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Sydney, Australia

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3GPP TSG-SA WG2 drafting meeting  
25-28 June, 2001  
Dallas, USA

***Tdoc S2-0116972***

**Title:** ~~draft-draft~~ LS on Cell ID in SIP messages  
**Source:** SA2 [~~drafting meeting~~](\* 1 week email approval, starting 29/6/01 \*)  
**To:** CN 1, CN 4, T 2, RAN 2, GERAN 2, SA 1, SA 3  
**Cc:**  
**Work Item:** IMS-~~CCR~~  
**Attachement:** Background information is in S2-01-1368

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**1 Introduction**

The SA 2 drafting meeting on IP Multimedia considered the issue of Location Information in the SIP INVITE message and came to the principle decision that

“the 3GPP release 5 system should provide the capability for the SIP signalling to carry the cell identification from the UE to the S-CSCF”.

Note that the S-CSCFs should be able to handle SIP signalling without cell identification information.

The attached document, S2-01-01368 provided the stimulus for the SA 2 discussion and contains some background information.

The following issues were identified as being of relevance to other 3GPP committees:

**2 SIP extensions**

During the discussion, it was proposed that the capability to provide cell identification should be available at:

- a) SIP registration;
- b) MO session (call) initiation (eg in the INVITE message or the use of an INFO message). This information might be used to aid call routing;
- c) MT session (call) initiation (eg in the response to the INVITE message);
- d) ~~{session termination}~~

**2.1 CN 1 action**

CN 1 are requested to investigate how to use SIP signalling on the Gm interface to carry the UMTS and GSM cell identifications.

**3 Privacy**

It is expected that Cx interface should provide the ability for the HSS to control whether the S-CSCF is allowed to (or prohibited from) supplying the cell identification to other nodes.

It is also anticipated that the UE would have a MMI that controls whether the UE sends, or does not send, the cell identification to the network.

SA 2 is still studying how to handle emergency calls in the IM Core Network. This might require the cell identification to be included in all SIP INVITE messages sent for emergency calls.

### **3.1 SA 1 and SA 3 action**

SA 1 and SA 3 are asked whether these levels of control will satisfy privacy (and other) requirements.

### **3.2 Actions for CN 4 and possibly T2**

CN 4 and T 2 are invited to provide the means to implement SA 1's, SA 2's and SA 3's requirements.

## **4 Nature of cell identification**

SA 2 expect the Cell Global Identity to be used to identify GSM cells.

For UMTS cells, SA 2 propose to use the combination of MNC, MCC, LAC, and (16 bit) Cell Identifier to identify the cell. SA 2 note that it is the choice of the UTRAN operator as to whether or not this cell identification is unique.

In both GSM and UMTS, there is always the possibility for a cell change (eg handover) to occur in the time between the application forming the SIP message and the message being sent on the radio interface. For practical reasons, SA 2 believe that it is sufficient for the mobile to send the identification of the cell where the SIP message was formed.

In UMTS, the mobile can be in soft handover and be using multiple cells. In this case, the mobile could either select one of the cell identities of those in the active set at random, or more usefully, select the one that has most recently been added to the active set (on the assumption that the mobile is moving towards this cell).

### **4.1 RAN 2 action**

SA 2 understand that the cell identification is available to UMTS mobiles that are not in the DCH state, however SA 2 believe that the (16 bit) Cell Identifier of the current cell(s) is not available during the DCH state.

SA 2 kindly requests RAN 2 to investigate the means to provide (within the Release 5 standards) the Cell Identifier to mobiles in the DCH state.

### **4.2 GERAN 2 action**

SA 2 kindly requests GERAN to ensure that the current Cell Global Identity is still known to release 5 GSM mobiles.

## **5 UE functional split**

IMS mobiles might be integrated units or might be split between, say, a "radio module" and a "SIP module".

### **5.1 action for T 2**

SA 2 recognise that provision of the cell identification from the "radio module" to the "SIP module" requires further study. SA 2 kindly requests T 2 to study this issue.

Source: Vodafone  
Agenda item: 11 (release 5)

## Location Information in the SIP Invite

### 1 Introduction

Many customers benefit from existing location based services. Services can range from emergency calls to traffic information.

Existing operational, administration, billing, roaming and fraud gathering activities also utilise location information.

In GSM these services and features work well and have been based on Cell Global Identity.

In R'99 UMTS the same services can use Service Area Identity provided that a one to one mapping is used between the (16 bit) Service Area Code and the (16 bit) Cell identifier.

In R5 Ip Multimedia, the same type of functions will be required. **Hence it is suggested that the cell identity is included in the SIP Invite messages sent by the mobiles.**

### 2 Privacy and Emergency Calls

Obviously customers have the right to privacy. However, when placing an emergency call, a customer does not want to enable a "per call location" function. Thus the following is suggested:

- a) all IM capable mobiles are required to include the Cell Identity in a SIP extension in the INVITE message;
- b) all IM capable mobiles shall support means to signal, on a per call basis, in the INVITE as to whether the Cell ID should be made available to, or suppressed from any Application Server(s);
- c) the Cx interface carries information to the S-CSCF as to whether or not the location information is to be passed to application servers;
- d) certain applications (eg emergency services) can have a privacy override capability; and
- e) if the mobile has additional sources of location information (eg from GPS) then these may be added. However, the Cell Identity shall always be sent.

### 3 Nature of Cell ID

In GSM this is the Cell Global Identity.

In UMTS, the mobile can see the PLMN ID, LAI (both known from SIB 1) and the 16 bit Cell Identifier (in SIB3). It is proposed that the mobile sends these 3 pieces of information.

In either system, there is always some time lag in between the application forming the INVITE message and the message being sent on the radio interface. For practical reasons, this can be regarded as irrelevant.

In UMTS, the mobile can be in soft handover and using multiple cells. In this case, the mobile could either select one of the Cell Identities of those in the active set at random, or more usefully, select the one that has most recently been added to the active set (on the assumption that the mobile is moving towards this cell).

It is not clear whether the cell ID is available when a UMTS mobile is using a DCH. However, if this is the case, then this is a serious omission from the R'99 standards because this functionality is important for mobiles using an 'engineering mode' to debug and monitor the performance of UMTS networks.

#### **4 Access Independence**

Some systems might not support any form of location identification. To cater for these systems, S-CSCFs need to be able to handle INVITEs without location information (at least to the extent of returning a BYE message).

#### **Proposals**

It is proposed that:

- a) the concepts of section 2 and 3 are agreed;
- b) S2 identify which sections in 23.228 should be updated to incorporate this information; ~~and~~
- c) S2 (or N1?) identify whether any new SIP extensions are required; ~~and~~
- d) send an LS to RAN 2 regarding the need for the mobile to know the Cell ID in the DCH state.