3GPP TSG CN Plenary Meeting #24 **NP-040215**
2nd – 4th June 2004 Seoul, KOREA.

Source: TSG CN WG4

Title: Corrections on IMS Cx-/Dx-interface

Agenda item: 8.1

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level N4-040	Phase	Subject	Cat	Ver_C
29.229	036	1	439	Rel-5	Update of the charging addresses from HSS	F	5.6.0
29.229	037	1	441	Rel-6	Update of the charging addresses from HSS	A	6.0.0
29.228	096	2	442	Rel-5	Update of the charging addresses from HSS	F	5.7.0
29.228	097	2	443	Rel-6	Update of the charging addresses from HSS	A	6.2.0
29.228	094	1	455	Rel-5	Content of the User Profile	F	5.7.0
29.228	095	1	456	Rel-6	Content of the User Profile	A	6.2.0
29.228	098		528	Rel-5	Correction of SessionCase attribute ambiguity	F	5.7.0
29.228	099		529	Rel-6	Correction of SessionCase attribute ambiguity	A	6.2.0
29.229	042		556	Rel-5	Multimedia-Auth-Request (MAR) Command Message Format Corrections	F	5.6.0
29.229	043		557	Rel-6	Multimedia-Auth-Request (MAR) Command Message Format Corrections	A	6.0.0
29.229	049	2	705	Rel-5	Use of Vendor-Id by 3GPP	F	5.6.0
29.229	050	2	706	Rel-6	Use of Vendor-Id by 3GPP	A	6.0.0

3GPP TSG CN WG4 Meeting #22bis
Edinburgh, UK, 14th – 20th April 2004

N4-040439

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **036** ⌘ **rev** **1** ⌘ Current version: **5.6.0** ⌘

*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:	⌘	Update of the charging addresses from HSS
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	06/04/2004
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:	⌘	Essential correction. At the CN4#22 meeting it was approved (N4-040343) to download the charging information in the SAR command whenever the user profile is downloaded. The reason was to update as much as possible in the S-CSCF any change in the charging information. However, this change is not enough, since the charging information is only downloaded to the S-CSCF whenever the S-CSCF initiates a SAR/SAA procedure, but if the information changes in the HSS, it is not pushed to the S-CSCF until the serving asks for it.
Summary of change:	⌘	It has been included the charging information also in the PPR/PPA procedure. So the HSS will initiate a push to the S-CSCF whenever the charging information changes.
Consequences if not approved:	⌘	An updated charging information in the HSS will not be propagated to the S-CSCF resulting in a failure in charging.

Clauses affected:	⌘	6.1.11

Other specs affected: ⌘	Y	N		⌘
	X		Other core specifications	29.228-096
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	The mirror of this CR is CR 037

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

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

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

3) 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.

****** First modified section ******

6.1.11 Push-Profile-Request (PPR) Command

The Push-Profile-Request (PPR) command, indicated by the Command-Code field set to 305 and the 'R' bit set in the Command Flags field, is sent by a Diameter Multimedia server to a Diameter Multimedia client in order to update the subscription data of a multimedia user in the Diameter Multimedia client whenever a modification has occurred in the subscription data that constitutes the data used by the client.

Message Format

< Push-Profile-Request > ::= < Diameter Header: 305, 167772151, REQ >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Host }
{ Destination-Realm }
{ User-Name }
[~~{~~ User-Data]~~}~~
[Charging-Information]
*[AVP]
*[Proxy-Info]
*[Route-Record]

3GPP TSG CN WG4 Meeting #23 **N4-040705**
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **049** ⌘ **rev** **2** ⌘ Current version: **5.6.0** ⌘

*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:	⌘	Use of Vendor-Id by 3GPP
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	05/05/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	The text is currently confusing on the use of Vendor-Id by 3GPP. This is an essential correction.
Summary of change:	⌘	The current text is clarified so that it is explicit where Vendor-Id is used by 3GPP and by manufacturers of Diameter servers.
Consequences if not approved:	⌘	This will lead to confusion over what to place in the Vendor-Id in different AVPs causing 3GPP Diameter servers not to inter-operate.

Clauses affected:	⌘	5.6			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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

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

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

3) 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.

5.6 Advertising Application Support

The HSS, S-CSCF and I-CSCF shall advertise support of the Diameter Multimedia Application by including the value of the application identifier ~~3GPP(10415)~~ (see chapter 6) in the Auth-Application-Id AVP within the Vendor-Specific-Application-Id grouped AVP of ~~Supported-Vendor-Id AVP of~~ the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands.

~~Within the Vendor-Specific-Application-Id AVP, and by including the~~The vendor identifier value of 3GPP (10415) shall be included in the Supported-Vendor-Id AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands, and in the Vendor-Id AVP within the Vendor-Specific-Application-Id grouped AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. ~~and the value of the application identifier (see chapter 6) shall be included in the Auth-Application-Id AVP,, both in the Vendor-Specific-Application-Id AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands.~~

Note: The Vendor-Id AVP included in Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands that is not included in the the Vendor-Specific-Application-Id AVPs as described above shall indicate the manufacturer of the Diameter node as per RFC 3588 [6].

3GPP TSG CN WG4 Meeting #23 **N4-040557**
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **043** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Multimedia-Auth-Request (MAR) Command Message Format Corrections
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	28/04/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The Message format of the MAR Command has some small but significant mistakes. This is therefore an essential correction.
Summary of change:	⌘	The Message Command Code is incorrectly specified in the description of the MAR command. The PXY bit in the message header of the MAR command is not present although it is for the UAR, SAR and LIR.
Consequences if not approved:	⌘	This will lead to potential failures in the protocol between the S-CSCF and the HSS leading to service failure for the user.

Clauses affected:	⌘	6.1.7

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

Other comments:	⌘	

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) 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.

6.1.7 Multimedia-Auth-Request (MAR) Command

The Multimedia-Auth-Request (MAR) command, indicated by the Command-Code field set to 3034 and the 'R' bit set in the Command Flags field, is sent by a Diameter Multimedia client to a Diameter Multimedia server in order to request security information.

Message Format

< Multimedia-Auth-Request > ::= < Diameter Header: 303, 167772151, REQ, PXY >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Realm }
[Destination-Host]
{ User-Name }
{ Public-Identity }
[SIP-Auth-Data-Item]
[SIP-Number-Auth-Items]
{ Server-Name }
* [AVP]
* [Proxy-Info]
* [Route-Record]

3GPP TSG CN WG4 Meeting #23 **N4-040556**
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **042** ⌘ **rev** **-** ⌘ Current version: **5.6.0** ⌘

*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:	⌘	Multimedia-Auth-Request (MAR) Command Message Format Corrections
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	28/04/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	The Message format of the MAR Command has some small but significant mistakes. This is therefore an essential correction.
Summary of change:	⌘	The Message Command Code is incorrectly specified in the description of the MAR command. The PXY bit in the message header of the MAR command is not present although it is for the UAR, SAR and LIR.
Consequences if not approved:	⌘	This will lead to potential failures in the protocol between the S-CSCF and the HSS leading to service failure for the user.

Clauses affected:	⌘	6.1.7

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

⌘

Other comments: ⌘

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) 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.

6.1.7 Multimedia-Auth-Request (MAR) Command

The Multimedia-Auth-Request (MAR) command, indicated by the Command-Code field set to 3034 and the 'R' bit set in the Command Flags field, is sent by a Diameter Multimedia client to a Diameter Multimedia server in order to request security information.

Message Format

< Multimedia-Auth-Request > ::= < Diameter Header: 303, 167772151, REQ, PXY >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Realm }
[Destination-Host]
{ User-Name }
{ Public-Identity }
[SIP-Auth-Data-Item]
[SIP-Number-Auth-Items]
{ Server-Name }
* [AVP]
* [Proxy-Info]
* [Route-Record]

3GPP TSG CN WG4 Meeting #23 **N4-040529**
Zagreb, CROATIA, 10th – 14th April 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **099** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Correction of SessionCase attribute ambiguity
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	16/04/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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

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

Reason for change:	⌘	The Session Case attribute can take one of three values. These are described in 29.228 as;- '…"Originating", "Terminating", "Terminating_Unregistered" indicating if the filter should be used by the S-CSCF handling the Originating, Terminating or Terminating for an unregistered end user services. It is not clear if the value 'Terminating' is for registered enduser services only, or for both registered and unregistered end user services. **This is an Essential Correction.**
Summary of change:	⌘	'Terminating' is changed to be 'Terminating_Registered' and the text describing the SessionCase attribute in B.2.3 is enhanced to reflect the real intention of this value.
Consequences if not approved:	⌘	Potential for differing interpretations leads to different processing of Service Point Triggers by S-CSCF's and IFC's being applied to SIP messages incorrectly.

Clauses affected:	⌘	Annex B.2.3, Annex E, CxDataType.xsd

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

⌘

Other comments:	⌘	

How to create CRs using this form:

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

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

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

3) 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.

B.2.3 Service Point Trigger

The following picture gives an outline of the UML model of Service Point Trigger class:

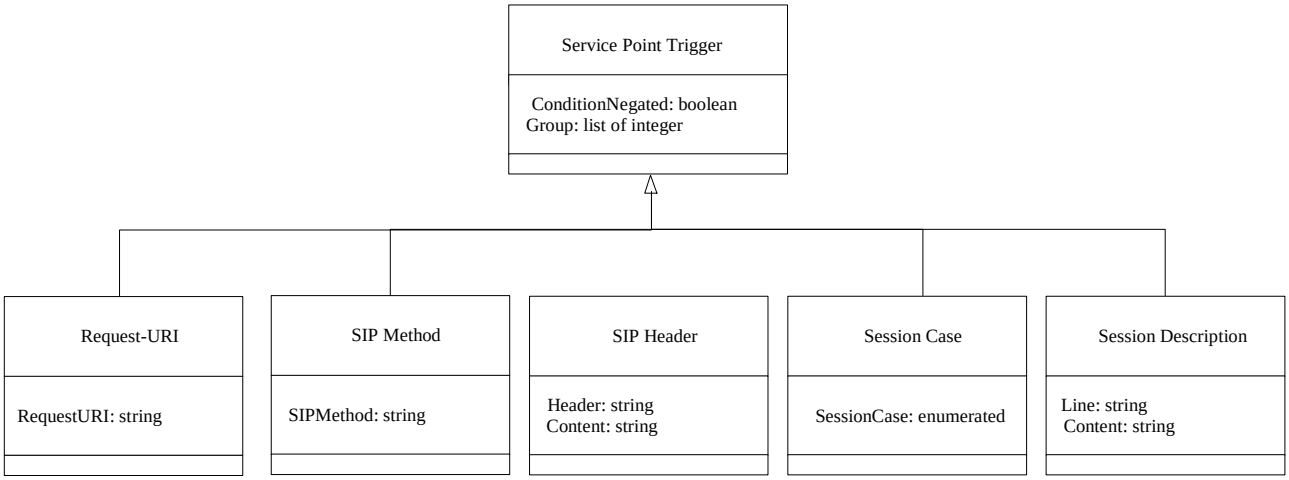

Figure B.2.3.1: Service Point Trigger

The attribute Group of the class Service Point Trigger allows the grouping of SPTs that will configure the sub-expressions inside a CNF or DNF expression. For instance, in the following CNF expression (A+B).(C+D), A+B and C+D would correspond to different groups.

In CNF, the attribute Group identifies the Ored sets of SPTinstances. If the SPTbelongs to different Ored sets, SPTcan have more than one Group values assigned. At least one Group must be assigned for each SPT.

In DNF, the attribute Group identifies the ANDed sets of SPTinstances. If the SPTbelongs to different ANDed sets, SPTcan have more than one Group values assigned. At least one Group must be assigned for each SPI.

The attribute ConditionNegated of the class Service Point Trigger defines whether the individual SPTinstance is negated (i.e. NOT logical expression).

Request-URI class defines SPTfor the Request-URI. Request-URI contains attribute RequestURI.

SIP Method class defines SPTfor the SIP method. SIP Method contains attribute SIPMethod which can evaluate to any existent SIP method.

SIP Header class defines SPTfor the presence or absence of any SIP header or for the content of any SIP header. SIP Header contains attribute SIP Header which identifies the SIP Header, which is the SPT, and the Content attribute defines the value of the SIP Header if required. The value of the Content attribute is a string that shall be interpreted as a regular expression. Perl-like regular expressions shall be taken as a model for legal regular expressions for this function. A regular expression would be as simple as a literal (e.g. “john”) or a more elaborated one, allowing to match a string “containing” a substring, beginning with a substring, etc. Examples of regular expressions valid for the “Match” attribute could be:

“Joe”: meaning that a given header matches exactly with the string “Joe”.

“^(Jo).*”: meaning that a given header contains a value that begins with “Jo”.

“.*Jo.*”: meaning that a given header contains the sub string “Jo” at any position.

The absence of the Content attribute and ConditionNegated = TRUE indicates that the SPTis the absence of a determined SIP header.

Session Case class represents an enumerated type, with possible values “Originating”, “Terminating_Registered”, “Terminating_Unregistered” indicating if the filter should be used by the S-CSCF handling the Originating, Terminating for a registered end user or Terminating for an unregistered end user services.

Session Description Information class defines SPTfor the content of any SDP field within the body of a SIP Method. The Line attribute identifies the line inside the session description. Content is a string defining the content of the line

identified by Line. Perl-like regular expressions shall be taken as a model for regular expressions for this function (as described above).

****** Next Changed Section******

Annex E (normative): XML schema for the Cx interface user profile

The file CxDataType.xsd, attached to this specification, contains the XML schema for the Cx interface user profile. Such XML schema details all the data types on which XML documents containing Cx profile information shall be based. The XML schema file is intended to be used by an XML parser.

Table E.1 describes the data types and the dependencies among them that configure the XML schema.

Table E.1: XML schema for Cx interface: simple data types

Data type	Tag	Base type	Comments
tPriority	Priority	integer	>= 0
tGroupID	Group	integer	>= 0
tDefaultHandling	DefaultHandling	enumerated	Possible values: 0 (SESSION_CONTINUED) 1 (SESSION_TERMINATED)
tDirectionOfRequest	SessionCase	enumerated	Possible values: 0 (ORIGINATING_SESSION) 1 (TERMINATING_REGISTERED)~~SESSION~~ 2 (TERMINATING_UNREGISTERED)
tPrivateID	PrivateID	anyURI	Syntax described in RFC 2486
tSIP_URL	Identity	anyURI	Syntax described in RFC 3261
tTEL_URL	Identity	anyURI	Syntax described in RFC 2806
tIdentity	Identity	(union)	Union of tSIP_URL and tTEL_URL
tServiceInfo	ServiceInfo	string	
tString	RequestURI, Method, Header, Content, Line	string	
tBool	ConditionTypeCNF, ConditionNegated, BarringIndication	boolean	Possible values: 0 (false) 1 (true)
tSubscribedMediaProfileId	SubscribedMediaProfileId	integer	>=0

****** *Changes to .xsd file* ******

```
<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">

    <xs:simpleType name="tPriority" final="list restriction">
```

```
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tGroupID" final="list restriction">
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tDefaultHandling" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="1"/>
            <xs:enumeration value="0">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">SESSION_CONTINUED</label>
                        <definition xml:lang="en">Session Continued</definition>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="1">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">SESSION_TERMINATED</label>
                        <definition xml:lang="en">Session Terminated</definition>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tDirectionOfRequest" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="3"/>
            <xs:enumeration value="0">
                <xs:annotation>
```

```
                <xs:documentation>
                    <label xml:lang="en">ORIGINATING_SESSION</label>
                    <definition xml:lang="en">Originating Session</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="1">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_REGISTERED~~SESSION~~</label>
                    <definition xml:lang="en">Terminating Session for registered user</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="2">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_UNREGISTERED</label>
                    <definition xml:lang="en">Terminating Session for unregistered user</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tPrivateID" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tSIP_URL" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tTEL_URL" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tIdentity" final="list restriction">
    <xs:union memberTypes="tSIP_URL tTEL_URL"/>
```

```
    </xs:simpleType>
    <xs:simpleType name="tServiceInfo" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tString" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tBool">
        <xs:restriction base="xs:boolean"/>
    </xs:simpleType>
    <xs:simpleType name="tSubscribedMediaProfileId" final="list restriction">
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tIMSSubscription">
        <xs:sequence>
            <xs:element name="PrivateID" type="tPrivateID"/>
            <xs:element name="ServiceProfile" type="tServiceProfile" maxOccurs="unbounded"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tServiceProfile">
        <xs:sequence>
            <xs:element name="PublicIdentity" type="tPublicIdentity" maxOccurs="unbounded"/>
            <xs:element name="CoreNetworkServicesAuthorization" type="tCoreNetworkServicesAuthorization"
minOccurs="0"/>
            <xs:element name="InitialFilterCriteria" type="tInitialFilterCriteria" minOccurs="0"
maxOccurs="unbounded"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
```

```
<xs:complexType name="tCoreNetworkServicesAuthorization">
    <xs:sequence>
        <xs:element name="SubscribedMediaProfileId" type="tSubscribedMediaProfileId" minOccurs="0"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tInitialFilterCriteria">
    <xs:sequence>
        <xs:element name="Priority" type="tPriority"/>
        <xs:element name="TriggerPoint" type="tTrigger" minOccurs="0"/>
        <xs:element name="ApplicationServer" type="tApplicationServer"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tTrigger">
    <xs:sequence>
        <xs:element name="ConditionTypeCNF" type="tBool"/>
        <xs:element name="SPT" type="tSePoTri" maxOccurs="unbounded"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tSePoTri">
    <xs:sequence>
        <xs:element name="ConditionNegated" type="tBool" default="0" minOccurs="0"/>
        <xs:element name="Group" type="tGroupID" maxOccurs="unbounded"/>
        <xs:choice>
            <xs:element name="RequestURI" type="tString"/>
            <xs:element name="Method" type="tString"/>
            <xs:element name="SIPHeader" type="tHeader"/>
            <xs:element name="SessionCase" type="tDirectionOfRequest"/>
            <xs:element name="SessionDescription" type="tSessionDescription"/>
        </xs:choice>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
```

```
    <xs:complexType name="tHeader">
        <xs:sequence>
            <xs:element name="Header" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tSessionDescription">
        <xs:sequence>
            <xs:element name="Line" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tApplicationServer">
        <xs:sequence>
            <xs:element name="ServerName" type="tSIP_URL"/>
            <xs:element name="DefaultHandling" type="tDefaultHandling" minOccurs="0"/>
            <xs:element name="ServiceInfo" type="tServiceInfo" minOccurs="0"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tPublicIdentity">
        <xs:sequence>
            <xs:element name="BarringIndication" type="tBool" default="0" minOccurs="0"/>
            <xs:element name="Identity" type="tIdentity"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:element name="IMSSubscription" type="tIMSSubscription"/>
</xs:schema>
```

3GPP TSG CN WG4 Meeting #23 **N4-040528**
Zagreb, CROATIA, 10th – 14th April 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **098** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

*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:	⌘	Correction of SessionCase attribute ambiguity
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	16/04/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	The Session Case attribute can take one of three values. These are described in 29.228 as;- '…"Originating", "Terminating", "Terminating_Unregistered" indicating if the filter should be used by the S-CSCF handling the Originating, Terminating or Terminating for an unregistered end user services. It is not clear if the value 'Terminating' is for registered enduser services only, or for both registered and unregistered end user services. **This is an Essential Correction.**
Summary of change:	⌘	'Terminating' is changed to be 'Terminating_Registered' and the text describing the SessionCase attribute in B.2.3 is enhanced to reflect the real intention of this value.
Consequences if not approved:	⌘	Potential for differing interpretations leads to different processing of Service Point Triggers by S-CSCF's and IFC's being applied to SIP messages incorrectly.

Clauses affected:	⌘	Annex B.2.3, Annex E, CxDataType.xsd

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

⌘

Other comments:	⌘	

How to create CRs using this form:

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

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

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

3) 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.

B.2.3 Service Point Trigger

The following picture gives an outline of the UML model of Service Point Trigger class:

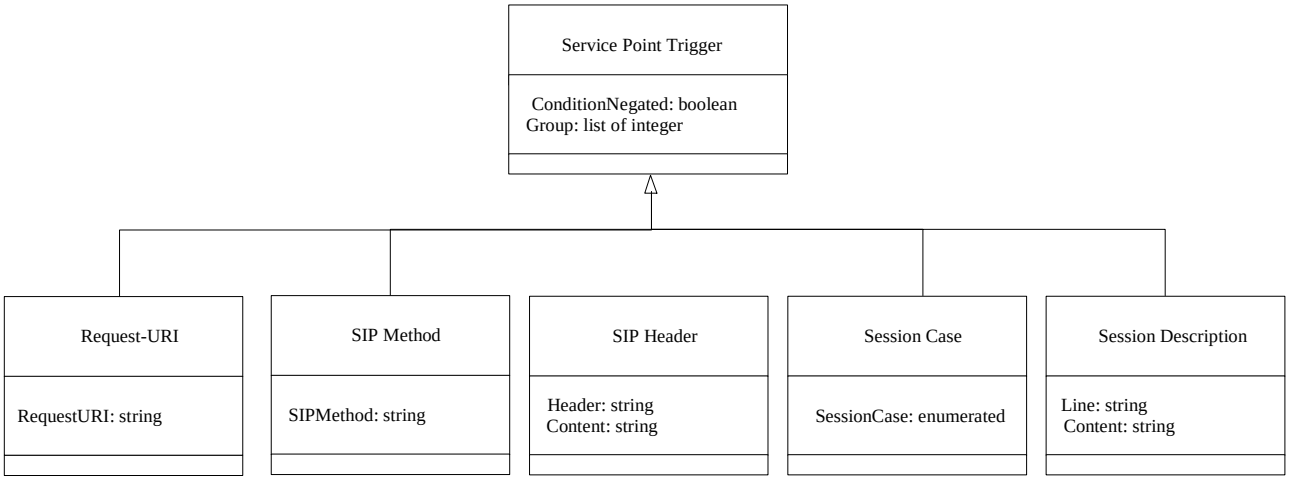

Figure B.2.3.1: Service Point Trigger

The attribute Group of the class Service Point Trigger allows the grouping of SPTs that will configure the sub-expressions inside a CNF or DNF expression. For instance, in the following CNF expression (A+B).(C+D), A+B and C+D would correspond to different groups.

In CNF, the attribute Group identifies the Ored sets of SPTinstances. If the SPTbelongs to different Ored sets, SPTcan have more than one Group values assigned. At least one Group must be assigned for each SPT.

In DNF, the attribute Group identifies the ANDed sets of SPTinstances. If the SPTbelongs to different ANDed sets, SPTcan have more than one Group values assigned. At least one Group must be assigned for each SPI.

The attribute ConditionNegated of the class Service Point Trigger defines whether the individual SPTinstance is negated (i.e. NOT logical expression).

Request-URI class defines SPTfor the Request-URI. Request-URI contains attribute RequestURI.

SIP Method class defines SPTfor the SIP method. SIP Method contains attribute SIPMethod which can evaluate to any existent SIP method.

SIP Header class defines SPTfor the presence or absence of any SIP header or for the content of any SIP header. SIP Header contains attribute SIP Header which identifies the SIP Header, which is the SPT, and the Content attribute defines the value of the SIP Header if required. The value of the Content attribute is a string that shall be interpreted as a regular expression. Perl-like regular expressions shall be taken as a model for legal regular expressions for this function. A regular expression would be as simple as a literal (e.g. “john”) or a more elaborated one, allowing to match a string “containing” a substring, beginning with a substring, etc. Examples of regular expressions valid for the “Match” attribute could be:

“Joe”: meaning that a given header matches exactly with the string “Joe”.

“^(Jo).*”: meaning that a given header contains a value that begins with “Jo”.

“.*Jo.*”: meaning that a given header contains the sub string “Jo” at any position.

The absence of the Content attribute and ConditionNegated = TRUE indicates that the SPTis the absence of a determined SIP header.

Session Case class represents an enumerated type, with possible values “Originating”, “Terminating_Registered”, “Terminating_Unregistered” indicating if the filter should be used by the S-CSCF handling the Originating, Terminating for a registered end user or Terminating for an unregistered end user services.

Session Description Information class defines SPTfor the content of any SDP field within the body of a SIP Method. The Line attribute identifies the line inside the session description. Content is a string defining the content of the line

identified by Line. Perl-like regular expressions shall be taken as a model for regular expressions for this function (as described above).

****** Next Changed Section******

Annex E (normative): XML schema for the Cx interface user profile

The file CxDataType.xsd, attached to this specification, contains the XML schema for the Cx interface user profile. Such XML schema details all the data types on which XML documents containing Cx profile information shall be based. The XML schema file is intended to be used by an XML parser.

Table E.1 describes the data types and the dependencies among them that configure the XML schema.

Table E.1: XML schema for Cx interface: simple data types

Data type	Tag	Base type	Comments
tPriority	Priority	integer	>= 0
tGroupID	Group	integer	>= 0
tDefaultHandling	DefaultHandling	enumerated	Possible values: 0 (SESSION_CONTINUED) 1 (SESSION_TERMINATED)
tDirectionOfRequest	SessionCase	enumerated	Possible values: 0 (ORIGINATING_SESSION) 1 (TERMINATING_REGISTERED)~~SESSION~~ 2 (TERMINATING_UNREGISTERED)
tPrivateID	PrivateID	anyURI	Syntax described in RFC 2486
tSIP_URL	Identity	anyURI	Syntax described in RFC 3261
tTEL_URL	Identity	anyURI	Syntax described in RFC 2806
tIdentity	Identity	(union)	Union of tSIP_URL and tTEL_URL
tServiceInfo	ServiceInfo	string	
tString	RequestURI, Method, Header, Content, Line	string	
tBool	ConditionTypeCNF, ConditionNegated, BarringIndication	boolean	Possible values: 0 (false) 1 (true)
tSubscribedMediaProfileId	SubscribedMediaProfileId	integer	>=0

****** *Changes to .xsd file* ******

```
<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">

    <xs:simpleType name="tPriority" final="list restriction">
```

```
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tGroupID" final="list restriction">
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tDefaultHandling" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="1"/>
            <xs:enumeration value="0">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">SESSION_CONTINUED</label>
                        <definition xml:lang="en">Session Continued</definition>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="1">
                <xs:annotation>
                    <xs:documentation>
                        <label xml:lang="en">SESSION_TERMINATED</label>
                        <definition xml:lang="en">Session Terminated</definition>
                    </xs:documentation>
                </xs:annotation>
            </xs:enumeration>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tDirectionOfRequest" final="list restriction">
        <xs:restriction base="xs:unsignedByte">
            <xs:maxInclusive value="3"/>
            <xs:enumeration value="0">
                <xs:annotation>
```

```
                <xs:documentation>
                    <label xml:lang="en">ORIGINATING_SESSION</label>
                    <definition xml:lang="en">Originating Session</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="1">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_REGISTERED~~SESSION~~</label>
                    <definition xml:lang="en">Terminating Session for registered user</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="2">
            <xs:annotation>
                <xs:documentation>
                    <label xml:lang="en">TERMINATING_UNREGISTERED</label>
                    <definition xml:lang="en">Terminating Session for unregistered user</definition>
                </xs:documentation>
            </xs:annotation>
        </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="tPrivateID" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tSIP_URL" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tTEL_URL" final="list restriction">
    <xs:restriction base="xs:anyURI"/>
</xs:simpleType>
<xs:simpleType name="tIdentity" final="list restriction">
    <xs:union memberTypes="tSIP_URL tTEL_URL"/>
```

```
    </xs:simpleType>
    <xs:simpleType name="tServiceInfo" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tString" final="list restriction">
        <xs:restriction base="xs:string">
            <xs:minLength value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="tBool">
        <xs:restriction base="xs:boolean"/>
    </xs:simpleType>
    <xs:simpleType name="tSubscribedMediaProfileId" final="list restriction">
        <xs:restriction base="xs:int">
            <xs:minInclusive value="0"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="tIMSSubscription">
        <xs:sequence>
            <xs:element name="PrivateID" type="tPrivateID"/>
            <xs:element name="ServiceProfile" type="tServiceProfile" maxOccurs="unbounded"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tServiceProfile">
        <xs:sequence>
            <xs:element name="PublicIdentity" type="tPublicIdentity" maxOccurs="unbounded"/>
            <xs:element name="CoreNetworkServicesAuthorization" type="tCoreNetworkServicesAuthorization"
minOccurs="0"/>
            <xs:element name="InitialFilterCriteria" type="tInitialFilterCriteria" minOccurs="0"
maxOccurs="unbounded"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
```

```
<xs:complexType name="tCoreNetworkServicesAuthorization">
    <xs:sequence>
        <xs:element name="SubscribedMediaProfileId" type="tSubscribedMediaProfileId" minOccurs="0"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tInitialFilterCriteria">
    <xs:sequence>
        <xs:element name="Priority" type="tPriority"/>
        <xs:element name="TriggerPoint" type="tTrigger" minOccurs="0"/>
        <xs:element name="ApplicationServer" type="tApplicationServer"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tTrigger">
    <xs:sequence>
        <xs:element name="ConditionTypeCNF" type="tBool"/>
        <xs:element name="SPT" type="tSePoTri" maxOccurs="unbounded"/>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="tSePoTri">
    <xs:sequence>
        <xs:element name="ConditionNegated" type="tBool" default="0" minOccurs="0"/>
        <xs:element name="Group" type="tGroupID" maxOccurs="unbounded"/>
        <xs:choice>
            <xs:element name="RequestURI" type="tString"/>
            <xs:element name="Method" type="tString"/>
            <xs:element name="SIPHeader" type="tHeader"/>
            <xs:element name="SessionCase" type="tDirectionOfRequest"/>
            <xs:element name="SessionDescription" type="tSessionDescription"/>
        </xs:choice>
        <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>
```

```
    <xs:complexType name="tHeader">
        <xs:sequence>
            <xs:element name="Header" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tSessionDescription">
        <xs:sequence>
            <xs:element name="Line" type="tString"/>
            <xs:element name="Content" type="tString" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tApplicationServer">
        <xs:sequence>
            <xs:element name="ServerName" type="tSIP_URL"/>
            <xs:element name="DefaultHandling" type="tDefaultHandling" minOccurs="0"/>
            <xs:element name="ServiceInfo" type="tServiceInfo" minOccurs="0"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="tPublicIdentity">
        <xs:sequence>
            <xs:element name="BarringIndication" type="tBool" default="0" minOccurs="0"/>
            <xs:element name="Identity" type="tIdentity"/>
            <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
    <xs:element name="IMSSubscription" type="tIMSSubscription"/>
</xs:schema>
```

3GPP TSG CN WG4 Meeting #22bis
Edinburgh, UK, 14th – 20th April 2004

N4-040456

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **095** ⌘ **rev** **1** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Content of the user profile		
Source:	⌘	CN4		
Work item code:	⌘	IMS-CCR	***Date:*** ⌘	01/04/2004
Category:	⌘	**A**	***Release:*** ⌘	Rel-6

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The current specification doesn't unambiguously specify the content of the User-Data AVP in the SAA and PPR messages. In order to inform the S-CSCF about the public identities belonging to the implicitly registered public identity set, the Cx shall carry the implicitly registered public identity set with the associated service profiles within the SAA message. In order to help the S-CSCF to maintain the content of an implicitly registered public identity set synchronised with the HSS, the HSS shall be able to inform the addition and removal of public identities within the implicitly registered public identity set with minor or no impacts on the end user service. This requires the coherence between the SAA and PPR content, that is, the PPR shall contain single updated implicitly registered public identity set to help the S-CSCF to detect the added or removed public identities. If the coherence is not maintained the adding and removal of public identity in the subscription requires a HSS initiated deregistration.
Summary of change:	⌘	It is aligned the terminology with the TS 23.228 and to use term "implicitly registered public identity set". It is clarified the text which describes that the SAA and PPR messages shall contain only the public identities with the associated service profiles of the implicitly registered public identity set.
Consequences if not approved:	⌘	Interoperability problems. Negative effect on the end user experience.

Clauses affected:	⌘	3.1, 6.1.2, 6.2.2, 6.5, 6.6

		Y	N			
Other specs affected:	⌘		X	Other core specifications	⌘	
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘	This is the mirror CR of the N4-040455				

How to create CRs using this form:

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

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

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

3) 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.

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

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

Authentication pending flag: A flag that indicates that the authentication of a public identity - private identity pair is pending and waiting for confirmation.

Charging information: Data that is sent in the Charging-Information AVP.

Implicitly registered Public User Identity set: A set of Public User Identities, which are registered and de-registered simultaneously when any of the Public User Identities belonging to that set is registered or de-registered.

Not Registered State: User is not Registered and has no S-CSCF assigned.

Registered State: User is Registered at the request of the user and has an S-CSCF assigned.

Unregistered State: User is not Registered but has a serving S-CSCF assigned to execute Unregistered state services as a consequence of a terminating call or there is an S-CSCF keeping the user profile stored.

User information: The user related data that the S-CSCF requests from the HSS or HSS pushes to the S-CSCF, e.g. user profile and charging information.

User profile: Data that is sent in the User-Data AVP.

---------next modified section----------

6.1.2 S-CSCF registration/deregistration notification

This procedure is used between the S-CSCF and the HSS. The procedure is invoked by the S-CSCF, corresponds to the combination of the operations Cx-Put and Cx-Pull (see 3GPP TS 23.228 [1]) and is used:

- To assign an S-CSCF to a ~~public~~ Public User ~~identity~~Identity, or to clear the name of the S-CSCF assigned to one or more ~~public~~ Public User ~~identities~~Identities.
- To download from HSS the relevant user ~~profile~~ information that the S-CSCF needs to serve the user.

This procedure is mapped to the commands Server-Assignment-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.1.2.1 and 6.1.2.2 describe the involved information elements.

Table 6.1.2.1: S-CSCF registration/deregistration notification request

Information element name	Mapping to Diameter AVP	Cat.	Description
Public User Identity (See 7.2)	Public-Identity	C	~~User p~~Public User ~~i~~Identity or list of ~~user p~~Public ~~i~~Identities. One and only one ~~p~~Public User ~~i~~Identity shall be present if the Server-Assignment-Type is any value other than TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION or ADMINISTRATIVE_DEREGISTRATION. If Server-Assignment-Type indicates deregistration of some type and Private User Identity ~~User Name~~ is not present in the request, at least one ~~p~~Public User ~~i~~Identity shall be present.
S-CSCF Name (See 7.4)	Server-Name	M	Name of the S-CSCF.

Private User Identity (See 7.3)	User-Name	C	~~User p~~Private User ~~i~~Identity. It shall be present if it is available when the S-CSCF issues the request. It may be absent during the initiation of a session to an unregistered user. In such a situation, Server-Assignment-Type shall contain the value UNREGISTERED_USER. In case of de-registration, Server-Assignment-Type equal to TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION or ADMINISTRATIVE_DEREGISTRATION, if no Public User ~~-~~ Identity ~~AVPs are~~ is present then the Private User Identity ~~Name AVP~~ shall be present.
Server Assignment Type (See 7.8)	Server-Assignment-Type	M	Type of update the S-CSCF requests in the HSS (e.g: de-registration). See 3GPP TS 29.229 [5] for all the possible values.
User Data Request Type (See 7.15)	User-Data-Request-Type	M	Parts of the user profile the S-CSCF requests from the HSS (e.g: complete profile). See 3GPP TS 29.229 [5] for all the possible values.
User Data Already Available (See 7.16)	User-Data-Already-Available	M	This indicates if the user profile is already available in the S-CSCF.
Routing Information (See 7.13)	Destination-Host	C	If the S-CSCF knows the HSS name, the Destination-Host AVP shall be present in the command. This information is available if the request belongs to an already existing registration, e.g. in case of the re-registration, where the HSS name is stored in the S-CSCF. The HSS name is obtained from the Origin-Host AVP, which is received from the HSS, e.g. included in the MAA command. This information may not be available if the command is sent as a consequence of a session termination for an unregistered user. In this case the Destination-Host AVP is not present and the command is routed to the next Diameter node, e.g. SLF, based on the Diameter routing table in the S-CSCF.

Table 6.1.2.2: S-CSCF registration/deregistration notification response

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity (See 7.3)	User-Name	C	~~User p~~Private User ~~i~~Identity. It shall be present if it is available when the HSS sends the response. It may be absent in the following error case: when the Server-Assignment-Type of the request is UNREGISTERED_USER and the received ~~p~~Public ~~u~~User ~~i~~Identity is not known by the HSS.
Registration result (See 7.6)	Result-Code / Experimental-Result	M	Result of registration. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

User Profile (See 7.7)	User-Data	C	Relevant user profile. It shall be present when Server-Assignment-Type in the request is equal to NO_ASSIGNMENT~~.~~, ~~If the Server-Assignment-Type in the request is equal to~~ REGISTRATION, RE_REGISTRATION or UNREGISTERED_USER ~~the User-Data AVP shall be present~~ according to the rules defined in ~~the~~ section 6.6. If the S-CSCF receives more data than it is prepared to accept, it shall perform the de-registration of the user with User-Authorization-Type set to DEREGISTRATION_TOO_MUCH_DATA and send back a SIP 3xx or 480 (Temporarily Unavailable) response, which shall trigger the selection of a new S-CSCF by the I-CSCF, as specified in 3GPP TS 24.229 [8].
Charging Information (See 7.12)	Charging-Information	C	Addresses of the charging functions. It shall be present when the User-Data AVP is sent to the S-CSCF. When this parameter is included, the Primary Charging Collection Function address shall be included. All other elements shall be included if they are available.

6.1.2.1 Detailed behaviour

On registering/deregistering a ~~p~~Public User ~~i~~Identity the S-CSCF shall inform the HSS. The same procedure is used by the S-CSCF to get the user information which contains the user profile and the charging information.. The relevant user profile downloaded is described in more detailed in ~~the~~ sections 6.5.1 and 6.6. The HSS holds information about the state of registration of all the identities of the user. The S-CSCF uses this procedure to update such states. For implicitly registered identities, the rules defined in Section 6.5.1 shall apply. The HSS shall, in the following order (in case of an error in any of the steps the HSS shall stop processing and return the corresponding error code, see 3GPP TS 29.229 [5]):

1. Check that the user is known. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_USER_UNKNOWN. If there is neither a Public User Identity nor a Private User Identity included, the Experimental-Result-Code shall be set to DIAMETER_MISSING_USER_ID.

2. The HSS may check whether the private and ~~p~~Public User ~~i~~Identities received in the request belong to the same user. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_IDENTITIES_DONT_MATCH.

3. Check the Server Assignment Type value received in the request:

   - If it indicates REGISTRATION or RE_REGISTRATION, the HSS shall download the relevant user ~~public identity~~ information. . If the ~~p~~Public User ~~i~~Identity's authentication pending flag which is specific for the ~~p~~Private User ~~i~~Identity is set, the HSS shall clear it. The Result-Code shall be set to DIAMETER_SUCCESS and the HSS shall set the registration state of the ~~p~~Public User ~~i~~Identity ~~and associated public identities~~ as registered (if not already registered).

     Only one ~~p~~Public User ~~i~~Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and no user information shall be returned. If there is no ~~p~~Public User ~~i~~Identity present, the Experimental-Result-Code shall be set to DIAMETER_MISSING_USER_ID.

   - If it indicates UNREGISTERED_USER, the HSS shall store the S-CSCF name, set the registration state of the ~~p~~Public User ~~i~~Identity as unregistered, i.e. registered as a consequence of a terminating call and download the relevant user ~~public identity~~ information. If there are multiple ~~p~~Private User ~~i~~Identities associated to the ~~p~~Public User ~~i~~Identity in the HSS, the HSS shall arbitrarily select one of the ~~private~~ Private User ~~identities~~ Identities and put it into the response message. The Result-Code shall be set to DIAMETER_SUCCESS.

     Only one ~~public~~ Public User ~~i~~Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and the modifications specified in the previous paragraph shall not be performed. If there is no ~~public~~ Public User ~~i~~Identity present, the Experimental-Result-Code shall be set to DIAMETER_MISSING_USER_ID.

   - If it indicates TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION, DEREGISTRATION_TOO_MUCH_DATA or ADMINISTRATIVE_DEREGISTRATION, the HSS shall

clear the S-CSCF name associated to the ~~private~~ Private User ~~identity~~ Identity for all the ~~public~~ Public User ~~identities~~ Identities that the S-CSCF indicated in the request and set the registration state of the identities as not registered. If no ~~public~~ Public User ~~identity~~ Identity is present in the request, the ~~private~~ Private User ~~identity~~ Identity shall be present; in this case the HSS shall clear the S-CSCF name for all the ~~public~~ Public User ~~i~~Identities associated to the ~~private~~ Private User ~~i~~Identity and set their registration state to not registered. The Result-Code shall be set to DIAMETER_SUCCESS.

- If it indicates TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME or USER_DEREGISTRATION_STORE_SERVER_NAME the HSS decides whether to keep the S-CSCF name associated to the ~~p~~Private User ~~i~~Identity stored or not for all the ~~public~~ Public User ~~identities~~ Identities that the S-CSCF indicated in the request and sets the registration state of the identities as unregistered. If no ~~public~~ Public User ~~i~~Identity is present in the request, the ~~private~~ Private User ~~identity~~ Identity shall be present. If the HSS decides to keep the S-CSCF name stored, the HSS shall keep~~s~~ the S-CSCF name stored for all the ~~public~~ Public User ~~identities~~ Identities associated to the ~~private~~ Private User ~~identity~~ Identity and set their registration state to unregistered. If the S-CSCF has only the Registered part of the user profile stored it shall not indicate TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME or USER_DEREGISTRATION_STORE_SERVER_NAME to the HSS.

  If the HSS decides to keep the S-CSCF name the Result-Code shall be set to DIAMETER_SUCCESS.

  If the HSS decides not to keep the S-CSCF name the Experimental-Result-Code shall be set to DIAMETER_SUCCESS_SERVER_NAME_NOT_STORED. If the HSS received ~~public~~ Public User ~~i~~Identities in the request, the HSS shall set the registration state to not registered for the ~~public~~ Public User ~~i~~Identity(ies) that the S-CSCF indicated in the request. If the HSS received a ~~private~~ Private User ~~identity~~ Identity in the request, the HSS shall set the registration state of all ~~public~~ Public User ~~identites~~ Identites related to the ~~private~~ Private User ~~identity~~ Identity to not registered.

- If it indicates NO_ASSIGNMENT, the HSS checks whether the user is assigned for the S-CSCF requesting the data and download the user ~~public identity~~ information requested in the User-Data-Request-Type AVP. The Result-Code shall be set to DIAMETER_SUCCESS. If the requesting S-CSCF is not the same as the assigned S-CSCF, the Result-Code shall be set to DIAMETER_UNABLE_TO COMPLY.

  Only one ~~public~~ Public ~~u~~User ~~i~~Identity shall be present in the request. If more than one ~~p~~Public User ~~i~~Identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and no user information shall be returned. If there is no ~~public~~ Public User ~~i~~Identity present, the Experimental-Result-Code shall be set to DIAMETER_MISSING_USER_ID.

- If it indicates AUTHENTICATION_FAILURE or AUTHENTICATION_TIMEOUT, the HSS shall clear the S-CSCF name for the ~~p~~Public User ~~i~~Identity associated to the ~~p~~Private User ~~i~~Identity that the S-CSCF indicated in the request and set the registration state of the identity as not registered. If the ~~p~~Public User ~~i~~Identity's authentication pending flag which is specific for the ~~p~~Private User ~~i~~Identity is set, the HSS shall clear it. The Result-Code shall be set to DIAMETER_SUCCESS.

  Only one ~~p~~Public User ~~i~~Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and the modifications specified in the previous paragraph shall not be performed. If there is no ~~p~~Public User ~~i~~Identity present, the Experimental-Result-Code shall be set to DIAMETER_MISSING_USER_ID.

If the HSS cannot fulfil the received request, e.g. due to database error, it shall set the Result-Code to DIAMETER_UNABLE_TO_COMPLY. The HSS shall not modify any user state nor download any user ~~public identity~~ information to the S-CSCF.

See chapter 8.1.2 and 8.1.3 for the description of the handling of the error situations: reception of an S-CSCF name different from the one stored in the HSS and reception of a Server-Assignment-Type value not compatible with the registration state of the user.

---------next modified section----------

6.2.2 HSS initiated update of User Profile

This procedure is initiated by the HSS to update user ~~profile~~ information in the S-CSCF. This procedure corresponds to the functional level operation Cx-Update_Subscr_Data (see 3GPP TS 23.228 [1]).

This procedure is mapped to the commands Push-Profile-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.2.2.1 and 6.2.2.2 describe the involved information elements.

Table 6.2.2.1: User Profile Update request

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity (See 7.3)	User-Name	M	~~User private~~ Private User ~~i~~Identity.
User profile (See 7.7)	User-Data	M	Updated user profile (see sections 6.5.2.1 and 6.6.1), with the format defined in chapter 7.7.
Routing Information (See 7.13)	Destination-Host	M	It contains the name of the S-CSCF which originated the last update of the name of the multimedia server stored in the HSS for a given multimedia user. The address of the S-CSCF is the same as the Origin-Host AVP in the message sent from the S-CSCF.

Table 6.2.2.2: User Profile Update response

Information element name	Mapping to Diameter AVP	Cat.	Description
Result (See 7.6)	Result-Code / Experimental-Result	M	This information element indicates the result of the update of User Profile in the S-CSCF. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

6.2.2.1 Detailed behaviour

The HSS shall make use of this procedure to update relevant user ~~profile~~ information in the S-CSCF. The user information contains the user profile. See chapters 6.5.2.1 and 6.6.1 for the rules of user profile updating. If there are multiple registered private identities associated to the public identity in the HSS, the HSS shall send only single request and select arbitrarily one of the private identities and put it into the request.

The S-CSCF shall overwrite, for the ~~p~~Public ~~u~~User ~~i~~Identities indicated in the request, current user information with the user information received from the HSS, except in the error situations detailed in table 6.2.2.1.1.

If the S-CSCF receives more data than it can accept, it shall return the corresponding error code to the HSS as indicated in table 6.2.2.1.1. The S-CSCF shall not overwrite the data that it already has to give service to the user. The HSS shall initiate a network-initiated de-registration procedure towards the S-CSCF with Deregistration-Reason set to SERVER_CHANGE, which will trigger the assignment of a new S-CSCF.

Table 6.2.2.1.1 details the valid result codes that the S-CSCF can return in the response.

Table 6.2.2.1.1: User profile response valid result codes

Result-Code AVP value	Condition

DIAMETER_SUCCESS	The request succeeded.
DIAMETER_ERROR_NOT SUPPORTED_USER_DATA	The request failed.The S-CSCF informs the HSS that the received ~~subscription data~~user information contained ~~information~~data, which was not recognised or supported, i.e. user profile ~~information~~ which is not correctly encoded according to the XML schema or standardised profile information which cannot be interpreted by the S-CSCF due to unsupported S-CSCF capabilities.
DIAMETER_ERROR_USER_UNKNOWN	The request failed because the user is not found in S-CSCF.
DIAMETER_ERROR_TOO_MUCH_DATA	The request failed. The S-CSCF informs to the HSS that it tried to push too much data into the S-CSCF.
DIAMETER_UNABLE_TO_COMPLY	The request failed.

---------next modified section----------

6.5 Implicit registration

Implicit registration is the mechanism by which a user is allowed to register simultaneously more than one of his/her ~~p~~Public User ~~i~~Identities. The HSS knows the identities that are to be implicitly registered when it receives the indication of the registration of an individual identity.

What follows is an extension of the affected basic procedures.

6.5.1 S-CSCF initiated procedures

The result of the S-CSCF initiated procedures affects all the ~~p~~Public User ~~i~~Identities that are configured in the HSS to be in the same implicitly registered Public User Identity set with the targetted individual Public User Identity~~registered implicitly~~. Where the S-CSCF initiated procedure affects the Registration state of the targetted Public User Identity, the Registration states of the Public User Identities in the associated implicitly registered Public User Identity set are affected in the same way.

6.5.1.1 Registration

The notification of a registration of a ~~p~~Public User ~~identity~~ Identity implies the registration of the corresponding implicitly registered Public User Identity set~~affects all the public identities that are configured in the HSS to be registered implicitly~~. The ~~profile~~ user information downloaded in the response contains the Public User Identities of the implicitly registered Public User Identity set with the associated service profiles~~the list of implicitly registered public identities~~. This allows the S-CSCF to know which Public User Identities belong to the implicitly registered ~~public~~ Public User ~~i~~Identity set~~ies~~. The S-CSCF shall take from the ~~list~~ set of implicitly registered ~~public~~ Public ~~u~~User ~~i~~Identities the first identity which has the syntax of a SIP URI and which is not barred, and use this as the default ~~p~~Public ~~u~~User ~~i~~Identity.

6.5.1.2 De-registration

The de-registration of a ~~p~~Public User ~~identity~~ Identity implies the de-registration of ~~all~~ the corresponding implicitly registered ~~p~~Public ~~identities~~User Identity set, both in the HSS and in the S-CSCF. The S-CSCF shall include in the request a single ~~public~~ Public User ~~i~~Identity ~~for~~ to deregister~~ing~~ all the Public User Identities that belong to the corresponding ~~implicitly registered public identities in the~~ implicitly registered ~~public~~ Public ~~u~~User ~~ID~~ Identity set.

The de-registration of a ~~private~~ Private User ~~identity~~ Identity implies the de-registration of all the corresponding ~~p~~Public User ~~i~~Identities, both in the HSS and in the S-CSCF.

6.5.1.3 Authentication

Setting the authentication pending flag for a ~~p~~Public User ~~i~~Identity implies setting the authentication pending flag for each corresponding implicitly registered ~~p~~Public User ~~i~~Identity in the HSS.

6.5.1.4 Downloading the user profile

If the S-CSCF requests to download a user profile from HSS, the user profile ~~information~~ in the response shall contain the ~~list~~Public User Identities of the corresponding implicitly registered ~~p~~Public ~~identities~~ User Identity set with the associated service profiles.

6.5.2 HSS initiated procedures

6.5.2.1 Update of User Profile

A request sent by the HSS to update the ~~service~~ user profile ~~associated to a user public identity~~ shall include ~~all~~ only the public identities of the ~~corresponding~~ implicitly registered ~~p~~Public User ~~identities~~Identity set, with ~~their respective~~the associated service profiles (even if not updated). If other Public User Identities not associated with the implicitly registered Public User Identity set are affected, they shall be downloaded in separate commands.

6.5.2.2 De-registration

A request sent by the HSS to de-register ~~a public identity~~an implicitly registered Public User Identity set shall ~~include~~ contain all the ~~corresponding implicitly registered p~~Public User ~~i~~Identities of the deregistered set.

The de-registration of a ~~p~~Private User ~~i~~Identity implies the de-registration of all the corresponding ~~p~~Public User ~~i~~Identities, both in the HSS and in the S-CSCF.

~~6.6 Download of relevant user data~~6.6 Download of the Relevant User Profile

The download of the relevant user ~~data~~profile from the HSS to the S-CSCF depends on whether the user ~~data~~ profile is already stored in the S-CSCF and/or on the user ~~data~~ profile requested from the S-CSCF and/or whether the requested user ~~data~~ profile is up-to-date in the S-CSCF.

If User-Data-Already-Available is set to USER_DATA_NOT_AVAILABLE the HSS shall download the requested user profile, according to the value of User-Data-Request-Type. See Section 6.3.25 in 3GPP TS 29.229 [5].

If User-Data-Already-Available is set to USER_DATA_ALREADY_AVAILABLE and the requested user profile is not up-to-date (according to the indications stored in HSS defined in 6.6.1) the HSS shall download the requested user profile, according to the value of User-Data-Request-Type. See Section 6.3.25 in 3GPP TS 29.229 [5].

Otherwise, the HSS shall not return any user profile data.

6.6.1 HSS initiated update of User Profile

The request to update ~~of~~ the user profile ~~information~~ in the S-CSCF includes ~~all~~ only the Public User ~~i~~Identities ~~in an~~of the implicitly registered Public User Identity set with the associated service profiles. See 6.5.2.1.

If the ~~user~~ Public User Identity is registered and there are changes in the registered part of the user profile, the HSS shall immediately push to the S-CSCF the registered part of the user profile.

If the Public User Identity is registered and there are changes in the unregistered part of the user profile, the HSS shall set a flag indicating that the unregistered part of the profile is not up-to-date in the S-CSCF. The HSS shall not initiate any push toward the S-CSCF.

If the ~~user~~ Public User Identity is unregistered (i.e. registered as a consequence of a terminating call or there is a S-CSCF keeping the user profile stored) and there is a change in the unregistered part of the user profile, the HSS shall immediately push to the S-CSCF the unregistered part of the user profile.

If the ~~user~~ Public User Identity is unregistered (i.e. registered as a consequence of a terminating call or there is a S-CSCF keeping the user profile stored) and there is a change in the registered part of the user profile, the HSS shall set a flag indicating that the registered part of the profile is not up-to-date in the S-CSCF. The HSS shall not initiate any push toward the S-CSCF.

6.6.2 S-CSCF operation

The S-CSCF shall store the user ~~data~~ information if it sends Server-Assignment-Request command including Server-Assignment-Type AVP set to value USER_DEREGISTRATION_STORE_SERVER_NAME or TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME and the HSS responds with DIAMETER_SUCCESS. Otherwise the S-CSCF shall not keep user ~~data~~information.

3GPP TSG CN WG4 Meeting #22bis
Edinburgh, UK, 14th – 20th April 2004

N4-040455

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **094** ⌘ **rev** **1** ⌘ Current version: **5.7.0** ⌘

*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:	⌘	Content of the User Profile			
Source:	⌘	CN4			
Work item code:	⌘	IMS-CCR	***Date:*** ⌘	14/04/2004	
Category:	⌘	**F**	***Release:*** ⌘	Rel-5	
		Use one of the following categories:		*Use one of the following releases:*	
		F *(correction)*		*2*	*(GSM Phase 2)*
		A *(corresponds to a correction in an earlier release)*		*R96*	*(Release 1996)*
		B *(addition of feature),*		*R97*	*(Release 1997)*
		C *(functional modification of feature)*		*R98*	*(Release 1998)*
		D *(editorial modification)*		*R99*	*(Release 1999)*
		Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Rel-4*	*(Release 4)*
				Rel-5	*(Release 5)*
				Rel-6	*(Release 6)*

Reason for change:	⌘	This is an essential correction. The current specification doesn't unambiguously specify the content of the User-Data AVP in the SAA and PPR messages. In order to inform the S-CSCF about the public user identities belonging to the implicitly registered public user identity set, the Cx shall carry the implicitly registered public user identity set with the associated service profiles within the SAA message. In order to help the S-CSCF to maintain the content of an implicitly registered public user identity set synchronised with the HSS, the HSS shall be able to inform the addition and removal of public user identities within the implicitly registered public user identity set with minor or no impacts on the end user service. This requires the coherence between the SAA and PPR content, that is, the PPR shall contain single updated implicitly registered public user identity set to help the S-CSCF to detect the added or removed public user identities. If the coherence is not maintained the adding and removal of public user identity in the subscription requires a HSS initiated deregistration.
Summary of change:	⌘	It is aligned the terminology with the TS 23.228 and to use term "implicitly registered public user identity set". It is clarified the text which describes that SAA and PPR messages shall contain only the public user identities with the associated service profiles of the implicitly registered public user identity set.
Consequences if not approved:	⌘	Interoperability problems. Negative effect on the end user experience.

Clauses affected:	⌘	3.1, 6.1.2, 6.2.2, 6.5, 6.6			
Other specs affected:	⌘	**Y**	**N**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	The Rel-6 mirror CR is in N4-040456.			

How to create CRs using this form:

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

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

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

3) 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.

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

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

Charging information: Data that is sent in the Charging-Information AVP.

Implicitly registered Ppublic User iIdentity set: A set of Ppublic User iIdentities, which are registered and de-registered simultaneously when any of the Ppublic User iIdentities belonging to that set is registered or de-registered.

Not Registered State: User is not Registered and has no S-CSCF assigned.

Registered State: User is Registered at the request of the user and has an S-CSCF assigned.

Unregistered State: User is not Registered but has a serving S-CSCF assigned to execute Unregistered state services as a consequence of a terminating call or there is an S-CSCF keeping the user profile stored.

User information: The user related data that the S-CSCF requests from the HSS or HSS pushes to the S-CSCF, e.g. user profile and charging information.

User profile: Data that is sent in the User-Data AVP.

---------next modified section----------

6.1.2 S-CSCF registration/deregistration notification

This procedure is used between the S-CSCF and the HSS. The procedure is invoked by the S-CSCF, corresponds to the combination of the operations Cx-Put and Cx-Pull (see 3GPP TS 23.228 [1]) and is used:

- To assign an S-CSCF to a Ppublic User iIdentity, or to clear the name of the S-CSCF assigned to one or more Ppublic User iIdentities.
- To download from HSS the relevant user ~~profile~~ information that the S-CSCF needs to serve the user.

This procedure is mapped to the commands Server-Assignment-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.1.2.1 and 6.1.2.2 describe the involved information elements.

Table 6.1.2.1: S-CSCF registration/deregistration notification request

Information element name	Mapping to Diameter AVP	Cat.	Description
Public User Identity (See 7.2)	Public-Identity	C	~~User p~~Public User I~~i~~dentity or list of ~~user p~~Public User I~~i~~dentities. One and only one Ppublic User iIdentity shall be present if the Server-Assignment-Type is any value other than TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION or ADMINISTRATIVE_DEREGISTRATION. If Server-Assignment-Type indicates deregistration of some type and Private User Identity~~User Name~~ is not present in the request, at least one Ppublic User iIdentity shall be present.
S-CSCF Name (See 7.4)	Server-Name	M	Name of the S-CSCF.

Private User Identity (See 7.3)	User-Name	C	~~User~~ P~~p~~rivate User I~~i~~dentity. It shall be present if it is available when the S-CSCF issues the request. It may be absent during the initiation of a session to an unregistered user. In such a situation, Server-Assignment-Type shall contain the value UNREGISTERED_USER. In case of de-registration, Server-Assignment-Type equal to TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION or ADMINISTRATIVE_DEREGISTRATION, if no Public User ~~-~~Identity ~~AVPs~~ is~~are~~ present then the Private User Identity ~~Name AVP~~ shall be present.
Server Assignment Type (See 7.8)	Server-Assignment-Type	M	Type of update the S-CSCF requests in the HSS (e.g: de-registration). See 3GPP TS 29.229 [5] for all the possible values.
User Data Request Type (See 7.15)	User-Data-Request-Type	M	Parts of the user profile the S-CSCF requests from the HSS (e.g: complete profile). See 3GPP TS 29.229 [5] for all the possible values.
User Data Already Available (See 7.16)	User-Data-Already-Available	M	This indicates if the user profile is already available in the S-CSCF.
Routing Information (See 7.13)	Destination-Host	C	If the S-CSCF knows the HSS name, the Destination-Host AVP shall be present in the command. This information is available if the request belongs to an already existing registration, e.g. in case of the re-registration, where the HSS name is stored in the S-CSCF. The HSS name is obtained from the Origin-Host AVP, which is received from the HSS, e.g. included in the MAA command. This information may not be available if the command is sent as a consequence of a session termination for an unregistered user. In this case the Destination-Host AVP is not present and the command is routed to the next Diameter node, e.g. SLF, based on the Diameter routing table in the S-CSCF.

Table 6.1.2.2: S-CSCF registration/deregistration notification response

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity (See 7.3)	User-Name	C	~~User p~~Private User ~~i~~Identity. It shall be present if it is available when the HSS sends the response. It may be absent in the following error case: when the Server-Assignment-Type of the request is UNREGISTERED_USER and the received P~~p~~ublic U~~u~~ser iIdentity is not known by the HSS.
Registration result (See 7.6)	Result-Code / Experimental-Result	M	Result of registration. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

User Profile (See 7.7)	User-Data	C	Relevant user profile. It shall be present when Server-Assignment-Type in the request is equal to NO_ASSIGNMENT~~. If the Server-Assignment-Type in the request is equal to~~ REGISTRATION, RE_REGISTRATION or UNREGISTERED_USER ~~the User-Data AVP shall be present~~ according to the rules defined in ~~the~~ section 6.6. If the S-CSCF receives more data than it is prepared to accept, it shall perform the de-registration of the user with User-Authorization-Type set to DEREGISTRATION_TOO_MUCH_DATA and send back a SIP 3xx or 480 (Temporarily Unavailable) response, which shall trigger the selection of a new S-CSCF by the I-CSCF, as specified in 3GPP TS 24.229 [8].
Charging Information (See 7.12)	Charging-Information	C	Addresses of the charging functions. It shall be present when the User-Data AVP is sent to the S-CSCF. When this parameter is included, the Primary Charging Collection Function name shall be included. All other elements shall be included if they are available.

6.1.2.1 Detailed behaviour

On registering/deregistering a P~~p~~ublic User ~~i~~Identity the S-CSCF shall inform the HSS. The same procedure is used by the S-CSCF to get the user information which contains the user profile and the charging information. The relevant user profile downloaded is described in more detailed in ~~the~~ sections 6.5.1 and 6.6. The HSS holds information about the state of registration of all the identities of the user. The S-CSCF uses this procedure to update such states. For implicitly registered identities, the rules defined in Section 6.5.1 shall apply. The HSS shall, in the following order (in case of an error in any of the steps the HSS shall stop processing and return the corresponding error code, see 3GPP TS 29.229 [5]):

1. Check that the user is known. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_USER_UNKNOWN.

2. The HSS may check whether the private and P~~p~~ublic User ~~i~~Identities received in the request belong to the same user. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_IDENTITIES_DONT_MATCH.

3. Check the Server Assignment Type value received in the request:

   - If it indicates REGISTRATION or RE_REGISTRATION, the HSS shall download the relevant user ~~public identity~~ information. If set, the flag that indicates that the identity is pending of the confirmation of the authentication shall be cleared. The Result-Code shall be set to DIAMETER_SUCCESS and the HSS shall set the registration state of the P~~p~~ublic U~~u~~ser I~~i~~dentity ~~and associated public user identities~~ as registered (if not already registered).

     Only one P~~p~~ublic User ~~i~~Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and no user information shall be returned.

   - If it indicates UNREGISTERED_USER, the HSS shall store the S-CSCF name, set the registration state of the P~~p~~ublic User ~~i~~Identity as unregistered, i.e. registered as a consequence of a terminating call and download the relevant user ~~public identity~~ information. The Result-Code shall be set to DIAMETER_SUCCESS.

     Only one P~~p~~ublic User ~~i~~Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and the modifications specified in the previous paragraph shall not be performed.

   - If it indicates TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION, DEREGISTRATION_TOO_MUCH_DATA or ADMINISTRATIVE_DEREGISTRATION, the HSS shall clear the S-CSCF name for all the P~~p~~ublic User ~~i~~Identities that the S-CSCF indicated in the request and set the registration state of the identities as not registered. If no P~~p~~ublic User ~~i~~Identity is present in the request, the P~~p~~rivate User I~~i~~dentity shall be present; in this case the HSS shall clear the S-CSCF name for all the

identities of the user and set their registration state to not registered. The Result-Code shall be set to DIAMETER_SUCCESS.

- If it indicates TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME or USER_DEREGISTRATION_STORE_SERVER_NAME the HSS decides whether to keep the S-CSCF name stored or not for all the Ppublic User Identities that the S-CSCF indicated in the request and sets the registration state of the identities as unregistered. If no Ppublic User Identity is present in the request, the Pprivate User Identity shall be present. If the HSS decided to keep the S-CSCF name stored, the HSS shall keeps the S-CSCF name stored for all the identities of the user and set their registration state to unregistered. If the S-CSCF has only the Registered part of the user profile stored it shall not indicate TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME or USER_DEREGISTRATION_STORE_SERVER_NAME to the HSS.

  If the HSS decides to keep the S-CSCF name the Result-Code shall be set to DIAMETER_SUCCESS.

  If the HSS decides not to keep the S-CSCF name the Experimental-Result-Code shall be set to DIAMETER_SUCCESS_SERVER_NAME_NOT_STORED. If the HSS received Ppublic User Identities in the request, the HSS shall set the registration state to not registered for the Ppublic User Identity(ies) that the S-CSCF indicated in the request. If the HSS received a Pprivate User Identity in the request, the HSS shall set the registration state of all Ppublic User Identities related to the Pprivate User Identity to not registered.

- If it indicates NO_ASSIGNMENT, the HSS checks whether the user is assigned for the S-CSCF requesting the data and download the user public identity information requested in the User-Data-Request-Type AVP. The Result-Code shall be set to DIAMETER_SUCCESS. If the requesting S-CSCF is not the same as the assigned S-CSCF, the Result-Code shall be set to DIAMETER_UNABLE_TO COMPLY.

  Only one Ppublic User Identity shall be present in the request. If more than one Ppublic User Identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and no user information shall be returned.

- If it indicates AUTHENTICATION_FAILURE or AUTHENTICATION_TIMEOUT, the HSS shall clear the S-CSCF name for the Ppublic User Identity that the S-CSCF indicated in the request and set the registration state of the identity as not registered. The flag that indicates that the identity is pending of the confirmation of the authentication shall be cleared. The Result-Code shall be set to DIAMETER_SUCCESS.

  Only one Ppublic User Identity shall be present in the request. If more than one identity is present the Result-Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and the modifications specified in the previous paragraph shall not be performed.

If the HSS cannot fulfil the received request, e.g. due to database error, it shall set the Result-Code to DIAMETER_UNABLE_TO_COMPLY. The HSS shall not modify any user state nor download any user public identity information to the S-CSCF.

See chapter 8.1.2 and 8.1.3 for the description of the handling of the error situations: reception of an S-CSCF name different from the one stored in the HSS and reception of a Server-Assignment-Type value not compatible with the registration state of the user.

---------next modified section----------

6.2.2 HSS initiated update of User Profile

This procedure is initiated by the HSS to update user profile information in the S-CSCF. This procedure corresponds to the functional level operation Cx-Update_Subscr_Data (see 3GPP TS 23.228 [1]).

This procedure is mapped to the commands Push-Profile-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.2.2.1 and 6.2.2.2 describe the involved information elements.

Table 6.2.2.1: User Profile Update request

Information element name	Mapping to Diameter	Cat.	Description

	AVP		
Private User Identity (See 7.3)	User-Name	M	~~User~~ P~~p~~rivate User ~~i~~Identity.
User profile (See 7.7)	User-Data	M	Updated user profile (see sections 6.5.2.1 and 6.6.1), with the format defined in chapter 7.7.
Routing Information (See 7.13)	Destination-Host	M	It contains the name of the S-CSCF which originated the last update of the name of the multimedia server stored in the HSS for a given multimedia user. The address of the S-CSCF is the same as the Origin-Host AVP in the message sent from the S-CSCF.

Table 6.2.2.2: User Profile Update response

Information element name	Mapping to Diameter AVP	Cat.	Description
Result (See 7.6)	Result-Code / Experimental-Result	M	This information element indicates the result of the update of User Profile in the S-CSCF. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

6.2.2.1 Detailed behaviour

The HSS shall make use of this procedure to update relevant user ~~profile~~ information in the S-CSCF. The user information contains the user profile. See chapters 6.5.2.1 and 6.6.1 for the rules of user profile updating.

The S-CSCF shall overwrite, for the P~~p~~ublic U~~u~~ser I~~i~~dentities indicated in the request, current user information with the user information received from the HSS, except in the error situations detailed in table 6.2.2.1.1.

If the S-CSCF receives more data than it can accept, it shall return the corresponding error code to the HSS as indicated in table 6.2.2.1.1. The S-CSCF shall not overwrite the data that it already has to give service to the user. The HSS shall initiate a network-initiated de-registration procedure towards the S-CSCF with Deregistration-Reason set to SERVER_CHANGE, which will trigger the assignment of a new S-CSCF.

Table 6.2.2.1.1 details the valid result codes that the S-CSCF can return in the response.

Table 6.2.2.1.1: User profile response valid result codes

Result-Code AVP value	Condition
DIAMETER_SUCCESS	The request succeeded.
DIAMETER_ERROR_NOT SUPPORTED_USER_DATA	The request failed. The S-CSCF informs the HSS that the received ~~subscription data~~user information contained ~~information~~data, which was not recognised or supported, i.e. user profile ~~information~~ which is not correctly encoded according to the XML schema or standardised profile information which cannot be interpreted by the S-CSCF due to unsupported S-CSCF capabilities.
DIAMETER_ERROR_USER_UNKNOWN	The request failed because the user is not found in S-CSCF.
DIAMETER_ERROR_TOO_MUCH_DATA	The request failed. The S-CSCF informs to the HSS that

	it tried to push too much data into the S-CSCF.
DIAMETER_UNABLE_TO_COMPLY	The request failed.

---------next modified section----------

6.5 Implicit registration

Implicit registration is the mechanism by which a user is allowed to register simultaneously more than one of his/her Ppublic User iIdentities. The HSS knows the identities that are to be implicitly registered when it receives the indication of the registration of an individual identity.

What follows is an extension of the affected basic procedures.

6.5.1 S-CSCF initiated procedures

The result of the S-CSCF initiated procedures affects on all the Ppublic User iIdentities that are configured in the HSS to be in the same implicitly registered Ppublic User Iidentity set with the targetted individual Ppublic Uuser Iidentityregistered implicitly. Where the S-CSCF initiated procedure affects the Registration state of the targetted Public User Identity, the Registration states of the Public User Identities in the associated implicitly registered Public User Identity set are affected in the same way.

6.5.1.1 Registration

The notification of a registration of a Ppublic User iIdentity implies the registration of the corresponding implicitly registered Ppublic User Iidentity set.affects all the public identities that are configured in the HSS to be registered implicitly. The profile user information downloaded in the response contains the Ppublic User Iidentities of the implicitly registered Ppublic User Iidentity set with the associated service profilesthe list of implicitly registered public identities. This allows the S-CSCF to know which Ppublic User Iidentities belong to the implicitly registered Ppublic identitiesUser iIdentity set. The S-CSCF shall take from the list set of implicitly registered Ppublic Uuser Iidentities the first identity which has the syntax of a SIP URI and which is not barred, and use this as the default Ppublic Uuser Iidentity.

6.5.1.2 De-registration

The de-registration of a Ppublic User Iidentity implies the de-registration of all the corresponding implicitly registered Ppublic identitiesUser Iidentity set, both in the HSS and in the S-CSCF. The S-CSCF shall include in the request a single Ppublic User iIdentity for to deregistering all the Ppublic User Iidentities that belong to the corresponding implicitly registered public identities in the implicitly registered Ppublic Uuser ID Iidentity set.

The de-registration of a Pprivate User iIdentity implies the de-registration of all the corresponding Ppublic User iIdentities, both in the HSS and in the S-CSCF.

6.5.1.3 Authentication

Setting the flag for a Ppublic User iIdentity that indicates a pending authentication implies setting the "authentication pending" flag for each corresponding implicitly registered Ppublic User iIdentity in the HSS.

6.5.1.4 Downloading the user profile

If the S-CSCF requests to download a user profile from HSS, the user profile information in the response shall contain the Ppublic User Iidentities list of the corresponding implicitly registered Ppublic identities User Iidentity set with the associated service profiles.

6.5.2 HSS initiated procedures

6.5.2.1 Update of User Profile

A request sent by the HSS to update the ~~service~~ user profile ~~associated to a user public identity~~ shall include ~~all~~ only the P~~p~~ublic User I~~i~~dentities of the ~~corresponding~~ implicitly registered P~~p~~ublic User ~~identities~~I~~i~~dentity set, with ~~their respective~~the associated service profiles (even if not updated). If other Public User Identities not associated with the implicitly registered Public User Identity set are affected, they shall be downloaded in separate commands.

6.5.2.2 De-registration

A request sent by the HSS to de-register ~~a public identity~~ an implicitly registered P~~p~~ublic User I~~i~~dentity set shall ~~include~~ contain all the ~~corresponding implicitly registered~~ P~~p~~ublic User ~~i~~Identities of the deregistered set.

The de-registration of a P~~p~~rivate User ~~i~~Identity implies the de-registration of all the corresponding P~~p~~ublic User I~~i~~dentities, both in the HSS and in the S-CSCF.

~~6.6 Download of relevant user data~~6.6 Download of the R~~r~~elevant U~~u~~ser P~~p~~rofile

The download of the relevant user ~~data~~ profile from the HSS to the S-CSCF depends on whether the user ~~data~~ profile is already stored in the S-CSCF and/or on the user ~~data~~ profile requested from the S-CSCF and/or whether the requested user ~~data~~ profile is up-to-date in the S-CSCF.

If User-Data-Already-Available is set to USER_DATA_NOT_AVAILABLE the HSS shall download the requested user profile, according to the value of User-Data-Request-Type. See Section 6.3.25 in 3GPP TS 29.229 [5].

If User-Data-Already-Available is set to USER_DATA_ALREADY_AVAILABLE and the requested user profile is not up-to-date (according to the indications stored in HSS defined in 6.6.1) the HSS shall download the requested user profile, according to the value of User-Data-Request-Type. See Section 6.3.25 in 3GPP TS 29.229 [5].

Otherwise, the HSS shall not return any user profile data.

6.6.1 HSS initiated update of User Profile

The request to update ~~of~~ the user profile ~~information~~ in the S-CSCF includes ~~all~~ only the P~~p~~ublic User ~~i~~Identities ~~in an~~of the implicitly registered P~~p~~ublic User ~~i~~Identity set with the associated service profiles. See 6.5.2.1.

If the P~~p~~ublic User ~~i~~Identity ~~user~~ is registered and there are changes in the registered part of the user profile, the HSS shall immediately push to the S-CSCF the registered part of the user profile.

If the Public User Identity is registered and there are changes in the unregistered part of the user profile, the HSS shall set a flag indicating that the unregistered part of the profile is not up-to-date in the S-CSCF. The HSS shall not initiate any push toward the S-CSCF.

If the ~~user~~ P~~p~~ublic User ~~i~~Identity is unregistered (i.e. registered as a consequence of a terminating call or there is a S-CSCF keeping the user profile stored) and there is a change in the unregistered part of the user profile, the HSS shall immediately push to the S-CSCF the unregistered part of the user profile.

If the ~~user~~ P~~p~~ublic User ~~i~~Identity is unregistered (i.e. registered as a consequence of a terminating call or there is a S-CSCF keeping the user profile stored) and there is a change in the registered part of the user profile, the HSS shall set a flag indicating that the registered part of the profile is not up-to-date in the S-CSCF. The HSS shall not initiate any push toward the S-CSCF.

6.6.2 S-CSCF operation

The S-CSCF shall store the user ~~data~~ information if it sends Server-Assignment-Request command including Server-Assignment-Type AVP set to value USER_DEREGISTRATION_STORE_SERVER_NAME or TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME and the HSS responds with DIAMETER_SUCCESS. Otherwise the S-CSCF shall not keep user ~~data~~information.

3GPP TSG CN WG4 Meeting #22bis
Edinburgh, UK, 14th – 20th April 2004

N4-040443

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **097** ⌘ **rev** **2** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Update of the charging addresses from HSS
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	14/04/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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 CN4#22 meeting it was approved (N4-040343) to download the charging information in the SAR command whenever the user profile is downloaded. The reason was to keep the S-CSCF updated as much as possible regarding changes in the charging information. However, this change is not enough, since the charging information is only downloaded to the S-CSCF whenever the S-CSCF initiates a SAR/SAA procedure, but if the information changes in the HSS, it is not pushed to the S-CSCF until the serving asks for it.
Summary of change:	⌘	It has been included the charging information also in the PPR/PPA procedure. So the HSS will initiate a push to the S-CSCF whenever the charging information changes.
Consequences if not approved:	⌘	An updated charging information in the HSS will not be propagated to the S-CSCF resulting in a failure in charging.

Clauses affected:	⌘	6.2.2			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	29.229 CR 037
		X /	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘	The mirror of this CR is CR 096. Editorial comments from the older version of the CR. Mainly replace of “charging addresses” by “charging info”.			

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

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

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

3) 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.

****** First modified section ******

6.2.2 HSS initiated update of User Profile

This procedure is initiated by the HSS to update user profile information and/or charging information in the S-CSCF. This procedure corresponds to the functional level operation Cx-Update_Subscr_Data (see 3GPP TS 23.228 [1]).

This procedure is mapped to the commands Push-Profile-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.2.2.1 and 6.2.2.2 describe the involved information elements.

Table 6.2.2.1: User Profile Update request

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity (See 7.3)	User-Name	M	User private identity.
User profile (See 7.7)	User-Data	~~M~~C	Updated user profile (see section 6.6.1), with the format defined in chapter 7.7. It shall be present if the user profile is changed in the HSS. If the User-Data AVP is not present, the Charging-Information AVP shall be present.
Charging Information (See 7.12)	Charging-Information	C	Addresses of the charging functions. It shall be present if the charging addresses are changed in the HSS. If the Charging-Information AVP is not present, the User-Data AVP shall be present. When this parameter is included, the Primary-Charging-Collection-Function-Name AVP shall be included. All other charging information shall be included if it is available.
Routing Information (See 7.13)	Destination-Host	M	It contains the name of the S-CSCF which originated the last update of the name of the multimedia server stored in the HSS for a given multimedia user. The address of the S-CSCF is the same as the Origin-Host AVP in the message sent from the S-CSCF.

Table 6.2.2.2: User Profile Update response

Information element name	Mapping to Diameter AVP	Cat.	Description
Result (See 7.6)	Result-Code / Experimental-Result	M	This information element indicates the result of the update of User Profile in the S-CSCF. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

6.2.2.1 Detailed behaviour

The HSS shall make use of this procedure to update relevant user profile information and/or the charging information in the S-CSCF. See chapter 6.6.1 for the rules of user profile updating. If there are multiple registered private identities

associated to the public identity in the HSS, the HSS shall send only single request and select arbitrarily one of the private identities and put it into the request.

If the User-Data AVP is present in the request,, t~~T~~he S-CSCF shall overwrite, for the public user identities indicated in the request, current information with the information received from the HSS, except in the error situations detailed in table 6.2.2.1.1.

If the S-CSCF receives more data than it can accept, it shall return the corresponding error code to the HSS as indicated in table 6.2.2.1.1. The S-CSCF shall not overwrite the data that it already has to give service to the user. The HSS shall initiate a network-initiated de-registration procedure towards the S-CSCF with Deregistration-Reason set to SERVER_CHANGE, which will trigger the assignment of a new S-CSCF. If the Charging-Information AVP is present in the request, the S-CSCF shall replace the existing charging information with the information received from the HSS.

The Charging-Information AVP and/or the User-Data AVP shall be present in the request.

Table 6.2.2.1.1 details the valid result codes that the S-CSCF can return in the response.

Table 6.2.2.1.1: User profile response valid result codes

Result-Code AVP value	Condition
DIAMETER_SUCCESS	The request succeeded.
DIAMETER_ERROR_NOT SUPPORTED_USER_DATA	The request failed.The S-CSCF informs the HSS that the received subscription data contained information, which was not recognised or supported, i.e. profile information which is not correctly encoded according to the XML schema or standardised profile information which cannot be interpreted by the S-CSCF due to unsupported S-CSCF capabilities.
DIAMETER_ERROR_USER_UNKNOWN	The request failed because the user is not found in S-CSCF.
DIAMETER_ERROR_TOO_MUCH_DATA	The request failed. The S-CSCF informs to the HSS that it tried to push too much data into the S-CSCF.
DIAMETER_UNABLE_TO_COMPLY	The request failed.

****** Next modified section ******

6.5.2 HSS initiated procedures

6.5.2.1 Update of User Profile

A request sent by the HSS to update the service profile associated to a user public identity shall include all the corresponding implicitly registered public identities, with their respective service profiles (even if not updated).

6.5.2.2 De-registration

A request sent by the HSS to de-register a public identity shall include all the corresponding implicitly registered public identities.

The de-registration of a private identity implies the de-registration of all the corresponding public identities, both in the HSS and in the S-CSCF.

6.5.2.x Update of the Charging information

A request sent by the HSS to update the charging information shall include the private user identity for whom the charging information changed.

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Edinburgh, UK, 14th – 20th April 2004

N4-040442

CR-Form-v7

CHANGE REQUEST

⌘ **29.228** **CR** **096** ⌘ **rev** **2** ⌘ Current version: **5.7.0** ⌘

*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:	⌘	Update of the charging addresses from HSS
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	14/04/2004
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:	⌘	Essential Correction. At the CN4#22 meeting it was approved (N4-040343) to download the charging information in the SAR command whenever the user profile is downloaded. The reason was to keep the S-CSCF updated as much as possible regarding changes in the charging information. However, this change is not enough, since the charging information is only downloaded to the S-CSCF whenever the S-CSCF initiates a SAR/SAA procedure, but if the information changes in the HSS, it is not pushed to the S-CSCF until the serving asks for it.
Summary of change:	⌘	It has been included the charging information also in the PPR/PPA procedure. So the HSS will initiate a push to the S-CSCF whenever the charging information changes.
Consequences if not approved:	⌘	An updated charging information in the HSS will not be propagated to the S-CSCF resulting in a failure in charging.

Clauses affected:	⌘	6.2.2

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		29.229 CR 036
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	The mirror of this CR is CR 097. Editorial comments from the older version of the CR. Mainly replace of “charging

addresses" by "charging info".

How to create CRs using this form:

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

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

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

3) 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.

****** First modified section ******

6.2.2 HSS initiated update of User Profile

This procedure is initiated by the HSS to update user profile information and/or charging information in the S-CSCF. This procedure corresponds to the functional level operation Cx-Update_Subscr_Data (see 3GPP TS 23.228 [1]).

This procedure is mapped to the commands Push-Profile-Request/Answer in the Diameter application specified in 3GPP TS 29.229 [5]. Tables 6.2.2.1 and 6.2.2.2 describe the involved information elements.

Table 6.2.2.1: User Profile Update request

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity (See 7.3)	User-Name	M	User private identity.
User profile (See 7.7)	User-Data	~~M~~C	Updated user profile (see section 6.6.1), with the format defined in chapter 7.7. It shall be present if the user profile is changed in the HSS. If the User-Data AVP is not present, the Charging-Information AVP shall be present.
Charging Information (See 7.12)	Charging-Information	C	Addresses of the charging functions. It shall be present if the charging information is changed in the HSS. If the Charging-Information AVP is not present, the User-Data AVP shall be present. When this parameter is included, the Primary-Charging-Collection-Function-Name AVP shall be included. All other charging information shall be included if they are available.
Routing Information (See 7.13)	Destination-Host	M	It contains the name of the S-CSCF which originated the last update of the name of the multimedia server stored in the HSS for a given multimedia user. The address of the S-CSCF is the same as the Origin-Host AVP in the message sent from the S-CSCF.

Table 6.2.2.2: User Profile Update response

Information element name	Mapping to Diameter AVP	Cat.	Description
Result (See 7.6)	Result-Code / Experimental-Result	M	This information element indicates the result of the update of User Profile in the S-CSCF. Result-Code AVP shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.

6.2.2.1 Detailed behaviour

The HSS shall make use of this procedure to update relevant user profile information and/or the charging information in the S-CSCF. See chapter 6.6.1 for the rules of user profile updating. If there are multiple registered private identities

associated to the public identity in the HSS, the HSS shall send only single request and select arbitrarily one of the private identities and put it into the request.

If the User-Data AVP is present in the request,, the S-CSCF shall overwrite, for the public user identities indicated in the request, current information with the information received from the HSS, except in the error situations detailed in table 6.2.2.1.1.

If the S-CSCF receives more data than it can accept, it shall return the corresponding error code to the HSS as indicated in table 6.2.2.1.1. The S-CSCF shall not overwrite the data that it already has to give service to the user. The HSS shall initiate a network-initiated de-registration procedure towards the S-CSCF with Deregistration-Reason set to SERVER_CHANGE, which will trigger the assignment of a new S-CSCF. If the Charging-Information AVP is present in the request, the S-CSCF shall replace the existing charging address information with the information received from the HSS.

The Charging-Information AVP and/or the User-Data AVP shall be present in the request.

Table 6.2.2.1.1 details the valid result codes that the S-CSCF can return in the response.

Table 6.2.2.1.1: User profile response valid result codes

Result-Code AVP value	Condition
DIAMETER_SUCCESS	The request succeeded.
DIAMETER_ERROR_NOT SUPPORTED_USER_DATA	The request failed.The S-CSCF informs the HSS that the received subscription data contained information, which was not recognised or supported, i.e. profile information which is not correctly encoded according to the XML schema or standardised profile information which cannot be interpreted by the S-CSCF due to unsupported S-CSCF capabilities.
DIAMETER_ERROR_USER_UNKNOWN	The request failed because the user is not found in S-CSCF.
DIAMETER_ERROR_TOO_MUCH_DATA	The request failed. The S-CSCF informs to the HSS that it tried to push too much data into the S-CSCF.
DIAMETER_UNABLE_TO_COMPLY	The request failed.

****** Next modified section ******

6.5.2 HSS initiated procedures

6.5.2.1 Update of User Profile

A request sent by the HSS to update the service profile associated to a user public identity shall include all the corresponding implicitly registered public identities, with their respective service profiles (even if not updated).

6.5.2.2 De-registration

A request sent by the HSS to de-register a public identity shall include all the corresponding implicitly registered public identities.

The de-registration of a private identity implies the de-registration of all the corresponding public identities, both in the HSS and in the S-CSCF.

6.5.2.x Update of the Charging information

A request sent by the HSS to update the charging information shall include the private user identity for whom the charging information changed.

3GPP TSG CN WG4 Meeting #22bis
Edinburgh, UK, 14th – 20th April 2004

N4-040441

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **037** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Update of the charging addresses from HSS
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	06/04/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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 CN4#22 meeting it was approved (N4-040343) to download the charging address in the SAR command whenever the user profile is downloaded. The reason was to keep the S-CSCF updated as much as possible regarding changes in the charging information. However, this change is not enough, since the charging information is only downloaded to the S-CSCF whenever the S-CSCF initiates a SAR/SAA procedure, but if the information changes in the HSS, it is not pushed to the S-CSCF until the serving asks for it.
Summary of change:	⌘	It has been included the charging information also in the PPR/PPA procedure. So the HSS will initiate a push to the S-CSCF whenever the charging information changes.
Consequences if not approved:	⌘	An updated charging information in the HSS will not be propagated to the S-CSCF resulting in a failure in charging

Clauses affected:	⌘	6.1.11			
Other specs affected:	⌘	**Y** / **N** **X** / ☐ Other core specifications ☐ / **X** Test specifications ☐ / **X** O&M Specifications	⌘	29.228-097	
Other comments:	⌘	The mirror of this CR is CR 036			

How to create CRs using this form:

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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.

****** First modified section ******

6.1.11 Push-Profile-Request (PPR) Command

The Push-Profile-Request (PPR) command, indicated by the Command-Code field set to 305 and the 'R' bit set in the Command Flags field, is sent by a Diameter Multimedia server to a Diameter Multimedia client in order to update the subscription data of a multimedia user in the Diameter Multimedia client whenever a modification has occurred in the subscription data that constitutes the data used by the client.

Message Format

< Push-Profile-Request > ::= < Diameter Header: 305, 167772151, REQ >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Host }
{ Destination-Realm }
{ User-Name }
[~~{~~ User-Data]~~}~~
[Charging-Information]
*[AVP]
*[Proxy-Info]
*[Route-Record]

3GPP TSG CN WG4 Meeting #23 ***N4-040706***
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.229** **CR** **050** ⌘ **rev** **2** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Use of Vendor-Id by 3GPP
Source:	⌘	CN4
Work item code:	⌘	IMS-CCR
Date:	⌘	05/05/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The text is currently confusing on the use of Vendor-Id by 3GPP. This is an essential correction.
Summary of change:	⌘	The current text is clarified so that it is explicit where Vendor-Id is used by 3GPP and by manufacturers of Diameter servers.
Consequences if not approved:	⌘	This will lead to confusion over what to place in the Vendor-Id in different AVPs causing 3GPP Diameter servers not to inter-operate.

Clauses affected:	⌘	5.6			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
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Below is a brief summary:

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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.

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5.6 Advertising Application Support

The HSS, S-CSCF and I-CSCF shall advertise support of the Diameter Multimedia Application by including the value of the application identifier ~~3GPP(10415)~~ (see chapter 6) in the Auth-Application-Id AVP within the Vendor-Specific-Application-Id grouped AVP of ~~Supported-Vendor-Id AVP of~~ the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands.

~~Within the Vendor-Specific-Application-Id AVP, and by including the~~The vendor identifier value of 3GPP (10415) shall be included in the Supported-Vendor-Id AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands, and in the Vendor-Id AVP within the Vendor-Specific-Application-Id grouped AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. ~~and the value of the application identifier (see chapter 6) shall be included in the Auth-Application-Id AVP,, both in the Vendor-Specific-Application-Id AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands.~~

Note: The Vendor-Id AVP included in Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands that is not included in the Vendor-Specific-Application-Id AVPs as described above shall indicate the manufacturer of the Diameter node as per RFC 3588 [6].