3GPP TSG SA WG3 Security — S3#36 **S3-041005**
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CR-Form-v7

PSEUDO CHANGE REQUEST

⌘ **33.878** **Pseudo-CR** **CRNum** ⌘ **rev** **-** ⌘ Current version: **0.0.3** ⌘

*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 [X] Radio Access Network ☐ Core Network [X]

Title:	⌘	Clarification of IP address related issue
Source:	⌘	Siemens
Work item code:	⌘	Early IMS
Date:	⌘	12/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

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

Reason for change:	⌘	The current text is not sufficiently clear about the assumption made on the use of IP addresses.
Summary of change:	⌘	It is clarified that, for the APN used for IMS, all active PDP contexts use the same IP address at any given time.
Consequences if not approved:	⌘	Unclear specification.

Clauses affected:	⌘	7.1

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

Other comments:	⌘	-

********** begin change **********.

7.1 Overview

The early IMS security solution works by creating a secure binding in the HSS between the public/private user identity (SIP-level identity) and the IP address currently allocated to the user at the GPRS level (bearer/network level identity). Therefore, IMS level signaling, and especially the IMS identities claimed by a user, can be connected securely to the PS domain bearer level security context.

The GGSN, terminating each user's authenticated PDP context, provides the user's IP address / MSISDN pair to the HSS when a PDP context is activated towards the IMS system. The HSS has a binding between the MSISDN and the IMPI, and is therefore able to store the currently assigned IP address from the GGSN against the user's IMPI. The GGSN informs the HSS when the PDP context is deactivated/modified so that the stored IP address can be updated in the HSS. When the S-CSCF receives a SIP registration request or any subsequent requests for a given IMPI, it checks that the IP address in the SIP header (verified by the network) matches the IP address that was stored against that subscriber's IMPI in the HSS.

The mechanism assumes that the GGSN does not allow a UE to successfully transmit an IP packet with a source IP address that is different to the one assigned during PDP context activation. In other words, the GGSN must prevent "source IP Spoofing". The mechanism also assumes that the P-CSCF checks that the source IP address in the SIP header is the same as the source IP address in the IP header received from the UE (the assumption here, as well as for the full security solution, is that no NAT is present between the GGSN and the P-CSCF).

The mechanism prevents an attacker from using his own IP address in the IP header but spoofing someone else's IMS identity or IP address in the SIP header, so that he pays for GPRS level charges, but not for IMS level charges. The mechanism also prevents an attacker spoofing the address in the IP header so that he does not pay for GPRS charges. It therefore counters the threat scenarios given in clause 6 above.

The mechanism assumes that only one contact IP address is associated with one IMPI. Furthermore, the mechanism supports the case that there may be several IMPUs associated with one IMPI, but one IMPU is associated with only one IMPI.

In early IMS the IMS user authentication is performed by linking the IMS registration (based on an IMPI) to an authenticated PDP context (based on an IMSI). The mechanism here assumes that there is a one-to-one relationship between the IMSI for bearer access and the IMPI for IMS access.

For the purposes of this present document, an APN, which is used for IMS services, is called an IMS APN. An IMS APN may be also used for non-IMS services. The mechanism described in this section further assumes that there is only one IMS APN and all active PDP contexts at the IMS APN use the same IP address at any given time.

In the following we use the terms P-CSCF and S-CSCF in a general sense to refer to components of an early IMS system. We note however that early IMS solutions may not have the same functionality split between SIP entities as defined in TS 23.228 [3]. Therefore, the requirements imposed on the SIP/IP core are specified in such a way that they are independent of the functionality split between SIP entities as far as possible. While the exact functionality split of the SIP/IP core may be left open, it is important that any changes to the Cx interface towards the HSS and changes to the interface towards the UE are standardised for vendor interoperability reasons.

********** end change **********