

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
11 November 2004 (11.11.2004)

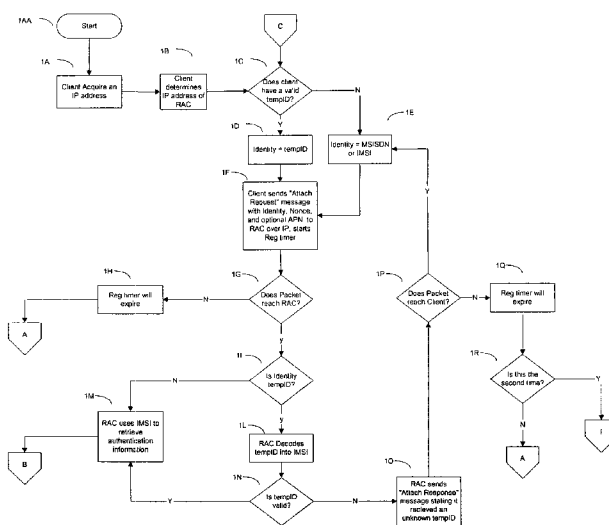
PCT

(10) International Publication Number
WO 2004/097590 A3

- (51) International Patent Classification⁷: **H04L 9/32**
 - (21) International Application Number: PCT/US2004/013636
 - (22) International Filing Date: 29 April 2004 (29.04.2004)
 - (25) Filing Language: English
 - (26) Publication Language: English
 - (30) Priority Data: 60/466,840 29 April 2003 (29.04.2003) US
 - (71) Applicant (for all designated States except US): **AZAIRE NETWORKS INC.** [—/US]; Azaire Networks Inc., 4800 Great America Parkway, Suite 515, Santa Clara, CA 95054 (US).
 - (72) Inventors; and
 - (75) Inventors/Applicants (for US only): **CHINNASWAMY, Sudhagar** [IN/US]; 1063 Morse Ave. Apartment 17-201, Sunnyvale, CA 94089 (US). **KANT, Nishi** [IN/US]; 239 Elk Creek Place, San Jose, CA 95127 (US). **RITTER, Michael, W.** [US/US]; 22312 Starlind Drive, Los Altos, CA 94024 (US).
 - (74) Agents: **RAE-VENTER, Barbara** et al.; Rae-Venter Law Group, P.C., P.O. Box 1898, Monterey, CA 93942 (US).
 - (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
 - (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR PROVIDING SIM-BASED ROAMING OVER EXISTING WLAN PUBLIC ACCESS INFRASTRUCTURE



(57) Abstract: A method and apparatus for performing SIM-based authentication and authorization in a WLAN Internet Service Provider (WISP) network supporting the universal access method (UAM) of authentication and authorization enabling roaming for customers of mobile service providers onto said networks. In addition, the invention provides a secure way of authenticating the customer's client device to the mobile service provider's network by employing temporary credentials for authentication that provide privacy of the user's identity and prevent replay attacks. Finally, if the WISP network supports the 'pass-through' facility, the authentication can be done more securely and quickly.

WO 2004/097590 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:

3 February 2005

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/13636

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04L 9/32
US CL : 713/200

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)

U.S. : 713/200-202, 168, 170, 182-185; 455/3.01, 410, 411, 432.1

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, T	US 6,748,532 B1 (DIGIORGIO et al) 8 June 2004 (08.06.2004), column 6, lines 54-63; column 4, lines 28-34.	1-3
Y	US 5,953,653 (JOSENHANS et al) 14 September 1999 (14.09.1999), column 6, lines 17-26.	1-3
A	US 5,546,397 (MAHANY) 13 August 1996 (13.08.1996), whole document.	1-3
A	US 6,452,910 B1 (VIJ et al) 17 September 2002 (17.09.2002), whole document.	1-3
A	Suzuki et al. An Authentication Technique Based on Distributed Security Management for the Global Mobility Network IEEE. 1997 pages 1608-1617	1-3
A	Al-Tawil et al. A New Authentication Protocol for Roaming Users in GSM Networks IEEE. 1999 pages 93-98	1-3

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

05 November 2004 (05.11.2004)

Date of mailing of the international search report

24 NOV 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Ayaz R Sheikh *Pearcy Hamod*
Telephone No. 703-305-1373

INTERNATIONAL SEARCH REPORT

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Hwang et al. A Self-Encryption Mechanism for Authentication of Roaming and Teleconference Services IEEE. 2003	1-3
A, P	Davies, Wynne. A-roaming we will go Telecommunications International. February 2004 pages 32-35	1-3

INTERNATIONAL SEARCH REPORT

PCT/US04/13636

Continuation of B. FIELDS SEARCHED Item 3:

East, Goole, IEEE, Proquest

search terms: SIM, WLAN, universal access method, authentication, authorization, mobile, cellular, wireless, networks, roaming, private, privacy, replay