Technical Specification Group Services and System Aspects
Meeting #18, New Orleans, USA, 9-12 December 2002

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Source: **SA1**

Title: **Release 6 CRs to 22.934 on Wireless LAN (Various subjects)**

Document for: **Approval**

Agenda Item: **7.1.3**

SA Doc	Spec	CR	Rev	Phase	Cat	Subject	Old Vers	New Vers	SA1 Doc
SP-020665	22.934	001		Rel-6	F	WLAN: Clarification of support of APNs for Scenario 3, 4 and 5	6.0.0	6.0.0	S1-022261
SP-020665	22.934	002		Rel-6	B	WLAN-LCS interworking requirement	6.0.0	6.1.0	S1-022328

TSG-SA1 SWG #18 **S1-022261**
Busan, Korea, 11-15th November 2002 **Agenda Item: WLAN**

CR-Form-v7

CHANGE REQUEST

⌘ **22.934** **CR** **001** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	Clarification of support of APNs for Scenario 3, 4 and 5
Source:	⌘	SA1 (Lucent Technologies)
Work item code:	⌘	WLAN
Date:	⌘	11/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-6

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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:	⌘	Discussions have shown that it is unclear as to the distinction between scenario 2 and scenario 3 and that there are different interpretations of these scenarios. The PS domain provides the capability to define access points identified by APNs to which the users subscribe. This is clearly a service provided -by the PS domain and hence is under scenario 3. Scenario 2 covers the ability to use 3GPP access control and charging, but is limited to providing the set of services "inherently offered by being addressable in an IP network". The use of APNs is not inherently offered in an IP network.
Summary of change:	⌘	In section 5.1, the description for scenario 3 includes the example of APNs in the list of PS based services.
Consequences if not approved:	⌘	The distinction between the service requirements for scenario 2 and 3 will be unclear.

Clauses affected:	⌘	3.1, 5.1

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

Other comments:	⌘	

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

3 Definitions, symbols and abbreviations

3.1 Definitions

APN: Access Point Name

Environment: The type of area to be covered by the WLAN network of a 3GPP - WLAN interworking; e.g. public, corporate and residential.

Home WLAN: The WLAN that is interworking with the HPLMN of the 3GPP - WLAN interworking user.

Interworking WLAN : WLAN that interworks with a 3GPP system**.**

Online Charging : See [1]

Offline Charging : See [1]

Serving WLAN : The interworking WLAN that the user is connected to, i.e. either a visited or a home WLAN.

Visited WLAN: An interworking WLAN that Interworks only with a visited PLMN.

WLAN coverage: an area where wireless local area network access services are provided for interworking by an entity in accordance with WLAN standards.

WLAN roaming: The ability for a 3GPP - WLAN interworking user (subscriber) to function in a serving WLAN different from the home WLAN

3GPP - WLAN Interworking: Used generically to refer to interworking between the 3GPP system and the WLAN family of standards**.**

Next Change

5.1 Interworking scenarios

In this chapter six 3GPP - WLAN interworking scenarios are described. Each scenario realises an additional step in integrating WLAN in the 3GPP service offering and naturally includes the previous level of integration of the previous scenario.

3GPP -WLAN interworking scenarios may be considered with the aid of the simplified reference diagram in figure 1. This reference diagram illustrates the elements of the 3GPP system and WLANs being interworked. These may be interconnected in a variety of ways to develop the progressive scenarios outlined in this section.

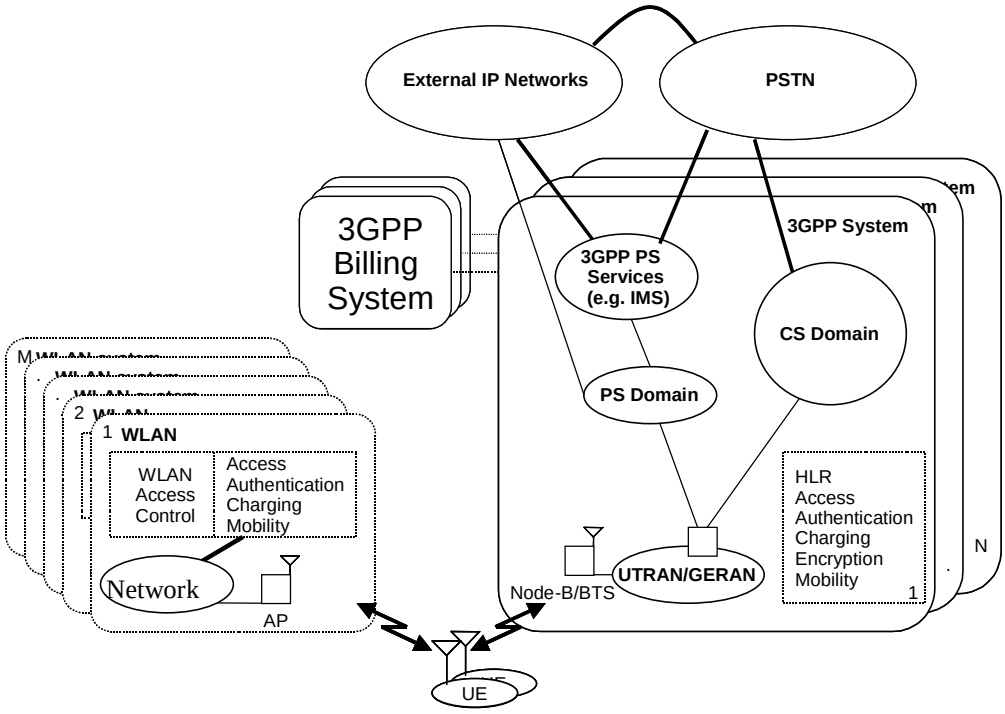

Figure 3: 3GPP System - WLAN interworking simplified reference model

Scenario 1 - Common Billing and Customer Care

This is the simplest scheme of 3GPP -WLAN interworking. The connection between the WLAN and the 3GPP system is that there is a single customer relationship. The customer receives one bill from the mobile operator for the usage of both 3GPP and WLAN services. Integrated Customer Care allows for a simplified service offering from both the operator and the subscriber's perspective. The security level of the two systems may be independent.

This scenario does not pose any new requirements on 3GPP specifications.

Use case: Jim Beam is a 3GPP subscriber who would like to access the WLAN service provided by his home operator. Jim wants the charges for the WLAN usage included on his 3GPP service bill. Jim's home 3GPP operator provides him with a user name and password to access the WLAN. Jim has access to Internet services and resources from the WLAN but does not have access to 3GPP services or resources other than those he can normally access from the Internet.

Scenario 2 - 3GPP system based Access Control and Charging

This is the scenario where authentication, authorization and accounting are provided by the 3GPP system. The security level of these functions applied to WLAN is in line with that of the 3GPP system [2]. This ensures that the user does not see significant difference in the way access is granted. This may also provide means for the operator to charge access in a consistent manner over the two platforms.

Reusing the 3GPP system access control principles allows for additional benefits seen from a user and 3GPP system operator standpoint. First, the 3GPP system operator may easily allow subscribers within his existing 3GPP system customer base to access the WLAN with a minimum effort both for the subscriber and the operator. In addition, the maintenance of the subscriber may also be simplified.

No requirements are put upon the set of services to be offered in the WLAN part beyond those inherently offered by being addressable in an IP network..

Use case : Angus Lagavulin is 3GPP subscriber who needs a more secure way of accessing the WLAN than user name and password. Angus's home 3GPP operator modifies his 3GPP user profile to include WLAN access and Angus purchases a WLAN NIC equipped with a UICC associated with his 3GPP account. Angus is authenticated on the WLAN from the credentials on the UICC but does not have access to 3GPP services other than those he can normally access from the Internet.

Jack Daniels is a 3GPP subscriber and wants to access 3GPP packet switched services and WLAN service without having to swap NIC's in his laptop. Jack purchases a dual mode (3GPP/WLAN) NIC. Jack can access 3GPP and WLAN service using separate sessions without changing any hardware.

Scenario 3: Access to 3GPP system PS based services

The goal of this scenario is to allow the operator to extend 3GPP system PS based services to the WLAN. These services may include, for example, APNs, IMS based services, location based services, instant messaging, presence based services, MBMS and any service that is built upon the combination of several of these components [5, 6, 7, 8, 11, 13, 14. 15, 16, 17, 18, 19, 20, 21, 22]

Even though this scenario allows access to all services, it is an implementation question whether only a subset of the services is actually provided.

However, service continuity between the 3GPP system part and the WLAN part is not required.

Use case : Jose Cuervo is a 3GPP subscriber and wants to access to his 3GPP packet switched services, e.g MMS, that he cannot normally access through the Internet. Jose has a dual mode NIC in his laptop and is able to receive his MMS through the WLAN or 3GPP system.

Scenario 4: Service Continuity

The goal of this scenario is to allow the services supported in Scenario 3 to survive a change of access between WLAN and 3GPP systems. The change of access may be noticeable to the user, but there will be no need for the user/UE to re-establish the service. There may be a change in service quality as a consequence of the transition between systems due to the varying capabilities and characteristics of the access technologies and their associated networks. It is also possible that some services may not survive, as the continuing network may not support an equivalent service.

The criteria and decision mechanism for change of access network is under investigation.

Change in service quality may be a consequence of mobility between radio access technologies, due to varying capabilities and characteristics of radio access technologies.

NOTE : The use of the term service continuity is different to the definition given in [12]

Use case : Jari Finlandia is a 3GPP subscriber who travels frequently and has a PDA equipped with a WLAN and 3GPP transceiver. Jari would like to be able to move freely about airports and hotels without having to establish a 3GPP session when he moves out or range of the WLAN. Jari's PDA can switch between 3GPP and WLAN as required based on the parameters (e.g. QOS) in his profile on the same session. However, Jari may experience brief interruptions in data flow during the transitions between 3GPP and WLAN.

Scenario 5: Seamless services

The goal of this scenario is to provide seamless service continuity, as defined in [12],between the access technologies, for the services supported in Scenario 3.

By seamless service continuity is meant minimizing aspects such as data loss and break time during the switch between access technologies.

Use case : Seamus Bushmills is a 3GPP subscriber with a multimedia terminal that includes VoIP capability. Seamus spends a lot of time in places with WLAN service and would like to utilise WLAN for his multimedia calls when possible. However, Seamus is on the go and may need to leave the area with WLAN in the middle of a call. Seamus would like to maintain his multimedia and VoIP sessions when he leaves WLAN coverage without noticeable interruption. Seamus purchased a WLAN card for his terminal, and can switch between 3GPP and WLAN as necessary without interrupting the session.

Scenario 6: Access to 3GPP CS Services

This scenario allows access to services provided by the entities of the 3GPP Circuit Switched Core Network over WLAN. This scenario does not imply any circuit-switched type of characteristics to be included into WLAN.

It shall be possible to provide a technical implementation that would allow:

- Access to services provided by the 3GPP CS core network entities over WLAN interface.
- Seamless and user-transparent switching between access technologies for a connection carrying service provided by the entities of 3GPP CS core network

TSG-SA1 #18 **S1-022328**
Busan, Korea, 11 -15 Noveber 2002 **Agenda Item:**

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CHANGE REQUEST

⌘ **22.934** **CR** **002** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Title:	⌘	WLAN-LCS interworking requirement
Source:	⌘	SA1 (Huawei Tech, China Mobile)
Work item code:	⌘	WLAN
Date:	⌘	13/Nov/2002
Category:	⌘	**B**
Release:	⌘	Rel-6

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R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Service capability interworking is mututal interworking between 3GPP user and WLAN user. When a user contracts with operator, the service provided to user is independent of the specific access network constructed by operator. So location sevice should be introduced to WLAN access network
Summary of change:	⌘	In section 6.4.1. Locaiton service interworking between WLAN and 3gpp network should be satisfied. Location service should be provided to a wlan user who access wlan network interworking with 3gpp network
Consequences if not approved:	⌘	Service interworking requirement can not be satisfied

Clauses affected:	⌘	Section 6.4.1.

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

Other comments: ⌘

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6.4 Interworking scenario 3

The goal of Scenario 3 is to make access to 3GPP system PS based services available to the user through the WLAN. The following service requirements apply to the interworking scenario 3.

6.4.1 Service aspects

The services available should include all services based on 3GPP System PS domain capabilities (e.g. IMS).

As the charging and QoS parameters may differ between the WLAN and 3GPP system, it shall be possible for the user to select which interface to use. This process may be automated by a function in the terminal.

The user's actions related to service invocation should be the same when using either the WLAN or the 3GPP system.

Simultaneous usage of both radio access technologies will depend on the requirements of the user's application, the capabilities of the UE and the coverage of the radio access technologies. The standards shall not preclude the simultaneous use of both WLAN and 3GPP radio access technologies.

For example, the following cases -

- The UE might use the WLAN for data services (internet access) together with the 3GPP system for a speech call.
- The UE and the WLAN and 3GPP systems might elect to use both access technologies simultaneously in order to balance traffic, system capabilities or for radio resource management.

6.4.1.1 IMS service aspects

WLAN should support all IMS capabilities

Support of real time IMS services will require QoS support in WLAN. If the WLAN technology does not offer sufficient support for QoS, best effort approach may be used to approximate the service.

NOTE: Currently the IMS does not support parallel registrations. No use cases have yet been identified that would require parallel IMS registrations of the UE over WLAN and over UTRAN/GERAN.

6.4.1.2 LCS service capability interworking

The requirements for support of Location Based services via the WLAN are:

1. When a LCS client requests the location of a user access via a Interworking WLAN, then it shall be possible to determine the location of the device. The accuracy of the position may be limited to the known area of coverage of the Access Point.
2. -The LCS client should not need to know which access technology is being used in order to obtain the location information
3. The security and privacy requirements as specified in TS 22.071 [7] shall be met

NOTE: The position methods in the WLAN are outside the scope of 3GPP