Making the transition smooth...

Title: APPARATUS, METHOD AND COMPUTER PROGRAM PRODUCT PROVIDING UNIFIED REACTIVE AND PROACTIVE HANDOVERS

Abstract: Apparatus, methods and computer program products incorporate improvements that provide enhanced security during handovers in a cellular wireless communications network. In one aspect, user equipment performs additional operations during handover to improve security. During such operations, user equipment begins key generation based on a predicted target base station before it is notified of the handover decision. User equipment also signs certain communications generated during handover operations to prevent hijacked base stations from generating false location updates. Separate keys are used to authenticate communications made by base stations during handover proceedings defeating, for example, logical theft of service attacks since a target base station's signature and encrypted content is required to be sent to the user equipment before the user equipment can switch to the target base station. In other aspects, user equipment assigns location updates sequence numbers and the active gateway keeps track of them defeating attacks based on replay of intercepted location update messages.
### INTERNATIONAL SEARCH REPORT

**International application No.**

PCT/IB2007/000771

#### A. CLASSIFICATION OF SUBJECT MATTER

**IPC:** see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC:** H04Q, H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

#### EPO-INTERNAL, WPI DATA, PAJ

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>US 20040228491 A1 (WU, C-H), 18 November 2004 (18.11.2004), paragraphs 21-25, claims 1-6, abstract</td>
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<td>A</td>
<td>WO 2005074315 A1 (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE), 11 August 2005 (11.08.2005), claim 1, abstract</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

- **A** document defining the general state of the art which is not considered to be of particular relevance
- **E** earlier application or patent published on or after the international filing date
- **L** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- **O** document referring to an oral disclosure, use, exhibition or other means
- **P** document published prior to the international filing date but later than the priority date claimed

**T** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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**Y** document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

**&** document member of the same patent family

**Date of the actual completion of the international search:** 4 October 2007

**Date of mailing of the international search report:** 08-10-2007

**Name and mailing address of the ISA/Swedish Patent Office:**

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<td>EP 1422875 A2 (DOCOMO COMMUNICATIONS LABORATORIES USA, INC), 26 May 2004 (26.05.2004), paragraphs 6-16, claims 1-10, abstract</td>
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<td>E</td>
<td>EP 1775972 A1 (MATSUSHITA ELECTRIC IND CO, LTD), 18 April 2007 (18.04.2007), claim 1, abstract</td>
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INTERNATIONAL SEARCH REPORT

International patent classification (IPC)
H04Q 7/38 (2006.01)
H04L 9/08 (2006.01)

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Use the application number as username.
The password is NBFDKIIZJH.

Paper copies can be ordered at a cost of 50 SEK per copy from PRV InterPat (telephone number 08-782 28 85).

Cited literature, if any, will be enclosed in paper form.
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<td>JP 2006199791 A</td>
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