

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
29 July 2004 (29.07.2004)

PCT

(10) International Publication Number  
WO 2004/064303 A3

(51) International Patent Classification<sup>7</sup>: H04L 12/28,  
H04B 7/14

[IN/US]; 8625 Pisa Drive, #1125, Orlando, Florida 32810 (US).

(21) International Application Number:  
PCT/US2004/000648

(74) Agents: BUCZYNSKI, Joseph et al.; Gardner Carton & Douglas LLP, 1301 K Street NW, Suite 900, East Tower, Washington, DC 20005 (US).

(22) International Filing Date: 13 January 2004 (13.01.2004)

(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.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/439,449 13 January 2003 (13.01.2003) US  
60/439,448 13 January 2003 (13.01.2003) US  
60/439,455 13 January 2003 (13.01.2003) US  
60/476,237 6 June 2003 (06.06.2003) US

(71) Applicant (for all designated States except US): MESH-NETWORKS INC. [US/US]; 485 North Keller Road, Suite 250, Maitland, Florida 32751 (US).

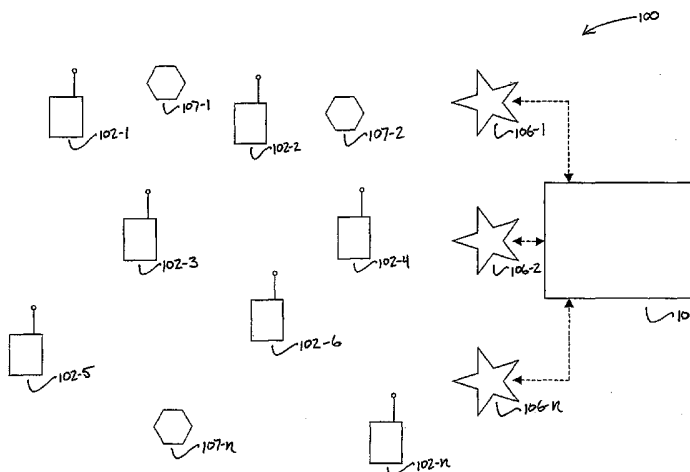
(72) Inventor; and

(75) Inventor/Applicant (for US only): AVINASH, Joshi

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, 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, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD FOR CONTINUOUS CONNECTIVITY TO AN ACCESS POINT IN A WIRELESS NETWORK



(57) Abstract: A system and method for enabling an ad-hoc communication network to maintain connectivity with the mobile nodes in the network in an effective and efficient manner with minimal overhead (Fig. 1). The system and method enables an ad-hoc communication network to maintain connectivity between intelligent access points of the network and mobile nodes in the network while performing an on-demand protocol. The system and method further uses an improved distance vector routing algorithm and unicast messages, to thus avoid an increase routing advertisement frequency in the network while keeping network overhead at a minimum. The system and method also modifies the Ad Hoc On-Demand Distance Vector Routing (AODV) protocol to facilitate smooth handoff of subscriber devices in an ad-hoc communication network while also eliminating unidirectional links between nodes in the network.

WO 2004/064303 A3



**Published:**

- *with international search report*
- *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:**

6 May 2005

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US04/00648

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>                  IPC(7) : H04L 12/28, H04B 7/14                  US CL : 370/389, 386, 395.52,315                  According to International Patent Classification (IPC) or to both national classification and IPC</p>												
<p><b>B. FIELDS SEARCHED</b>                  Minimum documentation searched (classification system followed by classification symbols)                  U.S. : 370/389, 386, 395.52,315</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p>												
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>US 6,073,016 A (HULTHEN et al) 06 June 2000 (06.06.2000), abstract, col 2 line 40 - col 3 line 50.</td> <td>1-24</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US 6,073,016 A (HULTHEN et al) 06 June 2000 (06.06.2000), abstract, col 2 line 40 - col 3 line 50.	1-24				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
A	US 6,073,016 A (HULTHEN et al) 06 June 2000 (06.06.2000), abstract, col 2 line 40 - col 3 line 50.	1-24										
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C.      <input type="checkbox"/> See patent family annex.</p>												
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent published on or after the international filing date	"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	"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)	"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	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
"A" document defining the general state of the art which is not considered to be of particular relevance	"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											
"E" earlier application or patent published on or after the international filing date	"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											
"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)	"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											
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
"P" document published prior to the international filing date but later than the priority date claimed												
<p>Date of the actual completion of the international search                  11 January 2005 (11.01.2005)</p>		<p>Date of mailing of the international search report  <b>01 MAR 2005</b></p>										
<p>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</p>		<p>Authorized officer                  Raj Jain                  Telephone No. 571-272-7445</p> <p><i>Kulgenia Zagan</i></p>										