TSG-RAN Meeting #17 ***RP-020466***
Biarritz, France, September 2002

Title: **Summary of RAN email discussion for handling of early mobiles**
Source: **Vodafone Group**
Document for: **Discussion**
Agenda:

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1. Introduction

During RAN#16 it was agreed to hold an email discussion based on the contribution RP-020449 that listed a number of candidate methods for the handling of early mobiles. The stimulus for the debate being the concern that mobiles are unable to be fully tested against all of the mandatory features (or combinations of features) in the R'99 standard. Hence when one of the un-tested features is "switched on" in a network, there is a risk that some mobiles will not work with this feature (or particular combination of features).

Over the last few weeks there has been a short discussion regarding the best methods that should be adopted by RAN from the list of candidates. This paper aims to summarise this discussion and note where there appears to be some agreement.

1) Everyone seems to be happy with the introduction of a TR/TS that is the equivalent of 09.94 that contains problems/faults with UE behaviour.

2) An indication for support of the following candidates was expressed:
   a. the introduction of 'some' hooks for early indications in the Uplink
   b. the use of IMEI-SV in the CN to send 'some' indication to the UTRAN of the UE maturity/behaviour.

2. Positions expressed regarding candidates

2.1 UE Hooks

The term 'hook' with respect to the coding at present has been left open, therefore leaving the possibility, when required to implement any of the solution/codings of the hooks to be possible.

During RAN WG2#31, when the creation of the list of hooks needs to be created, and this need to be performed when either:

1) The first fault is agreed, and needs to be fixed, OR
2) Rel-4 has been 'deep' frozen. Ie. Rel-4 is under isolated impact change control.

Both support and concern were raised regarding the introduction of hooks. The main benefit being that hooks would allow behaviour to be changed early in the call establishment. The following concerns were expressed regarding the hooks with an encoding meaning **special behaviour**:

1. First this requires all UE's to make a change for having this field for "hooks" in the RRC signalling. The actual requirement what to implement is not clear at the moment. This is a very late change and a new requirement for UE implementation.

2. Secondly there is a concern on what the "special" behaviour, which will be decided in RAN case by case basis, really means. This special behavior can equally mean that terminals not having any problems may need to adapt and make some changes. This is something which is way too open for different assumption what really can be acchieved with this hook mechanism.

3. main concern with the "hooks" or "adding capabilities" is that we believe we will have very difficult to agree to use these bits (which are a scarce resource). For the same reasons why Vodafone didn't select the "bitmap over Iu" solution we see it difficult to standardise a "fault" that only occur with limited number of UEs and in limited number of networks. Only for problems that is present in "all" UEs and "all" networks would it be possible, although still difficult.

Ericsson expressed support for an encoding of the hooks to mean UE vendor name + timestamp, since this should allow the coding to take place on fewer bits. In addition Ericsson expressed:

The main disadvantage with UE vendor name + timestamp seems to be the late change of RRC. However, adding this functionality into the very first UE product seems not that critical. Those UEs will be identified as produced before the introduction of feature, and hence need to be handle with care. The problem that a vendor of both UEs and networks can leverage of this relationship seems over-exaggerated: Ericsson as a network vendor wants to sell network equipment that works with all terminals for the benefit of our industry. Similar Ericsson as UE vendor wants to sell UEs to customers using networks from all vendors.

The ability/possibility to update the UE hooks to be indicated over-the-air was also raised. This may be possible through the use of SIM ToolKit.

2.1.1 Syntax/Coding of UE hooks

Two different proposals were suggested regarding the support/coding of the hooks for early UE handling.

a) Utilisation of R'99 extension container (R2-021854)
b) Explicit encoding of 16 reserved bits (R2-022099)

Either of these could be used to provide the early UE hook.

2.2 Use of IMEI-SV

A number of companies have expressed their support for an IMEI-SV based solution, either the **IMEI-SV** from the CN to RAN or sending a **bitmap** from the CN to RAN. Since this allows for special behaviour to take place in the RAN, and this can behaviour can be evolved 'transparent' to the UE.

Vodafone have expressed a preference for the IMEI-SV to be passed to the RAN, since it would allow greater flexibility in the handling of problems that only effect certain UE's. In addition, the delivery of the IMEI-SV to the RAN may help the gathering of targeted statistics. Vodafone also raised the fact that the ability to move the IMEI-SV around the CN as well as the RAN would also be beneficial. Vodafone also believe that by obtaining the IMEI-SV at the first attach, then the subsequent time before the employment of special behaviour would be possible could be significantly reduced. Some concern has also been raised regarding the use (or misuse) of the IMEI-SV in the RAN of the dominant vendors.

Nokia/Nortel have expressed support for the IMEI-SV, with a bitmap into the RAN, which allows special behaviour to take place but with reduced flexibility. One benefit that has been expressed with

this proposal is that it requires UE vendors to publicise faults in the specifications; and due to the greater exposure better solution are likely to be found. In addition, the view that there is a reduced ability for vendors that supply both UE and Network equipment to apply unfairly bias was expressed.

Ericsson have expressed concern in using the IMEI-SV for the following reasons:

> Though the IMEI-SV over Iu solution seems nice, it depends on CN standardisation and equipment availability. Further, it arrives to the RNC quite late in the process - a lot of UTRAN functions may already been invoked, e.g. handover and measurement functions. Hence, we fear that the solution:
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> a) is available too late - the problems have already occurred before the solution is implemented
>
> b) don't solve a significant part of the problem. This leaves the IMEI-SV in RRC or UE vendor name+timestamp. The difference between these two are not that big. IMEI-SV will not fit in the RRC Connection request and is primarily therefore not our choice.

3 Conclusions

There is common agreement that a TR equivalent to 09.94 should be created when the first fault is raised.

Support has been expressed for both IMEI-SV and UE hooks/indications. Further discussion is needed regarding the details of these proposals.