

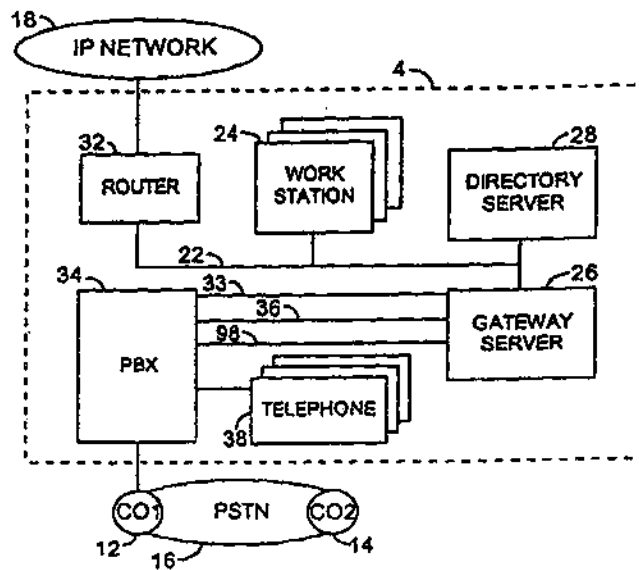
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 3/00</b>		<b>A2</b>	(11) International Publication Number: <b>WO 99/05590</b>
			(43) International Publication Date: 4 February 1999 (04.02.99)
(21) International Application Number: PCT/US98/15015		(74) Agents: WALKER, William, B. et al.; Enterprise Law Group, Inc., Suite 280, 4400 Bohannon Drive, Menlo Park, CA 94025 (US).	
(22) International Filing Date: 22 July 1998 (22.07.98)			
(30) Priority Data:		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
60/053,763 25 July 1997 (25.07.97) US			
60/063,742 17 October 1997 (17.10.97) US			
60/073,056 29 January 1998 (29.01.98) US			
09/061,802 16 April 1998 (16.04.98) US			
(71) Applicant (for all designated States except US): STARVOX, INC. [US/US]; 2880 Zanker Road, San Jose, CA 94134 (US).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): CHANG, Gordon, K. [US/US]; 2954 Heidi Drive, San Jose, CA 95132 (US). HARBISON, Robert, W. [US/US]; 118 Bonita Street, Sausalito, CA 94965 (US). BARRY, Richard, B. [US/US]; 305 South Gordon Way, Los Altos, CA 94022 (US). LO, Ming, C. [US/US]; 3331 Country Leaf Court, San Jose, CA 95132 (US). RAAB, Stephen, R. [US/US]; 738 Marin Drive, Mill Valley, CA 94941 (US).			
		<b>Published</b> Without international search report and to be republished upon receipt of that report.	

(54) Title: APPARATUS AND METHOD FOR INTEGRATED VOICE GATEWAY

## (57) Abstract

An integrated voice gateway system for use within a company which can route a voice telephone call between parties at two different locations over an IP network or over the PSTN. The system can route a voice telephone call from a first location within the system to a second location within the system via the IP network, and then from the second location to a third location via the PSTN. The integrated voice gateway system includes a gateway server which serves as an intranet/Internet telephony gateway. The gateway server routes intra-company voice or facsimile (fax) calls, over the company's intranet or the public Internet. The gateway server provides an alternate voice network to the PSTN for a company. This alternate network is provided at a much lower cost. The gateway server is a combination of hardware and software components which reside on a PC server platform. The gateway server is coupled to a customer premise telephone system, i.e. a PBX via a T1 or E1 trunk for larger systems, or an analog trunk for smaller systems. The gateway server is coupled to the company's intranet via industry standard connections. The gateway servers in a multi-site company are coupled together via the company's intranet or wide area network (WAN) into a gateway network. The gateway server uses PBX call status links to provide many unique and useful features which are otherwise unavailable. The gateway server uses T1 inband ANI, PRI, QSIG or industry standard CTI applications programming interfaces (API) and works with any PBX which supports any of these call status links. The gateway server is equipped with a database of user and gateway objects and attributes, and provides many unique features including caller's name based on caller phone number, address translation, gateway network routing information, user authentication, etc. This database can be integrated with industry standard enterprise directory services systems including any directory which supports the Lightweight Directory Access Protocol (X.500) (LDAP) interface.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakistan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## TITLE OF THE INVENTION

APPARATUS AND METHOD FOR INTEGRATED VOICE GATEWAY

## FIELD OF THE INVENTION

This invention relates to an integrated voice gateway system.

5

## BACKGROUND OF THE INVENTION

The widespread popularity of the Internet has provided new means of rapid and comprehensive communication between users located in distant and diverse locations around the world. Methods of sending, finding and retrieving information, previously confined to the domain of government, academia and industry, are now available in business, in the community, and in the home. Formerly arcane technical terms such as telnet, electronic mail (e-mail), file transfer protocol (FTP), hypertext transfer protocol (HTTP) and world wide web (WWW or web) are now widely used.

Very soon after the popularity of the Internet became widespread, new applications of the underlying technology began to emerge. With the concomitant growth of multimedia, a predominately text-based medium quickly expanded to include graphics, imagery, motion pictures and sound. A natural extension of the capability to transmit recorded, digitized sound between personal computers (PC), was the advent of PC based telephony. Although the initial users of PC to PC telephone calls over the Internet were primarily computer hobbyists and the like, there was an early recognition of the fact that the Internet provided the potential for the average user to make a telephone call anywhere in the world for the cost of a local telephone call to an Internet service provider (ISP).

PC to PC telephone technology is limited by the need to be logged on to a PC and the Internet to place or receive a call. Software incorporating proprietary algorithms limit the ability to call to others having the same or similar software. The sound quality is often degraded because of packet loss and delays in forwarding packets from the sender to the receiver over the Internet, operation in a half-duplex mode, and the use of low quality PC speakers and microphones.

With the expectation of improved performance and reduced cost of telephone calls in the business environment, voice gateways have facilitated

-1-

**SUBSTITUTE SHEET ( rule 26 )**

the interconnection of the private branch exchange (PBX) and the computer network. As used herein, PBX includes hybrid, key systems, and other such systems. Thus, through a PBX coupled to an Internet protocol (IP) network (e.g., intranet, wide area network (WAN), Internet), telephone calls between  
5 different sites within a company, or other institution, organization or enterprise (hereinafter referred to as "company"), or between companies, the company or companies having installations at two or more locations which locations may be geographically distant from each other, may be routed over the IP network rather than via the public switched telephone network (PSTN). As  
10 used herein, the PSTN includes both public and private networks. This can result in significant cost savings and can also help to improve communication within and between companies by providing a variety of related services which are not available via the PSTN.

The level of integration achieved in current voice gateway systems is  
15 quite low, and such systems are limited in the services they can provide. In particular, current voice gateway systems are capable of only routing a nominal telephone call from a calling party at point A to a called party at point B. However, if, for example, the called party is not present, or if the called party's telephone is currently busy, current voice gateway systems do not  
20 provide important additional services to facilitate making a connection between the calling party and the called party at a later time or at another location or by an alternative method.

One of the reasons for the limitations is that current voice gateway systems are limited in their ability to obtain, store, update and retrieve  
25 necessary information about both the calling party and the called party in order to do anything other than simply attempt to make a straight forward connection between the two points. If the telephone system had sufficient information about both parties, then the system could facilitate making the connection at a later time, at another location or by an alternative method.  
30 However, in current voice gateway systems, there is no way to obtain the necessary call status and call control information, nor is there an accessible central data base in which to store and from which to retrieve this information. Current voice gateway systems have no real-time call control/call status information link with the PBX, nor do they have any storage of telephone user  
35 information. For example, current voice gateway networks have no information regarding the calling party's name, telephone number, or status of the called party, e.g., busy or idle. It is this information about the calling and

called parties which is not readily available, but which is necessary to provide important additional services.

5 There is a need for a highly integrated voice gateway system for use within a company and between companies having installations at two or more locations which locations may be geographically distant from each other. The integrated voice gateway system should have the ability to route telephone calls between parties at two different locations over the IP network as well as the PSTN, and to automatically select which of the IP network and PSTN over which to route telephone calls. The integrated voice gateway system should have the means to obtain, store, update and retrieve information about calling and called parties. For example, in instances in which a calling party is unsuccessful in making a connection to a called party, the integrated voice gateway system should have the means to use information about the calling and called parties to provide services which facilitate making an alternate or subsequent connection between the calling party and the called party.

The following standards are incorporated herein by reference:  
ITU-T Recommendation H.323 - Packet-based multimedia communications systems;  
ITU-T Recommendation X.500 - Open systems interconnection - The directory: Overview of concepts, models and services; and  
20 IPNS Forum QSIG Handbook.

### SUMMARY OF THE INVENTION

We have now invented a highly integrated voice gateway system for use in a company or between companies having installations at two or more locations which locations may be geographically distant from each other.

As used herein, a voice telephone call from a caller telephone to a called telephone, the call carried via an IP network, is referred to as a VoIP call. As used herein, a fax call from a caller fax machine to a called fax machine, the call carried via an IP network, is referred to as an FoIP call.

30 Accordingly, it is an object of the invention to provide an integrated voice gateway system for use within a company which can route a voice telephone call between parties at two different locations over an IP network as well as the PSTN and to automatically select which of the IP network and PSTN over which to route the calls. It is a further object of the invention to

# 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.