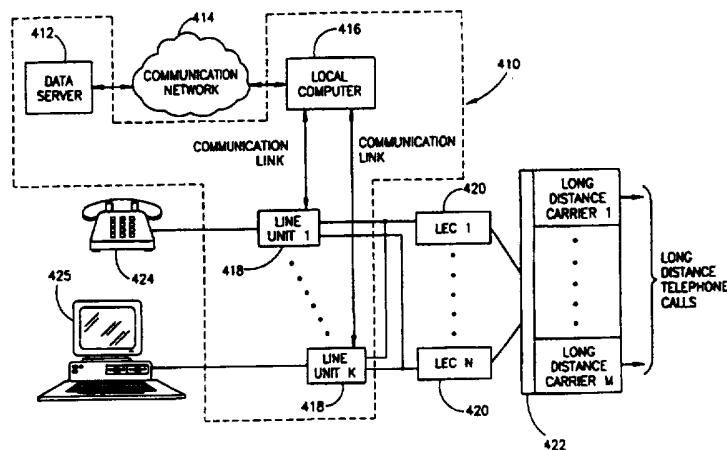




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>H04M 15/00, 3/42, 7/00</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 97/05749</b> (43) International Publication Date: 13 February 1997 (13.02.97)</p>
<p>(21) International Application Number: PCT/IL96/00056 (22) International Filing Date: 16 July 1996 (16.07.96)</p> <p>(30) Priority Data: 08/505,024 21 July 1995 (21.07.95) US 08/610,617 4 March 1996 (04.03.96) US</p> <p>(60) Parent Application or Grant (63) Related by Continuation US 98/610,617 (CIP) Filed on 4 March 1996 (04.03.96)</p> <p>(71) Applicant (for all designated States except US): CALL MAN-AGE LTD. [IL/IL]; 2 Levi Eshkol Street, 43703 Ra'anana (IL).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): WULKAN, Itzhak [IL/IL]; 23 Golomb Street, 43303 Ra'anana (IL). BARAK, Gideon [IL/IL]; 41 Hahursha Street, 43613 Ra'anana (IL).</p> <p>(74) Agent: A. TALLY EITAN - ZEEV PEARL &amp; CO.; Lumir House, 22 Maskit Street, 46733 Herzlia (IL).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 27 March 1997 (27.03.97)</p>	

## (54) Title: TELECOMMUNICATIONS CALL MANAGEMENT SYSTEM



## (57) Abstract

A call management system is disclosed for choosing the optimum carrier for calls made by a user (18). The system can interface with an existing PBX (120) or which can be used with ordinary analog or ISDN telephone lines. The system includes a data server (412), a local computer (416), and one or more line units. The line unit intercepts the dialed digits and transmits them to the local client computer for determining an optimum route for the call based on various parameters and transmits the complete dialing string back to the line unit which does the actual dialing of digits. The local computer also includes a carrier performance monitoring unit and call accounting unit. The client database is updated on a periodic basis via, for example, electronic mail or FTP over the internet.

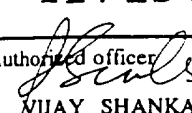
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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL96/00056

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(6) :H04M 15/00, 3/42, 7/00 US CL :379/111,112,113,114,115,130,131,133,140,207,219,220,230,231 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 379/111,112,113,114,115,130,131,133,140,207,219,220,230,231 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)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US,A, 4,751,728(TREAT) 14 June 1988, figures 1-2;summary; col.3,line 10-col.4,line 68	1-6 — 7-11
X —,P Y	US, A, 5,519,769(WEINBERGER ET AL) 21 May 1996, figures 2, 4-8; col.4,line 37-col. 6, line 20	16-20 — 7-15
Y	US, A, 5,420,914(BLUMHARDT) 30 May 1995, figures 3-4; summary; col.4, line 40-col.6, line 30	12-15
A	US, A, 4,585,904(MINCONE ET AL) 29 April 1986, figures 2-6; summary; col.3, line 62-col.13, line 55	1-20
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* *A* *E* *L* *O* *P*	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier document published on or after the international filing date 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 referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	*T* *X* *Y* *&*
Date of the actual completion of the international search 13 DECEMBER 1996		Date of mailing of the international search report 11 FEB 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer  VIJAY SHANKAR Telephone No. (703) 305-4763

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL96/00056

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4,791,665 (BOGART ET AL) 13 December 1988; figures 1-4; col.3,line 1-col.8, line 18	21-73
A,P	US, A, 5,515,425 (PENZIAS ET AL) 07 May 1996; figures 1-6; summary; col.2, line 31-col.9, line 11	1-73

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/IL96/00056

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING**

This ISA found multiple inventions as follows:

**Group I .**

Claims 1-6 are drawn to a method of determining an optimum telecommunication carrier from a group of carriers for placing a telephone call dialed by a user, classified in Class 379, subclass 130.

**Group II**

Claims 7-15 are drawn to the call management system comprising a means for generating call history data and statistics of phone calls, and the least cost router for determining from the database the least cost carrier for the call, classified in Class 379, subclass 114.

**Group III**

Claims 16-20 drawn to a call management system for updating the remote databases storing tariffs of telephone service providers, Classified in Class 379, subclass 112.

**Group IV**

Claims 21-73 are drawn to a telecommunications call management system for determining the optimum route for telephone calls made by the users of PBX, the system comprising a tariff data server for managing a database containing tariff and geographical related information on local and long distance carriers, first communication link coupling the tariff data server to a local computer and a second communication link coupling the local computer to the one line unit, classified in Class 379, subclass 115.

**Detailed Reasons For Holding Lack Of Unity Of Invention** The Claims of the four different groups are directed to different inventions and do not have in common the same special technical features. In particular group I describes a method of determining an optimum telecommunication carrier from a group of telecommunication carrier whereas group II describes a call management system for generating call history data and statistics of phone calls to generate expected call durations, volume predictions and statistical distributions. The group III describes a system for updating the remote databases storing tariffs of telephone service providers and group IV describes a system for determining the optimum route for telephone calls made by the users of PBX, managing database containing geographical related information on local and long distance carriers, which do not share the same special technical features with each other or the other groups.