US006711146B2

(12) **United States Patent**
Yegoshin

(10) **Patent No.: US 6,711,146 B2**
(45) **Date of Patent: *Mar. 23, 2004**

(54) **TELECOMMUNICATION SYSTEM FOR AUTOMATICALLY LOCATING BY NETWORK CONNECTION AND SELECTIVELY DELIVERING CALLS TO MOBILE CLIENT DEVICES**

(75) Inventor: **Leonid A. Yegoshin**, Palo Alto, CA (US)

(73) Assignee: **Genesys Telecommunications Laboratories, Inc.**, Daly City, CA (US)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/255,048**

(22) Filed: **Feb. 22, 1999**

(65) **Prior Publication Data**

US 2001/0012282 A1 Aug. 9, 2001

(51) **Int. Cl.**[7] **H04Q 7/24**; H04L 12/66

(52) **U.S. Cl.** **370/338**; 370/352; 370/465; 455/553; 709/249

(58) **Field of Search** 370/310, 311, 370/328, 338, 401, 410, 465, 352; 455/413, 553, 558, 556, 557; 709/249

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,412,760	A	*	5/1995	Peitz	370/329
5,845,211	A	*	12/1998	Roach, Jr.	455/436
5,949,775	A	*	9/1999	Rautiola et al.	370/338
5,956,331	A	*	9/1999	Rautiola et al.	370/338
5,956,391	A	*	9/1999	Melen et al.	379/114
5,970,059	A	*	10/1999	Ahopelto et al.	370/338
5,978,672	A	*	11/1999	Hartmaier et al.	455/413
5,991,639	A	*	11/1999	Rautiola et al.	455/553
6,052,725	A	*	4/2000	McCann et al.	709/223
6,078,566	A	*	6/2000	Kikinis	370/286
6,134,453	A	*	10/2000	Sainton et al.	455/553
6,370,394	B1	*	4/2002	Anttila	455/556
6,389,055	B1	*	5/2002	August et al.	375/130

FOREIGN PATENT DOCUMENTS

EP	0 483 547 A1	5/1992

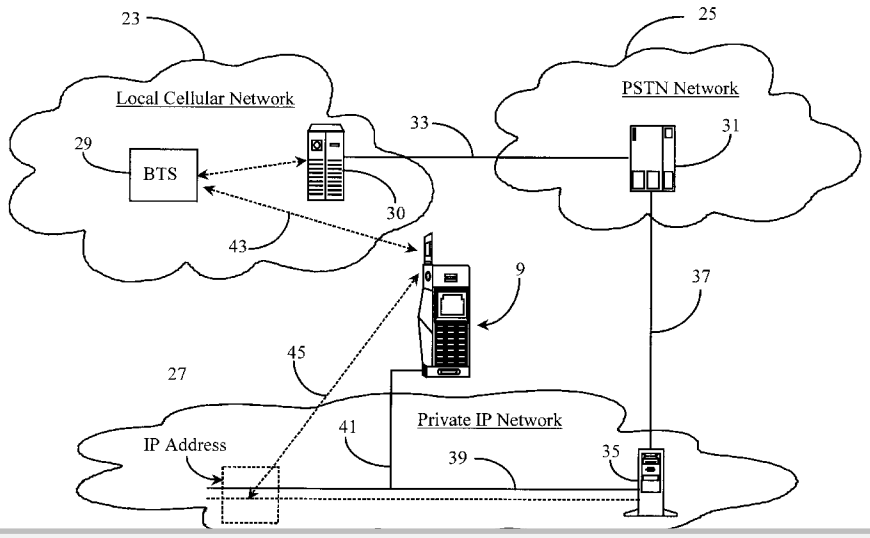
* cited by examiner

Primary Examiner—Hassan Kizou
Assistant Examiner—Saba Tsegaye
(74) *Attorney, Agent, or Firm*—Donald R. Boys; Central Coast Patent Agency, Inc.

(57) **ABSTRACT**

A communication system for an organization having multiple sites uses a dual-mode device capable of both cell phone communication and telephone communication on a local area network (LAN). IP LANS are established at organization sites such that a temporary IP address is assigned to a dual-mode device that logs onto an organization LAN, and the IP address is associated at a PSTN-connected server on the LAN with the cell phone number of the communication device. The IP server notifies a PSTN-connected routing server when a device logs on to a LAN, and also provides a destination number for the IP server. Cell calls directed to the device are then redirected to the IP server and directed to the device connected to the LAN.

13 Claims, 3 Drawing Sheets



DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

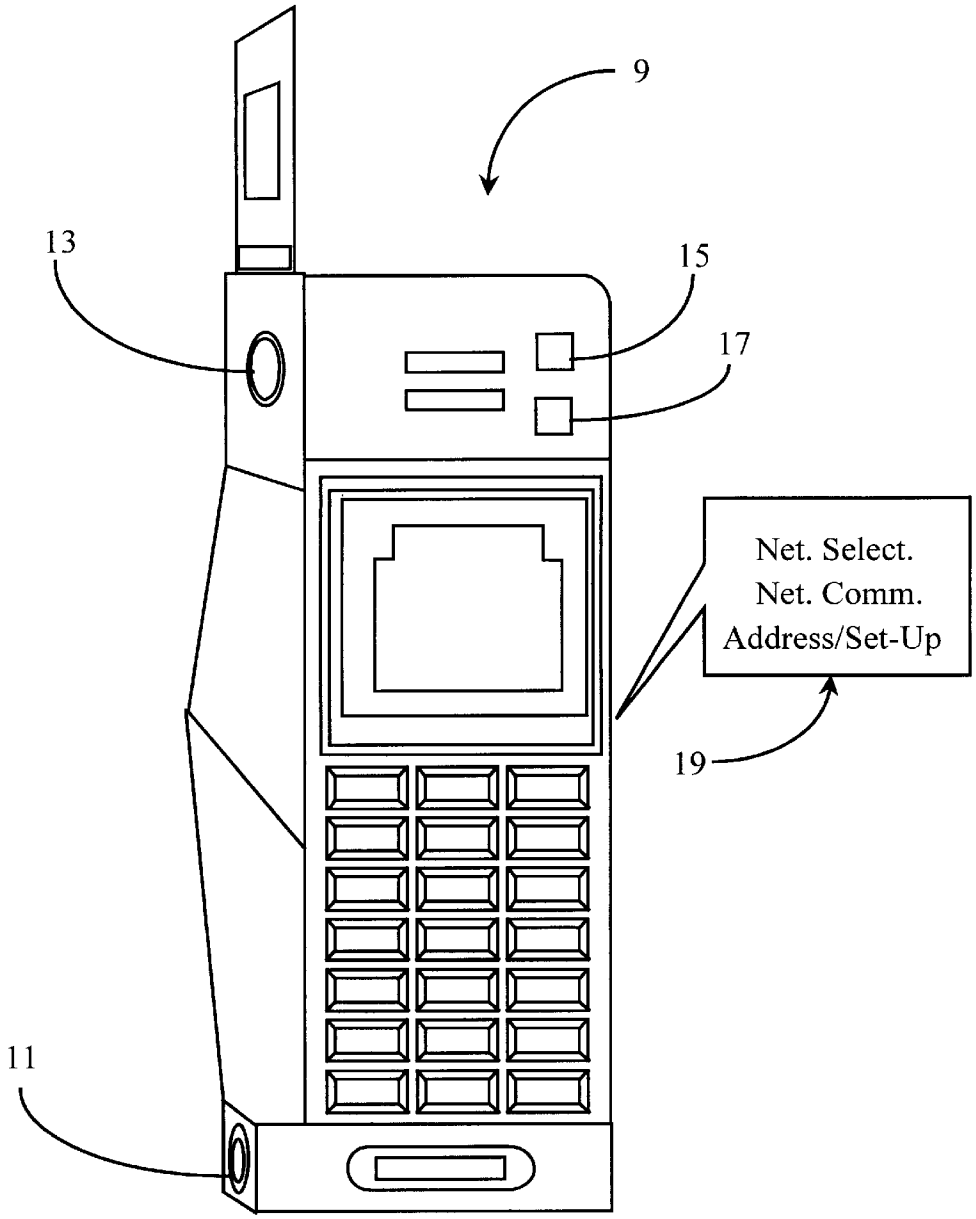


Fig. 1

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

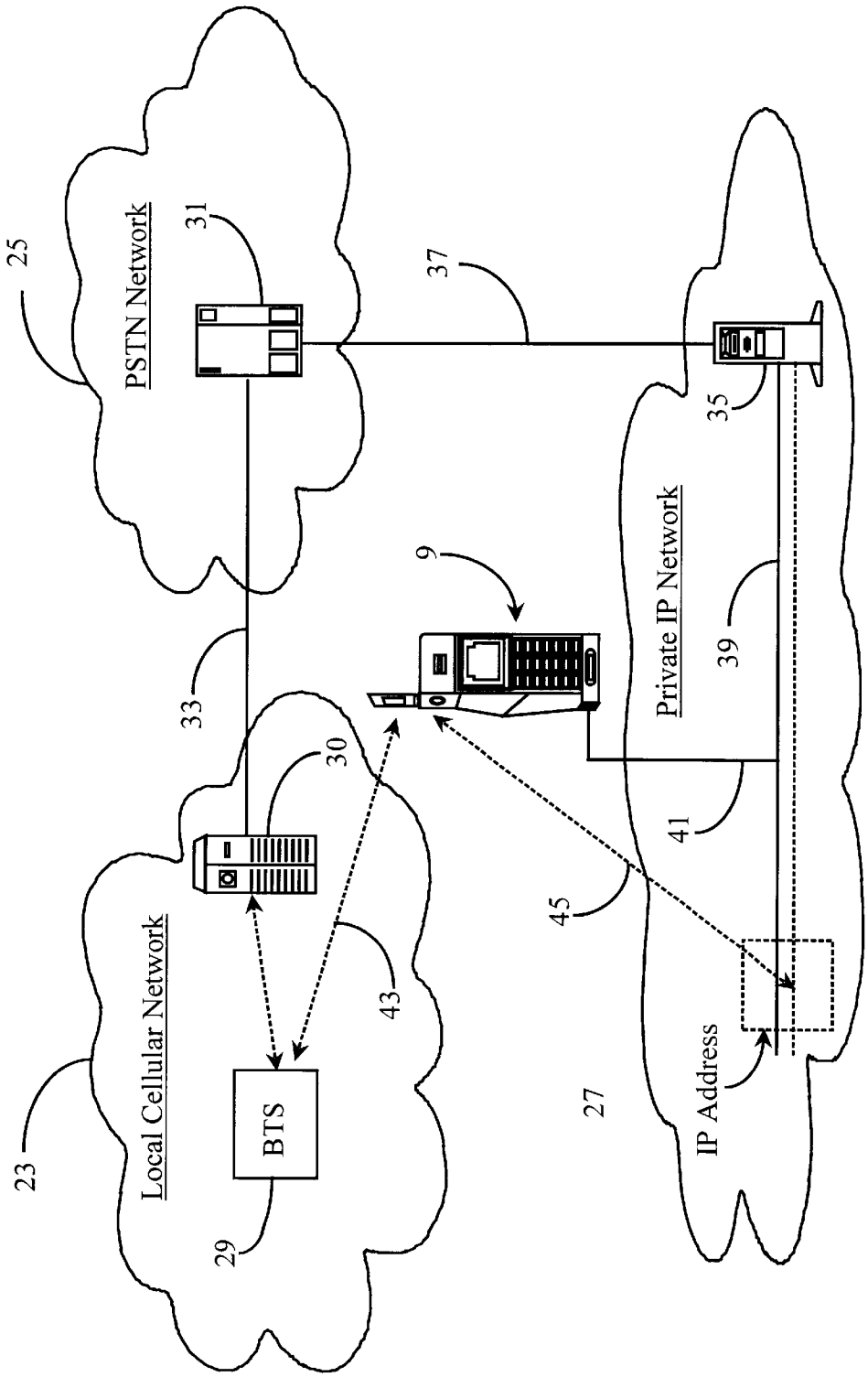


Fig. 2

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

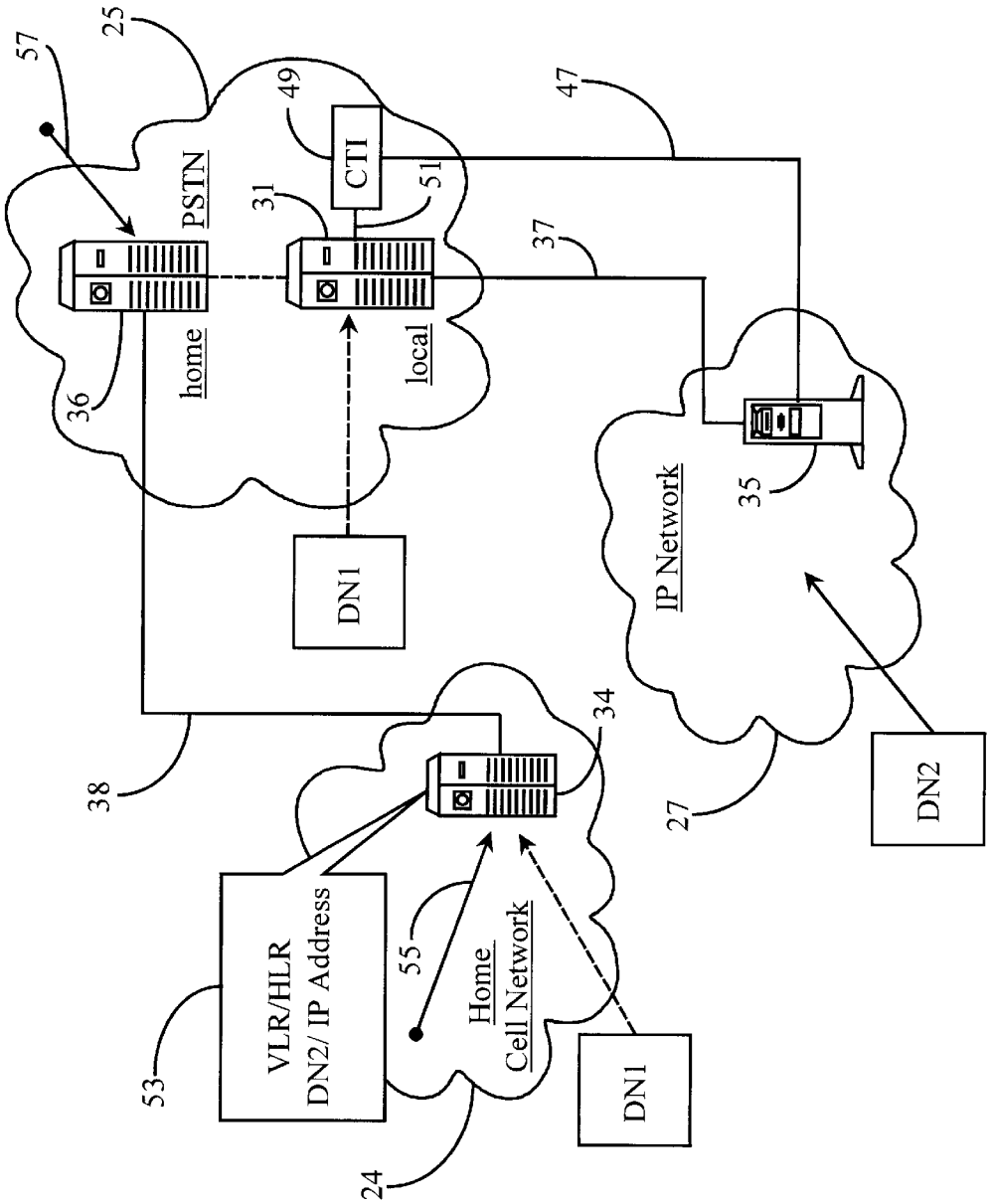


Fig. 3

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

TELECOMMUNICATION SYSTEM FOR AUTOMATICALLY LOCATING BY NETWORK CONNECTION AND SELECTIVELY DELIVERING CALLS TO MOBILE CLIENT DEVICES

FIELD OF THE INVENTION

The present Invention is in the field of telephony communications including data network telephony (DNT), which encompasses Internet Protocol Network Telephony (IPNT), and pertains more particularly to methods and apparatus for locating by network connection and selectively delivering calls to mobile client devices.

BACKGROUND OF THE INVENTION

The art of telephony communication has grown in proportion with improved telephony infrastructure, equipment, and methods of practice. Conventionally and historically telephone communication has been practiced by use of networks that provide dedicated connections and guaranteed bandwidth, such as in Publicly Switched Telephony Networks (PSTN). In such networks a call placed from a telephone connected to a local service is switched over dedicated channels to a destination, and as long as the connection is maintained, the dedicated path, having a dedicated bandwidth, is also maintained. Such networks may be termed Connection Oriented/Switched Telephony (COST) networks.

More recently, with the development of extensive data networks, of which the well-known Internet is a prime example, a newer type of telephony communication has been introduced. This form of telephony is termed herein Data Network Telephony (DNT), and, in the context of the Internet data network Internet Protocol Network Telephony (IPNT). Data networks typically link computers over one or more sub-nets, which may include local area networks (LAN), wide area networks (WAN) such as the Internet, company Intranets, and combinations of these and other data networks. IPNT telephony may be practiced on any suitable switched-packet data network whether wired or wireless provided suitable protocol is supported.

In DNT, such as IPNT, dedicated connections are not generally provided. Instead, digital audio data is prepared in standardized audio packets complete with header information and the like. The packets are prepared in near real-time and broadcast over the data network(s) connecting involved computers or telecommunications devices adapted for DNT applications. The header for each packet includes a destination for the packet.

Data Network Telephony, such as IPNT is well known in the art, and wireless data transmission is also quite well known in many applications. Internet service providers, for example, are recently providing high data-rate wireless Internet access by satellite systems, and, where bandwidth is not substantially restricted at the receiver's end.

The problems for Data Network Telephony in wireless systems are related to the real-time nature of telephony data and the typically limited bandwidth available in such systems. In relatively high-bandwidth systems having a relatively large number of users the distribution probabilities provide a situation where it is uncommon for several or many users to demand unusual bandwidth at the same time. The phenomenon is known in the art as averaging. Even

A contributing problem is in the nature of real-time audio data as opposed to data transmitting stored documents and the like, which may be called data-data as opposed to voice-data. Data-data such as graphics files, text files, and the like are stored and prepared for transmission wherein the file size is known. Late-arriving packets is not an issue as downloading is not complete until every packet is received. If for some reason transmission is lost, a re-connect may be performed to retrieve the rest of the file. Voice-data packets for real-time conversations are different. The packets for voice-data have to be prepared and transmitted in essentially real time in both directions or a meaningful conversation cannot be held. COST connections and wireless connections, wherein bandwidth is assured, have no problem with real-time voice communication.

More recent developments regarding quality-of-service (QOS) and analog-to-IPNT conversion and compression techniques have greatly improved the capability of IP networks having a lesser assurance of available bandwidth to facilitate real-time communication wherein the caller is calling from a cellular or a COST network.

With respect to Internet Protocol (IP) networks that are private and set up by companies to, for example, cover a large technical campus, it is known to the inventors that calls may arrive from COST or cellular digital networks, and to be converted to IPNT format for distribution to addressed telecommunications devices that are connected to the network. For example, certain connected computers, DNT capable telephones, and the like are capable of receiving from, and sending calls to a cellular or COST network such as a PSTN network. Such an IP network is usually of the form of a wired LAN such as an Extranet or Intranet. However, it is known to the inventor that such networks may also operate in various wireless technology modes such as a code-division-multiple-access CDMA or a time-division-multiple-access (TDMA) convention. The well-known cellular system is typically a variation of the latter. RF, microwave, and infrared technologies are also used. Improvements in bandwidth-reserving technology combined with smart IPNT routing capability such as is known to the inventor have made accepting COST or cellular calls from an out-side network practical.

Often, company sites maintaining LAN's as described above, whether wired or wireless, have frequent visitors from other sites, and the visitors are not resident employees and therefore typically do not have LAN-connected communication devices personally addressed to them at the visited campus. Such individuals may be required to move from one site to another spending an unpredictable time at each site. Consultants, sales people, regional managers, and the like make up this category of possible visitors. An especially large organization, such as a government organization, may have a large number of such visitors or mobile employees roaming through the sites at any given time.

Typically, such individuals would carry cellular telephones or equivalent devices for communication with, for example, callers from a home office, or other business calls. Depending on where such an individual lives or works, he or she may be required to extend the mobile communication range of a cellular device. This is termed roaming in the art. If the organization is significantly large or distributed over a large geographic region, he may have to roam over more than one service area. The cost of communication on a cellular phone increases has he roams further from a primary service area.

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.