UE wants to be subscribed to, i.e. to a SIP URL that contains the public user identity that was previously registered;

- a From header set to a SIP URL that contains the public user identity that was previously registered;

- a To header, set to a SIP URL that contains the public user identity that was previously registered;

- an Event header set to the "registration-state" event package;

- an Expires header set to a value higher than the Expires header of the before sent REGISTER request.

Afterwards it shall send out the so generated SUBSCRIBE request.

Upon receipt of a 2xx response to the SUBSCRIBE message, the UE shall store the information for the established dialog and the expiration time as indicated in the Expires header of the received response.

The UE shall automatically resubscribe to the registration-state event package for a previously registered public user identity if the expiration time, as indicated in the Expires header of the 2xx response to the SUBSCRIBE message, has run out and the public user identity is still registered.

NEXT CHANGE – P-CSCF

5.2.3   Subscription to the users registration-state event package

Upon receipt of a 2xx response to the initial REGISTER request of an user, the P-CSCF shall subscribe to the users registration-state event package at the users registrar (S-CSCF) as described in draft-beckmann-sip-reg-event-01 [X]. Therefore the P-CSCF shall generate a SUBSCRIBE request with the following elements:

-    a Request-URI set to the topmost entry of the path information that was obtained during the users registration;

-    a From header set to a SIP URL that contains the P-CSCF's FQDN;

-    a To header, set to a SIP URL that contains the public user identity that was previously registered;

-    an Event header set to the "registration-state" event package;

-    an Expires header set to a value higher then the Expires header of the before sent REGISTER request from the user; and

-    a Route header according to the path information that was obtained during the users registration. Th S-CSCF shall set the last Route header entry to the resource to which it wants to subscribe to, i.e. to a SIP URL the public user identity that was previously registered.

Afterwards the P-CSCF shall send out the so generated SUBSCRIBE request.

Upon receipt of a 2xx response to the SUBSCRIBE message, the P-CSCF shall store the information for the so established dialog and the expiration time as indicated in the Expires header of the received response.

NEXT CHANGE – S-CSCF

5.4.1.5   Network-initiated deregistration

When a network-initiated deregistration event occurs for a public user identity, and the UE has subscribed for the registration-stateat event, the S-CSCF shall generate a NOTIFY request in order to inform the UE of the network-initiated deregistration event for that public user identity. The S-CSCF shall set the event header to the name of the event package, which provides information about the registration state of the UE.

When a network-initiated deregistration event occurs for a public user identity, and the P-CSCF has subscribed for registration events for that public user identity, the S-CSCF shall generate a NOTIFY request in order to inform the P-CSCF of the network initiated deregistration event for that public user identity. The S-CSCF shall set the event header to the name of the event package, which provides information about the registration state of the UE.

If the network-initiated deregistration is for a set of public user identities associated with the subscriber, the NOTIFY shall send the registration state of all public user identities of the subscriber.

Also, the S-CSCF shall send a third-party REGISTER request, as described in subclause 5.4.1.7, to each Application Server that matches the Filter Criteria from the HSS for the REGISTER event.

5.4.1.6 Network-initiated reauthentication

The S-CSCF may request a subscriber to reauthenticate at any time, based on a number of possible operator settable triggers as described in subclause 5.4.1.2.

If the S-CSCF is informed that a private user identity needs to be re-authenticated, the S-CSCF shall generate a NOTIFY request on all dialogs (i.e. the dialog between S-CSCF and the UE and additionally between S-CSCF and P-CSCF) which have been established due to subscription to the registration-state event package of that user. The S-CSCF shall populate the content of the NOTIFY request and additionally shall:

- set the Request-URI and Route header to the saved route information during subscription;

- set the Event header to the "registration-state" value; and

- indicate a public user identity of the user for which the private user identity needs to be re-authenticated in the body of the NOTIFY request with registration state "re-authenticate".

Afterwards the S-CSCF shall:

- wait for the user to reauthenticate (see subclause 5.4.1.2).

NOTE: Network initiated re-authentication might be requested from the HSS or may occur due to internal processing within the S-CSCF.

In case S-CSCF receives no data it can authenticate the subscriber from, the S-CSCF may as an implementation option try to request the UE by other means to re-authenticate, e.g. by sending a REFER method in order to request a REGISTER message.

If UE does not re-authenticate within a certain period of time, the S-CSCF shall deregister the private user identity as described in subclause 5.4.1.5 and terminate the ongoing sessions of that user.

5.4.2.1.2 Notification about registration state

If the registration state of one or more public user identities changes, the S-CSCF shall generate a NOTIFY request on all dialogs which have been established due to subscription to the registration-state event package of that user. For each NOTIFY request, the S-CSCF shall:

- set the Request-URI and Route header to the saved route information during subscription;

- set the Event header to the "registration-state" value;

- indicate registration state "open" for all public user identities which are currently registered;

- indicate registration state "closed" for all public user identities which are currently deregistered; and

- indicate within the "<~~detail~~note>" information of those public user identities which will be automatically reregistered the "automatically by" information, followed by the specific public user identity which will cover the reregistration.

EXAMPLE: If sip:user1_public1@home1.net is reregistered, the public user identity sip:user1_public2@home1.net was automatically be registered. Therefore the entries in the body of the NOTIFY message look like:

```
<tuple name="sip:user1_public1@home1.net">
  <status><valuebasic>open</valuebasic></status>
</tuple>

<tuple name="sip:user1_public2@home1.net">
  <status>-<valuebasic>open</valuebasic>-</status>
  <detailnote>automatically by sip:user1_public1@home1.net</detailnote>
</tuple>
```

Afterwards the S-CSCF shall send the generated NOTIFY request on the dialog and await a 2xx response.

CR-Form-v5

CHANGE REQUEST

| ⌘ | **24.229** CR **115** | ⌘**rev** | **1** | ⌘ | Current version: | **5.0.0** | ⌘ |

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

Proposed change affects: ⌘   (U)SIM ☐   ME/UE **X**   Radio Access Network ☐   Core Network **X**

Title:	⌘	Support for ISIM-less UICC

Source:	⌘	Ericsson, Vodafone

Work item code:	⌘	IMS-CCR	***Date:*** ⌘	15-May-02

Category:	⌘	**B**	***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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be found in 3GPP TR 21.900.

Use one of the following releases:
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R96   (Release 1996)
R97   (Release 1997)
R98   (Release 1998)
R99   (Release 1999)
REL-4   (Release 4)
REL-5   (Release 5)

Reason for change: ⌘		There is not support for UICCs that do not contain the ISIM application

Summary of change: ⌘		Addition of a pointer to 23.003 in the case the UICC does not contain the ISIM application. Clarification that the S-CSCF gets barred and non-barred implicitely public user identities from the HSS. Only the non-barred IDs are bound to the Contact. Clarification that the S-CSCF does not send the barred public user IDs in the NOTIFY. Addition of the S-CSCF barring an attempt to initiate or terminate a session with a barred public ID.

Consequences if not approved: ⌘		Only UICCs that contain the ISIM applicationwill work with IMS

Clauses affected: ⌘		3.2, 4.2, 5.1.1.,5.2.2, 5.4.2.1.2, 5.4.3.1, 5.4.3.2

Other specs affected:	⌘ **X**	Other core specifications ⌘	23.003, 24.228
	☐	Test specifications	
	☐	O&M Specifications	

Other comments: ⌘		Part of the functionality introduced by this CR is implemented in CR 060

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

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FIRST PROPOSED CHANGE

3.2 Abbreviations

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

1xx	A status-code in the range 101 through 199, and excluding 100
2xx	A status-code in the range 200 through 299
AS	Application Server
AUTN	Authentication TokeN
BGCF	Breakout Gateway Control Function
c	conditional
CK	Ciphering Key
CN	Core Network
CSCF	Call Session Control Function
DNS	Domain Name System
FQDN	Fully Qualified Domain Name
i	irrelevant
I-CSCF	Interrogating CSCF
IMSI	International Mobile Subscriber Identity
IK	Integrity Key
IM	IP Multimedia
IP	Internet Protocol
ISC	IP multimedia Subsystem Service Control
ISIM	IMS Suscriber Identity Module
m	mandatory
MAC	Message Authentication Code
MGCF	Media Gateway Control Function
MRFC	Media Resource Function Controller
n/a	not applicable
o	optional
P-CSCF	Proxy CSCF
PDU	Protocol Data Unit
RAND	RANDom challenge
RES	RESponse
RTP	Real-time Transport Protocol`
S-CSCF	Serving CSCF
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SQN	SeQuence Number
UA	User Agent
UAC	User Agent Client
UAS	User Agent Server
UE	User Equipment
UICC	Universal Integrated Circuit Card
URI	Universal Resource Identifier
USIM	UMTS Subscriber Identity Module
URL	Universal Resource Locator
x	prohibited

4.2   URL and address assignments

In order for SIP and SDP to operate, the following preconditions apply:

1) I-CSCFs used in registration are allocated FQDNs. Other IM CN subsystem entities may be allocated FQDNs. How these addresses are assigned to the logical entities is up to the network operator. For example, a single FQDN may be assigned to all I-CSCFs, and the load shared between various physical boxes by underlying IP capabilities, or a separate FQDN may be assigned to each I-CSCF, and the load shared between various physical boxes using DNS SRV capabilities.

Editor's note: The requirements for DNS-SRV entries or alternatives require further discussion.

2) All IM CN subsystem entities are allocated IP addresses. Allocation of IPv6 and IPv4 addresses fulfils the requirements of of 3GPP TS 23.221 [6] subclause 5.1.

3) The subscriber is allocated a private user identity by the home network operator, and this is contained within the ISIM application, if present, on the UICC. Where no ISIM application is present, the private user identity is derived from the IMSI, which is contained on the USIM (see 3GPP TS 23.003 [3]). This private user identity is available to the SIP application within the UE.

NOTE: The FQDNs may be resolved by using any of public DNSs, private DNSs, or peer-to-peer agreements.

4) The subscriber is allocated one or more public user identities by the home network operator. At least one of these is contained within the USIMISIM application, if present, on the UICC. Where no ISIM application is present, the UE shall derive a temporary public user identity from the IMSI contained on the USIM (see 3GPP TS 23.003 [3]). All registered public user identities are available to the SIP application within the UE, after registration.

5) The UE is dynamically assigned an IP version 6 address.

5 Application usage of SIP

5.1 Procedures at the UE

5.1.1 Registration and authentication

5.1.1.1 General

The UE shall register public user identities (see table A.3/1 and dependencies on that major capability).

In case a UE registers several public user identities at different points in time, the procedures to re-register, deregister and subscribe to the registration-state event package for these public user identities can remain uncoordinated in time.

5.1.1.1A Parameters contained in the UICC

In case the UE is loaded with a UICC that contains the ISIM application, it will be preconfigured with all the necessary parameters to initiate the registration to the IM CN subsystem. These parameters include:

- the private user identity;

- one ore more public user identities; and

- the home network domain name used to address the SIP REGISTER request

In case the UE is loaded with a UICC that does not contain the ISIM application, the UE shall:

- generate a private user identity;

- generate a temporary public user identity; and

- generate a home network domain name to address the SIP REGISTER request to.

All these three parameters are derived from the IMSI parameter in the USIM, according to the procedures described in 3GPP TS 23.003 [3].

The temporary public user identity is only used in REGISTER requests. After a successful registration, the UE will get the associated public user identities, and any of them shall be used in subsequent non-REGISTER messages.

As the temporary public user identity may be barred, the UE shall not ~~indicate~~reveal ~~to the user~~ the temporary public user identity to the user.

In the case the UE needs to derive the temporary public user identity, the procedure shall be executed every time the UICC is changed.

5.1.1.2 Initial registration

The UE can register a public user identity at any time that a valid PDP context exists.

A REGISTER request may be integrity protected using IK, see 3GPP TS 33.203 [14], received in an earlier registration.

The public user identity to be registered can be extracted either from the ISIM application, if present, on the UICC~~SIM~~ or derived from the USIM, according to the procedures described in subclause 5.1.1.1A. ~~If no ISIM is present, the UE shall use the temporary public user identity derived the temporary public user identity from the IMSI contained on the~~

USIM. or A public user identity may be input from by the end user. On sending a REGISTER request, the UE shall populate the header fields as follows:

a) the user ID field of the authentication protocol, carried in the Authorization header, shall contain the private user identity. This shall be extracted from the ISIM application, if present, contained on the UICC. If no ISIM application is present, the private user identity id derived from shall be extracted from the IMSI contained on the USIM (see 3GPP TS 23.003[3]);

b) the From header shall contain the temporary public user identity, derived from the IMSI contained on the USIM (see 3GPP TS 23.003 [3]) or shall contain the public user identity to be registered;

c) the To header shall contain the temporary public user identity, derived from the IMSI contained on the USIM (see 3GPP TS 23.003 [3]) or shall contain the public user identity to be registered;

d) the Expires header, or the expires parameter within the Contact header, shall contain 600 000 seconds as the value desired for the duration of the registration;.

e) a Request-URI that contains the SIP URI of the domain name of the home network.

NOTE: The registrar (S-CSCF) might decrease the duration of the registration in accordance with network policy. Registration attempts with a registration period of less than a predefined minimum value defined in the registrar will be rejected with a 423 response.

The UE shall extract or derive from the UICC a public user identity, the private user identity, and the domain name to be used in the Request-URI in the registration, according to the procedures described in subclause 5.1.1.1A.

The use of the Path header shall not be supported by the UE.

On receiving the 200 OK response to the REGISTER request, the UE shall store the expiration time of the registration.

When a 401 Unauthorized response to a REGISTER is received the UE shall behave as described in subclause 5.1.1.5.1.

On receiving a 423 Registration too brief response to the REGISTER request, the UE shall:

- send another REGISTER request populating the Expires header or the expires parameter with an expiration timer of at least the value received in the Min-Expires header of the 423 response.

5.1.1.3 Initial subscription to the registration-state event package

Upon receipt of a 2xx response to the initial registration, the UE shall subscribe to the users registration-state event package for the public user identity registered as described in subclause 5.1.1.2 at the users registrar (S-CSCF). Therefore the UE shall generate a SUBSCRIBE request with the following elements:

- a Request URI set to the resource to which the UE wants to be subscribed to, i.e. to a SIP URL that contains the a public user identity that was previously registered;

- a From header set to a SIP URL that contains the a public user identity that was previously registered;

- a To header, set to a SIP URL that contains the a public user identity that was previously registered;

- an Event header set to the "registration-state" event package;

- an Expires header set to a value higher than the Expires header of the before sent REGISTER request.

Afterwards it shall send out the so generated SUBSCRIBE request.

Upon receipt of a 2xx response to the SUBSCRIBE message, the UE shall store the information for the established dialog and the expiration time as indicated in the Expires header of the received response.

The UE shall automatically resubscribe to the registration-state event package for a previously registered public user identity if the expiration time, as indicated in the Expires header of the 2xx response to the SUBSCRIBE message, has run out and the public user identity is still registered.

5.2 Procedures at the P-CSCF

5.2.1 General

The P-CSCF shall support use of the Path header.

NOTE: The Path header is only applicable to the REGISTER request and its 200 OK response.

5.2.2 Registration

When the P-CSCF receives a REGISTER request from the UE that pertains to a given public user identity, the P-CSCF shall:

- insert a Path header in the request. The P-CSCF shall include in the Path header an entry containing the SIP URL identifying the P-CSCF;

- insert a Require header and a Proxy-Require header both containing the option tag "path";

- if the REGISTER request was received with a valid integrity check, add information to the REGISTER request to indicate that the REGISTER request was received with a valid integrity check; and

Editor's Note : The exact mechanism for this is FFS.

- determine the I-CSCF of the home network and forward the request to that I-CSCF.

When the P-CSCF receives a 200 OK response to a REGISTER request, the P-CSCF shall check the value of the Expires header field and/or Expires parameter in the Contact header. When the value of the Expires header field and/or expires parameter in the Contact header is different than zero, then the P-CSCF shall:

1) remove its SIP URL from the list of Path headers, reverses the order of the list and save the resulting list of Path headers. This list shall be stored during the entire registration period of the respective public user identity. This list shall be used to preload the routeing information into the initial requests originated by the UE. If this registration is a reregistration, the P-CSCF shall replace the already existing Path headers with the new list;

2) associate the Path header information with the registered public user identity;

3) remove the list of Path headers and "path" option-tags from the 200 OK response before forwarding the response to the UE.

When the P-CSCF receives a 401 Unauthorized response to a REGISTER request, the P-CSCF shall remove and store the CK and IK values contained in the 401 Unauthorized response. The 401 Unauthorized response shall be forwarded to the UE if and only if the CK and IK have been removed.

Editor's Note: The P-CSCF behaviour when 3xx or 4xx responses other than 401 Unauthorized are received is FFS.

Editor's Note: The text above assumes that public user identities are registered one by one. Public user identity might need to be changed to Service Profile in the case when public user identities can be implicitly registered.

NOTE: The P-CSCF will maintain two Route lists. The first Route list - created during the registration procedure - is used only to pre-load the routeing information into the initial INVITE request that originated at the UE. This list is valid during the entire registration of the respective public user identity. The second Route list - constructed from the Record Route headers in the initial INVITE and associated response - is used during the duration of the call. Once the call is terminated, the second Route list is discarded.

When the P-CSCF receives a 420 Bad Extension response to the above REGISTER request, the P-CSCF shall check the value of the Unsupported header field. When the value of the Unsupported header field is path, the P-CSCF shall take OA&M actions to indicate an error, in addition to passing on the 420 response to the UE. In all other cases, the P-CSCF shall proxy the 420 Bad Extension response.

NEXT PROPOSED CHANGE

5.4.2.1.2 Notification about registration state

Notification of the registration state shall affects the non-barred public user identities. The barred public user identities areshall never be sent in a NOTIFY message.

If the registration state of one or more non-barred public user identities changes, the S-CSCF shall generate a NOTIFY request on all dialogs which have been established due to subscription to the registration-state event package of that user. For each NOTIFY request, the S-CSCF shall:

- set the Request-URI and Route header to the saved route information during subscription;

- set the Event header to the "registration-state" value;

- indicate registration state "open" for all public user identities which are currently registered;

- indicate registration state "closed" for all public user identities which are currently deregistered; and

- indicate within the "<detail>" information of those public user identities which will be automatically reregistered the "automatically by" information, followed by the specific public user identity which will cover the reregistration.

EXAMPLE: If sip:user1_public1@home1.net is reregistered, the public user identity sip:user1_public2@home1.net was automatically be registered. Therefore the entries in the body of the NOTIFY request look like:

```
<tuple name="sip:user1_public1@home1.net">
  <status><value>open</value></status>
</tuple>

<tuple name="sip:user1_public2@home1.net">
  <status> <value>open</value> </status>
  <detail>automatically by sip:user1_public1@home1.net</detail>
</tuple>
```

Afterwards the S-CSCF shall send the generated NOTIFY request on the dialog and await a 2xx response.

NEXT PROPOSED CHANGE

5.4.3.1 Requests initiated by the served user

When the S-CSCF receives from the served user an initial request for a dialog or a request for a standalone transaction, prior to forwarding the request, the S-CSCF shall:

- determine whether the request contains a barred public user identity in the From or Remote-Party-ID header fields of the request or not. In case any of the said header fields contains a barred public user identity for the user, then the S-CSCF shall reject the request by generating a 403 (Forbidden) response. Otherwise, continue with the rest of the steps.

- remove its own SIP URL from the topmost Route header;

- if the outgoing Request-URI is a TEL URL, the S-CSCF shall translate the E.164 address (see RFC 2806 [16]) to a globally routable SIP URL using an ENUM/DNS translation mechanism with the format specified in RFC 2916 [18]. Databases aspects of ENUM are outside the scope of the present document. If this translation fails, the request may be forwarded to a BGCF or any other appropriate entity (e.g a MRFC to play an announcement) in the originator's home network or an appropriate SIP response shall be sent to the originator;

- check if <original-dialog-id> XML element is present in the payload of the incoming request. If present, it indicates an association with an existing dialog, the request has been sent from an Application Server in response to a previously sent request. The <od-to>, <od-from> and <od-call-id> XML element values from the <original-dialog-id> XML element may be used as additional parameters when searching for existing dialogs. Local data shall be updated to indicate that this Application Server has been contacted for the initial request. The S-CSCF shall determine the next hop using initial filter criteria and local data on status of which Application Servers have been contacted. If the next hop is another Application Server, the S-CSCF shall retain the <original-dialog-id> XML element in the message body of the request. If the next hop is not an Application Server, the S-CSCF shall leave out the <original-dialog-id> XML element from the payload of the request;

- check whether the initial request matches the initial filter criteria of the application servers assigned for the public user identity as described in 3GPP TS 23.218 [5] subclause 6.4. Depending on the result of the previous check, the S-CSCF may contact one or more application server(s) before processing the outgoing Request-URI. In case of contacting one or more application server(s) the S-CSCF shall:

  - insert the AS URL to be contacted into the Route header as the topmost entry followed by its own URL; and

  - initialise local data to track the status of contacting each application server specified in the service profile. Additionally S-CSCF shall also populate the <original-dialog-id> XML element in the message body with the original To, From and Call-ID headers received in the request. See subclause 5.4.3.3 for further information on the original dialog identifier.

- store the value of the <icid> XML element received in the message body (see subclause 7.6) and retain the <icid> XML element in the message body;

- determine the destination address (e.g. DNS access) using the URL placed in the topmost Route header if present, otherwise based on the Request-URI; and

- in case of an initial request for a dialog the S-CSCF shall create a Record-Route header containing its own SIP URL and save the necessary header fields from the request (and from its appropriate responses) in order to release the dialog when needed.

When the S-CSCF receives from the served usera refresh request for a dialog, prior to forwarding the request the S-CSCF shall:

- remove its own URL from the topmost Route header;

- create a Record-Route header containing its own SIP URL and save the necessary header fields from the request (and from its appropriate responses) in order to release the dialog when needed; and

- route the request based on the topmost Route header.

When the S-CSCF receives from the served user a subsequent request other than refresh request for a dialog, prior to forwarding the request the S-CSCF shall:

- remove its own URL from the topmost Route header; and

- route the request based on the topmost Route header.

NEXT PROPOSED CHANGE

5.4.3.2   Requests terminated at the served user

When the S-CSCF receives, destined for the served user, an initial request for a dialog or a request for a standalone transaction, prior to forwarding the request, the S-CSCF shall:

- remove its own URL from the topmost Route header;

- check if <original-dialog-id> XML element is present in the payload of the incoming request. If present, it indicates an association with an existing dialog, the request has been sent from an Application Server in response to a previously sent request. The <od-to>, <od-from> and <od-call-id> XML element values from the <original-dialog-id> XML element may be used as additional parameters when searching for existing dialogs. Local data shall be updated to indicate that this Application Server has been contacted for the initial request. The S-CSCF shall determine the next hop using initial filter criteria and local data on status of which Application Servers have been contacted. If the next hop is another Application Server, the S-CSCF shall retain the <original-dialog-id> XML element in the message body of the request. If the next hop is not an Application Server, the S-CSCF shall leave out the <original-dialog-id> XML element from the payload of the request;

- check whether the initial request matches the initial filter criteria of the application servers assigned for the public user identity as described in 3GPP TS 23.218 [5] subclause 6.5. Depending on the result of the previous check the S-CSCF may contact one or more application server(s) before contacting an I-CSCF/P-CSCF respectively. In case of contacting one or more application server(s) the S-CSCF shall:

    - insert the AS URL to be contacted into the Route header as the topmost entry followed by its own URL; and

    - initialise local data to track the status of contacting each application server specified in the service profile. Additionally S-CSCF shall also populate the <original-dialog-id> XML element in the message body with the original To, From and Call-ID headers received in the request. See subclause 5.4.3.3 for further information on the original dialog identifier.

- store the value of the <icid> XML element received in the message body (see subclause 7.6) and retain the <icid> XML element in the message body;

- in case there are no Route headers in the request, then determine, from the destination public user identity, the list of preloaded routes saved during registration or re-registration, as described in subclause 5.4.1.2.1;

- determine, from the destination public user identity, the saved Contact URL where the user is reachable saved at registration or reregistration, as described in subclause 5.4.1.2.1;

- build the Request-URI and Request header field values from the preloaded routes and saved Contact URL, as described in RFC 2543bis [20];

- insert a P-Called-Party-ID SIP header field including the Request-URI received in the INVITE;

- in case of an initial request for a dialog create a Record-Route header containing its own SIP URL and save the necessary header fields from the request (and from its appropriate responses) in order to release the dialog when needed;

- replace the Request-URI with the contents of the user Contact URL saved by the S-CSCF at registration time; and

- forward the request based on the topmost Route header.

When the S-CSCF receives, destined for the served user, a refresh request for a dialog, prior to forwarding the request, the S-CSCF shall:

- remove its own URL from the topmost Route header;

- create a Record-Route header containing its own SIP URL and save the necessary header fields from the request (and from its appropriate responses) in order to release the dialog when needed; and

- forward the request based on the topmost Route header.

When the S-CSCF receives, destined for the served user, a subsequent request other than refresh request for a dialog, prior to forwarding the request, the S-CSCF shall:

- remove its own URL from the topmost Route header; and

- forward the request based on the topmost Route header.

When the S-CSCF receives a request destined for a barred public user identity, the S-CSCF shall return an appropriate unsuccessful SIP response. This response may be, e.g., a 404 (Not found) or 604 (Does not exist anywhere).

CR-Form-v5

CHANGE REQUEST

⌘ **24.229** CR **119** ⌘rev **1** ⌘ Current version: **5.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	SIP procedures at UE	
Source: ⌘	Nokia	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 04-05-2002
Category: ⌘	**F**	***Release:*** ⌘ Rel-5

Use <u>one</u> 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 <u>one</u> 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)

Reason for change: ⌘	Clarify the mandatory SIP procedures at UE
Summary of change: ⌘	UE shall add Require:precondition and Remote-Party-ID with registered public user identity when sending initial INVITE
Consequences if not approved: ⌘	Unconsistent UE behavior

Clauses affected: ⌘	5.1.3, 5.1.4
Other specs affected: ⌘	☐ 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/3G_Specs/CRs.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) 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.

5.1.3 Call initiation - mobile originating case

Editor's Note: A more detailed description of the INVITE responses (183, 180, 200...) might be needed here.

5.1.3.1 Initial INVITE

Upon generating an initial INVITE request, the UE3GPP terminals shall indicate:

- indicate the support for reliable provisional responses and specify it using the Supported header mechanism;

- indicate the requirement of precondition using the segmented status type as described in IETF manyfolks draft [22] and specify it using the Require header mechanism;

- include a Remote-Party-ID header field containing one of the registered public user identity.

If the UA receives a 503 (Service Unavailable) response to an initial INVITE request containing a Retry-After header, then the UE shall not automatically reattempt the request until after the period indicated by the Retry-After header contents.

5.1.3.2 PRACK

Void.

5.1.3.3 UPDATECOMET

Void.

5.1.3.4 ReINVITE

Void.

5.1.4 Call initiation - mobile terminating case

Editor's Note: A more detailed description of the INVITE responses (183, 180, 200...) might be needed here.

5.1.4.1 Initial INVITE

If the UA receives a 503 (Service Unavailable) response to an initial INVITE request containing a Retry-After header, then the UE shall not automatically reattempt the request until after the period indicated by the Retry-After header contents.

Upon receiving an initial INVITE request without containing either Supported: precondition or Require: precondition header values, the UE shall generate a 421 (Extension Required) response indicating the required extension in the Require header field.

Upon generating the first response to the initial INVITE request, the UE3GPP terminals shall: indicate the requirement for reliable provisional responses and specify it using the Require: header mechanism.;

The UE shall send the 200 (OK) response to the initial INVITE request only after the local resource reservation has been completed.

- include a Remote-Party-ID header field containing one of the registered public user identity.

5.1.4.2 PRACK

Void.

5.1.4.3 UPDATECOMET

Void.

5.1.4.4 ReINVITE

Void.

5.1.5 Call release

Void.

5.1.5.1 MO call release

Void.

5.1.5.2 MT call release

Void.

5.1.6 Call-related information

Void.

5.1.6.1 REFER

Void.

5.1.6.2 INFO

Void.

5.1.7 Call-independent information

Void.

5.1.7.1 OPTIONS

Void.

CR-Form-v5

CHANGE REQUEST

| ⌘ | **24.229 CR 121** | ⌘ **rev** | **2~~1~~** | ⌘ | Current version: | **5.0.0** | ⌘ |

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	New requirements for the P-CSCF	
Source: ⌘	Nokia	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 07-05-2002
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)*

Reason for change: ⌘	With the actual security mechanism it is possible to send a message related to somebody else's dialog and as such modify or clear a dialog in which the party is not involved.
Summary of change: ⌘	It is mandated for the P-CSCF to verify the SA the message came from and store all the dialog_IDs which were initiated or terminated by the owner of the SA. It is further mandated that when the P-CSCF receives a message other than initial request to/from a user with a specific SA, it checks whether the dialog_ID relates to that SA.
Consequences if not approved: ⌘	Rel5 will contain a huge security hole.

Clauses affected: ⌘	5.2.6

Other specs affected: ⌘	☐ Other core specifications ⌘	
	☐ 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.

5.2.6 General treatment for all dialogs and standalone transactions excluding the REGISTER method

5.2.6.1 Introduction

The procedures of subclause 5.2.6 and its subclauses are general to all requests and responses, except those for the REGISTER method. Procedures in subsequent clauses to subclause 5.2.6 apply in addition to the procedures of subclause 5.2.6.

5.2.6.2 Requests initiated by the UE

When the P-CSCF receives from the UE an initial request for a dialog, and a Path header list exists for the initiator of the request, the P-CSCF shall:

- ~~check the public user identity in the Remote Party ID header field. This shall contain one of the registered public user identities belonging to the private user identity of the UE~~;

- remove any Route header from the request;

- select the list of Route headers that was created during the registration or reregistration of the respective public user identity utilizing the Path mechanism (see subclause 5.2.3);

- pre-load the list of Route headers to the request;

- create a Record-Route header containing its own SIP URL;

- create a new, globally unique value for the <icid> XML element and insert it into the message body (see subclause 7.6); and

- forward the request based on the topmost Route header.

When the P-CSCF receives a 1xx or 2xx response to the above request, the P-CSCF shall:

- remove the list of Record-Route headers from the received response; and

- create a new list of stored Route headers, with the newly received list of Record-Route headers. The Contact header received in the response shall not be appended to the bottom of the stored list of Route headers.

- store the dialog ID and associate it with the private user identity and public user identity involved in the session.

When the P-CSCF receives any other response to the above request, the P-CSCF shall:

- remove any list of Record-Route headers, even though not allowed, from the received response and forward it to the UE.

When the P-CSCF receives from the UE a refresh request for a dialog, the P-CSCF shall:

- remove any Route header from the request;

- select the list of Route headers that was created during the exchange of the initial request and its associated response;

- pre-load the list of Route headers to the request;

- create a Record-Route header containing its own SIP URL; ~~and~~

- verify if the request relates to a dialog ~~which was established by~~in which the originator of the request is involved. ~~the UE which generated the request~~ ;If the request does not relates to a dialog in which the originator is involved, then a 403 response shall be sent back to the originator~~ and~~.

- forward the request based on the topmost Route header.

When the P-CSCF receives a 1xx or 2xx response to the above request, the P-CSCF shall:

-   remove the list of Record-Route headers from the received response; ~~and~~

-   overwrite any existing list of stored Route headers, or create a new list of stored Route headers, with the newly received list of Record-Route headers. The Contact header received in the response shall not be appended to the bottom of the stored list of Route headers; ~~and~~

-   ~~verify if the request relates to a dialog in which the originator of the request is involved. If the request does not relates to a dialog in which the originator is involved, then a 403 response shall be sent back to the originator.verify if the response relates to a dialog which was established by the UE which generated the response.~~

When the P-CSCF receives any other response to the above request, the P-CSCF shall:

-   remove any list of Record-Route headers, even though not allowed, from the received response and forward it to the UE.

When the P-CSCF receives from the UE the request for a standalone transaction, and a Path header list exists for the initiator of the request, the P-CSCF shall:

-   remove any Route header from the request;

-   select the list of Route headers that was created during the registration or reregistration of the respective public user identity utilizing the Path mechanism (see subclause 7.2.1);

-   pre-load the list of Route headers to the request;

-   create a new, globally unique value for the <icid> XML element and insert it into the message body (see subclause 7.6); and

-   forward the request based on the topmost Route header.

When the P-CSCF receives any response to the above request, the P-CSCF shall:

-   remove any list of Record-Route headers, even though not allowed, from the received response and forward it to the UE.

When the P-CSCF receives from the UE subsequent requests other than a refreshing request that pertains to an existing dialog, the P-CSCF shall:

-   select the list of Route headers that was created during the exchange of the initial request and associated response for this call;

-   pre-load the list of Route headers to the request; ~~and~~

-   verify if the request relates to a dialog in which the originator of the request is involved. If the request does not relates to a dialog in which the originator is involved, then a 403 response shall be sent back to the originator.~~verify if the request relates to a dialog which was established by the UE which generated the request~~; and

-   forward the request based on the topmost Route header.

When the P-CSCF receives any response to the above request, the P-CSCF shall:

-   verify if the request relates to a dialog in which the originator of the request is involved.. If the request does not relates to a dialog in which the originator is involved, then a 403 response shall be sent back to the originator.~~verify if the response relates to a dialog which was established by the UE which generated the response~~; and

-   remove any list of Record-Route headers, valid or not, from the received response and forward it to the UE.

When the P-CSCF receives from the UE an initial request for a dialog, a refresh request for a dialog, or the request of a standalone transaction, and a Path header list does not exist for the initiator of the request, the P-CSCF shall:

-   send a 403 Forbidden response back to the UE containing a warning header.

Editor's Note: how to find out whether the user has a valid registration in the P-CSCF is FFS.

Editor's Note: The correct value for the warning code is yet to be assigned by IANA.

When the P-CSCF receives from the UE the request for an unknown method, and a Path header list exists for the initiator of the request, the P-CSCF shall:

- select the list of Route headers that was created during the registration or reregistration of the respective public user identity utilizing the Path mechanism (see subclause 7.2.1);

- pre-load the list of Route headers to the request, and

- forward the request based on the topmost Route header.

When the P-CSCF receives any response to the above request, the P-CSCF shall:

- remove any list of Record-Route headers, even though invalid, from the received response and forward it to the UE.

When the P-CSCF receives any request or response from the UE, the P-CSCF shall:

- remove the <charging-vector> XML element (see subclause 7.6), if present, from the message body of the received request or response.

5.2.6.3 Requests terminated by the UE

When the P-CSCF receives, destined for the UE, an initial request for a dialog, or a refresh request for a dialog, prior to forwarding the request, the P-CSCF shall:

- remove its own SIP URL from the topmost Route header;

- remove the list of Record-Route headers, and shall convert it into a list of Route headers. The Contact header shall not be appended to the bottom of the list of Route headers. The P-CSCF shall save this list of Route headers and append this list to all UE originated requests for this dialog;

- add itself on the top of the removed list of Record-Route headers and save the list. The list will be appended to UE originated response to the SUBSCRIBE request;

- remove and store the list of received Via headers from the received request and shall place its own address in the Via header with locally unique token to identify the saved values as a branch parameter . The P-CSCF shall append the list of Via headers to the UE originated response for this request; and

- remove and store the <icid> XML element from the message body (see subclause 7.6).

When the P-CSCF receives a 1xx or 2xx response to the above request, the P-CSCF shall:

- ~~check the public user identity in the Remote Party ID header field. This shall contain one of the registered public user identities belonging to the private user identity of the UE;~~

- append the saved list of Record-Route headers to the response; ~~and,~~

- append the saved list of Via headers to the response; and,

- ~~.~~ store the dialog ID and associate it with the private user identity and public user identity involved in the session.

When the P-CSCF receives any other response to the above request, the P-CSCF shall:

- append the saved list of Via headers to the response.

When the P-CSCF receives, destined for the UE, a subsequent request for a dialog that is not a refresh request, or a request for a stand-alone transaction, prior to forwarding the request, the P-CSCF shall:

- remove and store the list of received Via headers from the received request and shall place its own address in the Via header with locally unique token to identify the saved values as a branch parameter . The P-CSCF shall append this list of Via headers to the UE originated response for this transaction; and

- remove and store the <icid> XML element from the message body (see subclause 7.6).

When the P-CSCF receives any response to the above request, the P-CSCF shall:

- append the saved list of Via headers to the response; and,

- - verify if the request relates to a dialog in which the originator of the request is involved. If the request does not relates to a dialog in which the originator is involved, then a 403 response shall be sent back to the originator.~~verify if the response relates to a dialog which was established by the UE which generated the response.~~

When the P-CSCF sends any request or response to the UE, the P-CSCF shall:

- remove the <charging-vector> XML element (see subclause 7.6) from the message body of the request or response.

CR-Form-v5

CHANGE REQUEST

| ⌘ | **24.229** CR **122** | ⌘ | **-** | ⌘ | Current version: | **5.0.0** | ⌘ |

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title: ⌘	SDP procedures at MGCF	
Source: ⌘	Lucent Technologies	
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 2002-05-05

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

Use <u>one</u> 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 <u>one</u> 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)*

Reason for change: ⌘	The current text indicates that the MGCF behaves as an UA. However, the described MGCF behaviour is not consistent with the behaviour of the UA.
Summary of change: ⌘	Remove the inconsistencies.
Consequences if not approved: ⌘	Inconsistent description of usage of the SDP by the UA.

Clauses affected: ⌘	6.4, 6.4.1, 6.4.2

Other specs affected: ⌘	☐ 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/3G_Specs/CRs.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) 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.

6.4 Procedures at the MGCF

The usage of SDP by the MGCF is the same as its usage by the UE, as defined in the subclauses 6.1 and A.3.2. When sending an SDP, the MGCF shall not include the "i", "u", "e", "p", "r", and "z" descriptors in the SDP, and it shall ignore them when received in the SDP.

6.4.1 Calls originating from circuit-switched networks

When the MGCF generates and sends an INVITE request for a call originating in a circuit-switched network, the MGCF shall:

- populate the SDP with the codecs supported by the associated MGW (see 3GPP TS 26.235 [10] for the supported codecs).;

- set the "t" field with the <stop time> set to zero, which indicates an unbounded session;

- set the "a:qos" attribute with the values of "mandatory" and "sendrecv".

When the MGCF receives 183 Session Progress response to an INVITE request, the MGCF shall:

- check that a supported codec has been indicated in the SDP.

Editor's note: the current 3GPP TS 24.228 call flow in 7.2.4.1 shows the use of Final SDP in the PRACK. Should that example be changed to align with the offer/answer model that does not include SDP in the PRACK? Will there be a requirement for the UE to only select one codec? Or, should the MGCF procedures allow for the possibility that the UE sends multiple codecs and that the MGCF selects the codec and includes the result in the SDP in the PRACK?

6.4.2 Calls terminating in circuit-switched networks

When the MGCF receives an initial INVITE request, the MGCF shall:

- check for a codec that matches the requested SDP, which may include DTMF support.

When the MGCF generates and sends a 183 Session Progress response to an initial INVITE request, the MGCF shall:

- set SDP indicating the selected codec, which may include DTMF support.;

- set the "t" field with the <stop time> set to zero, which indicates an unbounded session;

- set the "a:qos" attribute with the values of "mandatory", "sendrecv" and "confirm".

Editor's note: the current 3GPP TS 24.228 call flow in 7.4.4.1 shows the use of Final SDP in the PRACK. Should that example be changed to align with the offer/answer model that does not include SDP in the PRACK?

CR-Form-v5.1

CHANGE REQUEST

| ⌘ | **24.229** CR **124** | ⌘rev | **-1** | ⌘ | Current version: | **5.0.0** | ⌘ |

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	S-CSCF allocation
Source:	⌘	Nokia
Work item code: ⌘	IMS-CCR	***Date:*** ⌘ 07.05.2002
Category:	⌘ **F**	***Release:*** ⌘ REL-5

Use <u>one</u> 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 <u>TR 21.900</u>.

Use <u>one</u> 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)

Reason for change: ⌘		SA2 has agreed that S-CSCF may keep the subscriber profile stored after a mobile initiated deregistration or after network initiated application (SIP) de-registration due to registration timeout.
Summary of change: ⌘		The requirement of removing all related stored information has been removed.
Consequences if not approved:	⌘	CN1 specification are not aligned with SA2 and CN4 specifications.

Clauses affected:	⌘	5.4.1.4
Other specs affected:	⌘ **X**	Other core specifications ⌘ 23.228, 24.228, 29.228, 29.229
	☐	Test specifications
	☐	O&M Specifications
Other comments:	⌘	SA2 has approved S2-021435 (CR) and S2-021528 (LS to CN4).

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.

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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.

5.4.1.4   User-initiated deregistration

When the S-CSCF receives a REGISTER request, it shall verify that the "path" option-tag is contained in the Proxy-Require header. If the "path" option-tag is present, the S-CSCF shall store the information contained in the Path header so that it can be used for mobile terminated requests.

Editor's Note: If the S-CSCF receives a Path header without the "path" option tag in the Proxy-Requre header, we have an error condition in the I-CSCF. The I-CSCF behavior for this scenario is FFS.

When S-CSCF receives a REGISTER request with the Expires header field containing the value zero, the S-CSCF shall:

-    deregister the subscriber ~~and remove all related stored information~~;

-    insert its own FQDN or IP address in the form of SIP URL at the top of the list found in the Path header saved from the REGISTER request;

-    add its Path header on the top of the received list of Path headers, and returns this list in the 200 OK response; and

-    send a third-party REGISTER request, as described in subclause 5.4.1.7, to each Application Server that matches the Filter Criteria from the HSS for the REGISTER event.

<u>Based on operators' ~~choice~~policy the S-CSCF can request from HSS to either be kept or cleared as the S-CSCF allocated to this subscriber. In both cases the state of the subscriber identity is stored as unregistered in the HSS and the S-CSCF. Based on HSS decision, the S-CSCF may either keep all or only a part of the user profile or removes it.</u>

~~either removes all related stored information or keeps the stored information after receiving a REGISTER request with the Expires header field containing the value zero.~~