3GPP TSG CN Plenary Meeting #22 **NP-030506**
10th – 12th December 2003 Maui, USA.

Source: TSG CN WG4

Title: Corrections on small Technical Enhancements and Improvements Rel-5

Agenda item: 8.8

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.003	082		N4-031360	Rel-5	Changes to enable the GSMA root DNS architecture using ".3gppnetwork.org" TLD	F	5.7.0
23.003	083		N4-031361	Rel-6	Changes to enable the GSMA root DNS architecture using ".3gppnetwork.org" TLD	A	6.0.0

3GPP TSG CN WG4 Meeting #21 **N4-031360**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.003** **CR** **082** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

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

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

Title:	⌘	Changes to enable the GSMA root DNS architecture using ".3gppnetwork.org" TLD
Source:	⌘	CN4
Work item code:	⌘	TEI_5
Date:	⌘	30/10/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change: ⌘

Essential Correction

In an LS from the GSMA IREG working group (N4-030932) it was stated that a root DNS architecture for the ".gprs" top level domain is being set up by the GSMA for the private, inter-PLMN IP backbone known as the GRX. The LS identified some inconsistencies with definitions of the ".gprs" domain and asked that these be corrected.

Upon further analysis within 3GPP TSG CN WG4, it was agreed that it would be advantagous and ease burden on administraors if the new top level domain name of ".3gppnetwork.org" have the exact same structure of the current ".gprs" top level domain.

Summary of change: ⌘

1. All occurences of the "<MNC>.<MCC>.IMSI.3gppnetwork.org" domain are replaced with the new structure of "mnc<MNC>.mcc<MCC>.3gppnetwork.org"; where MNC is 3 digits (with a zero added at the beginning for 2 digit MNCs) and MCC is 3 digits.
2. The label "ims" is added as a reserved string for an APN network identifier.
3. The temporary private ID and temporary public ID is specifically mandated to be used only when the access method requires the use of the GRX (e.g. GPRS)
4. A few miscellaneous errors in grammar and punctuation are corrected.
5. Care has been taken to ensure the changes in this CR do *not* conflict with those proposed in CR 23.003-080.

Consequences if not approved: ⌘

1. Administration of two different DNS systems will be more complex; administrators will have to configure 2 domains with totally different structures.

	2. If only Rel-6 and onwards is changed, there will be backward compatibility issues for SIP clients in UEs which do not have access to an ISIM (which is defined from Rel-5 onwards).

Clauses affected:	⌘	9.1.1, 9.1.2, 13.2, 13.3, 13.4			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	This CR is the same in substance as CR 23.003-074r4, except that the ".3gppnetwork.org" TLD has its structure aligned with that of ".gprs", rather than a complete swap of using the (old structured) ".3gppnetwork.org" domain name.			

****** First Modified Section ******

9 Definition of Access Point Name

In the GPRS backbone, an Access Point Name (APN) is a reference to a GGSN. To support inter-PLMN roaming, the internal GPRS DNS functionality is used to translate the APN into the IP address of the GGSN.

9.1 Structure of APN

The APN is composed of two parts as follows:

- The APN Network Identifier; this defines to which external network the GGSN is connected and optionally a requested service by the MS. This part of the APN is mandatory.
- The APN Operator Identifier; this defines in which PLMN GPRS backbone the GGSN is located. This part of the APN is optional.

The APN Operator Identifier is placed after the APN Network Identifier. An APN consisting of both the Network Identifier and Operator Identifier corresponds to a DNS name of a GGSN; it has a maximum length of 100 octets.

The syntax of the APN shall follow the Name Syntax defined in RFC 2181 [18], RFC 1035 [19] and RFC 1123 [20]. The APN consists of one or more labels. Each label is coded as a one octet length field followed by that number of octets coded as 8 bit ASCII characters. Following RFC 1035 [19] the labels shall consist only of the alphabetic characters (A-Z and a-z), digits (0-9) and the hyphen (-). Following RFC 1123 [20], the label shall begin and end with either an alphabetic character or a digit. The case of alphabetic characters is not significant. The APN is not terminated by a length byte of zero.

NOTE: A length byte of zero is added by the SGSN at the end of the APN before interrogating a DNS server.

For the purpose of presentation, an APN is usually displayed as a string in which the labels are separated by dots (e.g. "Label1.Label2.Label3").

9.1.1 Format of APN Network Identifier

The APN Network Identifier shall contain at least one label and shall have a maximum length of 63 octets. An APN Network Identifier shall not start with any of the strings "rac", "lac", "sgsn", ~~or~~ "rnc" or "ims", and it shall not end in ".gprs". Further, it shall not take the value "*".

In order to guarantee uniqueness of APN Network Identifiers within GPRS PLMN(s), an APN Network Identifier containing more than one label corresponds to an Internet domain name. This name should only be allocated by the PLMN to an organisation which has officially reserved this name in the Internet domain. Other types of APN Network Identifiers are not guaranteed to be unique within GPRS PLMN(s).

An APN Network Identifier may be used to access a service associated with a GGSN. This may be achieved by defining:

- an APN which corresponds to a DNS name of a GGSN, and which is locally interpreted by the GGSN as a request for a specific service, or
- an APN Network Identifier consisting of 3 or more labels and starting with a Reserved Service Label, or an APN Network Identifier consisting of a Reserved Service Label alone, which indicates a GGSN by the nature of the requested service. Reserved Service Labels and the corresponding services they stand for shall be agreed among operators.

9.1.2 Format of APN Operator Identifier

The APN Operator Identifier is composed of three labels. The last label shall be "gprs". The first and second labels together shall uniquely identify the GPRS PLMN (e.g. "<operator-name>.<operator-group>.gprs").

For each operator, there is a default APN Operator Identifier (i.e. domain name). This default APN Operator Identifier is derived from the IMSI as follows:

"mnc<MNC>.mcc<MCC>.~~gprs~~<TLD>"

where:

"mnc" and "mcc" serve as invariable identifiers for the following digits.

<MNC> and <MCC> are derived from the components of the IMSI defined in subclause 2.2.

<TLD> is either "gprs" or "3gppnetwork.org", depending on the service (see clause 13 and Annex C for when each top level domain is used).

This default APN Operator Identifier is used in inter-PLMN roaming situations when attempting to translate an APN consisting only of a Network Identifier into the IP address of the GGSN in the HPLMN. The PLMN may provide DNS translations for other, more human-readable, APN Operator Identifiers in addition to the default Operator Identifier described above.

In order to guarantee inter-PLMN DNS translation possibility, the <MNC> and <MCC> coding used in the "mnc<MNC>.mcc<MCC>.~~gprs~~<TLD>" format of the APN OI shall be:

- <MNC> = 3 digits
- <MCC> = 3 digits
- If there are only 2 significant digits in the MNC, one "0" digit is inserted at the left side to fill the 3 digits coding of MNC in the APN OI.

As an example, the APN OI for MCC 345 and MNC 12 shall be coded in the DNS as mnc012.mcc345.gprs or "mnc012.mcc345.3gppnetwork.org".

****** Next Modified Section ******

13 Numbering, addressing and identification within the IP multimedia core network subsystem

13.1 Introduction

This clause describes the format of the parameters needed to access the IP multimedia core network subsystem. For further information on the use of the parameters see 3GPP TS 23.228 [24].

13.2 Home network domain name

The home network domain name shall be in the form of an Internet domain name, e.g. operator.com, as specified in RFC 1035 [19].

If there is no ISIM application and the access method requires the use of the GRX, the UE shall derive the home network domain name from the IMSI as described in the following steps:

1. take the first 5 or 6 digits, depending on whether a 2 or 3 digit MNC is used (see 3GPP TS 31.102 [27]) and separate them into MCC and MNC ~~with "."~~;
2. use the MCC and MNC derived in step 1 to create the "mnc<MNC>.mcc<MCC>.3gppnetwork.org" domain name as described in subclause 9.1.2;
3. ~~2. reverse the order of the MCC and MNC. Append to the result: ".IMSI.3gppnetwork.org"~~add the label "ims." to the beginning of the domain.

An example of a home network domain name is:

—IMSI in use: 234150999999999;

Where:

MCC = 234;

MNC = 15;

MSIN = 0999999999~~, which gives~~.

Which gives the home network domain name: ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org~~.~~

13.3 Private user identity

The private user identity shall take the form of an NAI, and shall have the form username@realm as specified in clause 3 of RFC 2486 [25].

NOTE: It is possible for a representation of the IMSI to be contained within the NAI for the private identity.

If there is no ISIM application, the private user identity is not known. ~~In this case~~If the private user identity is not known and the access method requires the use of the GRX, the private user identity shall be~~is~~ derived from the IMSI.

The following steps show how to build the private user identity out of the IMSI:

1. use the whole string of digits as the username part of the private user identity;
2. convert the leading digits of the IMSI, i.e. MNC and MCC, into a domain name, as described in subclause 13.2.

The result will be a private user identity of the form "<IMSI>~~imsi~~@ims.mnc<MNC>.mcc<MCC>~~."IMSI~~.3gppnetwork.org". For example: If the IMSI is 234150999999999 (MCC = 234, MNC = 15), the private user identity then takes the form 234150999999999@ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org

13.4 Public user identity

The public user identity shall take the form of either a SIP URI (see RFC 3261 [26]) or a tel URL (see RFC 2806 [45]). A SIP URI shall take the form "sip:user@domain".

If there is no ISIM application to host the public user identity and the access method requires the use of the GRX, a temporary public user identity shall be derived, based on the IMSI. The temporary public user identity shall be of the form "user@domain" and shall therefore be equal to the private user identity. The private user identity is derived as described in subclause 13.2. That is, the private user identity will be appended to the string "sip:"

EXAMPLE: "sip:234150999999999@ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org".

****** End of document ******

3GPP TSG CN WG4 Meeting #21 **N4-031361**
Bangkok, THAILAND, 27th – 31st October 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.003** **CR** **083** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

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

Title:	⌘	Changes to enable the GSMA root DNS architecture using ".3gppnetwork.org" TLD
Source:	⌘	CN4
Work item code:	⌘	TEI_5
Date:	⌘	30/10/2003
Category:	⌘	**A**
Release:	⌘	Rel-6

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

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

Reason for change: ⌘ **Essential Correction**

In an LS from the GSMA IREG working group (N4-030932) it was stated that a root DNS architecture for the ".gprs" top level domain is being set up by the GSMA for the private, inter-PLMN IP backbone known as the GRX. The LS identified some inconsistencies with definitions of the ".gprs" domain and asked that these be corrected.

Upon further analysis within 3GPP TSG CN WG4, it was agreed that it would be advantagous and ease burden on administraors if the new top level domain name of ".3gppnetwork.org" have the exact same structure of the current ".gprs" top level domain.

Summary of change: ⌘

1. All occurences of the "<MNC>.<MCC>.IMSI.3gppnetwork.org" domain are replaced with the new structure of "mnc<MNC>.mcc<MCC>.3gppnetwork.org"; where MNC is 3 digits (with a zero added at the beginning for 2 digit MNCs) and MCC is 3 digits.
2. The label "ims" is added as a reserved string for an APN network identifier.
3. The temporary private ID and temporary public ID is specifically mandated to be used only when the access method requires the use of the GRX (e.g. GPRS)
4. A few miscellaneous errors in grammar and punctuation are corrected.
5. Care has been taken to ensure the changes in this CR do *not* conflict with those proposed in CR 23.003-081.

Consequences if not approved: ⌘

1. Administration of two different DNS systems will be more complex; administrators will have to configure 2 domains with totally different structures.

	2. If only Rel-6 and onwards is changed, there will be backward compatibility issues for SIP clients in UEs which do not have access to an ISIM (which is defined from Rel-5 onwards).

Clauses affected:	⌘	9.1.1, 9.1.2, 13.2, 13.3, 13.4			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	This CR is the same in substance as CR 23.003-079r1, except that the ".3gppnetwork.org" TLD has its structure aligned with that of ".gprs", rather than a complete swap of using the (old structured) ".3gppnetwork.org" domain name.			

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where:

"mnc" and "mcc" serve as invariable identifiers for the following digits.

<MNC> and <MCC> are derived from the components of the IMSI defined in subclause 2.2.

<TLD> is either "gprs" or "3gppnetwork.org", depending on the service (see clause 13 and Annex C for when each top level domain is used).

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- <MNC> = 3 digits
- <MCC> = 3 digits
- If there are only 2 significant digits in the MNC, one "0" digit is inserted at the left side to fill the 3 digits coding of MNC in the APN OI.

As an example, the APN OI for MCC 345 and MNC 12 shall be coded in the DNS as mnc012.mcc345.gprs or "mnc012.mcc345.3gppnetwork.org".

****** Next Modified Section ******

13 Numbering, addressing and identification within the IP multimedia core network subsystem

13.1 Introduction

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13.2 Home network domain name

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1. take the first 5 or 6 digits, depending on whether a 2 or 3 digit MNC is used (see 3GPP TS 31.102 [27]) and separate them into MCC and MNC ~~with "."~~;
2. use the MCC and MNC derived in step 1 to create the "mnc<MNC>.mcc<MCC>.3gppnetwork.org" domain name as described in subclause 9.1.2;
3. ~~2. reverse the order of the MCC and MNC. Append to the result: ".IMSI.3gppnetwork.org"~~add the label "ims." to the beginning of the domain.

An example of a home network domain name is:

—IMSI in use: 234150999999999;

Where:

MCC = 234;

MNC = 15;

MSIN = 0999999999~~, which gives~~.

Which gives the home network domain name: ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org~~.~~

13.3 Private user identity

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NOTE: It is possible for a representation of the IMSI to be contained within the NAI for the private identity.

If there is no ISIM application, the private user identity is not known. ~~In this case~~If the private user identity is not known and the access method requires the use of the GRX, the private user identity shall be~~is~~ derived from the IMSI.

The following steps show how to build the private user identity out of the IMSI:

1. use the whole string of digits as the username part of the private user identity;
2. convert the leading digits of the IMSI, i.e. MNC and MCC, into a domain name, as described in subclause 13.2.

The result will be a private user identity of the form "<IMSI>~~imsi~~@ims.mnc<MNC>.mcc<MCC>~~."IMSI~~.3gppnetwork.org". For example: If the IMSI is 234150999999999 (MCC = 234, MNC = 15), the private user identity then takes the form 234150999999999@ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org

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If there is no ISIM application to host the public user identity and the access method requires the use of the GRX, a temporary public user identity shall be derived, based on the IMSI. The temporary public user identity shall be of the form "user@domain" and shall therefore be equal to the private user identity. The private user identity is derived as described in subclause 13.2. That is, the private user identity will be appended to the string "sip:"

EXAMPLE: "sip:234150999999999@ims.mnc015.mcc234.~~IMSI.~~3gppnetwork.org".

****** End of document ******