



US007412598B1

(12) **United States Patent**
Gleichauf

(10) **Patent No.:** **US 7,412,598 B1**
(45) **Date of Patent:** **Aug. 12, 2008**

(54) **METHOD AND SYSTEM FOR REAL-TIME INSERTION OF SERVICE DURING A CALL SESSION OVER A COMMUNICATION NETWORK**

(75) Inventor: **Robert E Gleichauf**, San Antonio, TX (US)

(73) Assignee: **Cisco Technology, Inc.**, San Jose, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 744 days.

5,974,566	A *	10/1999	Ault et al.	714/15
5,983,273	A *	11/1999	White et al.	709/229
6,088,430	A	7/2000	McHale	379/93.28
6,122,631	A *	9/2000	Berbec et al.	707/9
6,393,481	B1 *	5/2002	Deo et al.	709/224
6,401,211	B1 *	6/2002	Brezak et al.	713/201
6,453,362	B1 *	9/2002	Bittinger et al.	719/316
6,477,708	B1 *	11/2002	Sawa	725/116
6,567,916	B1 *	5/2003	Terao et al.	713/176
6,678,733	B1 *	1/2004	Brown et al.	709/229
6,760,759	B1 *	7/2004	Chan	709/219
6,819,652	B1 *	11/2004	Akhtar et al.	370/230
6,986,157	B1 *	1/2006	Fijolek et al.	725/111
7,079,499	B1 *	7/2006	Akhtar et al.	370/310
7,145,898	B1 *	12/2006	Elliott	370/352
2006/0106703	A1 *	5/2006	Del Rey et al.	705/35

(21) Appl. No.: **09/751,811**

(22) Filed: **Dec. 29, 2000**

(51) **Int. Cl.**
H04L 9/32 (2006.01)
H04L 9/00 (2006.01)
H04M 11/00 (2006.01)
H04M 5/00 (2006.01)

(52) **U.S. Cl.** **713/155**; 713/168; 713/182; 726/4; 726/10; 379/92.04; 379/93.02; 379/93.03; 379/243

(58) **Field of Classification Search** 713/155, 713/165, 185, 200, 201
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,481,720	A *	1/1996	Loucks et al.	713/201
5,560,008	A *	9/1996	Johnson et al.	713/201
5,764,887	A *	6/1998	Kells et al.	713/200
5,768,379	A *	6/1998	Girault et al.	713/185
5,787,170	A *	7/1998	Op de Beek	713/165
5,815,574	A *	9/1998	Fortinsky	713/153
5,822,433	A *	10/1998	Bottle et al.	713/155
5,854,894	A *	12/1998	Lancaster et al.	709/219
5,864,665	A *	1/1999	Tran	713/201
5,920,562	A	7/1999	Christie et al.	370/395
5,928,323	A *	7/1999	Gosling et al.	709/203

OTHER PUBLICATIONS

Woo et al, Authentication for Distributed Systems, 1992, IEEE, pp. 39-51.*
Neuman et al, Kerberos: An Authentication Service for Computer Networks, 1994, IEEE, pp. 33-38.*
Anonymous, Kerberos: A Model for Single Sign-On, 2004, Business Communications Review, p. 43.*
Fontana, John, Web Services Security Spec Approved, 2004, Network World, p. 22.*

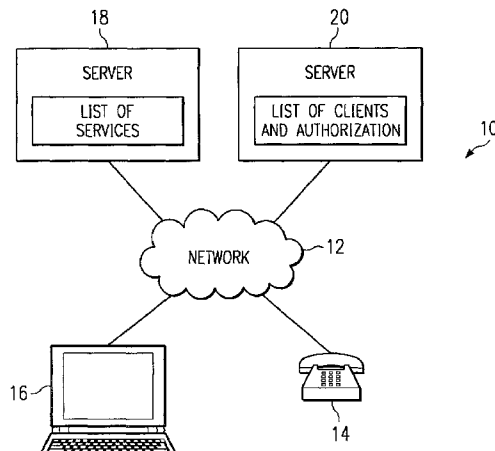
* cited by examiner

Primary Examiner—Ayaz Sheikh
Assistant Examiner—Aravind K Moorthy
(74) *Attorney, Agent, or Firm*—Baker Botts L.L.P.

(57) **ABSTRACT**

A method and apparatus for real-time insertion of services into an IP telephony call session are disclosed. A client initiates a service request message to a second server. The service request message includes the client identity and a requested service available from a second server. The first server determines if the client is authorized to use the requested service. If the client is authorized to use the requested service, the second server delivers the requested service to the client.

35 Claims, 3 Drawing Sheets



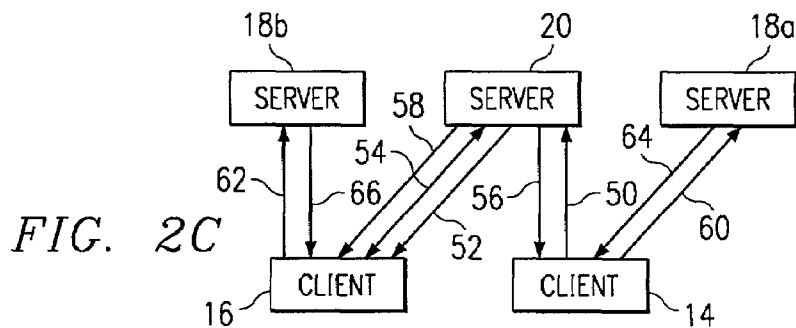
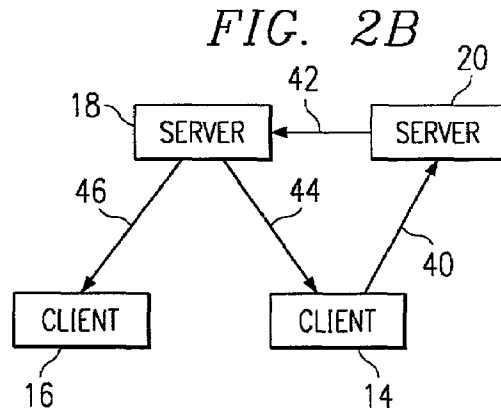
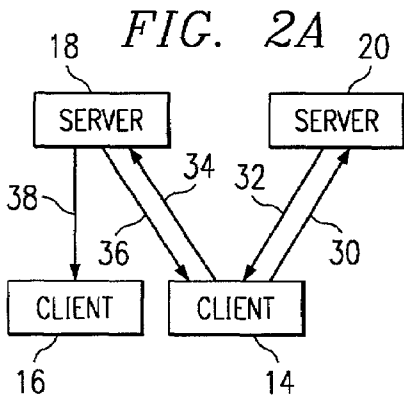
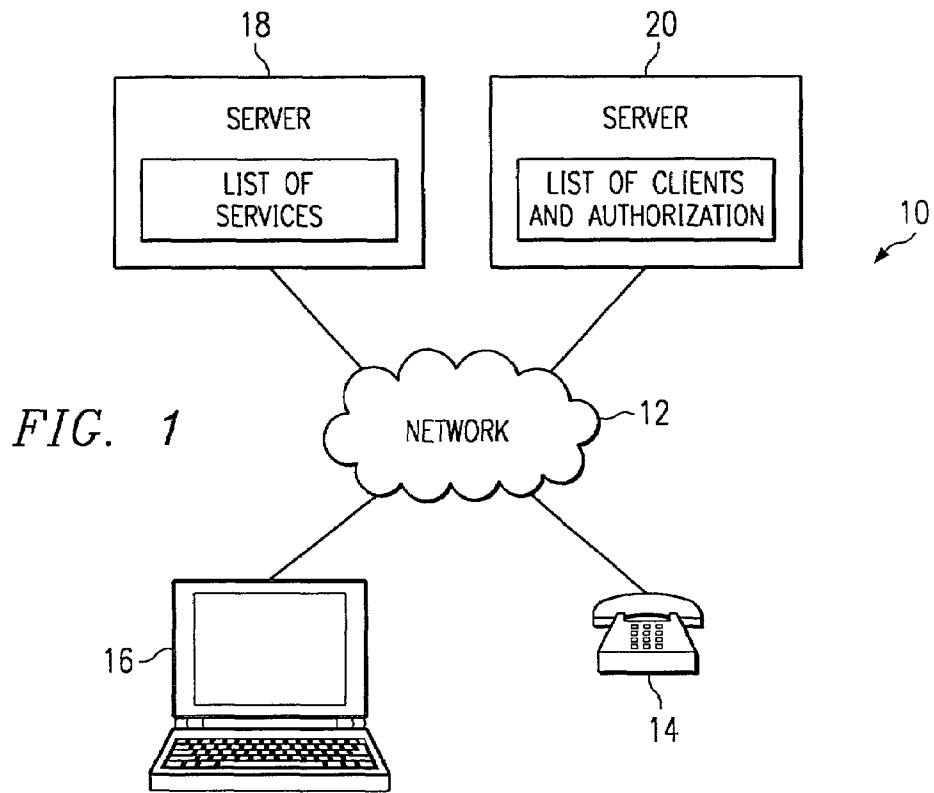


FIG. 3

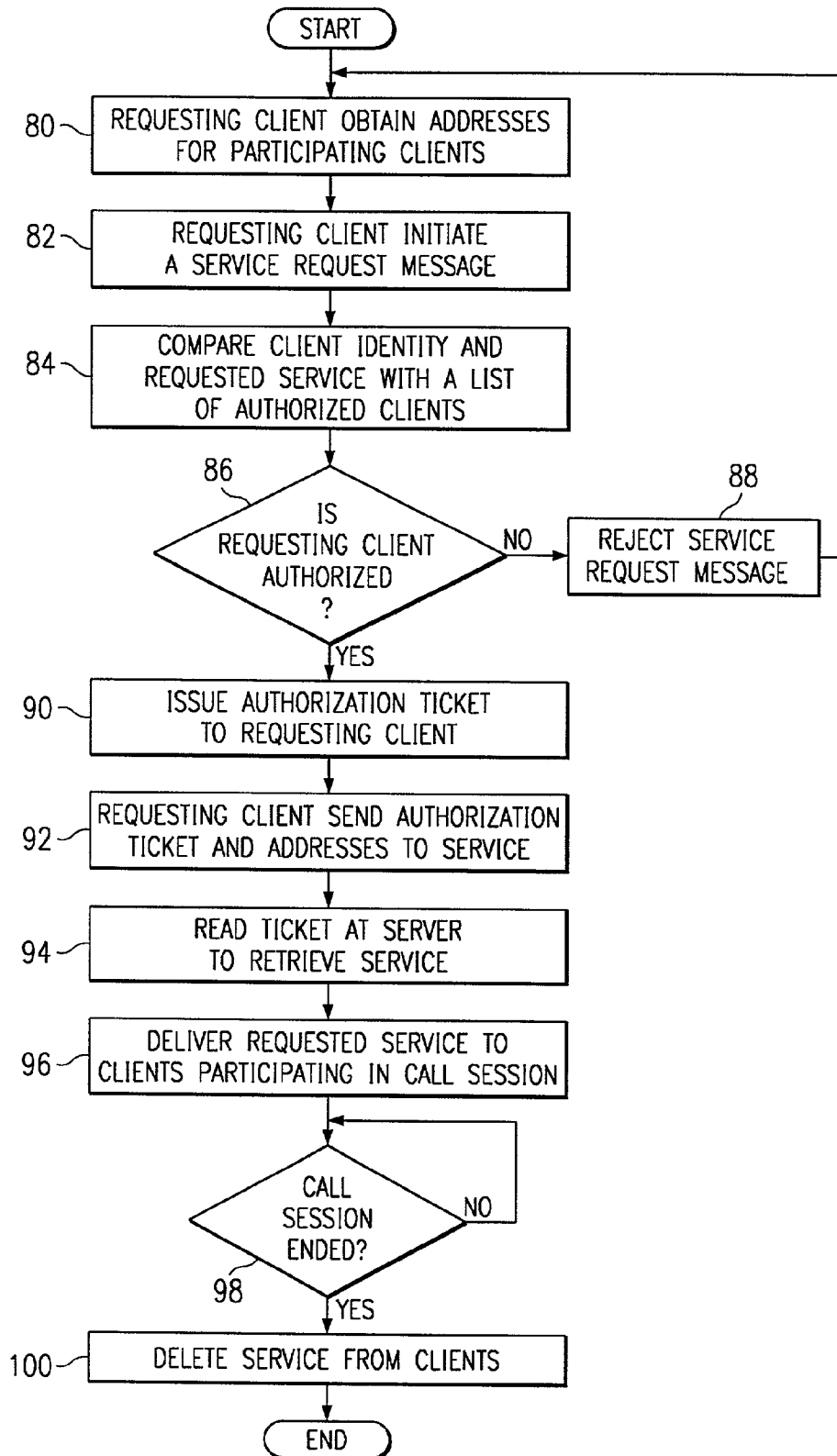
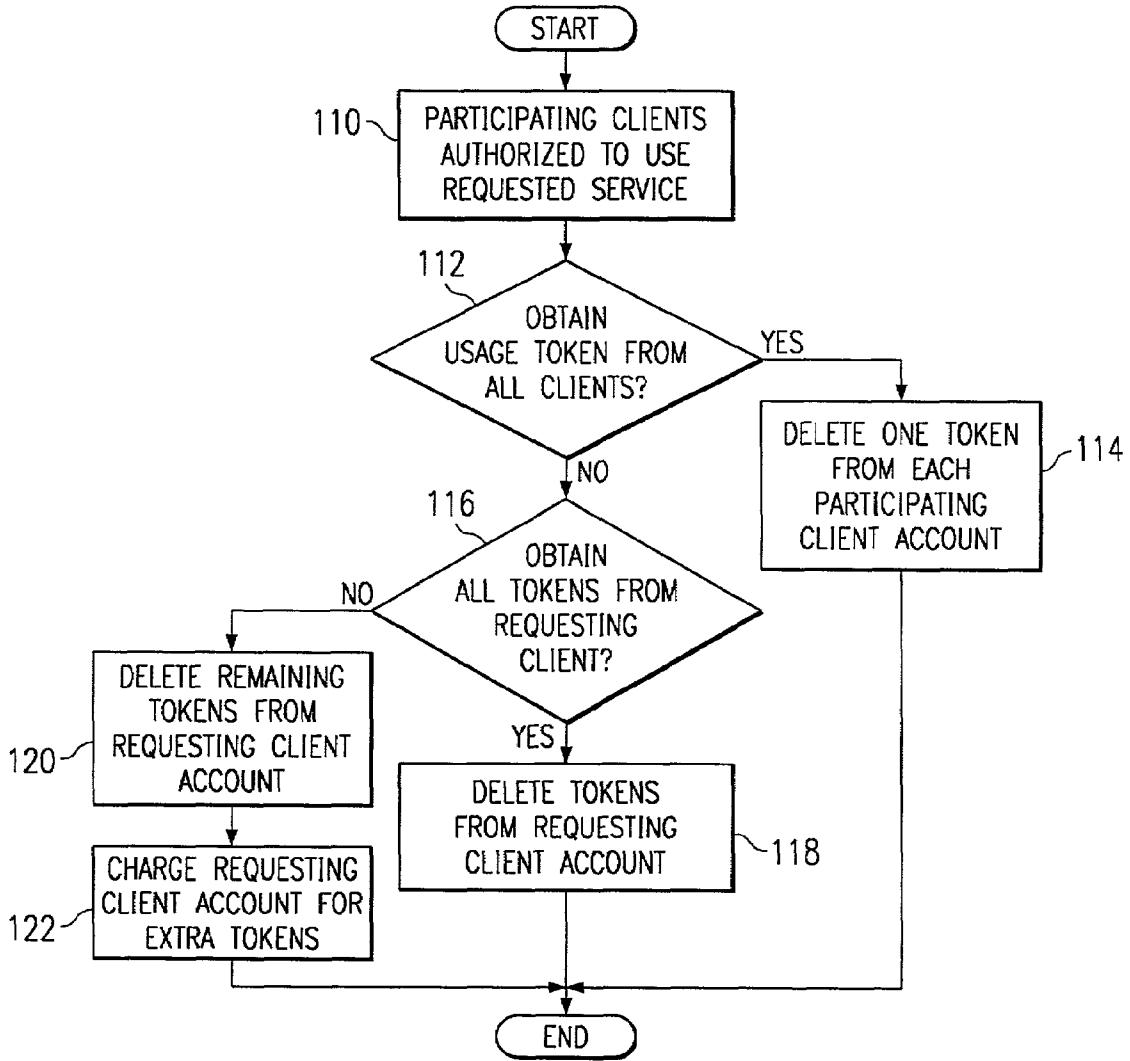


FIG. 4



1

**METHOD AND SYSTEM FOR REAL-TIME
INSERTION OF SERVICE DURING A CALL
SESSION OVER A COMMUNICATION
NETWORK**

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to Internet Protocol (IP) telephony, and more particularly to a method and system for real-time insertion of services during a call session over a communication network.

BACKGROUND OF THE INVENTION

IP telephony uses the Internet Protocol (IP) to transmit voice as packets over any data network that supports IP. Traditional circuit switched networks, such as the public switched telephone network (PSTN), establish a call by setting up an end-to-end circuit between two telephones. The switched connection is established for the duration of the telephone call, with a fixed bandwidth. In contrast, an IP telephony connection digitizes, compresses and converts the voice signal into IP packets and transmits the packets over the data network. Numerous different calls may share the same network and each participant in a call may have a different bandwidth that varies over the duration of the call depending on the amount of data being communicated over the network at any given time.

Conventional phone service provided over the PSTN requires a subscriber to pay for long distance service based on the number of minutes for the call. Furthermore, if the subscriber would like to add a special service, such as caller id, call forwarding or call waiting, the subscriber typically pays a monthly fee for the service. This fee is paid to the telephone company even if the subscriber does not use the service during the month. IP telephony service operates in a similar way because the subscriber is limited to services provided by an Internet Service Provider (ISP) for a fee during a specific period.

SUMMARY OF THE INVENTION

In accordance with the teachings of the present invention, disadvantages and problems associated with real-time insertion of services during a call session over a communication network have been substantially reduced or eliminated. In a particular embodiment, Session-based Services Telephony Protocol (SSTP) for use in Internet Protocol (IP) telephony is disclosed that allows a user to add services, such as the ability to send data for use in a word processing application or the ability to increase the level of encryption provided, during an IP telephony call session by requesting a desired service from a server coupled to a packet-based network.

In accordance with one embodiment of the present invention, a method for real-time insertion of services during a call session over a communication network includes initiating a Service Request Message (SRM) by a first client to a first server. The SRM includes the first client identity and a requested service available from a second server including a plurality of services. Upon receiving the message, the first server determines if the first client is authorized to receive the requested service. If the first client is authorized to receive the requested service, the second server delivers the requested service to the first client.

In accordance with another embodiment of the present

2

includes a client, a first device and a second device coupled to a communication network. The first device includes a list of clients authorized to receive a plurality of services. The second device inserts one or more of the services requested by the client into the call session if the list includes the client and the requested service.

Important technical advantages of certain embodiments of the present invention include the ability to add services for use during a call session. In a conventional communication system, a subscriber may use an extra service installed on a network if the subscriber requests and pays for the service before beginning the call session. The present invention allows the subscriber to add one or more services during a call session. If the equipment used by the subscriber is not capable of receiving the requested service, the necessary software may be configured at a remote location, such as a server, and uploaded onto a cache, or other suitable memory, associated with the subscriber's equipment. When the call session is terminated or the subscriber disconnects from or breaks communication with the call session, the service and associated software may be deleted from the subscriber's equipment by flushing the cache.

Another important technical advantage of certain embodiments of the present invention includes the ability of a service provider to charge a subscriber for a requested service based on use of the requested service. When the subscriber requests to use a service, either by subscribing to the service for specific time period, requesting the service prior to initiating a call session, or requesting the service during the call session, the service provider creates an account for the subscriber. The account may contain usage tokens for the requested service. Each time the subscriber uses the requested service, a usage token is deleted from the subscriber's account. The service provider, therefore, may track usage of the service and bill the subscriber based on the number of tokens used.

Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a communication network incorporating one embodiment of the present invention;

FIG. 2A illustrates a block diagram of one embodiment for inserting a requested service into a call session;

FIG. 2B illustrates a block diagram of an alternative embodiment for inserting the requested service into the call session;

FIG. 2C illustrates a block diagram of a further embodiment for inserting the requested service into the call session;

FIG. 3 illustrates a flowchart of a method for real-time insertion of services into a call session over the communication network;

FIG. 4 illustrates a flowchart of a method for charging a client for use of the requested service.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 illustrates a block diagram of a communication system 10 that supports real-time insertion of services during a call session over network 12. System 10 includes network 12, clients 14 and 16, and servers 18 and 20. Server 18 includes a list of services that may be requested by clients 14 and 16 during a call session and associated software applications to execute the services. Server 20 includes a database

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.