Source: **SA1**

Title: **CRs to various specification to remove WLAN requirements**

Document for: **Approval**

Agenda Item: **7.1.3**

These CRs should only be approved if the TR in SP-040100 is approved.

Meeting	SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers. Current	Vers New	SA1 Doc
SP-23	SP-040101	22.011	057	-	Rel-6	D	Extraction of redundant WLAN network selection information [– now in WLAN TS22.234]	6.2.0	6.3.0	S1-040260
SP-23	SP-040101	22.041	012	-	Rel-6	D	Extraction of redundant WLAN related ODB text – now in WLAN TS22.234	6.1.0	6.2.0	S1-040261
SP-23	SP-040101	22.101	150	-	Rel-6	D	Extraction of redundant WLAN information – now in WLAN TS22.234	6.6.0	6.7.0	S1-040258
SP-23	SP-040101	22.101	151	-	Rel-6	D	Extraction of redundant WLAN related simultaneous connection information [now in WLAN TS22.234]	6.6.0	6.7.0	S1-040262
SP-23	SP-040101	22.115	020	-	Rel-6	D	Extraction of redundant WLAN charging information – now in WLAN TS22.234	6.3.0	6.4.0	S1-040259

CR-Form-v7

CHANGE REQUEST

⌘ **22.011 CR 057** ⌘**rev** **-** ⌘ Current version: **6.2.0** ⌘

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

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

Title: ⌘	Extraction of redundant WLAN network selection information [– now in WLAN TS22.234]	
Source: ⌘	SA1 (Lucent Technologies)	
Work item code: ⌘	WLAN	***Date:*** ⌘ 12/01/2004

Category: ⌘	**D**	***Release:*** ⌘ Rel-6

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: ⌘	Creation of WLAN TS would lead to duplicate information
Summary of change: ⌘	Deletion of WLAN related text and addition of reference to TS22.234
Consequences if not approved: ⌘	Maintaining duplicate information is not advised. Possible synchronisation errors as text updates over time.

Clauses affected: ⌘	6, 6.1, 6.2

	Y	**N**	
Other specs affected: ⌘	Y		Other core specifications ⌘ 22.234
			Test specifications
			O&M Specifications

Other comments: ⌘	Proposed change does not affect elements as same text exists, now in 22.234

*************************FIRST CHANGE***********************************

*************************FIRST CHANGE***********************************

1 Scope

The purpose of this TS is to describe the service access procedures as presented to the user.

Definitions and procedures are provided in this TS for international roaming, national roaming and regionally provided service. These are mandatory in relation to the technical realization of the Mobile Station (UE).

1.1 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]   Void

[2]   3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[3]   3GPP TS 23.122: "Non Access Stratum functions related to Mobile Station (MS) in idle mode".

[4]   ITU-T Recommendation Q.1001: "General aspects of Public Land Mobile Networks".

[5]   3GPP TS 22.043: " Support of Localised Service Area (SoLSA). Stage 1".

[6]   3GPP TS 22.234: "Requirements on 3GPP system to wireless local area network (WLAN) interworking"

1.2 Definitions and abbreviations

In addition to those below, abbreviations used in this 3GPP TS are listed in 3GPP TR 21.905 [2].

PLMN

A Public Land Mobile Network (PLMN) is a network established and operated by an Administration or RPOA for the specific purpose of providing land mobile communication services to the public. It provides communication possibilities for mobile users. For communications between mobile and fixed users, interworking with a fixed network is necessary.

A PLMN may provide service in one, or a combination, of frequency bands.

As a rule, a PLMN is limited by the borders of a country. Depending on national regulations there may be more than one PLMN per country.

A relationship exists between each subscriber and his home PLMN (HPLMN). If communications are handled over another PLMN, this PLMN is referred to as the visited PLMN (VPLMN).

PLMN Area

The PLMN area is the geographical area in which a PLMN provides communication services according to the specifications to mobile users. In the PLMN area, the mobile user can set up calls to a user of a terminating network. The terminating network may be a fixed network, the same PLMN, another PLMN or other types of PLMN.

Terminating network users can also set up calls to the PLMN.

The PLMN area is allocated to a PLMN. It is determined by the service and network provider in accordance with any provisions laid down under national law. In general the PLMN area is restricted to one country. It can also be determined differently, depending on the different telecommunication services, or type of UE.

If there are several PLMNs in one country, their PLMN areas may overlap. In border areas, the PLMN areas of different countries may overlap. Administrations will have to take precautions to ensure that cross border coverage is minimized in adjacent countries unless otherwise agreed.

NOTE 1: ITU-T Recommendation Q.1001 [4] does not contain a definition of the PLMN area.

System Area

The System Area is defined as the group of PLMN areas accessible by UEs.

Interworking of several PLMNs and interworking between PLMNs and fixed network(s) permit public land mobile communication services at international level.

NOTE 2: The System Area according to [4] Recommendation Q.1001 corresponds to the System Area.

Service Area

The Service Area is defined in the same way as the Service Area according to ITU-T Recommendation Q.1001 [4]. In contrast to the PLMN area it is not based on the coverage of a PLMN. Instead it is based on the area in which a fixed network user can call a mobile user without knowing his location. The Service Area can therefore change when the signalling system is being extended, for example.

Regionally Provided Service

Regionally Provided Service is defined as a service entitlement to only certain geographical part(s) of a PLMN, as controlled by the network operator.

Localised Service Area (LSA)

The localised service area concept shall give the operator a basis to offer subscribers different services (e.g. tariffs or access rights) depending on the location of the subscriber. A LSA consists of a cell or a number of cells within a PLMN. (3GPP TS 22.043 [5]).

*********************SECOND CHANGE***********************************

6 Support of 3GPP - WLAN Interworking

~~The following section is only applicable to the support of WLAN Interworking to 3GPP Systems.~~Support of 3GPP-WLAN interworking and network selection is captured in TS 22.234 [6]

6.1 ~~Network selection~~(void)

~~The UE shall support both manual and automatic network selection mechanisms (modes) as standardized.~~

~~The UE shall use the last network selection mode used, as the default mode, at every switch on.~~

~~The user shall be given the opportunity to change the network selection mode at any time.~~

~~When selecting a PLMN that is accessed via an interworked WLAN, this selection shall be based on operator and end user preferences. This set of preferences may be different from the preferences used for direct 3GPP access.The UE shall select between multiple WLANs in the same coverage area based on the operator preferences and user preferences by using similar procedures as for Network Selection without WLAN Interworking.~~

~~NOTE 1: The 3GPP operator may have agreements with multiple WLANs in the area and has preference over which WLAN to connect to based on the services supported.~~

NOTE 2: The adaptation of the Network Selection procedures to the WLAN Interworking environment should take into account performance criteria (e.g. power consumption, network load).

6.2 ~~Dual mode 3GPP / WLAN devices~~(void)

The UE shall select between the available 3GPP systems and the WLANs by using similar procedures as for Network Selection without WLAN Interworking.

NOTE 1: The 3GPP operator may have agreements with multiple WLANs in the area and has preference over which WLAN to connect to based on the services supported.

TSG-SA WG1 #23   **S1-040261**
Innsbruck, Austria, 12ᵗʰ – 16ᵗʰ January 2004   **Agenda Item: 10.5**

<div align="right"><i>CR-Form-v7</i></div>

CHANGE REQUEST

| ⌘ | **22.041** CR **012** | ⌘**rev** | **-** | ⌘ | Current version: | **6.1.0** | ⌘ |

*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: ⌘	Extraction of redundant WLAN related ODB text – now in WLAN TS22.234	
Source: ⌘	SA1 (Lucent Technologies)	
Work item code: ⌘	WLAN	***Date:*** ⌘ 12/01/2004

Category: ⌘ **D**	***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: ⌘	Creation of WLAN TS would lead to duplicate information
Summary of change: ⌘	Deletion of WLAN related text, inclusion of reference to 22.234
Consequences if not approved: ⌘	Maintaining duplicate information is not advised. Possible synchronisation errors as text updates over time.

Clauses affected: ⌘	1, 5.3

	Y	**N**	
Other specs affected: ⌘	Y		Other core specifications ⌘ 22.234
			Test specifications
			O&M Specifications

Other comments: ⌘	

<div align="center">*************************FIRST CHANGE*************************</div>

1 Scope

The present document describes the network feature Operator Determined Barring (ODB).

This allows the network operator or service provider to regulate, by means of an exceptional procedure, access by the subscribers to services (both Circuit and Packet Oriented),, by the barring of certain categories of outgoing or incoming calls/Packet Oriented Services or of roaming. ODB shall take effect immediately and shall terminate ongoing calls and bar future calls/Packet Oriented Services.

The purpose of this network feature is to be able to limit the service provider's financial exposure to new subscribers, or to those who have not promptly paid their bills. It may only be applied to the service provider's own subscribers.

1.1 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] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TS 22.088: " Call Barring (CB) supplementary services - Stage 1".

[3] ITU-T Recommendation E.164 : "Numbering plan for the ISDN era".

[4] TS 22.082: " Call Forwarding (CF) supplementary services - Stage 1".

[5] TR 21.905: "Vocabulary for 3GPP Specifications"

[6] 3GPP TS 22.234: "Requirements for 3GPP system to wireless local area network (WLAN) interworking"

1.2 Definitions and abbreviations

In addition to the following definitions, abbreviations used in the present document are listed in GSM 01.04 [1] and TR 21.905 [5].

premium rate call: A telecommunications network, possibly but not necessarily a PLMN, may make available certain services, for which the tariff is comparable to, or may exceed, International Call rates. Examples of such premium rate services might be information and entertainment services. The exact definition of what constitutes a premium rate call is the responsibility of the VPLMN operator, possibly subject to inter-operator agreements.

**************************SECOND CHANGE*********************************

5 Normal procedure

5.1 Circuit Oriented Services

As described in the following categories, the Service Provider may at any time activate this feature and this shall terminate any relevant calls in progress, including forwarded calls, and bar future calls covered by the barring category:

Independently, one of:

   1.1   Barring outgoing calls;

or: 1.2   Barring outgoing international calls;

or: 1.3   Barring outgoing international calls except those directed to the home PLMN country;

or: 1.4   Barring of outgoing calls when roaming outside the home PLMN country;

or: 1.5   Barring of outgoing inter-zonal calls;

or: 1.6   Barring of outgoing inter-zonal calls except those directed to the home PLMN country;

or: 1.7   Barring of outgoing international calls except those directed to the home PLMN country   AND barring of outgoing inter-zonal calls.

and/or one of:

   2.1   Barring incoming calls;

or: 2.2   Barring incoming calls when roaming outside the home PLMN country;

or: 2.3   Barring incoming calls when roaming outside the zone of the home PLMN country.

and/or one of:

   3.1   Barring of Roaming outside the home PLMN;

or: 3.2   Barring of Roaming outside the home PLMN country.

and/or one or both of:

   4.1   Barring of outgoing Premium Rate Calls (Information);

   4.2   Barring of outgoing Premium Rate Calls (Entertainment).

and/or one or more of:

   5.1   When registered in the HPLMN, Operator Specific Barring (Type 1);

or: 5.2   When registered in the HPLMN, Operator Specific Barring (Type 2);

or: 5.3   When registered in the HPLMN, Operator Specific Barring (Type 3);

or: 5.4   When registered in the HPLMN, Operator Specific Barring (Type 4).

and/or

   6.1   Barring of Supplementary Services Management, which prevents user control of any supplementary service (registration, erasure, activation, deactivation, user invocation, interrogation, password registration and mobile initiated USSD). However, this does not   prevent invocation by other action - e.g. an existing call forwarding or barring state will   remain.

and/or one of:

   7.1   Barring of registration of any call forwarded-to number;

or: 7.2   Barring of registration of any international call forwarded-to number;

or: 7.3   Barring or registration of any international call forwarded-to number except to a number   within the HPLMN country;

or: 7.4   Barring of registration of any inter-zone call forwarded-to number.

or: 7.5   Barring of registration of any inter-zone call forwarded-to number except to a number within   the HPLMN country;

NOTE: The definition of an international call is based on the equivalent definition of an international call in TS 22.088 [2]. The principles for deciding whether a forwarded-to number is international or inter-zonal are the same as those given in TS 22.082 [4] to determine the interactions between call forwarding and call barring.

and/or one of:

8.1   Barring of invocation of call transfer;

or: 8.2   Barring of invocation of call transfer where at least one of the two calls is a call charged to the   served subscriber; i.e. the call is either an outgoing call or an incoming call when the served subscriber roams outside the HPLMN;

or: 8.3   Barring of invocation of call transfer where at least one of the two calls is a call charged to the   served subscriber at international rates, i.e. the call is either an outgoing international call or   an incoming call when the served subscriber roams outside the HPLMN country;

or: 8.4   Barring of invocation of call transfer where at least one of the two calls is a call charged to the   served subscriber at inter-zonal rates, i.e. the call is either an outgoing inter-zonal call or an incoming call when the served subscriber roams to a VPLMN in a different zone from the   HPLMN.

and/or:

9   Barring of invocation of call transfer where both calls are calls charged to the served subscriber, i.e. both calls are either outgoing calls or incoming calls when the served subscriber roams outside the HPLMN;

and/or:

10   Barring of further invocation of call transfer if there is already one ongoing transferred call for   the served subscriber in the serving MSC/VLR.

"User invocation", as it relates to ODB, consists of the following action:

-    invocation of the call hold supplementary service.

"Zone" is asbased on the first digit of their international dialing code as defined in ITU-T Recommendation E.164 [3].

NOTE: For the purposes of this TS, zone 3 and zone 4 are treated as one zone.

NOTE: If control of Supplementary Services Management is barred, then the control of call forward will be barred as a consequence, so explicit barring of call forward activation is not necessary.

If a mobile subscriber attempts to use a mobile initiated service which is barred as described above (categories 1, 4, 5, 6, 7, 8, 9, and 10), an appropriate message shall be returned to the Mobile Station or alternatively (categories 1, 4, and 5), if located in the HPLMN, the mobile subscriber can be automatically connected to a destination address determined by the HPLMN operator. It is necessary for the message to indicate that the barring is due to Operator Determined Barring. It is not necessary to indicate the categories which are barred. For ongoing, or transferred calls, that are terminated due to ODB, the network operator may give an appropriate indication to the barred party.

A notification (announcement or ITU-T#7 cause value) may be returned to callers attempting to call a mobile subscriber who is appropriately barred incoming calls. It is not necessary to indicate to the called mobile station that an incoming call has been barred.

Only the HPLMN Operator can activate, change or deactivate application of this network feature.

In order to provide this feature securely when a subscriber roams to another network, the visited network needs to support the feature to ensure that the roaming subscriber cannot use a service which has been barred to him.

5.2 Packet Oriented Services

Packet Oriented Services, particularly data services, are different in nature to Circuit Oriented Services, and therefore have different requirements for Operator Determined Barring.

As described in the following categories, the Service Provider may at any time activate this feature and this shall terminate any relevant services in progress, and bar future requests for service covered by the barring category:

- It shall be possible to bar subscribers completely from the Packet Oriented Services.

- It shall be possible to bar a subscriber from requesting Packet Oriented Services from access points that are within the HPLMN whilst the subscriber is roaming in a VPLMN.

- It shall be possible to bar a subscriber from requesting Packet Oriented Services from access points that are within the roamed to VPLMN.

The term 'access point' is used to indicate the GGSN or part of the GGSN that is specified by a particular APN.

5.3 Interworking WLAN

Aspects of ODB related to interworking WLAN are addressed in TS 22.234 [6]Access to services via an Interworking WLAN is different in nature to Circuit and other 3GPP packet oriented services, and therefore has different requirements for Operator Determined Barring.

As described in the following categories, the Service Provider may at any time activate this feature and this shall terminate any relevant services in progress, and bar future requests for service covered by the barring category:

- It shall be possible to bar subscribers attached via an Interworking WLANcompletely from the interworked service capabilities.

- It shall be possible to bar a subscriber from requesting interworking through access points that are within the HPLMN whilst the subscriber is WLAN connected via a VPLMN

- It shall be possible to bar a subscriber from requesting Packet Oriented Services from access points that are within the roamed to VPLMN.

- It shall be possible to bar a subscriber from requesting direct Internet access from access points that are within the I WLAN

The term 'access point' is used to indicate the Network Element (e.g. PDG or GGSN) or part of the Network Element (e.g. PDG or GGSN) that is specified by a particular APN.

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CHANGE REQUEST

⌘   **22.101** CR **150**   ⌘**rev**   **-**   ⌘   Current version: **6.6.0**   ⌘

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

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

Title: ⌘	Extraction of redundant WLAN information – now in WLAN TS22.234	
Source: ⌘	SA1 (Lucent Technologies)	
Work item code:⌘	WLAN	***Date:*** ⌘ 12/01/2004
Category: ⌘ **D**		***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: ⌘	Creation of WLAN TS would lead to duplicate information
Summary of change:⌘	Deletion of WLAN related text, inclusion of text in scope to clarify that the WLAN TS contains all WLAN relevant requirements, addition of reference to WLAN TS
Consequences if not approved: ⌘	Maintaining duplicate information is not advised. Possible synchronisation errors as text updates over time.

Clauses affected: ⌘	1 , 2 , 10.5 , 11 , 13.1.1 , 13.2 , 16 , 17.3

	Y	**N**	
Other specs affected: ⌘	Y		Other core specifications ⌘ 22.234
			Test specifications
			O&M Specifications

Other comments: ⌘	Proposed change does not affect elements as same text exists, now in 22.234

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 CHANGES************************

1   Scope

This Technical Specification (TS) describes the Service Principles for PLMNs specified by 3GPP. Principles and requirements for interworking with WLAN are covered in TS22.234 [35]

3GPP specifications provide integrated personal communications services. The system will support different applications ranging from narrow-band to wide-band communications capability with integrated personal and terminal mobility to meet the user and service requirements of the 21st century.

3GPP specifications allow the realisation of a new generation of mobile communications technology for a world in which personal communications services should allow person-to-person calling, independent of location, the terminal used, the means of transmission (wired or wireless) and the choice of technology. Personal communication services should be based on a combination of fixed and wireless/mobile services to form a seamless end-to-end service for the user.

3GPP specifications should be in compliance with the following objectives:

a)   to provide a single integrated system in which the user can access services in an easy to use and uniform way in all environments;

b)   to allow differentiation between service offerings of various serving networks and home environments;

c)   to provide a wide range of telecommunications services including those provided by fixed networks and requiring user bit rates of up to 2 Mbits/s as well as services special to mobile communications. These services should be supported in residential, public and office environments and in areas of diverse population densities. These services are provided with a quality comparable with that provided by fixed networks such as ISDN;

d)   to provide services via hand held, portable, vehicular mounted, movable and fixed terminals (including those which normally operate connected to fixed networks), in all environments (in different service environments - residential, private domestic and different radio environments) provided that the terminal has the necessary capabilities;

e)   to provide support of roaming users by enabling users to access services provided by their home environment in the same way even when roaming.

f)   to provide audio, data, video and particularly multimedia services;

g)   to provide for the flexible introduction of telecommunication services;

h)   to provide within the residential environment the capability to enable a pedestrian user to access all services normally provided by fixed networks;

i)   to provide within the office environment the capability to enable a pedestrian user to access all services normally provided by PBXs and LANs;

j)   to provide a substitute for fixed networks in areas of diverse population densities, under conditions approved by the appropriate national or regional regulatory authority.

k)   to provide support for interfaces which allow the use of terminals normally connected to fixed networks.

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*.

2.1   Normative references

[1]   3GPP TS 22.105 "Services and Service Capabilities"

[2]   3GPP TS 22.121: "Virtual Home Environment (VHE), Stage 1"

[3]   3GPP TS 22.038: "SIM application toolkit, stage 1"

[4]   3GPP TS 22.001: " Principles of Circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[5]   3GPP TS 22.004: General on supplementary services"

[6]   3GPP TS 22.030: "Man-Machine Interface (MMI) of the User Equipment (UE)"

[7]   3GPP TS 22.066: "Support of Mobile Number Portability (MNP); Service description; Stage 1"

[8]   3GPP TS 22.079: " Support of Optimal Routing; Stage 1"

[9]   3GPP TS 22.129: "Handover Requirements between UTRAN and GERAN or other Radio Systems"

[10]   3GPP TS 33.102: "Security Architecture"

[11]   3GPP TS 22.011: "Service Accessibility"

[12]   3GPP TS 22.016: "International mobile Station Equipment Identities (IMEI)"

[13]   3GPP TS 24.008: " Mobile Radio Interface Layer 3 Specification"

[14]   3GPP TS 22.003: "Circuit Teleservices supported by a Public Land Mobile Network (PLMN)"

[15]   3GPP TS 21.133: "Security Threats and Requirements"

[16]   3GPP TS 33.120: "Security Principles"

[17]   3GPP TS 22.042: "Network Identity and Time Zone, Service Description, Stage 1"

[18]   3GPP TS 42.009: " Security Aspects"

[19]   3GPP TS 31.102: "USIM Application Characteristics"

[20]   3GPP TS 23.221 "Architectural Requirements"

[21]   3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)"

[22]   3GPP TS 22.060: "General Packet Radio Service (GPRS)"

[23]   3GPP TS 29.002: "Mobile Application Part (MAP) specification "

[24]   3GPP TR 23.972: "Circuit Switched Multimedia Telephony".

[25]   3GPP TS 22.140: "Multimedia messaging service; Stage 1".

[26]   3GPP TS 22.226: "Global Text Telephony, Stage 1."

[27]   3GPP TS 22.228: "IP multimedia (IM) CN subsystem, stage 1"

[28]   RFC 3261: "SIP: Session Initiation Protocol"

[29]   3GPP TR 21.905: " Vocabulary for 3GPP Specifications"

[30] 3GPP TS 26.233: "Packet Switched Streaming Service (PSS) ; General Description"

[31] 3GPP TS 26.234: "Packet Switched Streaming Service (PSS) ; Protocols and Codecs"

[32] 3GPP TR 22.934: "Feasibility study on 3GPP system to Wireless LAN interworking"

[33] RFC 2486: "The Network Access Identifier"

[34] TS 51.011: "Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface", Release 4

[35] TS22.234: "Requirements on 3GPP system to wireless local area network (WLAN) interworking"

**************SECOND CHANGES**********************************

10 Emergency Calls

10.1 General requirements

It shall be possible to establish an emergency speech call. Emergency calls will be routed to the emergency services in accordance with national regulations for where the subscriber is located. This may be based upon one or more default numbers stored in the ME. It shall be allowed to establish an emergency call without the need to dial a dedicated number to avoid the mis-connection in roaming case, such as menu, by use of a 'red button', or a linkage to a car air bag control. Emergency Calls shall be supported by the UE without a SIM/USIM being present. No other type than Emergency calls shall be accepted without a SIM/USIM.

The Emergency service is required only if the UE supports voice.

> Note: It will be left to the national authorities to decide whether the network should accept emergency calls without the SIM/USIM.

It shall be possible to initiate emergency calls to different emergency call centers, depending on the type of emergency. The following types of emergency calls shall be possible:

- Police

- Ambulance

- Fire Brigade

- Marine Guard

- Mountain Rescue

- Spare, at least [three] different types

When a SIM/USIM is present, subscriber specific emergency call set-up MMI shall be provided. The Home Environment operator shall specify preferred emergency call MMI(s) (e.g. 911 for US citizens or 110, 118 and 119 for Japanese citizens). This shall be stored in the SIM/USIM and the ME shall read this and use any entry of these digits to set up an emergency call. It shall be possible to store more than one instance of this field.

> Note: Release '98 and earlier SIM cards have the capability to store additional emergency call set-up MMI. However in many cases this has not been used.

It shall be possible to tie any emergency call number, specified in the preferred emergency call MMI(s) above, to any single emergency call type or to any combination of emergency types. The association between emergency numbers and emergency call type shall be able to be programmed by the Home Environment operator into the SIM/USIM.

> Example:

19 Police (Albania)

100 Police and Fire Brigade (Greek cities)

100 Ambulance and Fire Brigade (Belgium)

112 Police and Ambulance (Italy)

112 General emergency call, all categories (Sweden)

115 Fire Brigade (Italy)

114 Ambulance (Austria)

Note: if the UE does not recognise the emergency call MMI(s) (i.e. the dialled number is not stored in SIM/USIM) but the serving network recognises the dialled number as an emergency call number used in the country, a normal call set up takes place over the radio interface and after the serving network has recognised the emergency number the call is routed as an emergency call.

The user friendly MMI that specifies the type of emergency directly (e.g. menu) should be supported for use in any (i.e. home or visited) PLMN to avoid the mis-connection in roaming case. This shall be allowed both with and without SIM/USIM being present.

The serving network may download additional emergency numbers to the UE in order to ensure that local emergency numbers are known to the UE. The UE shall regard these emergency numbers as valid in that country only (as identified by the MCC) and shall discard them when a new country is entered.

10.1.1 Identification of emergency numbers

The ME shall identify a number dialled by the end user as a valid emergency number if it occurs under one or more of the following conditions.

a) 112 and 911 shall always be available. These numbers shall be stored on the ME.

b) Any emergency number stored on a SIM/USIM when the SIM/USIM is present.

c) 000, 08, 110, 999, 118 and 119 when a SIM/USIM is not present. These numbers shall be stored on the ME.

d) Additional emergency numbers that may have been downloaded by the serving network when the SIM/USIM is present.

10.1.2 Domains priority and selection for UE attempts to emergency call

A CS and IMS capable UE attempting an emergency call should give priority to the CS Domain. In case the call attempt fails, the UE should automatically make a second attempt on the other domain.

10.2 Emergency calls in the CS CN Domain

A CS CN Domain shall support the emergency call teleservice as defined in 3GPP TS 22.003 [14] (TS12).

If a UE supports TS11(Telephony)[14], then it shall also support TS12(Emergency Calls)[14].

10.3 Emergency Calls in the PS CN Domain

Without the IM CN subsystem, emergency calls are not supported in the PS CN domain.

10.4 Emergency calls in the IM CN subsystem

It shall be possible for the IM CN subsystem to support IMS emergency calls.

Note: Other forms than speech for emergency services are for further study.

10.5   ~~Emergency Calls when Attached via an I-WLAN~~VOID

~~Any attempt to make an emergency call shall be handled as defined for a PS CN domain network in section 10.3.~~

11   Numbering principles

The following network addressing schemes listed below shall be supported at the relevant domains:

- E.164,

- E.168,

- E.212,

- X.121

- Internet (including e.g. IP address).

~~When the UE is connected via a I-WLAN, the addressing shall be based on Network Access Identifier (NAI) format (user@realm) as defined in RFC 2486 [33].~~

11.1   Number portability

11.1.1   Requirements for CS CN domain

Some numbering schemes shall be fully independent of the supporting serving network and the home environment, allowing users to transfer this number to another home environment. For further information see 3GPP TS 22.066 [7].

An MSISDN shall be allocated to each new user at the start of a subscription. This number may be allocated from one of several numbering domains. For example:

- home / serving environment numbering scheme;

- national numbering scheme;

- regional numbering scheme;

- global numbering scheme.

A user shall be able to move subscription from one home environment to another without changing the MSISDN provided that the new home environment offers service in the same geographic domain. It is envisaged that home environment s will be able to allocate MSISDNs from each of these domains as required.

11.1.2   Requirements for PS CN domain

None identified.

11.1.3   Requirements for IM CN subsystem

It shall be possible to offer number portability for E.164 numbers within IM CN subsystem. For further information see 3GPP TS 22.066 [7].

11.2   Evolution path

Since 3GPP specifications aim to be aligned with IMT-2000, a primary goal in numbering is the provision of global user

numbering in line with steps taken by the ITU - SG2.

The numbering scheme and network implementation chosen shall allow for international/global evolution.

11.3   Void

11.4   Void

11.5   Void

11.6   Private numbering

A user may wish to use private numbers for the purposes of calling frequent numbers. Therefore there is a requirement for the use, by the user, of Private Numbering Plans (PNPs). These schemes may belong to the user himself, to a home environment or a third party.

11.7   Numbering schemes

11.7.1   Multiple numbering scheme

The standards shall support the possiblity of allowing the bearer service associated with an MT call to be implicitly defined by the destination MSISDN, for example to use a different MSISDN to establish voice, fax or data . It will be possible for multiple MSISDNs to be associated with a single subscription.

11.7.2   Single numbering scheme

The standards shall support the possibility of allowing MT calls of different bearer types (eg voice, fax, data) to be routed to a single MSISDN. It is recognised that the implementation of this may depend on the availability of bearer information associated with an incoming call from the adjoining transit network. In particular the standards will support this possibility in the case of an adjoining ISDN transit network.

11.8   Optimal routing for CS CN domain

The implementation of the numbering scheme used shall allow for optimal routing; i.e. routing shall not take place simply on the number dialled. See 3GPP TS 22.079 [8] for some scenarios.

11a   Identification Requirements

11a.1   Subscriber Identification

In 3GPP the identity of a subscriber is encoded in a identity module application which is contained on a UICC or on a GSM SIM card. The UICC or GSM SIM card is a removable component of the User Equipment. Three types of identity modules are used in the 3GPP system:

-    Universal Subscriber Identity Module (USIM)

-    IMS Subscriber Identity Module (ISIM)

-    Subscriber Identity Module (SIM) according to GSM

General requirements:

- In the 3GPP system each subscriber shall be uniquely identifiable.

- The serving networks shall be able to authenticate any subscriber that roams onto their network

- If a UE, that is registered on the serving network, contains a GSM SIM card or a UICC containing a identity module application, the serving network shall be able to identify the associated home PLMN.

Note 1: UE support of GSM SIM is optional.

Note 2: See the chapter (USIM, UICC and Terminal) of the present specification for a reference, which GSM phase SIMs need to be supported by the network.

11a.2 Terminal Identification

It is a requirement that the terminal can be uniquely identified by the home environment and serving network. This shall require a terminal identity scheme which uniquely identifies each terminal, see 3GPP TS 22.016[12].

11a.3 Home Environment / Serving Network Identification

- Home / serving environments need to route communication to the current location of the user. This shall require a identity scheme which uniquely identifies the serving environment and shall be used for routing purposes.

***************THIRD CHANGES****************************

13 UICC, USIM and Terminal

This clause defines the functional characteristics and requirements of the User Service Identity Module (USIM) and ISIM (IM Services Identity Module). The USIM/ISIM are applications residing on a UICC.

13.1 The USIM/ISIM and User Profiles

13.1.1 The USIM

Every USIM shall have a unique identity and shall be associated with one and only one home environment.

It shall be possible for a home environment to uniquely identify a user by the USIM.

The USIM shall be used to provide security features.

For access to services, provided by PS or CS CN domains, a valid USIM shall be required. Optionally, SIM according to GSM phase 2, GSM phase 2+, 3GPP release 99, 3GPP release 4 specifications may be supported.

The USIM shall be able to support SIM Application Toolkit as specified in 3GPP TS 22.038 [3].

The USIM shall reside on a UICC, 3GPP specifications shall adopt both of the GSM SIM card physical formats. Other formats may also be supported. USIM specific information shall be protected against unauthorised access or alteration.

It shall be possible to update USIM specific information via the air interface, in a secure manner.

Access to the IMS services shall be possible using the USIM application in the event of no ISIM being present on the UICC. If an ISIM is present on the UICC it shall be used to access the IMS.

Access via a I-WLAN shall be possible using earlier releases (than the current release) of the UICC or using a SIM.

Annex A describes a number of features that may optionally be supported by the UE and thus USIM.

13.1.2 User Profiles

It shall be possible for a user to be associated with one or a number of user profiles, which the user can select and activate on a per call basis. The user profile contains information which may be used to personalise services for the user.

It shall be possible for one or more user profiles associated with the same user to be active simultaneously so that the user may make or receive calls associated with different profiles simultaneously. Activation of profiles shall be done in a secure manner, for example with the use of a PIN.

For terminating calls the correct profile shall be indicated by the user address used (e.g. MSISDN), each profile will have at least one unique user address associated with it. For originating calls the user shall be able to choose from the available profiles, the appropriate one for the call. A profile identity will need to be associated with the call for accounting and billing purposes. User profile identities need not be standardised but a standardised means is required for indicating that a particular profile is being used.

Simultaneous use of the same user profile on multiple terminals for the same type of service shall not be allowed.

User profiles associated with different home environments shall not share the same user address.

13.1.3 UICC usage in GERAN only Terminals

In Release 5 and later, terminals supporting only GERAN shall support USIM.

Note: It is strongly recommended that manufacturers implement SIM support on GERAN only terminals until the population of SIMs in the market is reduced to a low level.

13.1.4 Multiple USIMs per UICC

The standard shall support more than one USIM per UICC even when those USIMs are associated with different home environments. Only one of the USIMs or the SIM shall be active at a given time. While the UE is in idle mode, it shall be possible for the user to select/reselect one USIM application amongst those available on the UICC. At switch on, the Last Active USIM shall be automatically selected. The Last Active USIM shall be stored on the UICC. By default if there is no Last Active USIM defined in the UICC, the user shall be able to select the active USIM amongst those available on the UICC.

The standard must not prevent the coexistence of USIM applications, each associated with different home environments on the same UICC, so long as the security problems which arise from such a coexistence are solved.

13.1.5 The ISIM

Access to the IMS services shall be possible using an ISIM application.

The ISIM shall be sufficient for providing the necessecary security features for the IMS and IMS only.

The ISIM shall reside on a UICC. ISIM specific information shall be protected against unauthorised access or alteration.

It shall be possible to update ISIM specific information via the air interface, in a secure manner.

In Rel5 the ISIM application shall require the presence of a USIM application on the same UICC.

13.2 The UICC

Access to services via 3GPP system ~~or via an I WLAN~~ with a single UICC shall be possible.

13.2.1 The UICC and Applications other than the USIM or ISIM

It shall be possible for the UICC to host other applications in addition to the USIM or ISIM, see figure 3. Service providers, subscribers or users may need to establish additional data or processes on the UICC. Each application on an UICC shall reside in its own domain (physical or logical). It shall be possible to manage each application on the card separately. The security and operation of an application in any domain shall not be compromised by an application

running in a different domain. Applications may need to use their own security mechanisms which are separate to those specified by 3GPP e.g. electronic commerce applications.

Examples of UICC applications are: USIM, ISIM, off-line user applications like UPT, electronic banking, credit service, etc.

Applications should be able to share some information such as a common address book.

It shall be possible to address applications, which reside on the UICC, via the air interface.
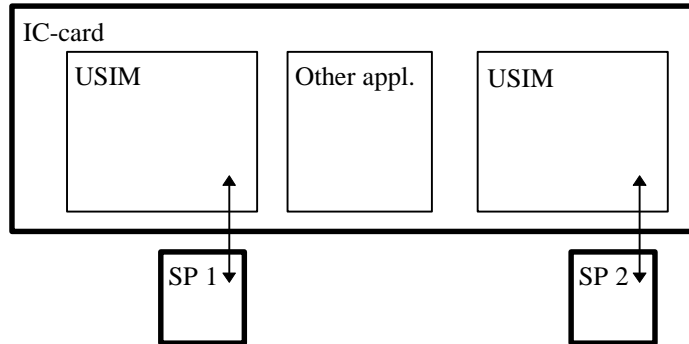

Figure 3 Example of a Multifunction UICC

13.3   Terminals and Multiple UICCs

A single terminal may support the use of multiple UICC (e.g with applications like USIM and/or banking, credit card,...). Only one UICC shall be active at a time to access a PLMN. In case the active UICC contains more than one USIM, the requirements of 11.1.4 shall apply.

If the UICC with the active USIM is removed from the mobile terminal during a call (except for emergency calls), the call shall be terminated immediately. If the UICC with an active ISIM is removed during an IMS session the IMS session shall be terminated.

**************************FOURTH CHANGES*****************************

15   Relationship between subscription and service delivery

15.1   Subscription

A subscription describes the commercial relationship between the subscriber and the service provider.
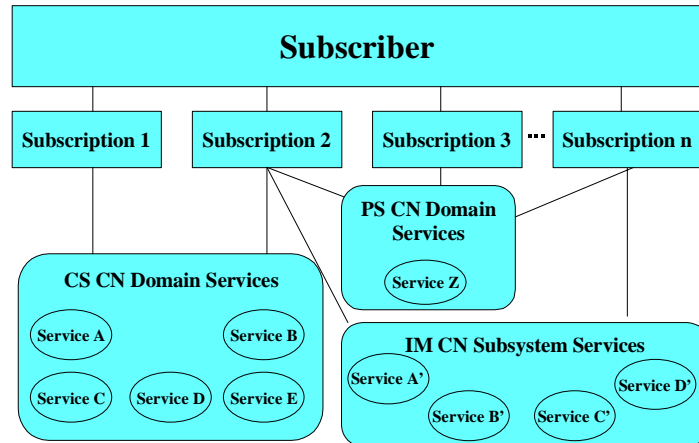
Figure 4: Subscriber, subscription and services relationship

A subscription to a network operator may provide the user with access to one or more domains. A Subscription shall identify the set of services, within particular domains, to which the user has access (see figure 3); each subscription may specify a different set of services. These services may be provided by the CS CN Domain and/or a PS CN Domain and/or an IM CN subsystem. Subscriptions relate to services such as Basic Services (e.g. Teleservices, Bearer services), GPRS services and IM-Services (IP-based multimedia services), which are typically provided by network operators, and to value added services which typically are provided by network operators and/or other entities that provide services to a subscriber

The subscription identifies:

- the services and related services information that are made available to the subscriber by the service provider ;

In addition a subscription to a network operator may identify:

- the domains to which the user has been granted access by the network operator. In particular, the GPRS service profile and information on the allowed QoS parameter ranges shall be contained in the subscription.

- the identity of the subscriber within these domains.
Note: The identity of a subscriber in the CS CN domain and PS CN domain (e.g. her IMSI) may potentially be different to her identity in the IM CN subsystem

- the radio access technologies over which the subscriber may access their services e.g. I-WLAN.

15.2 Other concepts associated with services

Provision of services:
An action to make a service available to a subscriber. The provision may be:

- general: where the service is made available to all subscribers (subject to compatibility restrictions enforced) without prior arrangements being made with the service provider;

- pre-arranged: where the service is made available to an individual subscriber only after the necessary arrangements have been made with the service provider.

Withdrawal:
An action taken by the service provider to remove an available service from a subscriber's access. The withdrawal may be:

- general: where the service is removed from all subscribers provided with the service;

　　　-　specific:　where the service is removed on an individual basis from subscribers provided with the service.

　　NOTE:　Access to the IM subsystem requires IP connectivity provided, for example, through provision of the PS CN domain.

15.3　Requirements concerning service delivery

In general it is a requirement to allow the use of independent services simultaneously (i.e. Basic, GPRS, IP multimedia and operator specific).

1.　The network usage shall be based on the services identified within the subscription, the terminal capabilities and, where applicable, roaming agreements between operators.

2.　The Home environment shall be able to decide on the service delivery in a roaming scenario. I.e. it shall control how services are delivered in line with the subscription.

3.　If an offered or required service (e.g. voice) could be provided with different technologies within the serving network, the decision on service delivery shall be based on preferences identified in the user profile and serving network capabilities and conditions (e.g. load).

4.　If the user profile does not allow an alternative service delivery method and the requested delivery method is not available in the serving network the service shall not be provided to the subscriber. This applies also to data bearer services with defined QoS parameters (or parameter ranges).

Examples:

- A terminating voice call for a subscriber with a dual/multi mode terminal (e.g.UTRAN/GERAN) could be delivered in a hybrid network as IM service or CS voice call (TS11). The delivery decision is based on the preferences of service delivery within the user profile and the network conditions. If there is no preference information of the Home environment available the decision is made only on the network conditions from the serving network.

- A terminating data service (e.g. GPRS with QoS for real time audio) where the network cannot provide the QoS at call setup. Both the originating and terminating application shall be informed about the possible QoS configuration for that call. The further handling (setup continuation, termination) depends on the decisions of the applications.

16　Charging principles

The cost of the call may cover the cost of sending, transporting, delivery and storage. The cost of call related signalling may also be included. Provision shall be made for charging based on time, destination, location, volume, bandwidth and quality. Charges may also be levied as a result of the use of value added services.

It shall be possible for information relating to chargeable events to be made available to the home environment at short notice. The requirements shall include:

-　Immediately after a chargeable event is completed;

-　At regular intervals of time, volume or charge during a chargeable event.

Standardised mechanisms of transferring charging information are required to make these requirements possible.

It should be possible for multiple leg calls (e.g. forwarded, conference or roamed) to be charged to each party as if each leg was separately initiated. However, in certain types of call, the originating party may wish/be obliged to pay for other legs (e.g. SMS MO may also pay for the MT leg.).

Provision shall be made for the chargeable party to be changed during the life of the call. There shall be a flexible billing mechanism which may include the use of stored value cards, credit cards or similar devices.

The chargeable party (normally the calling party) shall be provided with an indication of the charges to be levied (e.g. via the called number automatically or the Advice of Charge supplementary service) for the duration of the call (even

though the user may change service environment)The user shall be able to make decisions about the acceptable level of accumulated charge dynamically or through their service profile.

If a user is to be charged for accepting a call then their consent should be obtained. This may be done dynamically or through their service profile.

~~Charging in the 3GPP system shall not be compromised when access is via an I-WLAN.~~

Charging and accounting solutions shall support the shared network architecture so that end users can be appropriately charged for their usage of the shared network, and network sharing partners can be allocated their share of the costs of the shared network resources.

17 Roaming

17.1 Assumptions

In order to roam, the following applies:

- Mobile terminal can connect to the radio access network.

- Authentication (charging/billing network) must occur in order to get access to services (except for emergency calls).

- The services offered to a roaming subscriber may be restricted by the capabilities of the visited network, and the roaming agreement between the visited and the home environment.

17.2 Principle

Long term evolution of the IM CN subsystem shall not be restricted by the short/mid term inter-domain roaming requirements.
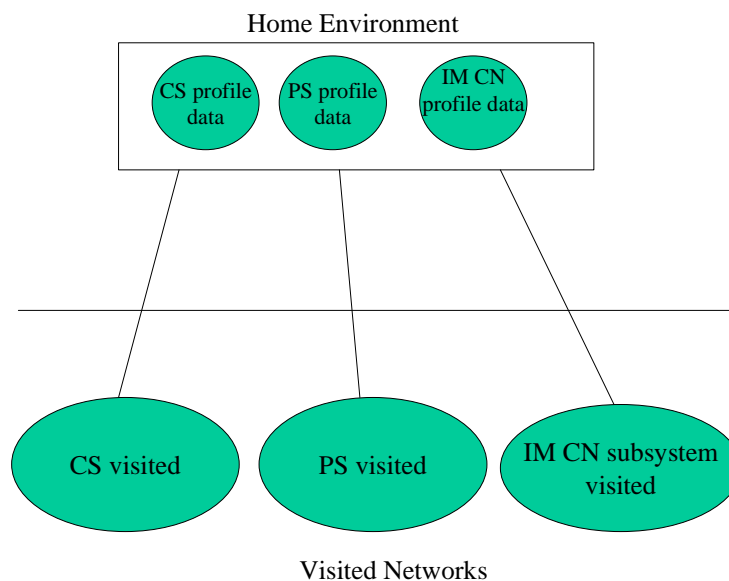
17.3 Requirements

Figure 5: Roaming requirements

- The personalised services & capabilities available in a visited network are dependent upon the subscription options

in the home environment. This does not preclude the visited network offering additional services, or access to content providers.

- Roaming from this release's home environment to CS (this release or earlier) visited network is required

- Roaming from this release's home environment to IM CN subsystem visited network is required

- Roaming from this release's home environment to PS (this release or earlier) visited network is required

- Roaming from previous releases' home environment (or earlier) to this release CS visited network is required

- Roaming from previous releases' home environment (or earlier) to this release PS visited network is required

- ~~Roaming from the home environment to I-WLANs is required. The I-WLAN may be part of the home environment or a visited network. The interworking shall support the case where a 3GPP operator does not operate the I-WLAN.~~

Note: When an operator allows a subscriber to roam to different domains, the home environment needs to provide subscription data to the visited network . The mapping between service data of the different domains is not standardised; it is determined by the home environment and may be influenced by roaming agreements.

*************END OF CHANGES*************************

CR-Form-v7

CHANGE REQUEST

⌘ **22.101** CR **151** ⌘**rev** **-** ⌘ Current version: **6.6.0** ⌘

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

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

Title: ⌘	Extraction of redundant WLAN related simultaneous connection information [now in WLAN TS22.234]
Source: ⌘	SA1 (Lucent Technologies)
Work item code:⌘	WLAN **Date:** ⌘ 12/01/2004
Category: ⌘ **D**	**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: ⌘	Creation of WLAN TS would lead to duplicate information
Summary of change:⌘	Deletion of WLAN related text
Consequences if not approved: ⌘	Maintaining duplicate information is not advised. Possible synchronisation errors as text updates over time.

Clauses affected: ⌘	4.8

	Y	**N**
Other specs affected: ⌘	Y	Other core specifications ⌘ 22.234
		Test specifications
		O&M Specifications

Other comments: ⌘	Proposed change does not affect elements as same text exists, now in 22.234

4　General

4.1　Aims of 3GPP specifications

It shall be capable of delivering audio, text, video and graphics direct to people and provide them with access to the next generation of information based services. It moves mobile and personal communications forward from existing systems, delivering massmarket low-cost digital telecommunication services.

The aims are:

- to enable users to access a wide range of telecommunications services, including many that are today undefined as well as multi-media and high data rates.

- to facilitate the provision of a high quality of service (particularly speech quality) similar to that provided by fixed networks;

- to facilitate the provision of small, easy to use, low cost terminals with long talk time and long standby operation;

- to provide an efficient means of using network resources (particularly radio spectrum).

4.2　Standardisation of Service Capabilities

Existing systems have largely standardised the complete sets of teleservices, applications and supplementary services which they provide. As a consequence, substantial re-engineering is often required to enable new services to be provided and the market for services is largely determined by operators and standardisation. This makes it more difficult for operators to differentiate their services.

3GPP shall therefore standardise service capabilities and not the services themselves. Service capabilities consist of bearers defined by QoS parameters and the mechanisms needed to realise services. These mechanisms include the functionality provided by various network elements, the communication between them and the storage of associated data. This TS provides a conceptual description of a service architecture and architecture requirements which aim to provide service capabilities. It is intended that these standardised capabilities should provide a defined platform which will enable the support of speech, video, multi-media, messaging, data, other teleservices, user applications and supplementary services and enable the market for services to be determined by users and home environments.

4.2.1　Provision of service capabilities in shared networks

The provision of services and service capabilities that is possible to offer in a network shall not be restricted by the existence of the network sharing It shall be possible for a core network operator to differentiate its service offering from other core network operators within the shared network.

It shall be possible to control the access to service capabilities offered by a shared network according to the core network operator the user is subscribed to.

4.3　Efficient Use of Network Resources

Service capabilities shall take account of the discontinuous and asymmetric nature of most teleservices and user applications in order to make efficient use of network resources (particularly radio resources).

Service capabilities shall be provided in a wide range of radio operating environments (where a radio environment is characterised in terms of propagation environment, mobile equipment relative speeds and traffic characteristics - see [2]). Although 3GPP aims to minimise the number of radio interfaces and to maximise commonality between them, it may utilise several radio interfaces, each optimised for different environments. Each radio interface might provide differing service capabilities. 3GPP specifications include UTRAN radio interface supporting two modes (TDD and FDD)and GERAN radio interface.

3GPP specifications shall provide a mechanism which will enable a piece of user equipment (UE) to adapt to different

radio interfaces as necessary and to determine the service capabilities available. The specifications shall also provide a mechanism which will enable a UE to select radio interfaces capable of providing appropriate service capabilities.

4.4 Compatibility with Global Standards

3GPP specifications aim to be compatible with IMT-2000 and to provide global terminal mobility (roaming), enabling the user to take his/her terminal to different regions of the world and to be provided with services. It is probable that different regions of the world will adopt different radio interface technologies. IMT-2000, as a global standard, should therefore enable a IMT-2000 terminal to determine the radio interface technology and the radio interface standard used in a region. Global terminal roaming also requires the global standardisation of service capabilities. As far as possible the method of indication of the radio interface standard and available service capabilities shall be aligned with IMT-2000.

3GPP specifications shall enable users to access the services provided by their home environment in the same way via any serving network provided the necessary service capabilities are available in the serving network.

The 3GPP specifications will be available for the partner organisations to adopt as their regional standards. For example in Europe, ETSI may adopt them as standards for both GSM and UMTS.

4.5 Virtual Home Environment

The 3GPP specifications aim to provide the user with a comprehensive set of services and features, which have the "same look and feel" wherever they are used. For further information see 3GPP 22.121 [2]. Especially the VHE shall provide for:

- a generic set of services / features and access capabilities, if the required service capabilities are available in the visited network;

- the means for serving network, home environments and user to re-use existing system capabilities to define their own specific features / services;

- user personalisation of features / services;

- a personalised service set being used via all access and transport networks, subject to physical limitations;

- the ability for the user to have access to personalised services from any suitable UE;

- regional or network based variations, enhancements to the basic services;

- future evolution of 3GPP specification itself.

4.6 Functionality of Serving Network and Home Environment

The following functionality shall be the responsibility of the home environment:

- User Authentication.

- SIM/USIM Issue.

- Billing.

- User Profile/VHE Management.

The following functionality shall be the responsibility of the serving network:

- Radio or other means of access.

- Transport and signalling.

The following functionality may be the responsibility of either the serving network, the home environment or an appropriate combination of both

- Service Control.

- QoS negotiation.

- Mobility management, including roaming.

- Automatic establishment of roaming agreements.

4.7 PLMN Architecture

The network is logically divided into a radio access network and a core network, connected via an open interface. From a functional point of view the core network is divided into a Packet Switched CN Domain, IP Multimedia (IM) CN subsystem and a Circuit Switched CN Domain. IM CN subsystem utilises PS CN domain (GPRS) bearer services.

CS CN domain supports bearer independent transport. There is no difference in service offering or UE functionality due to different transport.

For further information see 3GPP TS 23.221 [20].

4.8 Interworking Between PLMN and Wireless LANs

Aspects related to interworking between PLMN and WLAN are captured in TS 22.234 [x]

4.8.1 General (void)

WLAN-3GPP system interworking is defined as a wireless IP connectivity service where the user obtains access via a Wireless LAN technology. It shall be possible to deploy the WLAN as an integral part of the 3GPP system or the two systems can be separate.

The 3GPP system shall be capable of interworking with one or more WLANs and a WLAN shall be capable of interworking with one or more 3GPP systems see figure 0.
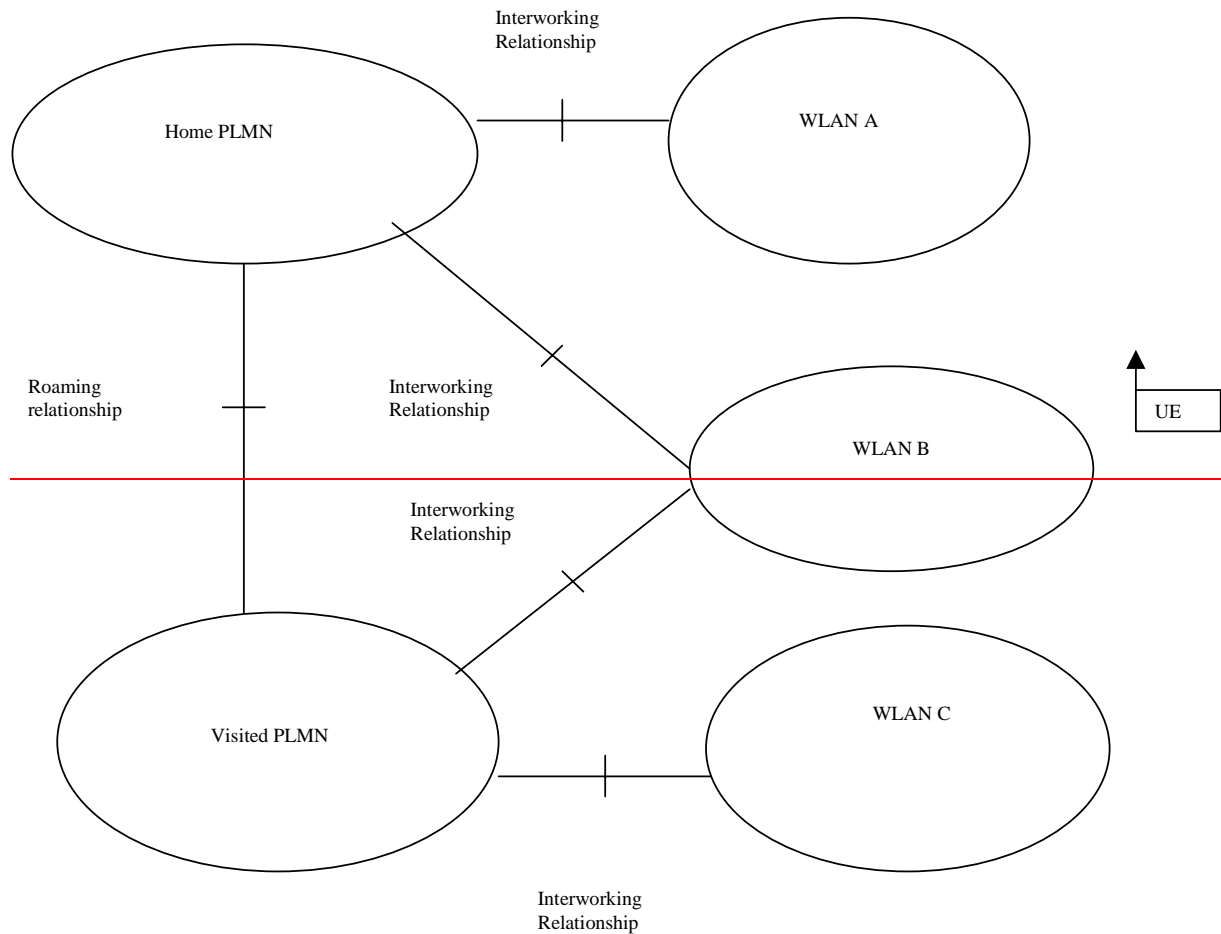
```
                          Interworking
                          Relationship
        _____                        _____
       /           \                      /           \
      /             \      |             /             \
     (  Home PLMN    )-----|------------(    WLAN A      )
      \             /                    \             /
       _____/\                     _____/
            |        \
            |         \
            |          \
            |           \  Interworking                        ___^___
   Roaming  |            \ Relationship                        |  UE  |
 relationship|            |                                    |_____|
 _____|_____|_____
            |            \        _____
            |             \      /           \
            |              \    (   WLAN B     )
            |   Interworking \   \           /
            |   Relationship  \   _____/
            |                  \     /
        _____             \   /
       /           \             \ /
      /             \             X
     (  Visited PLMN )           / \
      \             /           /   \         _____
       _____/          /      \       /           \
                   \---------/--------|------(   WLAN C    )
                                             \           /
                                              _____/
                          Interworking
                          Relationship
```

~~Figure 0: WLAN-3GPP system Interworking Relationships~~

~~Selection of the network is defined in TS 22.011 [11]~~

~~The service is subject to a 3GPP system subscription see section 15. Both IPv4 and IPv6 connectivity via a Wireless LAN (WLAN) shall be supported.~~

~~It is an operator decision as to the level of interworking supported. This can be broadly grouped as:~~

1. ~~3GPP based access control and charging. The user shall be able to access general internet services and/or corporate intranets. (Scenario 2 of TR 22.934 [32])~~

2. ~~Access to 3GPP PS based services, e.g. IMS. (Scenario 3 of TR 22.934 [32])~~

3. ~~Access to 3GPP PS based services with service continuity. The user mayor may not notice a disruption in service, depending upon the level of service continuity supported. This is further defined in TS 22.129 [9]. (Scenarios 4 and 5 of TR 22.934 [32])~~

~~NOTE: Further information on these levels of interworking and the use cases supported can be found in TR 22.934 [32].~~

~~In addition to the general requirements on I WLAN defined in the present document, the following requirements apply:~~

1. ~~When enabling access to 3GPP services that require separate authentication and access control, such as IMS, the service authentication and access control mechanisms for that service shall be used.~~

2. ~~It should be possible to provide access via I WLAN on deployed WLAN devices.~~

4.8.2   ~~Simultaneous Connection to I-WLANs and 3GPP systems~~(void)

~~The 3GPP system shall support simultaneous connection to an I-WLAN and to the 3GPP systems for the following scenarios:~~

- ~~For an integrated WLAN/3GPP device the user shall be able to make or receive a CS domain call without the need to drop the connection to the I-WLAN and visa versa.~~

- ~~For an integrated WLAN/3GPP device the user shall be able to connect to both the PS domain and to the I-WLAN at the same time, to access different services. For example, this will allow the user to access the Presence service via the 3GPP system and the internet via the I-WLAN.~~

- ~~The user shall be able to connect simultaneously to the 3GPP system and the I-WLAN with multiple devices (which have separate UICCs) on the same subscription.~~

4.9   Network Sharing

Network sharing shall be transparent to the user.

The specifications shall support both the sharing of:

(i) radio access network only;

(ii) radio access network and core network entities connected to radio access network

NOTE: In a normal deployment scenario only one or the other option will be implemented.

It shall be possible to support different mobility management rules, service capabilities and access rights as a function of the home PLMN of the subscribers.

CR-Form-v7

CHANGE REQUEST

⌘	**22.115** CR **020**	⌘**rev**	**-**	⌘	Current version:	**6.3.0**	⌘

*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: ⌘	Extraction of redundant WLAN charging information – now in WLAN TS22.234
Source: ⌘	SA1 (Lucent Technologies)
Work item code:⌘	WLAN ***Date:*** ⌘ 12/01/2004
Category: ⌘ **D**	***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: ⌘	Creation of WLAN TS would lead to duplicate information
Summary of change:⌘	Deletion of WLAN related text, inclusion of reference and referring text
Consequences if not approved: ⌘	Maintaining duplicate information is not advised. Possible synchronisation errors as text updates over time.

Clauses affected: ⌘	5.2.6

	Y	N			
Other specs affected: ⌘	Y		Other core specifications	⌘	22.234
			Test specifications		
			O&M Specifications		

Other comments: ⌘	Proposed change does not affect elements as same text exists, now in 22.234

***********************FIRST CHANGE****************************

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 22.101: "Service aspects; Service Principles".

[2] 3GPP TS 22.066: "Support of Mobile Number Portability (MNP)".

[3] 3GPP TS 22.234: "Requirements for 3GPP system to wireless local area network (WLAN) interworking"

*****************SECOND CHANGE****************************

5 Generation of Call Detail Records

The standard shall support the creation and transfer of charging records in order to facilitate:

- interworking with Release 98 and earlier releases

- fraud management procedures;

- detailed itemised billing

Generally, the information provided in the CDRs shall support the high level principles in section 4 (above) and the requirements identified for inter-operator charging as elaborated by the GSM Association. . The information listed below is the minimum requirement.

5.1 Call Detail Record Requirements

Call Detail Records shall be generated in the Serving Network to record chargeable User or Mobile Station activity and inter-carrier connections. Some of the information is provided by the user, other information is only available in the network element of the serving network.

Depending on the type of chargeable event some of the information may not be available or might not be required.

5.1.1 Information provided by the user

The user's user equipment that is incurring the charge shall provide the following information to the serving network:

- User identity used for authentication;

- Home environment identity;

- Terminal Identity and Terminal Class;

- Destination endpoint identifier for service requested (e.g. B number);

- Resource requested (e.g. bandwidth, connectionless);

- QoS parameters (e.g. maximum delay);

- IP Multimedia capability requested (e.g.media components).

5.1.2 Information provided by the serving network

The serving network serving the user shall provide the following information to the home environment:

- All of the information listed in section above (Information provided by the user);

- Serving network identity;

- Recording network element identity;

- Universal Time (UT) at which the service request was initiated;

- Universal Time (UT) at which;

- Resource allocated to the user;

- Quantity of data transferred both to and from the user;

- QoS provided to the user;

- Location of the user in the standard format used for 3GPP location based services (e.g. geographical co-ordinates, Cell ID);

- whether GSM Optimal Routing was applied;

- If IN or CAMEL services were applied, the service parameters and the actually used destination number and calling party number identification;

- Time duration covered by this call record to an accuracy of at least 1 second;

- Unique identity of the chargeable event which allows the billing system to correlate all records belonging to the same chargeable event;

- Unique CDR identity (unique per network element in a period of about 100 days);

- IP Multimedia capability provided to the user;

- VAS information;

- Identifier of third party accessed by the user;

- Presence Information;

- Service Identification (eg voice call, video call, data download etc);

- Supplementary Services used;

- Prepay account identifier and related information.

5.1.3 Charged Party

For subscription related chargeable events the CDR shall indicate the charged party, i.e. normally the calling party. As alternative it should be possible to apply reverse charging or to charge the event to a party not involved in the event itself (e.g. a company as VPN subscriber). It should be possible for multiple leg calls (e.g. forwarded, conference or roamed) to be charged to each party as if each leg was separately initiated. However, in certain types of call, the originating party may wish/be obliged to pay for other legs (e.g. SMS MO may also pay for the MT leg.).

It shall be possible to change the chargeable party at the call set-up.

In case of inter-network chargeable events, the CDR usually does not contain the charged party, but it can be derived from network configuration information contained in the CDR.

For each party to be charged for a chargeable event or parts of it a separate CDR shall be generated.

5.1.3   Information provided by the third party accessed by the user

Supply of Value Added Services, especially in IP based environment, is often made with the aid of third parties typically represented by portals and content/application providers.

To execute an effective charging of these services, the following informations should be provided by the third party:

- Third party identity

- Type of service (information, entertainment, gaming, public utility)

- Type of content (picture, videoclip, mp3 file, java file)

- Universal Time (UT) at which the service request was initiated;

- Universal Time (UT) at which the service provision was completed;

- Cause for Abnormal reject of the service

- Universal Time (UT) for abnormal reject of the service

5.2   Special Cases

5.2.1   Long calls

The advent of packet data services, which can extend for very long periods of time (days, weeks etc), although at low cost because charges are based on data throughput, may mean that billing records are only output at the end of very long periods. For this reason the serving network shall support the generation of call records also during the life of the packet data session, either when some charge value is reached or some duration or some data volume or all three, to allow for both charging settlement and cost control.

5.2.2   Multimedia calls

During one call the user may invoke different services like speech, data transmission, video and audio, which may lead to a separate CDR for each service. If several CDRs will be the result of each multimedia call, the billing system shall be able to correlate these records and to indicate to the user on the bill that they belonged to one call.

5.2.3   E-Commerce

The 3GPP system may be used to trade soft goods (e.g. information, video, audio), or hard goods (e.g. books) of high or low value per item between the user and a merchant. It shall be possible for such merchants to charge users directly for services they provide. Electronic payment mechanisms are or shall be made available through other standards (micropayment, credit card payment, etc), and therefore are outside the scope of this specification 3GPP shall not prohibit the use of these mechanisms, and, where possible, shall provide the basic communications transport to allow them to be used effectively.

However, if the serving network acts as merchant of soft goods, it may charge the user directly, creating a CDR as described above or using micropayment mechanisms.

5.2.4   Volume Based Charging

It shall be possible to charge for the total volume of data/packets sent and received by the user.

5.2.5 VAS

It shall be possible to charge the user for Value Added Services offered by the network in terms of access, surfing, queries etc. irrespectevely of the volume of data sent or received by the user.5.2.4 Usage of IP Multimedia service

It shall be possible to charge the usage of IP multimedia service independently of the volume of data sent or received by the user. Information on the IP Multimedia capability provided to the user (e.g. voice, mixture of voice and video component, numbers of parties) should be available in the CDR.

5.2.6 I- WLAN

The advent of I—WLAN, may further enhance the ease of use for the mobile system user and virtually extend the effective coverage areas of each system. It shall be possible to charge the user for services offered by the interworking between WLAN and 3GPP system in terms of access, usage, etc which is an operator decision as to the level of interworking supported.

It shall be the role of the 3GPP system to process the I-WLAN access resource usage information into 3GPP compatible format (e.g. CDR).

I-WLAN charging issues are captured in 3GPP TS 22.234 [3]