

Source: TSG CN WG4
Title: Corrections on IP-based Multimedia Services Sh-interface
Agenda item: 8.1
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.328	012	3	N4-030315	Rel-5	Initial Filter Criteria	F	5.2.1
29.329	005	1	N4-030057	Rel-5	Initial Filter Criteria	F	5.2.0
29.328	015		N4-030022	Rel-5	Deletion of Annex E	F	5.2.1
29.328	016	2	N4-030262	Rel-5	Update after Diameter has become RFC	F	5.2.1
29.329	007	2	N4-030263	Rel-5	Update after Diameter has become RFC	F	5.2.0
29.328	017	1	N4-030266	Rel-5	Correction to application server identity	F	5.2.1
29.329	008		N4-030103	Rel-5	Correction of the Application Server Identification type for Initial Filter Criteria usage	F	5.2.0
29.328	018	2	N4-030267	Rel-5	Clarification on Sh interface for charging purposes	F	5.2.1
29.329	009		N4-030123	Rel-5	Clarification on Sh interface for charging purposes	F	5.2.0
29.329	011		N4-030264	Rel-5	Missing code-point in Data-Reference AVP	F	5.2.0
29.329	013		N4-030316	Rel-5	Registration State Alignment	F	5.2.0

CR-Form-v7

CHANGE REQUEST

29.328 CR 012 † rev 3 † Current version: 5.2.1 †

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Proposed change affects: UICC apps † ME Radio Access Network Core Network

Title:	†	Initial Filter Criteria	
Source:	†	CN4	
Work item code:	†	IMS-CCR	Date: † 18/02/2003
Category:	†	F	Release: † Rel-5
		Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	†	To clarify that reading of initial filter criteria by an AS via Sh is limited to those initial filter criteria which are relevant to the reading AS. Update of Initial Filter Criteria via Sh is not required.
Summary of change:	†	Add the limitation of Sh-Pull for initial filter criteria to those relevant for the requesting AS. Indicate that update of Initial Filter Criteria is not required. Various minor corrections
Consequences if not approved:	†	Unclear specification.

Clauses affected:	†	6, 7.								
Other specs affected:	†	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications † CR 29.329 005 Test specifications O&M Specifications	Y	N	X			X		X
Y	N									
X										
	X									
	X									
Other comments:	†	Parts of this CR modify the same chapters as CR 017rev1 does. If both CRs are approved, CR 017rev1 has to be implemented first and the affected parts of this CR shall be implemented in line with the modifications introduced by CR 017rev1.								

How to create CRs using this form:

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

6 Procedure Descriptions

6.1 User data handling procedures

6.1.1 Data read (Sh-Pull)

This procedure is used by an AS to read transparent and/or non-transparent data from the HSS. Tables 6.1.1.1 and 6.1.1.2 detail the involved information elements.

Table 6.1.1.1: Sh-Pull

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	Identity of the user for whom the data is required.
Requested data (See 7. 36)	Data-Reference	M	This information element indicates the list of references to the requested information. The set of valid reference values are defined in 7. 6.
Requested domain (See 7.2)	Requested-Domain	C	This information element indicates the domains to which the operation is applicable. Check table 7.6.1 to see when it is applicable.
Current Location (See 7.8)	Current-Location	C	This information element indicates whether an active location retrieval has to be initiated or not. It shall be present if Location Information is requested. If this information element takes the value InitiateActiveLocationRetrieval (1) the HSS shall indicate to the MSC/VLR and/or SGSN the need to initiate an active location retrieval.
Service Indication (See 7. 4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data that is being requested..
Application Server Identity (See 7.9)	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the filter criteria.

Table 6.1.1.2: Sh-Pull Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request Result (See 7. 5)	Result-Code	M	Result of the request.
Requested Data (See 7. 6)	User-Data	O	Requested data.

6.1.1.1 Detailed behaviour

Upon reception of the Sh-Pull request, the HSS may check that the user for whom data is asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Pull permission in the AS Permissions List (See 6.2).

The HSS shall return the requested data identified by User-Identity and Data-Reference. Check table 7.6.1 to see when Requested-Domain must be present in the request as an additional key to the requested data. If repository data are requested Service-Indication shall be present in the request. If [initial](#) filter criteria are requested the [request is limited to those initial filter criteria which are relevant to the AS identified by the Application Server Identity in Origin-Host AVP identifies the AS that initiates](#) the request.

CR-Editor's note: If this CR and CR 017rev1 are both approved, the effect of implementing both CRs shall result in the following sentence: "IF initial filter criteria are requested, the Server-Name AVP shall contain the SIP URL of the AS"

that initiates the request; requests of initial filter criteria are limited to those initial filter criteria which are relevant to the requesting AS.”

6.1.2 Data Update (Sh-Update)

This procedure is used by an AS to update data in the HSS. Tables 6.1.2.1 and 6.1.2.2 detail the involved information elements.

Table 6.1.2.1: Sh-Update

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data is updated.
Updated eData (See 7.6)	User-Data	M	Updated data.
Application Server Identity (see 7.9)	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the updated filter criteria.

Table 6.1.2.2: Sh-Update Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data-update fResult (See 7.5)	Result-Code	M	Result of the update of data in the HSS.

6.1.2.1 Detailed behaviour

Upon reception of the Sh-Update request, the HSS may check that the user for whom data is asked to be updated exists in the HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Update permission in the AS Permissions List (See 6.2).

The keys to determine the updated data are part of the information element ~~User-Data~~ (See 7.6 Annex E). When data in the repository is updated (i.e. added, modified or removed) Service-Indication is also sent as part of the information element ~~User-Data~~. The HSS shall check whether repository data identified by the Service-Indication is already stored ~~for~~against the user and whether Service-Data is received.

- If so, the stored data is replaced with the received data.
- If repository data identified by the Service-Indication is stored ~~for~~against the user and Service-Data is not received, the stored data is removed from the repository.
- If repository data identified by the Service-Indication is not stored ~~for~~against the user and Service-Data is received, the received data is added to the repository.
- If repository data identified by the Service-Indication is not stored ~~for~~against the user and Service-Data is not received, the repository data is not updated.

~~When initial filter criteria are updated the Origin-Host AVP identifies the AS that initiates the request.~~

If the HSS receives more user data than it is prepared to accept, it shall return result code DIAMETER_ERROR_TOO_MUCH_DATA and discard the data received from the AS.

6.1.3 Subscription to notifications (Sh-Subs-Notif)

This procedure is used by an AS to subscribe to notifications from the HSS of changes in data. Tables 6.1.3.1 and 6.1.3.2 detail the involved information elements.

Table 6.1.3.1: Sh-Subs-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user for whom notifications of data changes are requested.
Requested data (See 7.3)	Data-Reference	M	This information element includes the list of references to the data on which notifications of change are required (valid reference values are defined in 7.6).
Subscription request type (See 7.7)	Subs-Req-Type	M	This information element indicates the action requested on subscription to notifications.
Service Indication (See 7.4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data for which notifications of changes are requested..
Application Server Identity (See 7.9)	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the filter criteria.

Table 6.1.3.2: Sh-Subs-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code	M	Result of the request.
Requested data Unauthorized data (See 7.3.2)	Data-Reference	C	This information element includes the list of references to data for which subscription to notifications of change is rejected by the HSS.

6.1.3.1 Detailed behaviour

Upon reception of the Sh-Subs-Notif request, the HSS may check that the user for whom notifications are asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Subs-Notif permission in the AS Permissions List (See 6.2).

The HSS shall take note of the subscription request on the data identified by User-Identity and Data-Reference. If notifications on changes of repository data are requested Service-Indication shall be present in the request. If notifications on changes of filter criteria are requested the Origin-Host AVP shall be used as key to the filter criteria.

If there were values of Data-Reference for which the AS is not allowed to subscribe to notifications of change, the HSS shall include the list of values in the Sh-Subs-Notif Resp.

6.1.4 Notifications (Sh-Notif)

This procedure is used by the HSS to send to an AS notifications of changes in data to which the AS has previously subscribed using Sh-Subs-Notif. Tables 6.1.4.1 and 6.1.4.2 detail the involved information elements.

Table 6.1.4.1: Sh-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data has changed.
Changed eData (See 7.6)	User-Data	M	Changed data.

Table 6.1.4.2: Sh-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code	M	Result of the request.

6.1.4.1 Detailed behaviour

The keys to the updated data are part of the information element User-Data (See Annex X). When data repository is updated Service-Indication is also part of the information element User-Data.

6.2 AS permissions list

The HSS shall maintain a list of AS permissions (the 'AS Permissions List'). AS permissions are identified by AS identity and Data Reference (See Table 7.6.1). The possible permissions are Sh-Pull, Sh-Update, Sh-Subs-Notif or any combination of these permissions. The permissions apply to all users served by the HSS, they are not user specific. When an AS requests Sh-Pull, Sh-Update or Sh-Subs-Notif the HSS shall check permissions and return an error result if the AS does not have the required permission.

7 Information element contents

7.1 User Identity

This information element contains a user public identity (either SIP-URL, TEL-URL or MSISDN).

7.2 Requested Domain

This information element details the access domains for which certain data (e.g. user state, location information) are requested. See 3GPP TS 29.329 [5] for the list of possible values.

7.3 Requested Data ~~Reference~~

- Reference to the data that an AS is requesting from the HSS.

- Reference to the data which **if changed**, an AS wants to be notified of, when changed.

- Reference to data for which subscription to notification of change is rejected.

See chapter 7.6.

7.4 Service Indication

Identifier of one set of service related transparent data, ~~3~~, which is stored in an HSS in an operator network. It shall be unique within an operator network. Per user and value of Service Indication the HSS may allocate memory space to implement a data repository to store transparent data.

7.5 Result

This information element contains the result code of the operation. See 3GPP TS 29.329 for the list of possible values.

7.6 Data

This information element contains an XML document conformant to the XML schema defined in Annex D.

Annex C specifies the UML logical model of the data downloaded via the Sh interface.

Table 7. 6.1 defines the reference values, access key and recommended access rights for the data accessible via the Sh interface. It is a matter of operator policy to ~~relax or~~ further restrict the access rights defined in table 7. 6.1.

Table 7.6.1: Data accessible via Sh interface

Data Ref.	XML tag	Defined in	Access key	May be included in the operations:
0	RepositoryData	7.6.1	Public-Identity + Data-Reference + Service-Indication	Sh-Pull, Sh-Update, Sh-Subs-Notif
10	PublicIdentifiers	7.6.2	User-Identity + Data-Reference	Sh-Pull
11	IMSUserStateRegistrationState	7.6.3		Sh-Pull, Sh-Subs-Notif
12	S-CSCFName	7.6.4		Sh-Pull, Sh-Subs-Notif
13	InitialFilterCriteria	7.6.5	User-Identity + Data-Reference + Origin-Host	Sh-Pull, Sh-Update , Sh-Subs-Notif
14	LocationInformation	7.6.6	User-Identity + Data-Reference+ Requested-Domain	Sh-Pull
15	UserState	7.6.7		

7.6.1 Repository Data

This information element contains transparent data. A data repository may be shared by more than one AS implementing the same service.

7.6.2 PublicIdentifiers

List of public identities of the user.

7.6.3 ~~IMS UserRegistration~~ State

This information element contains the IMS ~~USER~~registration State of the public identifier referenced. Its possible values are: REGISTERED, NOT_REGISTERED, AUTHENTICATION_PENDING and REGISTERED_UNREG_SERVICES.

7.6.4 S-CSCF Name

This information element contains the name of the S-CSCF where a multimedia public identity is registered.

7.6.5 Initial Filter Criteria

This information element contains the triggering information for a service.

For a more detailed description, refer to 3GPP TS 23.218 [4] and 3GPP TS 29.228 [6].

7.6.6 Location Information

This IE contains the location of the served subscriber in the MSC/VLR if the requested domain is CS, or the location of the served subscriber in the SGSN if the requested domain is PS. If the HSS has to communicate with the MSC/VLR and/or SGSN to retrieve location information, it shall make use of the service MAP-PROVIDE-SUBSCRIBER-INFO.

7.6.6.1 Location information for CS

It consists of the following subordinate information elements:

- Location number: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 apply.
- Service area ID: defined in 3GPP TS 23.003.
- Global Cell ID: defined in 3GPP TS 23.003.
- Location area ID: defined in 3GPP TS 23.003
- Geographical Information: defined in 3GPP TS 23.032. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- Geodetic Information: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- VLR Number: defined in 3GPP TS 23.003.
- MSC Number: defined in 3GPP TS 23.003.
- Age of location information: defined in 3GPP TS 23.018.
- Current Location Retrieved: shall be present when location information was obtained after a successful paging procedure for Active Location Retrieval.

7.6.6.2 Location information for GPRS

It consists of the following subordinate information elements:

- Service area ID: defined in 3GPP TS 23.003.
- Global Cell ID: defined in 3GPP TS 23.003.
- Location area ID: defined in 3GPP TS 23.003
- Geographical Information: defined in 3GPP TS 23.032. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- Geodetic Information: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- SGSN Number: defined in 3GPP TS 23.003.
- Routing Area ID: defined in 3GPP TS 23.003.
- Current Location Retrieved: shall be present when location information was obtained after a successful paging procedure for Active Location Retrieval.

For both information elements, Location Information for CS and Location Information for GPRS, the considerations described in 3GPP TS 23.078 apply.

7.6.7 User state

This information element indicates the state of the user in the domain indicated by the Requested-Domain (see 7.2), with the values specified in 3GPP TS 23.078 for Subscriber State and PS Domain Subscriber State. The HSS shall make use of the operation MAP-PROVIDE-SUBSCRIBER-INFO towards the MSC/VLR and/or the SGSN to obtain this information.

7.7 Subscription request type

This information element indicates the action requested for subscription to notifications. See 3GPP TS 29.329 [5] for the list of valid values.

7.8 Current Location

This information element indicates whether an active location retrieval has to be initiated or not when an AS requested location information. See 3GPP TS 29.329 [5] for the list of possible values.

7.9 Application Server Identity

[This information element contains the identity of the Application Server. It is used for the AS permission check \(see 6.2\).](#)

CHANGE REQUEST

⌘ **29.328 CR 015** ⌘ rev **-** ⌘ Current version: **5.2.1** ⌘

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:	⌘ Deletion of Annex E		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 15/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ There is a reference to the XML schema in Annex D, so the Annex E text is already present in the normative Annex D.
Summary of change:	⌘ Removal of Annex E.
Consequences if not approved:	⌘ Duplication of information

Clauses affected:	⌘ Annex E						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
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Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
Other comments:	⌘						

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Beginning of modified section

Annex E (~~informative~~void):

~~XML document for the Sh interface user profile~~

~~The file ShDataTypes.xsdxml, attached to this specification, contains the XML schema document with the data description for Sh interface, compliant with the Data Description Framework.~~

End of modified section

CHANGE REQUEST

⌘ **29.328 CR 016** ⌘ rev **2** ⌘ Current version: **5.2.1** ⌘

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

Title:	⌘ Update after Diameter has become RFC		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 15/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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:	⌘ Alignment with IETF Diameter Base Protocol		
Summary of change:	⌘ Alignment with the new Experimental-Result AVP.		
Consequences if not approved:	⌘ Misalignment with the Diameter standard protocol		

Clauses affected:	⌘ 6.1.1, 6.1.2, 6.1.3, 6.1.4, A3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
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		Test specifications									
		O&M Specifications									
Other comments:	⌘										

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Beginning of modified section

2 References

...

[X] [draft-ietf-aaa-diameter-17, "Diameter Base Protocol", work in progress](#)

End of modified section

Beginning of modified section

6 Procedure Descriptions

6.1 User data handling procedures

6.1.1 Data read (Sh-Pull)

This procedure is used by an AS to read transparent and/or non-transparent data from the HSS. Tables 6.1.1.1 and 6.1.1.2 detail the involved information elements.

Table 6.1.1.1: Sh-Pull

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	Identity of the user for whom the data is required.
Requested data (See 7.6)	Data-Reference	M	This information element indicates the list of references to the requested information. The set of valid reference values are defined in 7.6.
Requested domain (See 7.2)	Requested-Domain	C	This information element indicates the domains to which the operation is applicable. Check table 7.6.1 to see when it is applicable.
Current Location (See 7.8)	Current-Location	C	This information element indicates whether an active location retrieval has to be initiated or not. It shall be present if Location Information is requested. If this information element takes the value InitiateActiveLocationRetrieval (1) the HSS shall indicate to the MSC/VLR and/or SGSN the need to initiate an active location retrieval.
Service Indication (See 7.4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data that is being requested..
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the filter criteria.

Table 6.1.1.2: Sh-Pull Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7. 5)	Result-Code / Experimental Result	M	Result of the request. Result-Code AVP will shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP will shall be used for Cx/Dx Sh 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.
Requested data (See 7. 6)	User-Data	O	Requested data.

6.1.1.1 Detailed behaviour

Upon reception of the Sh-Pull request, the HSS may check that the user for whom data is asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Pull permission in the AS Permissions List (See 6.2).

The HSS shall return the requested data identified by User-Identity and Data-Reference. Check table 7.6.1 to see when Requested-Domain must be present in the request as an additional key to the requested data. If repository data are requested Service-Indication shall be present in the request. If filter criteria are requested the Origin-Host AVP identifies the AS that initiates the request.

6.1.2 Data Update (Sh-Update)

This procedure is used by an AS to update data in the HSS. Tables 6.1.2.1 and 6.1.2.2 detail the involved information elements.

Table 6.1.2.1: Sh-Update

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data is updated.
Updated data (See 7. 6)	User-Data	M	Updated data.
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the updated filter criteria.

Table 6.1.2.2: Sh-Update Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data update result (See 7. 5)	Result-Code / Experimental Result	M	Result of the update of data in the HSS. Result-Code AVP will shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP will shall be used for Cx/Dx Sh 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.

6.1.2.1 Detailed behaviour

Upon reception of the Sh-Update request, the HSS may check that the user for whom data is asked to be updated exists in the HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Update permission in the AS Permissions List (See 6.2).

The keys to determine the updated data are part of the information element User-Data (See Annex E). When data in the repository is updated (i.e. added, modified or removed) Service-Indication is also sent as part of the information element User-Data. The HSS shall check whether repository data identified by the Service-Indication is already stored against the user and whether Service-Data is received.

- If so, the stored data is replaced with the received data.
- If repository data identified by the Service-Indication is stored against the user and Service-Data is not received, the stored data is removed from the repository.
- If repository data identified by the Service-Indication is not stored against the user and Service-Data is received, the received data is added to the repository.
- If repository data identified by the Service-Indication is not stored against the user and Service-Data is not received, the repository data is not updated.

When initial filter criteria are updated the Origin-Host AVP identifies the AS that initiates the request.

If the HSS receives more user data than it is prepared to accept, it shall return ~~result code~~ [Experimental-Result-Code AVP to DIAMETER_ERROR_TOO_MUCH_DATA](#) and discard the data received from the AS.

6.1.3 Subscription to notifications (Sh-Subs-Notif)

This procedure is used by an AS to subscribe to notifications from the HSS of changes in data. Tables 6.1.3.1 and 6.1.3.2 detail the involved information elements.

Table 6.1.3.1: Sh-Subs-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user for whom notifications of data changes are requested.
Requested data (See 7.3)	Data-Reference	M	This information element includes the list of references to the data on which notifications of change are required (valid reference values are defined in 7.6).
Subscription request type (See 7.7)	Subs-Req-Type	M	This information element indicates the action requested on subscription to notifications.
Service Indication (See 7.4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data for which notifications of changes are requested..
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used, together with the user identity and Data-Reference, as key to identify the filter criteria.

Table 6.1.3.2: Sh-Subs-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code / Experimental-Result	M	Result of the request. Result-Code AVP will shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP will shall be used for Cx/Dx Sh 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.
Unauthorized data (See 7.2)	Data-Reference	C	This information element includes the list of references to data for which subscription to notifications of change is rejected by the HSS.

6.1.3.1 Detailed behaviour

Upon reception of the Sh-Subs-Notif request, the HSS may check that the user for whom notifications are asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Subs-Notif permission in the AS Permissions List (See 6.2).

The HSS shall take note of the subscription request on the data identified by User-Identity and Data-Reference. If notifications on changes of repository data are requested Service-Indication shall be present in the request. If notifications on changes of filter criteria are requested the Origin-Host AVP shall be used as key to the filter criteria.

If there were values of Data-Reference for which the AS is not allowed to subscribe to notifications of change, the HSS shall include the list of values in the Sh-Subs-Notif Resp.

6.1.4 Notifications (Sh-Notif)

This procedure is used by the HSS to send to an AS notifications of changes in data to which the AS has previously subscribed using Sh-Subs-Notif. Tables 6.1.4.1 and 6.1.4.2 detail the involved information elements.

Table 6.1.4.1: Sh-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data has changed.
Changed data (See 7.6)	User-Data	M	Changed data.

Table 6.1.4.2: Sh-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code / Experimental-Result	M	Result of the request. Result-Code AVP will shall be used for errors defined in the Diameter Base Protocol. Experimental-Result AVP will shall be used for Cx/Dx Sh 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.

End of modified section

Beginning of modified section

A.3 Sh message parameters to Diameter AVP mapping

The following table gives an overview about the mapping:

Table A.3.1: Sh message parameters to Diameter AVP mapping

Sh parameter	AVP Name
User identity	User-Identity
Requested data, Changed data	Data-Reference
Service Indication	Service-Indication
Result	Result-Code / Vendor-Specific <u>Experimental</u> -Result
Requested Data, Updated data	User-Data
Subscription request type	Subs-Req-Type
Unauthorized data	Data-Reference
Requested Domain	Requested-Domain
Current Location	Current-Location

End of modified section

CR-Form-v7

CHANGE REQUEST

⌘ **29.328 CR 017** ⌘ rev **1** ⌘ Current version: **5.2.1** ⌘

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 to application server identity		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 12/02/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The misalignment with 29.228. The application server is identified with SIP URI in the initial Filter Criteria in 29.228, and with Diameter Identity in the 29.328.
Summary of change:	⌘ It is proposed to add a separate Application Server Name IE to indicate the AS's SIP URI within the Sh-Pull, Sh-Update and Sh-Subs-Notif procedures related to initial Filter Criteria. The IE shall follow the syntax of Server-Name AVP as defined in TS 29.229.
Consequences if not approved:	⌘ Interoperability problems, because the initial Filter Criteria cannot be accessed via Sh.

Clauses affected:	⌘ 2, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.2, 7.6, 7.9, A.3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ TS 29.329-008	
Y	N										
X											
	X										
	X										
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.

----- First modification-----

2 References

- [1] 3GPP TS 23.228: "IP Multimedia (IM) Subsystem – Stage 2".
- [2] 3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP".
- [3] 3GPP TS 23.002 "Network architecture".
- [4] 3GPP TS 23.218: "IP Multimedia (IM) Session Handling; IP Multimedia (IM) call model"
- [5] 3GPP TS 29.329: "Sh Interface based on Diameter – Protocol details"
- [6] 3GPP TS 29.228: "IP multimedia (IM) Subsystem Cx Interface; Signalling flows and Message Elements".
- [7] [3GPP TS 29.229: "Cx and Dx Interfaces based on the Diameter protocol ; Protocol details"](#)

----- Second modification-----

6.1.1 Data read (Sh-Pull)

This procedure is used by an AS to read transparent and/or non-transparent data from the HSS. Tables 6.1.1.1 and 6.1.1.2 detail the involved information elements.

[This procedure is mapped to the commands User-Data-Request/Answer in the Diameter application specified in 3GPP TS 29.329 \[5\].](#)

Table 6.1.1.1: Sh-Pull

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	Identity of the user for whom the data is required.
Requested data (See 7.6)	Data-Reference	M	This information element indicates the list of references to the requested information. The set of valid reference values are defined in 7.6.
Requested domain (See 7.2)	Requested-Domain	C	This information element indicates the domains to which the operation is applicable. Check table 7.6.1 to see when it is applicable.
Current Location (See 7.8)	Current-Location	C	This information element indicates whether an active location retrieval has to be initiated or not. It shall be present if Location Information is requested. If this information element takes the value InitiateActiveLocationRetrieval (1) the HSS shall indicate to the MSC/VLR and/or SGSN the need to initiate an active location retrieval.
Service Indication (See 7.4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data that is being requested..
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used to check the AS permission list , together with the user identity and Data-Reference, as key to identify the filter criteria.
Application Server Name	Server-Name	C	IE that is used, together with the user identity and Data-Reference, as key to identify the filter criteria. This element shall be present when the Data-Reference value is InitialFilterCriteria (13).

Table 6.1.1.2: Sh-Pull Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code	M	Result of the request.
Requested data (See 7.6)	User-Data	O	Requested data.

6.1.1.1 Detailed behaviour

Upon reception of the Sh-Pull request, the HSS may check that the user for whom data is asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Pull permission in the AS Permissions List (See 6.2).

The HSS shall return the requested data identified by User-Identity and Data-Reference. Check table 7.6.1 to see when Requested-Domain must be present in the request as an additional key to the requested data. If repository data are requested Service-Indication shall be present in the request. If filter criteria are requested, the ~~Origin-Host~~[Server-Name](#) AVP [shall contain the SIP URL of](#) ~~identifies~~ the AS that initiates the request.

6.1.2 Data Update (Sh-Update)

This procedure is used by an AS to update data in the HSS. Tables 6.1.2.1 and 6.1.2.2 detail the involved information elements.

[This procedure is mapped to the commands Profile-Update-Request/Answer in the Diameter application specified in 3GPP TS 29.329 \[5\].](#)

Table 6.1.2.1: Sh-Update

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data is updated.
Updated data (See 7. 6)	User-Data	M	Updated data.
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used to check the AS permission list , together with the user identity and Data-Reference, as key to identify the updated filter criteria.

Table 6.1.2.2: Sh-Update Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data update result (See 7. 5)	Result-Code	M	Result of the update of data in the HSS.

6.1.2.1 Detailed behaviour

Upon reception of the Sh-Update request, the HSS may check that the user for whom data is asked to be updated exists in the HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Update permission in the AS Permissions List (See 6.2).

The keys to determine the updated data are part of the information element User-Data (See Annex E). When data in the repository is updated (i.e. added, modified or removed) Service-Indication is also sent as part of the information element User-Data. The HSS shall check whether repository data identified by the Service-Indication is already stored against the user and whether Service-Data is received.

- If so, the stored data is replaced with the received data.
- If repository data identified by the Service-Indication is stored against the user and Service-Data is not received, the stored data is removed from the repository.
- If repository data identified by the Service-Indication is not stored against the user and Service-Data is received, the received data is added to the repository.
- If repository data identified by the Service-Indication is not stored against the user and Service-Data is not received, the repository data is not updated.

~~When initial filter criteria are updated, the Origin-Host AVP identifies the AS that initiates the request.~~

If the HSS receives more user data than it is prepared to accept, it shall return result code DIAMETER_ERROR_TOO_MUCH_DATA and discard the data received from the AS.

6.1.3 Subscription to notifications (Sh-Subs-Notif)

This procedure is used by an AS to subscribe to notifications from the HSS of changes in data. Tables 6.1.3.1 and 6.1.3.2 detail the involved information elements.

[This procedure is mapped to the commands Subscribe-Notifications-Request/Answer in the Diameter application specified in 3GPP TS 29.329 \[5\].](#)

Table 6.1.3.1: Sh-Subs-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user for whom notifications of data changes are requested.
Requested data (See 7.3)	Data-Reference	M	This information element includes the list of references to the data on which notifications of change are required (valid reference values are defined in 7.6).
Subscription request type (See 7.7)	Subs-Req-Type	M	This information element indicates the action requested on subscription to notifications.
Service Indication (See 7.4)	Service-Indication	O	IE that identifies, together with the User-Identity and Data-Reference, the set of service related transparent data for which notifications of changes are requested..
Application Server Identity	Origin-Host	M	IE that identifies the AS originator of the request and that is used to check the AS permission list , together with the user identity and Data-Reference, as key to identify the filter criteria.
Application Server Name	Server-Name	C	IE that is used, together with the user identity and Data-Reference, as key to identify the filter criteria. This element shall be present when the Data-Reference value is InitialFilterCriteria (13).

Table 6.1.3.2: Sh-Subs-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code	M	Result of the request.
Unauthorized data (See 7.26)	Data-Reference	C	This information element includes the list of references to data for which subscription to notifications of change is rejected by the HSS.

6.1.3.1 Detailed behaviour

Upon reception of the Sh-Subs-Notif request, the HSS may check that the user for whom notifications are asked exists in HSS. The HSS shall check that the AS sending the request (identified by the Origin-Host AVP) has Sh-Subs-Notif permission in the AS Permissions List (See 6.2).

The HSS shall take note of the subscription request on the data identified by User-Identity and Data-Reference. If notifications on changes of repository data are requested Service-Indication shall be present in the request. If notifications on changes of filter criteria are requested the [Server-Name](#) ~~Origin-Host~~ AVP shall be used as key to the filter criteria. [The Server-Name AVP shall contain the SIP URL of the AS sending the request.](#)

If there were values of Data-Reference for which the AS is not allowed to subscribe to notifications of change, the HSS shall include the list of values in the Sh-Subs-Notif Resp.

----- Third modification-----

6.1.4 Notifications (Sh-Notif)

This procedure is used by the HSS to send to an AS notifications of changes in data to which the AS has previously subscribed using Sh-Subs-Notif. Tables 6.1.4.1 and 6.1.4.2 detail the involved information elements.

[This procedure is mapped to the commands Push-Notification-Request/Answer in the Diameter application specified in 3GPP TS 29.329 \[5\].](#)

Table 6.1.4.1: Sh-Notif

Information element name	Mapping to Diameter AVP	Cat.	Description
User Identity (See 7.1)	User-Identity	M	IMS public identity of the user which data has changed.
Changed data (See 7.6)	User-Data	M	Changed data.

Table 6.1.4.2: Sh-Notif Resp

Information element name	Mapping to Diameter AVP	Cat.	Description
Data request result (See 7.5)	Result-Code	M	Result of the request.

6.1.4.1 Detailed behaviour

The keys to the updated data are part of the information element User-Data (See Annex ~~XC~~). When data repository is updated Service-Indication is also part of the information element User-Data.

----- Fourth modification-----

6.2 AS permissions list

The HSS shall maintain a list of AS permissions (the 'AS Permissions List'). AS permissions are identified by AS identity and Data Reference (See Table 7.6.1). The possible ~~permissons~~permissions are Sh-Pull, Sh-Update, Sh-Subs-Notif or any combination of these permissions. The permissions apply to all users served by the HSS, they are not user specific. When an AS requests Sh-Pull, Sh-Update or Sh-Subs-Notif the HSS shall check permissions and return an error result if the AS does not have the required permission.

----- Fifth modification-----

7.6 Data

This information element contains an XML document conformant to the XML schema defined in Annex D.

Annex C specifies the UML logical model of the data downloaded via the Sh interface.

Table 7.6.1 defines the reference values, access key and recommended access rights for the data accessible via the Sh interface. It is a matter of operator policy to relax or further restrict the access rights defined in table 7.6.1.

Table 7.6.1: Data accessible via Sh interface

Data Ref.	XML tag	Defined in	Access key	May be included in the operations:
0	RepositoryData	7.6.1	Public-Identity + Data-Reference + Service-Indication	Sh-Pull, Sh-Update, Sh-Subs-Notif
10	PublicIdentifiers	7.6.2	User-Identity + Data-Reference	Sh-Pull
11	RegistrationState	7.6.3		Sh-Pull, Sh-Subs-Notif
12	S-CSCFName	7.6.4		Sh-Pull, Sh-Subs-Notif
13	InitialFilterCriteria	7.6.5	User-Identity + Data-Reference + Origin-Host Server-Name	Sh-Pull, Sh-Update, Sh-Subs-Notif
14	LocationInformation	7.6.6	User-Identity + Data-Reference+ Requested-Domain	Sh-Pull
15	UserState	7.6.7		

----- Sixth modification-----

7.9 Application Server Name

[This information element indicates application server's SIP URI. See 3GPP TS 29.229 \[7\] for the detailed definition of the AVP.](#)

----- Seventh modification-----

A.3 Sh message parameters to Diameter AVP mapping

The following table gives an overview about the mapping:

Table A.3.1: Sh message parameters to Diameter AVP mapping

Sh parameter	AVP Name
User identity	User-Identity
Requested data, Changed data , Unauthorized data	Data-Reference
Service Indication	Service-Indication
Result, Data Request Result , Data Update Result	Result-Code / Vendor-Specific-Result
Requested Data, Updated data, Changed data	User-Data
Subscription request type	Subs-Req-Type
Unauthorized data	Data-Reference
Requested Domain	Requested-Domain
Current Location	Current-Location
Application Server Identity	Server-Name

CR-Form-v7

CHANGE REQUEST

⌘ **29.328 CR 018** ⌘ rev **2** ⌘ Current version: **5.2.1** ⌘

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:	⌘ Clarification on Sh interface for charging purposes		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 31/1/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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:	⌘ At the last CN#18 plenary, CR against 23.218 (CN1) regarding Sh interface for charging purposes was postponed to the CN1 meeting in February until the corresponding CR against 29.328 or 29.329 (CN4) are submitted. This is why the CR is produced for CN4. However, CR against 24.229 is already agreed at the last CN plenary.
	During the last SA2 meeting in November, there was apparent requirement for 3GPP AAA server, 3GPP Proxy or Presence server, Presence List Server need to retrieve the CCF/ECF addresses from HSS to access to CCF/ECF for offline/online charging purposes. For the forward compatibility, it was agreed to fulfil this requirement for Rel 5.
Summary of change:	⌘ In 7.6, charging information is added into data accessible via Sh interface. 7.6.8 charging information explanation is added.
	For Annex C3, within Sh- IMS-Data charging information is added. For Annex D, in XML schema for the Sh interface user profile, charging information is added.
Consequences if not approved:	⌘ For IMS charging mechanism, it may cause backward compatibility problem in Rel 6.

Clauses affected:	⌘ 7.6, 7.6.8, Annex C3, Annex D						
Other specs	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">Y</td> <td style="width: 20px; height: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; height: 20px; text-align: center;">X</td> <td style="width: 20px; height: 20px;"></td> </tr> </table>	Y	N	X		Other core specifications	⌘ The corresponding CR(CR No: 40r1, N1-030263) against 23.218 and CR(CR No:
Y	N						
X							

affected:

X	
X	

Test specifications
O&M Specifications

009, N4-030123) against 29.329

Other comments: ⌘

How to create CRs using this form:

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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.

2 References

[7] [draft-ietf-aaa-diameter-17, "Diameter Base Protocol", work in progress](#)

Start of first change

7 Information element contents

7.1 User Identity

This information element contains a user public identity (either SIP-URL, TEL-URL or MSISDN).

7.2 Requested Domain

This information element details the access domains for which certain data (e.g. user state, location information) are requested. See 3GPP TS 29.329 [5] for the list of possible values.

7.3 Data Reference

Reference to the data that an AS is requesting from the HSS. Reference to the data which if changed, an AS wants to be notified of. See chapter 7.6.

7.4 Service Indication

Identifier of one set of service related transparent data,], which is stored in an HSS in an operator network. It shall be unique within an operator network. Per user and value of Service Indication the HSS may allocate memory space to implement a data repository to store transparent data.

7.5 Result

This information element contains the result code of the operation. See 3GPP TS 29.329 for the list of possible values.

7.6 Data

This information element contains an XML document conformant to the XML schema defined in Annex D.

Annex C specifies the UML logical model of the data downloaded via the Sh interface.

Table 7. 6.1 defines the reference values, access key and recommended access rights for the data accessible via the Sh interface. It is a matter of operator policy to relax or further restrict the access rights defined in table 7. 6.1.

Table 7.6.1: Data accessible via Sh interface

Data Ref.	XML tag	Defined in	Access key	May be included in the operations:
0	RepositoryData	7.6.1	Public-Identity + Data-Reference + Service-Indication	Sh-Pull, Sh-Update, Sh-Subs-Notif
10	PublicIdentifiers	7.6.2	User-Identity + Data-Reference	Sh-Pull
11	RegistrationState	7.6.3		Sh-Pull, Sh-Subs-Notif
12	S-CSCFName	7.6.4		Sh-Pull, Sh-Subs-Notif
13	InitialFilterCriteria	7.6.5	User-Identity + Data-Reference + Origin-Host	Sh-Pull, Sh-Update, Sh-Subs-Notif
14	LocationInformation	7.6.6	User-Identity + Data-Reference+ Requested-Domain	Sh-Pull
15	UserState	7.6.7		
16	Charging information	7.6.8		Sh-Pull, Sh-Update

7.6.1 Repository Data

This information element contains transparent data. A data repository may be shared by more than one AS implementing the same service.

7.6.2 PublicIdentifiers

List of public identities of the user.

7.6.3 Registration State

This information element contains the IMS Registration State of the public identifier referenced. Its possible values are: REGISTERED, NOT_REGISTERED, AUTHENTICATION_PENDING and REGISTERED_UNREG_SERVICES.

7.6.4 S-CSCF Name

This information element contains the name of the S-CSCF where a multimedia public identity is registered.

7.6.5 Initial Filter Criteria

This information element contains the triggering information for a service.

For a more detailed description, refer to 3GPP TS 23.218 [4] and 3GPP TS 29.228 [6].

7.6.6 Location Information

This IE contains the location of the served subscriber in the MSC/VLR if the requested domain is CS, or the location of the served subscriber in the SGSN if the requested domain is PS. If the HSS has to communicate with the MSC/VLR and/or SGSN to retrieve location information, it shall make use of the service MAP-PROVIDE-SUBSCRIBER-INFO.7.6.6.1 Location information for CS

It consists of the following subordinate information elements:

- Location number: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 apply.
- Service area ID: defined in 3GPP TS 23.003.
- Global Cell ID: defined in 3GPP TS 23.003.
- Location area ID: defined in 3GPP TS 23.003

- Geographical Information: defined in 3GPP TS 23.032. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- Geodetic Information: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- VLR Number: defined in 3GPP TS 23.003.
- MSC Number: defined in 3GPP TS 23.003.
- Age of location information: defined in 3GPP TS 23.018.
- Current Location Retrieved: shall be present when location information was obtained after a successful paging procedure for Active Location Retrieval.

7.6.6.2 Location information for GPRS

It consists of the following subordinate information elements:

- Service area ID: defined in 3GPP TS 23.003.
- Global Cell ID: defined in 3GPP TS 23.003.
- Location area ID: defined in 3GPP TS 23.003
- Geographical Information: defined in 3GPP TS 23.032. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- Geodetic Information: defined in ITU-T Recommendation Q.763. Considerations described in 3GPP TS 23.018 and 3GPP TS 29.002 apply.
- SGSN Number: defined in 3GPP TS 23.003.
- Routing Area ID: defined in 3GPP TS 23.003.
- Current Location Retrieved: shall be present when location information was obtained after a successful paging procedure for Active Location Retrieval.

For both information elements, Location Information for CS and Location Information for GPRS, the considerations described in 3GPP TS 23.078 apply.

7.6.7 User state

This information element indicates the state of the user in the domain indicated by the Requested-Domain (see 7.2), with the values specified in 3GPP TS 23.078 for Subscriber State and PS Domain Subscriber State. The HSS shall make use of the operation MAP-PROVIDE-SUBSCRIBER-INFO towards the MSC/VLR and/or the SGSN to obtain this information.

7.6.8 Charging information

Addresses of the charging functions (primary event charging function name, secondary event charging function name, primary charging collection function name, secondary charging collection function name). When the clash occurs between the charging function address(es) received over the ISC interface and those received over the Sh interface, the address(es) received over the ISC interface should take precedence.

NOTE: The use of the Sh interface to retrieve charging function addresses is not intended as a general-purpose alternative to receiving charging function addresses from the ISC interfaces. Rather, it is meant to address a special case where the AS needs to interact with the charging system before initiating a request to a user when the AS has not received the third party REGISTER for that user.

7.7 Subscription request type

This information element indicates the action requested for subscription to notifications. See 3GPP TS 29.329 [5] for the list of valid values.

7.8 Current Location

This information element indicates whether an active location retrieval has to be initiated or not when an AS requested location information. See 3GPP TS 29.329 [5] for the list of possible values.

End of first change

Start of second change

C.3 Sh-IMS-Data

The following picture details the UML model of the class Sh-IMS-Data.

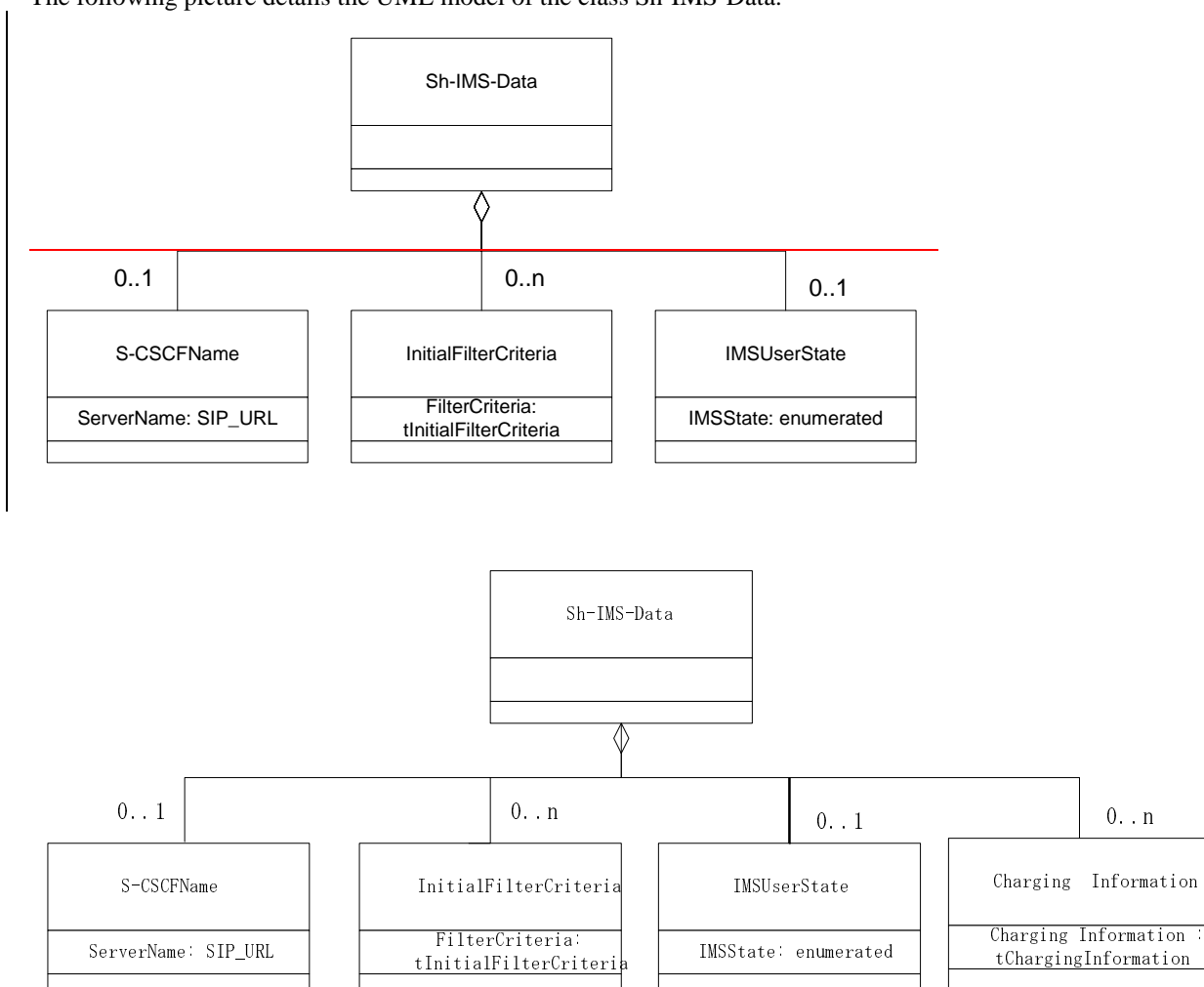


Figure C.3.1: Sh-IMS-Data

Each instance of the class Sh-IMS-Data contains 0 or 1 instance of the class S-CSCFName, 0 to n instances of the class InitialFilterCriteria and/or 0 or 1 instance or the IMSUserState class.

Class S-CSCFName contains the SIP URL of the S-CSCF where the multimedia public identity that the AS included in the request is registered.

Class InitialFilterCriteria is defined in 3GPP TS 29.228 [6] and contains the initial filter criteria of the multimedia public identity that the AS included in the request.

Class IMSUserState contains the registration state of the identity given by the attribute of class Sh-IMS-Data. See chapter 7.6 for possible values.

[Class Charging Information contains the online and offline charging function addresses. See chapter 7.6 for possible values.](#)

Annex D (normative): XML schema for the Sh interface user profile

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

Tables D.1 and D.2 describe the data types and the dependencies among them that configure the XML schema.

Table D.1: XML schema for Sh 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_SESSION 2 (TERMINATING_UNREGISTERED)
tIMSUserState	IMSUserState	Enumerated	Possible values: 0 (NOT_REGISTERED) 1 (REGISTERED) 2 (REGISTERED_UNREG_SERVICES) 3 (AUTHENTICATION_PENDING)
tCSUserState	CSUserState	Enumerated	Possible values (as defined in 3GPP TS 23.078): 0 (CAMELBusy) 1 (NetworkDeterminedNotReachable) 2 (AssumedIdle) 3 (NotProvidedfromVLR)
tPSUserState	PSUserState	Enumerated	Possible values (as defined in 3GPP TS 23.078): 0 (Detached) 1 (AttachedNotReachableForPaging) 2 (AttachedReachableForPaging) 3 (ConnectedNotReachableForPaging) 4 (ConnectedReachableForPaging) 5 (NotProvidedFromSGSN)
tLocationNumber	LocationNumber	string	Syntax described in ITU-T Q.763 (base 64)

			encoded according to RFC 2045). Length ≥ 4 and ≤ 16 (multiples of 4).
tGlobalCellId	GlobalCellId	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 12.
tServiceAreaId	ServiceAreaId	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 12.
tLocationAreaId	LocationAreaId	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 8.
tRoutingAreaId	RoutingAreaId	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 8.
tGeographicalInformation	GeographicalInformation	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 12.
tGeodeticInformation	GeodeticInformation	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length = 16.
tAgeOfLocationInformation	AgeOfLocationInformation	integer	≥ 0 , ≤ 32767
tAddressString	AddressString	string	Syntax described in 3GPP TS 29.002 (base 64 encoded according to RFC 2045). Length ≥ 4 and ≤ 28 (multiples of 4).
tMSISDN	MSISDN	string	Syntax described in 3GPP TS 23.003.
tSIP_URL	PublicIdentity	anyURI	Syntax described in RFC 3261
tTEL_URL	PublicIdentity	anyURI	Syntax described in RFC 2806
tDiameterURI	DiameterURI	string	Syntax of a Diameter URI as described in [7]
tIMSPublicIdentity	IMSPublicIdentity	(union)	Union of tSIP_URL and tTEL_URL
tServiceInfo	ServiceInfo	string	
tString	RequestURI, Method, Header, Content, Line	string	
tBool	ConditionTypeCNF,	boolean	Possible values:

	ConditionNegated		0 (false) 1 (true)
--	------------------	--	-----------------------

Table D.2: XML schema for Sh interface: complex data types

Data type	Tag	Compound of		
		Tag	Type	Cardinality
tSh-Data	Sh-Data	PublicIdentifiers	tPublicIdentity	0 to 1
		RepositoryData	tTransparentData	0 to 1
		Sh-IMS-Data	tShIMSData	0 to 1
		LocationInformation	tLocationInformation	0 to 1
tTransparentData	RepositoryData	ServiceIndication	string	1
		ServiceData	string	0 to 1
tShIMSData	Sh-IMS-Data	SCSCFName	tSIP_URL	0 to n
		InitialFilterCriteria	tInitialFilterCriteria	0 to 10
		IMSUserState	tIMSUserState	0 to 1
		ChargingInformation	tChargingInformation	0 to 1
tCSLocationInformation	CSLocationInformation	LocationNumber	tLocationNumber	0 to 1
		CellGlobalId	tGlobalCellId	0 to 1
		ServiceAreaId	tServiceAreaId	0 to 1
		LocationAreaId	tLocationAreaId	0 to 1
		GeographicalInformation	tGeographicalInformation	0 to 1
		GeodeticInformation	tGeodeticInformation	0 to 1
		VLRNumber	tISDNAddress	0 to 1
		MSCNumber	tISDNAddress	0 to 1
		CurrentLocationRetrieved	tBool	0 to 1

		AgeOfLocationInformation	tAgeOfLocationInformation	0 to 1	
tPSLocationInformation	PSLocationInformation	CellGlobalId	tGlobalCellId	0 to 1	
		ServiceAreaId	tServiceAreaId	0 to 1	
		LocationAreaId	tLocationAreaId	0 to 1	
		RoutingAreaId	tRoutingAreaId	0 to 1	
		GeographicalInformation	tGeographicalInformation	0 to 1	
		GeodeticInformation	tGeodeticInformation	0 to 1	
		SGSNNumber	tISDNAddress	0 to 1	
		CurrentLocationRetrieved	tBool	0 to 1	
		AgeOfLocationInformation	tAgeOfLocationInformation	0 to 1	
tPublicIdentity	PublicIdentity	IMSPublicIdentity	tIMSPublicIdentity	0 to n	
		MSISDN	tMSISDN	0 to n	
tInitialFilterCriteria	InitialFilterCriteria	Priority	tPriority	1	
		TriggerPoint	tTrigger	0 to 1	
		ApplicationServer	tApplicationServer	1	
tTrigger	Trigger	SPI	tSiPoint	0 to n	
		ConditionTypeCNF	tBool	1	
tSiPoint	SPI	ConditionNegated	tBool	0 to 1	
		Group	tGroupID	1 to n	
		Choice of	RequestURI	tString	1
			Method	tString	1
SIPHeader	tHeader		1		

			SessionCase	tDirectionOfRequest	1
			SessionDescription	tSessionDescription	1
tHeader	SIPHeader		Header	tString	1
			Content	tString	0 to 1
tSessionDescription	SessionDescription		Line	tString	1
			Content	tString	0 to 1
tApplicationServer	ApplicationServer		ServerName	tSIP_URL	1
			DefaultHandling	tDefaultHandling	0 to 1
			ServiceInfo	tServiceInfo	0 to 1
tChargingInformation	ChargingInformation		PrimaryEventChargingFunctionName	tDiameterURI	1
			SecondaryEventChargingFunctionName	tDiameterURI	1
			PrimaryChargingCollectionFunctionName	tDiameterURI	1
			SecondaryChargingCollectionFunctionName	tDiameterURI	1
NOTE: "n" shall be interpreted as non-bounded.					

End of second change

CHANGE REQUEST

⌘ **29.329 CR 005** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ Initial Filter Criteria		
Source:	⌘ CN4		
Work item code:	⌘ IMS	Date:	⌘ 29/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ To clarify that read requests for initial filter criteria are limited to those initial filter criteria relevant to the requesting application server.
Summary of change:	⌘ The data reference value "InitialFilterCriteria" is pointing to initial filter criteria relevant to the requesting application server.
Consequences if not approved:	⌘ Unclear specification.

Clauses affected:	⌘ 6.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ CR 29.328 012	
Y	N										
X											
	X										
	X										
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.

6.3.4 Data-Reference AVP

The Data-Reference AVP (AVP code 103) is of type Enumerated, and indicates the type of the requested user data in the operation UDR and SNR. Its exact values and meaning is defined in 3GPP TS 29.328. The following values are defined (more details are given in 3GPP TS 29.328):

RepositoryData (0)

PublicIdentifiers (10)

This value is used to request the read or notification of changes in the IMS public identities fields

RegistrationState (11)

S-CSCFName (12)

InitialFilterCriteria (13)

[This value is used to request initial filter criteria relevant to the requesting AS](#)

LocationInformation (14)

CR-Form-v7

CHANGE REQUEST

⌘ **29.329 CR 007** ⌘ rev **2** ⌘ Current version: **5.2.1** ⌘

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 after Diameter has become RFC		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 15/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ Alignment with IETF Diameter Base Protocol
Summary of change:	⌘ Modifications according to the new command code and AVP headers format. Alignment with the new Experimental-Result AVP. Command Codes by IANA inserted.
Consequences if not approved:	⌘ Misalignment with the Diameter standard protocol

Clauses affected:	⌘ 2, 6.1, 6.4						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Test specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> O&M Specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
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.

Beginning of modified section

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 29.328 “IP Multimedia (IM) Subsystem Sh interface; signalling flows and message contents (Release 5)”

[2] 3GPP TS 33.210 “3G Security; Network Domain Security; IP Network Layer Security (Release 5)”

[3] IETF RFC 2960 “Stream Control Transmission Protocol”

[4] draft-ietf-aaa-diameter-17.txt, “Diameter Base Protocol”, work in progress

[5] IETF RFC 2234 “Augmented BNF for syntax specifications”

[6] 3GPP TS 29.229 “Cx and Dx Interfaces based on the Diameter protocol; protocol details (Release 5)”

[7] draft-loughney-aaa-cc-3gpp-01, “Diameter Command Codes for 3GPP Release 5”

End of modified section

Beginning of modified section

6 Diameter application for Sh interface

This clause specifies a Diameter application that allows a Diameter server and a Diameter client:

- to download and update transparent and non-transparent user data
- to request and send notifications on changes on user data

The Sh interface protocol is defined as an IETF vendor specific Diameter application, where the vendor is 3GPP. The vendor identifier assigned by IANA to 3GPP (<http://www.iana.org/assignments/enterprise-numbers>) is 10415.

The Diameter application identifier assigned to the Sh interface ~~application protocol~~ is [TBD \(pending of allocation by IANA\) number 2](#).

6.1 Command-Code values

This section defines Command-Code values for this Diameter application.

Every command is defined by means of the ABNF syntax [5], according to the rules in [4]. Whenever the definition and use of an AVP is not specified in this document, what is stated in [4] or [6] shall apply.

The command codes for the Sh interface application are taken from the range allocated by IANA in [7] as assigned in this specification. For these commands, the Application-ID field shall be set to TBD (application identifier of the Sh interface application, pending of allocation by IANA).

The following Command Codes are defined in this specification:

Table 6.1.1: Command-Code values

Command-Name	Abbreviation	Code	Section
User-Data-Request	UDR	1 306	6.1.1
User-Data-Answer	UDA	1 306	6.1.2
Profile-Update-Request	PUR	2 307	6.1.3
Profile-Update-Answer	PUA	2 307	6.1.4
Subscribe-Notifications-Request	SNR	3 308	6.1.5
Subscribe-Notifications-Answer	SNA	3 308	6.1.6
Push-Notification-Request	PNR	4 309	6.1.7
Push-Notification-Answer	PNA	4 309	6.1.8

6.1.1 User-Data-Request (UDR) Command

The User-Data-Request (UDR) command, indicated by the Command-Code field set to ~~1~~306 and the 'R' bit set in the Command Flags field, is sent by a Diameter client to a Diameter server in order to request user data.

Message Format

```

< User-Data -Request > ::= < Diameter Header: 10415:1306, TBD, REQ, PXY >
    < Session-Id >
    _____ { Vendor-Specific-Application-Id }
    { Auth-Session-State }
    { Origin-Host }
    { Origin-Realm }
    [ Destination-Host ]
    _____ { Destination-Realm }
    { User-Identity }
    [ Service-Indication ]
    1*[ Data-Reference ]
    *[ Requested-Domain ]
    [ Current-Location ]
    *[ AVP ]
    *[ Proxy-Info ]
    *[ Route-Record ]

```

6.1.2 User-Data-Answer (UDA) Command

The User-Data-Answer (SAA) command, indicated by the Command-Code field set to ~~1~~306 and the 'R' bit cleared in the Command Flags field, is sent by a server in response to the User-Data-Request command. The Result-Code or ~~Vendor-Specific~~Experimental-Result AVP may contain one of the values defined in section 6.2 in addition to the values defined in [6].

Message Format

```

< User-Data-Answer > ::= < Diameter Header: 10415:1306, TBD >
    < Session-Id >

```

```

----- { Vendor-Specific-Application-Id }
----- [ Result-Code ]
[ Vendor-SpecificExperimental-Result ]
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
[ User-Data ]
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.3 Profile-Update-Request (PUR) Command

The Profile-Update-Request (PUR) command, indicated by the Command-Code field set to [2-307](#) and the 'R' bit set in the Command Flags field, is sent by a Diameter client to a Diameter server in order to update user data in the server.

Message Format

```

< Profile-Update-Request > ::= < Diameter Header: 10415-2307, TBD, REQ, PXY >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Host }
{ Destination-Realm }
{ Public-Identity }
{ User-Data }
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.4 Profile-Update-Answer (PUA) Command

The Profile-Update-Answer (PUA) command, indicated by the Command-Code field set to [2-307](#) and the 'R' bit cleared in the Command Flags field, is sent by a client in response to the Profile-Update-Request command. The Result-Code or ~~Vendor-Specific~~Experimental-Result AVP may contain one of the values defined in section 6.2 in addition to the values defined in [6].

Message Format

```

< Profile-Update-Answer > ::= < Diameter Header: 10415-2307, TBD >
< Session-Id >
{ Vendor-Specific-Application-Id }
[ Result-Code ]
[ Vendor-SpecificExperimental-Result ]
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.5 Subscribe-Notifications-Request (SNR) Command

The Subscribe-Notifications-Request (SNR) command, indicated by the Command-Code field set to [3-308](#) and the 'R' bit set in the Command Flags field, is sent by a Diameter client to a Diameter server in order to request notifications of changes in user data.

Message Format

```

< Subscribe-Notifications-Request > ::= < Diameter Header: 308, 10415TBD:-3, REQ, PXY >
< Session-Id >

```

```

_____ { Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
[ Destination-Host ]
_____ { Destination-Realm }
{ Public-Identity }
[ Service-Indication ]
{ Subs-Req-Type }
1*[ Data-Reference ]
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.6 Subscribe-Notifications-Answer (SNA) Command

The Subscribe-Notifications-Answer command, indicated by the Command-Code field set to [2-308](#) and the 'R' bit cleared in the Command Flags field, is sent by a client in response to the Subscribe-Notifications-Request command. The Result-Code or ~~Vendor-Specific~~[Experimental](#)-Result AVP may contain one of the values defined in section 6.2 in addition to the values defined in [6].

Message Format

```

< Subscribe-Notifications-Answer > ::=      < Diameter Header: 308, TBD-10415-3 >
< Session-Id >
_____ { Vendor-Specific-Application-Id }
_____ { Auth-Session-State }
_____ [ Result-Code ]
[ Vendor-SpecificExperimental-Result ]
{ Origin-Host }
{ Origin-Realm }
*[ Data-Reference ]
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.7 Push-Notification-Request (PNR) Command

The Push-Notification-Request (PNR) command, indicated by the Command-Code field set to [4-309](#) and the 'R' bit set in the Command Flags field, is sent by a Diameter server to a Diameter client in order to notify changes in the user data in the server.

Message Format

```

< Push-Notification-Request > ::=      < Diameter Header: 309, TBD-10415-4, REQ, PXY >
< Session-Id >
{ Vendor-Specific-Application-Id }
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Host }
{ Destination-Realm }
{ Public-Identity }
{ User-Data }
*[ AVP ]
*[ Proxy-Info ]
*[ Route-Record ]

```

6.1.8 Push-Notifications-Answer (PNA) Command

The Push-Notifications-Answer (PNA) command, indicated by the Command-Code field set to [2-309](#) and the 'R' bit cleared in the Command Flags field, is sent by a client in response to the Push-Notification-Request command. The

Result-Code or ~~Vendor-Specific~~[Experimental](#)-Result AVP may contain one of the values defined in section 6.2 in addition to the values defined in [6].

Message Format

```
< Push-Notification-Answer > ::= < Diameter Header: 10415:4309, TBD >
    < Session-Id >
    { Vendor-Specific-Application-Id }
    [ Result-Code ]
    [ Vendor-SpecificExperimental-Result ]
    { Auth-Session-State }
    { Origin-Host }
    { Origin-Realm }
    *[ AVP ]
    *[ Proxy-Info ]
    *[ Route-Record ]
```

6.2 Result-Code AVP values

This section defines new result code values that must be supported by all Diameter implementations that conform to this specification. The result codes defined in 3GPP TS 29.229 are also applicable. When one of the result codes defined here is included in a response, it shall be inside an ~~an~~ ~~Vendor-Specific~~[Experimental](#)-Result AVP and Result-Code AVP shall be absent.

End of modified section

Beginning of modified section

6.4 Use of namespaces

This clause contains the namespaces that have either been created in this specification, or the values assigned to existing namespaces managed by IANA.

~~This specification assigns the values 1-4 from the Command Code namespace managed by 3GPP for its Diameter vendor-specific application number 2. See section 6.1 for the assignment of the namespace in this specification.~~

6.4.1 AVP codes

This specification assigns the values 100-107 from the AVP Code namespace managed by 3GPP for its Diameter vendor-specific applications ~~number 2~~. See section 6.3 for the assignment of the namespace in this specification.

6.4.2 ~~Vendor-Specific~~[Experimental](#)-Result-Code AVP values

This specification has assigned ~~Vendor-Specific~~[Experimental](#)-Result-Code AVP values 4100 and 5100-5104. See section 6.2.

[6.4.3 Command Code values](#)

[This specification assigns the values 306-309 from the range allocated by IANA to 3GPP in- \[12\].](#)

[6.4.4 Application-ID value](#)

[IANA has allocated the value TBD for the 3GPP Sh interface application.](#)

End of modified section

CHANGE REQUEST

⌘ **29.329 CR 008** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ Correction of the Application Server Identification type for Initial Filter Criteria usage		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 15/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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:	⌘ Over Sh interface, the Application Server Identifier is defined as type Origin-Host (i.e., Diameter-Identity). However, the InitialFilter Criteria assumes the application server identifier as a SIP URL type. This inconsistency is solved by defining the Application Server over the Sh interface as SIP URL.
Summary of change:	⌘ Include in the Sh interface the Application Server Identifier, as SIP URL type.
Consequences if not approved:	⌘ Initial Filter Criteria not possible to request unless a table mapping Origin-Host / SIP-URL is implemented..

Clauses affected:	⌘ 6.1.1, 6.1.5, 6.3, 6.3.9										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ TS 29.328-017	
Y	N										
X											
	X										
	X										
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.

Beginning of modified section

6.1.1 User-Data-Request (UDR) Command

The User-Data-Request (UDR) command, indicated by the Command-Code field set to 1 and the 'R' bit set in the Command Flags field, is sent by a Diameter client to a Diameter server in order to request user data.

Message Format

```

< User-Data -Request > ::= < Diameter Header: 10415: 1, REQ, PXY >
    < Session-Id >
    { Vendor-Specific-Application-Id }
    { Auth-Session-State }
    { Origin-Host }
    { Origin-Realm }
    [ Destination-Host ]
    { Destination-Realm }
    { User-Identity }
    [ Service-Indication ]
    [ Server-Name ]
    1*[ Data-Reference ]
    *[ Requested-Domain ]
    [ Current-Location ]
    *[ AVP ]
    *[ Proxy-Info ]
    *[ Route-Record ]

```

End of modified section

Beginning of modified section

6.1.5 Subscribe-Notifications-Request (SNR) Command

The Subscribe-Notifications-Request (SNR) command, indicated by the Command-Code field set to 3 and the 'R' bit set in the Command Flags field, is sent by a Diameter client to a Diameter server in order to request notifications of changes in user data.

Message Format

```

< Subscribe-Notifications-Request > ::= < Diameter Header: 10415: 3, REQ, PXY >
    < Session-Id >
    { Vendor-Specific-Application-Id }
    { Auth-Session-State }
    { Origin-Host }
    { Origin-Realm }
    [ Destination-Host ]
    { Destination-Realm }
    { Public-Identity }
    [ Service-Indication ]
    [ Server-Name ]
    { Subs-Req-Type }
    1*[ Data-Reference ]
    *[ AVP ]
    *[ Proxy-Info ]
    *[ Route-Record ]

```

End of modified section

Beginning of modified section

6.3 AVPs

The following table describes the Diameter AVPs defined for the Sh interface protocol, their AVP Code values, types, possible flag values and whether the AVP may or not be encrypted.

Table 6.3.1: Diameter Multimedia Application AVPs

Attribute Name	AVP Code	Section defined	Value Type	AVP Flag rules				
				Must	May	Should not	Must not	May Encr.
User-Identity	100	6.3.1	Grouped	M, V				N
MSISDN	101	6.3.2	OctetString	M, V				N
User-Data	102	6.3.3	OctetString	M, V				N
Data-Reference	103	6.3.4	Enumerated	M, V				
Service-Indication	104	6.3.5	OctetString	M, V				N
Subs-Req-Type	105	6.3.6	Enumerated	M, V				N
Requested-Domain	106	6.3.7	Enumerated	M, V				N
Current-Location	107	6.3.8	Enumerated	M, V				N
Server-Name	3	6.3.9	UTF8String	M, V				N

NOTE 1: The AVP header bit denoted as ‘M’, indicates whether support of the AVP is required. The AVP header bit denoted as ‘V’, indicates whether the optional Vendor-ID field is present in the AVP header. For further details, see [6].

NOTE 2: Depending on the concrete command.

...[text skipped for clarity]

[6.3.9 Server-Name AVP](#)

[The Server-Name contains a SIP-URL used to identify an AS. See 3GPP TS 29.229 \[6\] for further description of this AVP.](#)

End of modified section

CHANGE REQUEST

⌘ **29.329 CR 009** ⌘ rev ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ Clarification on Sh interface for charging purposes		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 31/1/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ At the last CN#18 plenary, CR against 23.218 (CN1) regarding Sh interface for charging purposes was postponed to the CN1 meeting in February until the corresponding CR against 29.328 or 29.329 (CN4) are submitted. This is why the CR is produced for CN4 at this meeting. However, CR against 24.229 is already agreed at the last CN plenary.
	During the last SA2 meeting in November, there was apparent requirement for 3GPP AAA server, 3GPP Proxy or Presence server, Presence List Server need to retrieve the CCF/ECF addresses from HSS to access to CCF/ECF for offline/online charging purposes. For the forward compatibility, it was agreed to fulfil this requirement for Rel 5.
Summary of change:	⌘ In 6.3.4 Data reference AVP, charging information is added into data accessible via Sh interface.
Consequences if not approved:	⌘ For IMS charging mechanism, it may cause backward compatibility problem in Rel 6.

Clauses affected:	⌘ 6.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	⌘ 29.328-018, 23.218-040	
Y	N										
X											
	X										
	X										
	Test specifications										
	O&M Specifications										

Other comments: ☹ The corresponding CR(N1-03XXXX) against 23.218 and CR(N4-030122) against 29.328 are also affected each other.

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.

Start of change

6.3.3 User-Data AVP

The User-Data AVP (AVP Code 102) is of type OctetString. This AVP contains the user data requested in the UDR and SNR operations and the data to be modified in the UPR operation . The exact content and format of this AVP is described in 3GPP TS 29.328 [1].

6.3.4 Data-Reference AVP

The Data-Reference AVP (AVP code 103) is of type Enumerated, and indicates the type of the requested user data in the operation UDR and SNR. Its exact values and meaning is defined in 3GPP TS 29.328. The following values are defined (more details are given in 3GPP TS 29.328):

RepositoryData (0)

PublicIdentifiers (10)

This value is used to request the read or notification of changes in the IMS public identities fields

RegistrationState (11)

S-CSCFName (12)

InitialFilterCriteria (13)

LocationInformation (14)

[ChargingInformation \(15\)](#)

End of change

CHANGE REQUEST

⌘ **29.329 CR 011** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ Missing code-point in Data-Reference AVP		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CCR	Date:	⌘ 12/02/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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:	⌘ The code-point that identifies user state information is missing in the definition of the Data-Reference AVP.
Summary of change:	⌘ Add a codepoint 'UserState to the Data-Reference AVP.
Consequences if not approved:	⌘ It is not possible for an AS to request user state information.

Clauses affected:	⌘ 6.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <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.

6.3.4 Data-Reference AVP

The Data-Reference AVP (AVP code 103) is of type Enumerated, and indicates the type of the requested user data in the operation UDR and SNR. Its exact values and meaning is defined in 3GPP TS 29.328. The following values are defined (more details are given in 3GPP TS 29.328):

RepositoryData (0)

PublicIdentifiers (10)

This value is used to request the read or notification of changes in the IMS public identities fields

RegistrationState (11)

S-CSCFName (12)

InitialFilterCriteria (13)

LocationInformation (14)

[UserState \(15\)](#)

CR-Form-v7

CHANGE REQUEST

⌘ **29.329 CR 13** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ Registration State Alignment		
Source:	⌘ CN4		
Work item code:	⌘ IMS CCR	Date:	⌘ 17/02/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> 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:	⌘ To align with 29.328
Summary of change:	⌘ Replace "RegistrationState" with "IMSUserState"
Consequences if not approved:	⌘ Misalignment between 29.328 and 29.329

Clauses affected:	⌘ 6.3.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
	Y	N									
	<input type="checkbox"/>	<input checked="" type="checkbox"/>									
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test specifications	⌘							
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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.

6.3.4 Data-Reference AVP

The Data-Reference AVP (AVP code 103) is of type Enumerated, and indicates the type of the requested user data in the operation UDR and SNR. Its exact values and meaning is defined in 3GPP TS 29.328. The following values are defined (more details are given in 3GPP TS 29.328):

RepositoryData (0)

PublicIdentifiers (10)

This value is used to request the read or notification of changes in the IMS public identities fields

[IMSUserRegistrationState](#) (11)

S-CSCFName (12)

InitialFilterCriteria (13)

LocationInformation (14)