

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 December 2004 (09.12.2004)

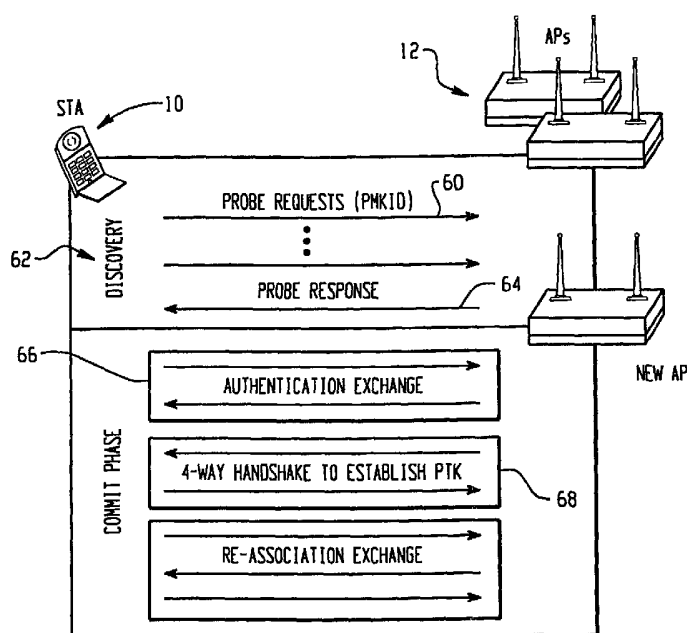
PCT

(10) International Publication Number
WO 2004/107780 A3

- (51) International Patent Classification⁷: **H04L 12/28**, (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.
- (21) International Application Number: PCT/US2004/016700
- (22) International Filing Date: 27 May 2004 (27.05.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/473,507 27 May 2003 (27.05.2003) US
60/511,187 14 October 2003 (14.10.2003) US
10/729,171 5 December 2003 (05.12.2003) US
- (71) Applicant: **CISCO TECHNOLOGY, INC.** [US/US];
170 W. Tasman Drive, San Jose, CA 95134 (US).
- (72) Inventor: **CAM WINGET, Nancy**; 325 Martens Avenue,
Mountain View, CA 94040 (US).
- (74) Agent: **GARRED, John, X.**; Tucker Ellis & West LLP,
925 Euclid Avenue, 1150 Huntington Building, Cleveland,
OH 44115-1475 (US).
- (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
- (88) Date of publication of the international search report:
10 March 2005

[Continued on next page]

(54) Title: FACILITATING 802.11 ROAMING BY PRE-ESTABLISHING SESSION KEYS



(57) Abstract: A method and system for pre-authenticating a pre-establishing key management on a roaming device (10) prior to reassociation to facilitate fast hand-off in a wireless network is described. For enhanced mobility, both authentication and key establishment is performed prior to reassociation of the roaming device (10) between access points (12). When the roaming device enters in contact with one of the access points, a local authentication is performed between the access point and the roaming device prior to reassociation with the access point to allow for fast hand-offs of the device between access points within the network.



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.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/016700

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L12/28 H04Q7/38

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 7 H04L H04Q

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	"EAP KEY MANAGEMENT FRAMEWORK" INTERNET, August 2003 (2003-08), XP002287958 page 6, line 27 - page 21, line 17 page 22, line 31 - page 23, line 38 page 38, line 22 - line 40 page 40, line 2 - page 43, line 28	1-6, 8-16, 18-26, 28-30
Y	PACK S AND YANGHEE CHOI: "PRE-AUTHENTICATED FAST HANDOFF IN A PUBLIC WIRELESS LAN BASED ON IEEE 802.1X MODEL" INTERNET, 2002, XP002294124 page 2, line 5 - page 3, line 18 page 5, line 16 - line 38 figures 1,3,4 ----- -/--	1-30

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

° Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but 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

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

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

22 November 2004

Date of mailing of the international search report

08/12/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Biyee, N

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US2004/016700

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	LAN MAN STANDARD COMMITTEE: "P802.11i Draft Supplement to Standard for Telecommunications and Information Exchange Between Systems- LAN/MAN Specific Requirements - Part 11: Wireless Medium Access Control (MAC) and physical layer (PHY) specifications: Specification for Enhanced Security" IEEE, 'Online! November 2002 (2002-11), pages 1-128, XP002304762 'retrieved on 2004-11-08! page 8, line 24 - line 35 page 11, line 1 - page 16, line 23 page 19, line 14 - page 35, line 33 page 42, line 1 - page 47, line 28 page 67, line 26 - page 94, line 22 page 97, line 33 - page 105, line 21 page 117, line 24 - page 118, line 28 page 127, line 5 - page 128, line 38 -----	1-30
A	MCCANN P: "Mobile IPv6 Fast handovers for 802.11 Networks" INTERNET, October 2002 (2002-10), XP002288527 page 5, line 13 - page 7, line 33 page 9, line 23 - page 10, line 37 -----	1-30
A	YOUNG KIM: "802.11b Wireless LAN Authentication, Encryption, and Security" INTERNET, 31 May 2001 (2001-05-31), XP002250118 the whole document -----	1-30
A	"Wireless Security in 802.11 (Wi-Fi) networks" DELL WHITE PAPER, XX, XX, January 2003 (2003-01), pages 1-8, XP002294652 page 2, left-hand column, line 19 - right-hand column, line 14 page 4, left-hand column, line 20 - line 42 page 4, right-hand column, line 34 - page 8, left-hand column, line 27 -----	1-30