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Title: Terminal/SIM management as a potential new O&M feature in 3G

Document for: For discussion and decision

Agenda Item: 5.5.2

1. Introduction

In 2G GSM architecture, the MS (including the terminal and the SIM) was considered as a network element lying beyond the limit of telecom management network. This conscious or unconscious decision led the management of terminal equipment to become totally a responsibility of the end-users. The direct consequence of that can perhaps be summarized as follows:

1. GSM terminals are subscribers' commodity items;
2. GSM operators have very little control over the subscribers' terminal equipment O&M
3. GSM operators have to strictly go with terminal equipment's natural life cycle in the network evolution management.

However, in 3G, in which some sophisticated terminal equipment can be of very expensive, end-users may have more difficulty in considering such equipment as mere dispensable commodity item. Furthermore, with more sophisticated service concepts introduced in 3G, some service features can be more effectively managed from the terminal (USIM) side rather than from the network side. Also, with the information technology progressing so rapidly, the speed of network evolution may be significantly more accelerated so that the burden to the network operators of maintaining the terminal backward compatibility to the time extent imposed by the natural life cycle of terminal equipment can become unbearably painful. Also noted is that some NEs (e.g., LMU -- Location Measurement Unit) being considered to be introduced to support some features (such as Location Services) will be in their nature very much like a Mobil Station connected to the network only over the radio interface, while they will have to be managed like any other NEs in the network.

In these lights, the idea of bringing the terminals and SIMs into the management network in the 3G appears as an attractive move that may require a serious study.

2. Work deemed to be required

Support of terminal management will be, however, non-trivial. First, it will require an extensive amount of work since there is no existing infrastructure for this feature in the 2G system. Secondly, the work will be technically complicated because it will require constructing new secured signaling path over the air interface to the terminal, which may be compared to building a highway bridge over a channel to an island.

The following items of work will be required to support the terminal management feature in 3G:

1. Identify terminal management service requirements (e.g., software update, on-line terminal test from the network etc.);
2. Construct a secured management information transmission path between the management center and the terminal equipment, going through the core network and radio access network;
3. Define the new management information model, management messages, and semantics of management operations required for the terminal management feature;

3. Assessment of the problem

The terminal management feature appears to be extremely interesting. However, due to its revolutionary nature, the feasibility and the cost of its standardization compared to the benefit of that new capability must be very thoroughly investigated before making a definite decision on this case. Two readily thinkable difficulties related to this work are pertaining to the security and reliability issues. Since the management information is likely to be exchanged over the air interface, the need of security protection of the information against malicious intention as well as physical cause is absolute. The usefulness of having the terminal management capability is also questioned in the case of fault management where that management capability itself may very well be disabled due to the loss of radio loss when a critical error occurs on the terminal equipment.

4. Recommendation

Due to such complicated questions that need to be addressed, a thorough harmonized joint effort by all relevant parties will have to be conducted before making a final position regarding this new potentially revolutionaly 3G management capability. So, it is recommended that SA5 communicate with relevant entities that include virtually all entities of the 3GPP namely, the service group (SA1). the architecture group (SA2), the security group (SA3), the radio access group (RAN), the core network group (CN), and the terminal/USIM group (T).