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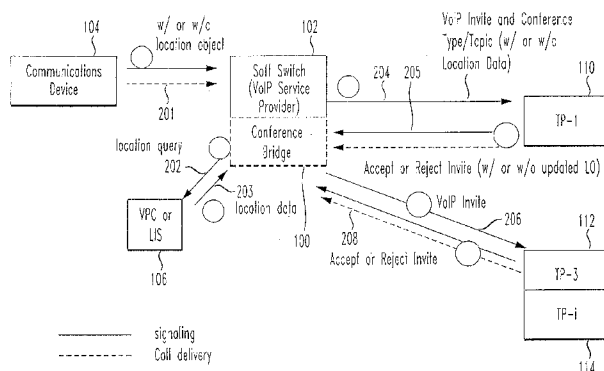
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(54) Title: VOICE OVER INTERNET PROTOCOL (VOIP) LOCATION BASED CONFERENCING



(57) Abstract: A Voice Over Internet Protocol (VoIP) device uses its location to narrow down known and unknown potential VoIP third parties meeting the user's criteria, based on their physical proximity to the initial caller and other pre-determined characteristics, to join in a phone conference. A VoIP soft switch includes conference bridges that eliminate the conventional requirement that they dial digits for a direct link with another specific VoIP communications device. Instead, location information relating to the initial VoIP user is passed to the VoIP conference bridge, either from the user's VoIP communication device or from their respective location server. The location information is then compared by the VoIP soft switch against other VoIP devices to find potential VoIP users within a defined geographic region surrounding the initial VoIP user. Those VoIP users matching the criteria are sent an Invite message to join the conference, which they may or may not accept.

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VOICE OVER INTERNET PROTOCOL (VoIP) LOCATION BASED CONFERENCING

This application is related to and claims priority from a co-pending
5 U.S. Provisional Application No. 60/723,960, entitled "Voice Over Internet
Protocol (VoIP) Location Based Conferencing", filed on October 6, 2005; U.S.
Provisional Application No. 60/733,789, entitled "Voice Over Internet Protocol
(VoIP) Multi-User Conferencing", filed on November 7, 2005; and U.S.
Provisional Application No. 60/723,961, entitled "Voice Over Internet Protocol
10 (VoIP) Location Based 911 Conferencing", filed on October 6, 2005; the entirety
of all three of which are expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

15 This invention relates generally to Voice Over Internet (VoIP)
protocols and architectures. More particularly, it relates to location based
conferencing services using VoIP.

2. Background of the Related Art

20 Voice-Over-Internet Protocol (VoIP) is a technology that emulates a
phone call, but instead of using a circuit based system such as the telephone
network, utilizes packetized data transmission techniques most notably
implemented in the Internet.

The use of VoIP technology is growing quickly. Given VoIP
25 technology, there are at least three VoIP scenarios:

1. A VoIP UA that is physically connected to a static data cable at a "home"
address. For instance, an Analog Telephone Adapter (ATA) that is
connected to the "home" data cable and uses traditional telephone
devices.
- 30 2. A VoIP UA that is physically connected to a data cable at a location
different than its "home" address. For instance, a laptop computer device

utilized away from home as a VoIP software telephone would be a VoIP 'visitor' device as described by this scenario.

3. A VoIP UA that is wireless, physically disconnected from any data cable. In this situation, the VoIP UA connects to the VoIP service provider via either a wide-area wireless technology (e.g., cellular, PCS, WiMAX) or via a local-area wireless technology (e.g., Wireless Fidelity (WiFi), UWB, etc.) using a laptop computer or handheld device.

VoIP phone calls are routed to a VoIP voice gateway, from which they are passed on to their destination. A VoIP voice gateway or soft switch is a programmable network switch that can process the signaling for all types of packet protocols. Also known as a 'media gateway controller,' 'call agent,' or 'call server,' such devices are used by carriers that support converged communications services by integrating SS7 telephone signaling with packet networks. Softswitches can support, e.g., IP, DSL, ATM and frame relay.

VoIP telephone technology is quickly replacing conventional switched telephone technology. A location of a given VoIP device may be provisioned to be at a given geographic location, or queried from a home location register (HLR) in a mobile system.

With given VoIP technologies, a VoIP user must know the specific phone number of an individual, business, or other entity that they wish to call. There is no conventional technique for allowing a conference call between two or more VoIP users. In the Internet venue, users can find each other using a "chat room", but the burden nevertheless remains on the user to search for, identify, and use a specific phone number or Universal Resource Identifier (URI) information to reach specific entities. This creates inefficiency and lack of flexibility with respect to the desire to establish a conference call, preventing VoIP users from managing their own communication needs and preferences. Generally, voice communication using VoIP technologies is limited to only point-to-point direct links between familiar or previously identified parties.

There is a need for an architecture and methodology that simplifies the complexity of conferencing VoIP calls.

SUMMARY OF THE INVENTION

In accordance with the principles of the present invention, a Voice Over Internet Protocol (VoIP) conference bridge comprises a conference bridge application active in a location addressed using Internet Protocol. A module determines a geographic boundary of a given conference. A plurality of Internet interfaces are provided to the conference bridge application, to accept a respective plurality of VoIP telephone users. Wherein a conference is established between the plurality of VoIP telephone users, each of the plurality of VoIP telephone users being within the geographic boundary.

A method of conferencing Voice Over Internet Protocol (VoIP) voice communications devices in accordance with another aspect of the present invention comprises establishing at least one conference bridge. At least one criteria is defined for participation in the given conference bridge. A VoIP call to the conference bridge is received from an initial VoIP user. A location of the initial VoIP is compared to a location of at least one other VoIP user. An invite message is issued to another VoIP user based on a match of the location of the at least one other VoIP user being within a desired proximity to the location of the initial VoIP user.

20

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows an exemplary architecture of a VoIP conference bridge application operating in a soft switch of a VoIP provider to provide VoIP location based conferencing, in accordance with the principles of the present invention.

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Fig. 2 shows an exemplary message flow diagram for establishing a VoIP location based conference, in accordance with the principles of the present invention.

Fig. 3 shows a VoIP user originating an invitation to join a conference bridge in a VoIP soft switch, in a business to business or business to consumer scenario, in accordance with the principles of the present invention.

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Fig. 4 shows exemplary signal/call flow for a VoIP user originating an invitation to join a conference bridge sent to other VoIP users as shown in Fig. 3.

5 Fig. 5 shows a VoIP user originating the transmission of a series of Invitations to join a conference bridge in a VoIP soft switch, in a peer to peer or consumer to consumer scenario, in accordance with the principles of the present invention.

10 Fig. 6 shows exemplary signal/call flow for a VoIP user originating an invitation to join a conference bridge sent to other VoIP users as shown in Fig. 5.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

A VoIP user from time to time might wish to initiate a conversation with other (known or unknown) VoIP users based on location and other shared attributes/criteria. The need may be for a single point-to-point type connection, or it may extend to the desire for a multi-user conference with other VoIP users.

Existing conferencing systems for putting VoIP users in touch with one another relies upon prior knowledge and contact information existing between the specified users. The present invention provides a way for VoIP users to use VoIP technology to form temporary or permanent "VoIP Communities" or VoIP conferences by initiating an interaction based on location and other shared attributes, supply/demand relationships, or other criteria.

Currently, there is no existing mechanism to create a voice link between VoIP communication devices based on the location of each VoIP user (and potentially other preferences or attributes). Existing VoIP technology does not address this problem for VoIP calls nor does it for any conference established based on location. For instance, while Internet text chat rooms provide a means of communication between party's, Internet text chat rooms do not utilize the user's location to find and invite available individuals/businesses/entities.

30 The present invention provides the ability for a VoIP user to utilize their own geographic position to narrow down or pinpoint known and even

unknown potential VoIP third parties meeting the user's criteria based on their physical location to join in on a phone conference.

Fig. 1 shows an exemplary architecture of a VoIP conference bridge application operating in a VoIP soft switch of a VoIP provider to provide VoIP location based conferencing, in accordance with the principles of the present invention.

In particular, as shown in Fig. 1, a VoIP communications device **104** is serviced by their service provider's soft switch **102**. A positioning center **106** provides location data upon request from the soft switch **102**. Other VoIP users **110**, **112**, **114** etc. are potential members of any given conference.

Conference bridges **100** are implemented on the VoIP soft switch **102** located, e.g., at the VoIP service provider's VoIP network.

While the VoIP soft switch **102** is preferably capable of being provisioned with as many VoIP conference bridges **100** as are required in any particular application, only one conference bridge **100** is shown in Fig. 1 for simplicity of explanation.

Also, while the conference bridge **100** is shown implemented in the soft switch **102**, it can be embodied within another suitable network element having an Internet Protocol (IP) type connection (e.g., TCP/IP) with the initial user **104** as well as with the potential conferees **110**, **112**, **114**.

The use of a conference bridge **100** eliminates the otherwise conventional requirement that the VoIP user **104** dial digits for a direct link with another specific VoIP communications device **110**, **112** or **114**. Instead, in accordance with the principles of the present invention, location information relating to the initial VoIP user **104** is passed to the VoIP conference bridge **100**, either from the user's VoIP communication device **104** or from their respective location server **106**. The location information is then compared by the VoIP soft switch **102** against other VoIP devices **110**, **112**, **114** etc. to find matching predetermined location-based criteria, e.g., within a geographic vicinity of the user's VoIP communication device **104**.

The VoIP soft switch **102** makes use of the location information. Based on the location, the VoIP conference bridge **100** identifies potential other participants to be asked to join the conference currently established by the initial VoIP user **104** on the conference bridge **100**, and outputs invites or requests **204** to join that conference **100** to the specific URLs, phone numbers and/or other identifying address information relating to VoIP communications equipment **110**, **112**, **114** of the potential other participants.

The soft switch **102** also maintains the attributes and rules from other communication devices **110**, **112**, **114** etc. for receiving conference bridge calls, as well as the fixed location (e.g., a place of business) or the ability to query for a current location (e.g., for mobile communication devices such as mobile phones) for each device. Based on this information, with or without other user input (e.g., to select or prioritize among a list of available third parties), the soft switch **102** invites one or more other communication devices **110**, **112**, **114**, etc. to join the conference bridge. This creates a voice link between the first user **104** and the other third parties **110**, **112**, **114** without requiring the first user **104** to know the contact information or name of the third parties **110**, **112**, **114**.

Fig. 2 shows an exemplary message flow diagram for establishing a VoIP location based conference, in accordance with the principles of the present invention.

In particular, as shown in Fig. 2, the initial VoIP user **104** sends a request for conference bridge call to the soft switch **102**. Preferably the initial VoIP user **104** includes location information with the conference request call **201**. However, as depicted in Fig. 1, location information can be obtained from an appropriate positioning server **106** if not available from the initial VoIP user **104**.

Subsequent to the incoming conference call **201**, suitable potential conferees are determined, and those that are within the geographic boundary pre-set or pre-provisioned into the conference bridge are invited with respective invite messages **204**, **206**.

In operation, the user's VoIP communication device **104** dials a pre-determined phone number (or URL) to initiate a conference bridge **100** on the

relevant VoIP soft switch **102**. Various phone numbers (or URL's) may be made available at the VoIP conference bridge **100**, each corresponding to a respective VoIP conference bridge **100** each with its own pre-established profile of who will be invited once the conference bridge **100** is first entered by the initiating VoIP user **104**.

For instance, one VoIP conference bridge **100** may be profiled to invite all other VoIP users within a geographic boundary of, e.g., 1 mile radius from a center point formed by the location of the initiating VoIP user **104**. A geographic boundary need not be merely a distance range. For instance, a geographic boundary may comprise, e.g., the grounds of a college or schoolyard, a workplace, etc., or be as specific as those VoIP users within a given room (e.g., gym) at the college or schoolyard. Another VoIP conference bridge **100** with its own phone number may correspond to invites to all other VoIP users **110**, **112**, **114** etc. currently located in, e.g., a given sports stadium.

The profiles used to identify the potential other VoIP conference participants may provide additional filtering characteristics beyond the location based information, e.g., other VoIP users who are contained not only within the pre-established geographic boundaries set for a given conference bridge **100**, but also listed within a 'conference buddy' list pre-listed by the user. Thus, as a result, 'buddies' that a user has pre-listed that are within the sports stadium at the time of the user's call will be invited to join a VoIP conference bridge.

Fig. 1 shows use of a VoIP positioning center (VPC) **106**. The VoIP soft switch **102** may receive the user's location information either from each of the VoIP communication devices **104**, **110**, **112**, **114** etc., or from the VPC **106**.

The VoIP soft switch **102** preferably uses both the location information of the initiating VoIP user **104**, together with any profile criteria set for a given conference bridge **100**, to determine a list of potential other conferees to be sent Invite messages inviting them to join the established VoIP conference bridge **100**. The profile information for the conference bridge **100** is preferably either pre-established by the VoIP service provider (e.g., to set a geographic boundary within a sports stadium), and/or may be input by the initiating user

through keypad entry or voice response on the communications device. Alternatively, profile information for a particular conference bridge may be pre-established via an appropriate web page and transmitted via the Internet to the soft switch **102** or other host gateway.

5 The VoIP soft switch **102** preferably also maintains the attributes and rules from other VoIP communication devices **110, 112, 114** for receiving conference bridge calls, as well as the fixed location (e.g., a place of business) or the ability to query for a current location (e.g., for mobile communication devices such as mobile phones) for each device. Based on this information, with or
10 without other user input (e.g., to select or prioritize among a list of available third parties), the VoIP soft switch **102** invites one or more other VoIP communication devices **110, 112, 114**, etc. to join the VoIP conference bridge **100**. This creates a voice link between the first VoIP user **104** that initially called into the VoIP conference bridge **100**, and the other potential, third party conferees **110, 112,**
15 **114**, etc., without requiring the first VoIP user **104** to know the name or even the contact information of the other potential, third party conferees **110, 112, 114**, etc.

 Upon receipt of an invite to a VoIP conference bridge **204, 206**, the potential other VoIP users **110, 112, 114**, etc. are preferably notified similar to an
20 incoming telephone call, e.g. with a ring signal, though it may be customized to be distinguished from the sound of an otherwise ordinary incoming phone call. For instance, a given unique phone tone may be activated upon receipt of an invite **204, 206** to a conference bridge **100**.

 In accordance with the principles of the present invention, the VoIP
25 user(s) **110, 112, 114** receiving invitations to join a VoIP conference **100** may be provided with a filter that automatically rejects any/all invite requests not meeting their own specific criteria (e.g., maintained on their VoIP devices **110, 112, 114** themselves, though such filtering may alternatively be performed at a network level, e.g., at the VoIP soft switch **102** or other centralized location.

30 Benefits of the invention include that there is no effective limit to the number of participants in the conference VoIP call, there are no cold transfers of

a call as VoIP invitees enter or leave the conference bridge **100**, and there is the ability to continue the conference call even after the initial VoIP user **104** disconnects.

The present invention has particular applicability with any/all VoIP
5 users, VoIP service providers, and/or even Public Safety Access Points (PSAPs).

Fig. 3 shows a VoIP user **104** originating an invitation to join a conference bridge **100** in a VoIP soft switch **102**, in a business to business or business to consumer scenario, in accordance with the principles of the present invention.

10 In particular, as shown in Fig. 3, a VoIP user **104** initiates an invitation or request **204** based on certain pre-defined criteria for a service provider or a peer attribute. The VoIP service provider acquires the user's location information, either directly from the VoIP communications device 104 or by request to the LIS **106**, and initiates a conference on the conference bridge
15 **100**. The conference bridge **100** issues invitations or notifications to one or more potential VoIP conferee users **110**, **112**, **114** etc. based on the location of the original user **104** and the specified criteria, by comparison to attribute or provider data for the other VoIP users **110**, **112**, **114** etc. The conference bridge **100** enables participation by multiple parties and does not depend on the participants'
20 knowledge of or current access to each other's contact information, profile / attributes / business type, or location. In addition, VoIP users can elect when to receive notifications based on their current status (away, available, business hours, etc.)

For instance, the VoIP user **104** would initiate a call to the
25 conference bridge **100**, thus initiating the sending of invitations or requests to potential conferees **110**, **112**, **114** etc. based on certain criteria (e.g., "tow truck drivers currently in Seattle"). Upon receipt of the initial call from the initiating VoIP user **104**, the VoIP service provider initiates a conference bridge **100** and issues an Invite or other notification to one or more VoIP users **110**, **112**, **114** etc.
30 who have selected or subscribed to receive such conference notifications for this particular conference topic (as defined by its criteria). Subscriptions may be

semi-permanent criteria for that particular conference bridge **100** (e.g., occupations or interests of the registered user of the relevant VoIP device) or temporary criteria (e.g., passengers on a specific airline flight, ticket agents with extra tickets for a specific event, etc.)

5 The conference bridge **100** enables participation by multiple parties and does not depend on the participants' knowledge of or current access to each other's contact information. In addition, VoIP users can elect when to receive notifications based on their current status (e.g., away, available).

10 More sophisticated implementations of the invention include adaptation of the criteria for a given conference bridge **100** to correspond to a particular live auction. For instance, in such application, the matchmaking database **300** functions as an automated auction tool by accepting as criteria for the auction data such as the proposed cost of service, and then connect the lowest bidder of those potential bidders **110, 112, 114** to the conference bridge
15 **100**.

 Preferably, the initiating VoIP user **104** is allowed to pre-define given criteria for the conference bridge **100**, e.g., a maximum number of participants (e.g., the first 4 providers or peers who accept the conference invitation), or other criteria for choosing among multiple users (e.g., to select the
20 VoIP user(s) **110, 112, 114** etc. whose location is closest to the initiating VoIP user **104** who initiated the conference invitation in the first place).

 Fig. 4 shows exemplary signal/call flow for an initiating VoIP user **104** calling to establish a conference bridge **100**, causing invitations to be transmitted to each potential VoIP conferee using IP protocol (e.g., TCP/IP) to
25 join the conference bridge **100** as shown in Fig. 3. In response, each invited VoIP user **110, 112, 114** may accept or reject the invitation with an Accept or Reject message transmitted via Internet Protocol back to the VoIP soft switch **102** that transmitted the initial invite messages **204, 206**.

 Offline activity also occurs, separate from the call flow, e.g., to
30 update location data (be it permanent or temporary) and criteria or attributes for the conference bridge **200** itself. Availability data may also be maintained and

updated offline, e.g., relating to pre-defined times for the conference bridge **100** to be established, and/or to the current status of the conference bridge **100**.

Fig. 5 shows a VoIP user **104** originating the transmission of a series of Invitations **504** to join a conference bridge **100** in a VoIP soft switch **102**, in a peer to peer or consumer to consumer scenario, in accordance with the principles of the present invention.

In particular, as shown in Fig. 5, the VoIP user **104** can call a conference bridge **100** and provide particular, customized criteria for the conference. In a peer-to-peer scenario as shown in Fig. 5, the VoIP user **104** issues a peer-to-peer request **550** such as a call searching for tickets to a specific public event (e.g., "Falcons Tickets"), searching for others with a similar hobby or interest (e.g., "Chess Players"), matchmaking services forming a personal add (e.g., "Male 30-35"), etc.

In the disclosed embodiment, the peer-to-peer conference is initiated by a call by an initiating VoIP user **104**. The conference bridge **100** may be pre-established with pre-determined criteria, and the initiating VoIP user **104** merely calls the appropriate conference bridge **100**. In such case, the VoIP service provider may establish network-wide criteria itself, or may allow customized conference bridges as a service to their subscribers. Alternatively, the criteria for the conference bridge may be established by the initiating VoIP user **104**. The criteria may be transmitted to the soft switch to establish the relevant conference bridge **100** preferably with data contained within the call from the initiating VoIP user **104**.

The peer attributes and desired geographical boundaries of the conference are maintained in a matchmaking database **500** in communication with the VoIP soft switch **102** or other gateway that hosts the conference bridge **100**.

The VoIP soft switch **102** issues a Peer Request **504** with location data to any/all VoIP users **110**, **112** and/or **114** fitting the criteria for the conference. In response, those VoIP users **110**, **112** and/or **114** who accept entry into the conference (e.g., by activating an 'Accept' button on the VoIP

communications device), return an Accept message **505** to the inviting VoIP soft switch **102**. Those VoIP users **110**, **112** and/or **114** that don't accept the Invite (either by activating a 'Reject' button on the VoIP communications device, or simply by not responding to the Invite message **204** within a given period of time) return a Reject message **505** to the inviting VoIP soft switch **102**.

The invited VoIP users **110**, **112**, **114** may include a filter allowing through only acceptable Invite messages based on criteria established by or on the receiving VoIP users **110**, **112**, **114**.

Fig. 6 shows exemplary signal/call flow for a VoIP user originating an invitation to join a conference bridge sent to other VoIP users as shown in Fig. 5.

In particular, the peer-to-peer request **550** issued by the VoIP user **104** is depicted in Fig. 6, as are the respective Invite messages **504** and Accept or Reject messages **505** from each of the invited VoIP users **110**, **112**, **114**.

The present invention allows VoIP users to find their most appropriate conferees, provider or peer match with minimal user interaction. This is particularly helpful for mobile VoIP users (e.g., while driving, walking, etc.) Moreover, there is no effective limit to the number of participants in the conference call (within network hardware limits of the conference bridge itself). There is also no risk of cold transfers of a VoIP telephone call as participants aren't handled in point-to-point connections that are transferred but rather join or exit an established conference at will. Furthermore, participants in the conference call can continue in the conference even after the initial user disconnects.

Potential markets for the present invention include VoIP service providers who may implement the inventive VoIP multi-user conferencing as a value added services for users. Other uses of the invention include consumer and business VoIP users with respect to commercial, government, educational activities, and Public Safety Access Points (PSAPs), to name a few.

VoIP location based conferencing in accordance with the principles of the present invention has particular applicability with any/all VoIP users, VoIP service providers, and/or Public Safety Access Points (PSAPs).

5 While the invention has been described with reference to the exemplary embodiments thereof, those skilled in the art will be able to make various modifications to the described embodiments of the invention without departing from the true spirit and scope of the invention.

CLAIMS

What is claimed is:

1. A Voice Over Internet Protocol (VoIP) conference bridge, comprising:

5 a conference bridge application active in a location addressed using Internet Protocol;

a module to determine a geographic boundary of a given conference; and

10 a plurality of Internet interfaces to said conference bridge application, to accept a respective plurality of VoIP telephone users;

wherein a conference is established between said plurality of VoIP telephone users, each of said plurality of VoIP telephone users being within said geographic boundary.

15 2. A method of conferencing Voice Over Internet Protocol (VoIP) voice communications devices, comprising:

establishing at least one conference bridge;

defining at least one criteria for participation in said given conference bridge;

20 receiving a VoIP call to said conference bridge from an initial VoIP user;

comparing a location of said initial VoIP to a location of at least one other VoIP user; and

25 issuing an invite message to another VoIP user based on a match of said location of said at least one other VoIP user being within a desired proximity to said location of said initial VoIP user.

3. The method of conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 2, further comprising:

30 requesting a location of said initial VoIP user from a positioning center.

4. The method of conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 2, further comprising:

5 obtaining a location of said initial VoIP user from said initial VoIP user themselves.

5. The method of conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 2, wherein:

10 a plurality of conference bridges are established.

6. The method of conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 5, wherein:

said plurality of conference bridges are established on a soft switch.

7. The method of conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 6, wherein:

15 said soft switch is located in a VoIP service provider's network.

8. Apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications devices, comprising:

20 means for establishing at least one conference bridge;

means for defining at least one criteria for participation in said given conference bridge;

25 means for receiving a VoIP call to said conference bridge from an initial VoIP user;

means for comparing a location of said initial VoIP to a location of at least one other VoIP user; and

30 means for issuing an invite message to another VoIP user based on a match of said location of said at least one other VoIP user being within a desired proximity to said location of said initial VoIP user.

9. The apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 8, further comprising:

means for requesting a location of said initial VoIP user from a positioning center.

5

10. The apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 8, further comprising:

means for obtaining a location of said initial VoIP user from said initial VoIP user themselves.

10

11. The apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 8, wherein:

said means for establishing at least one conference bridge establishes a plurality of conference bridges.

15

12. The apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 11, wherein:

said plurality of conference bridges are established on a soft switch.

20

13. The apparatus for conferencing Voice Over Internet Protocol (VoIP) voice communications device according to claim 12, wherein:

said soft switch is located in a VoIP service provider's network.

FIG. 1

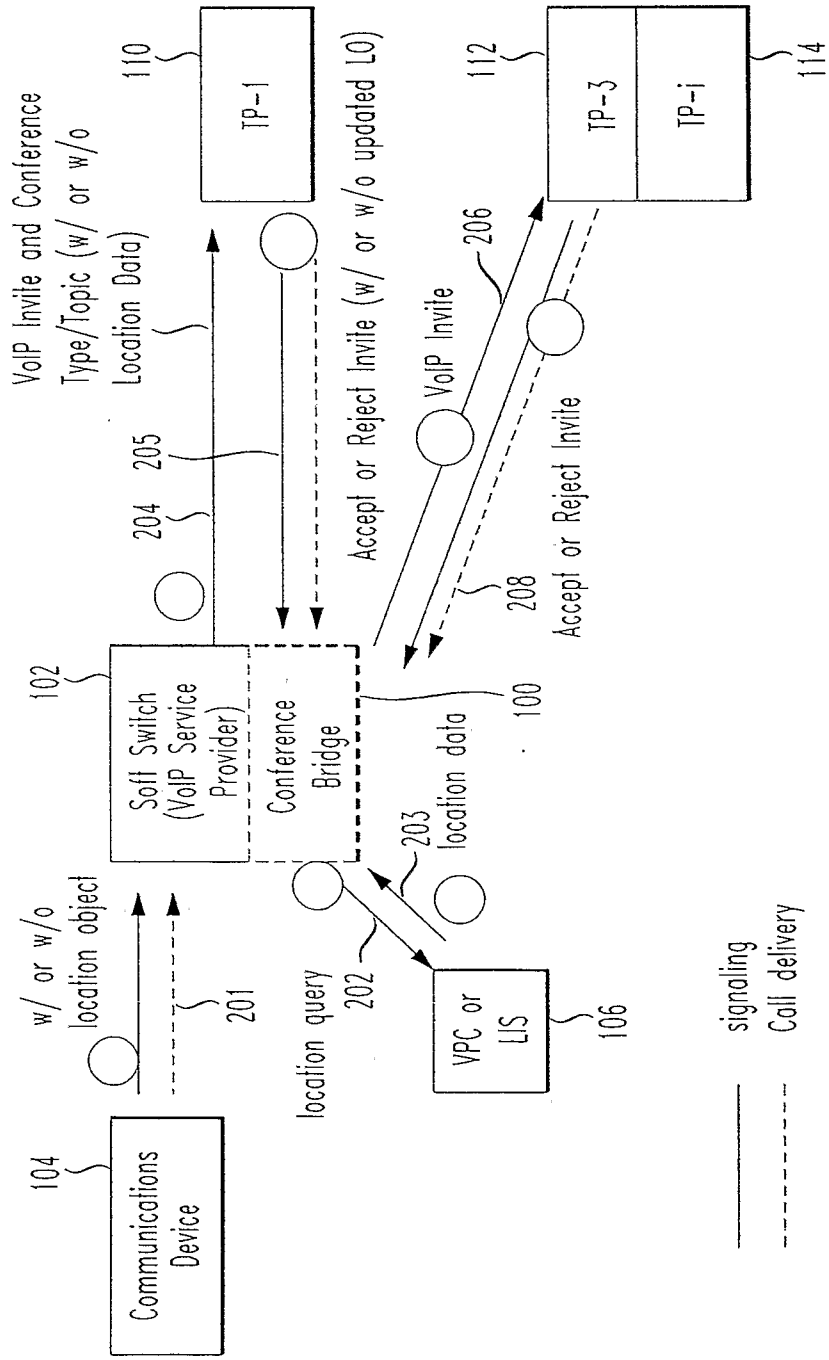


FIG. 2

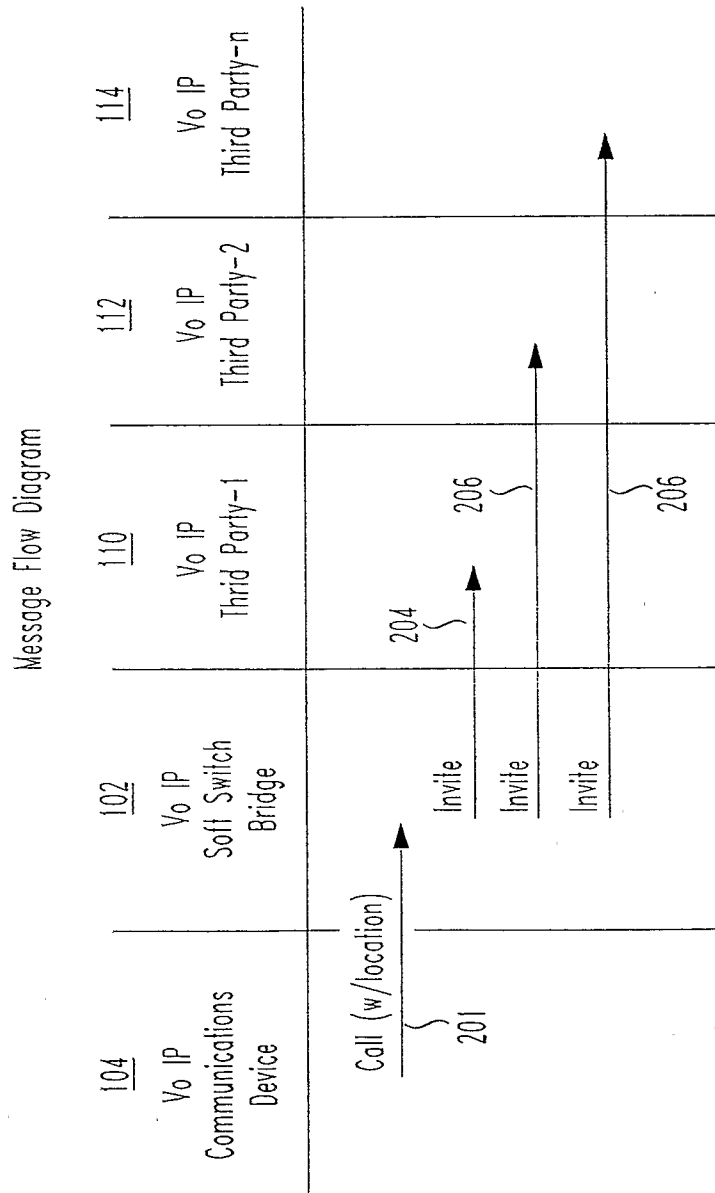
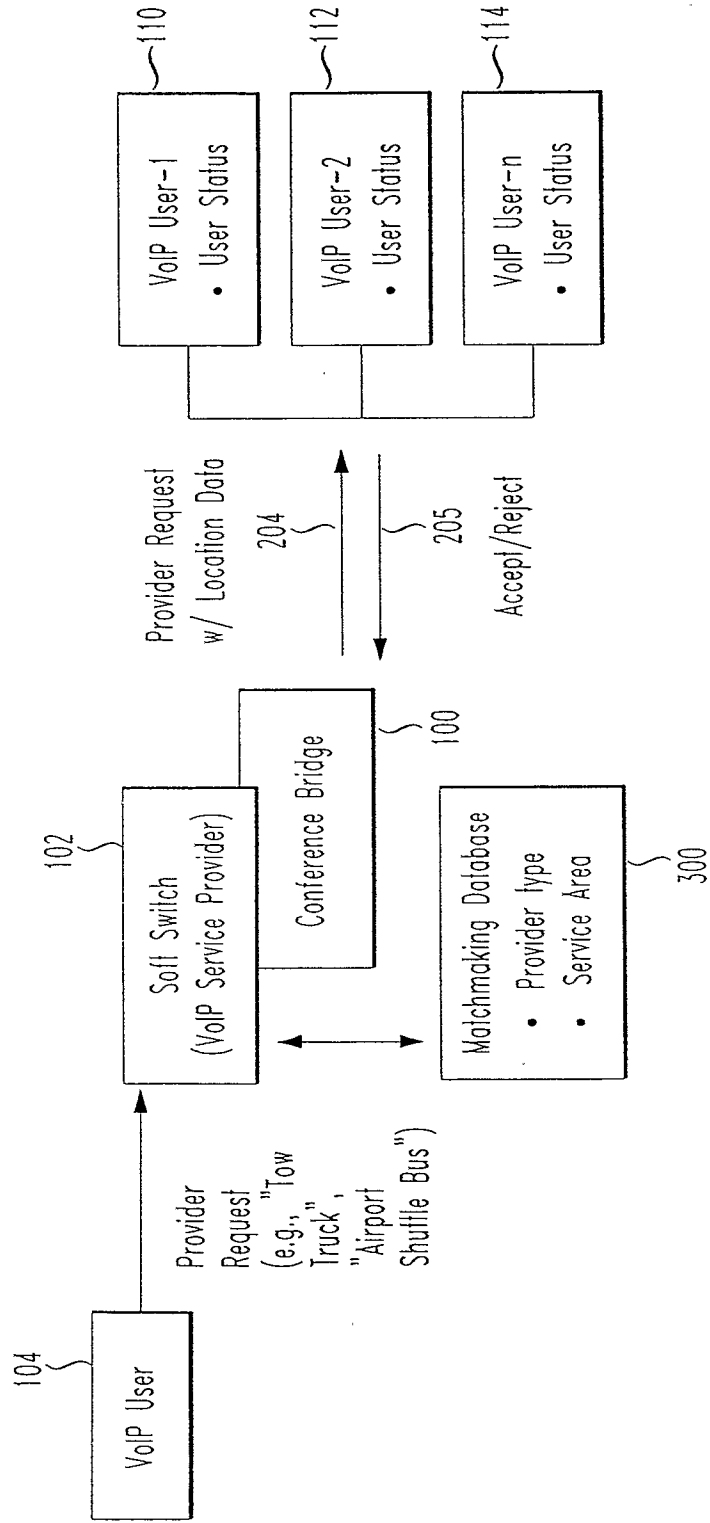


FIG. 3

Scenario 1: Provider Directory (B2B - Business to Business, or B2C - Business to Consumer)



Scenario 1 Signal / Call Flow

FIG. 4

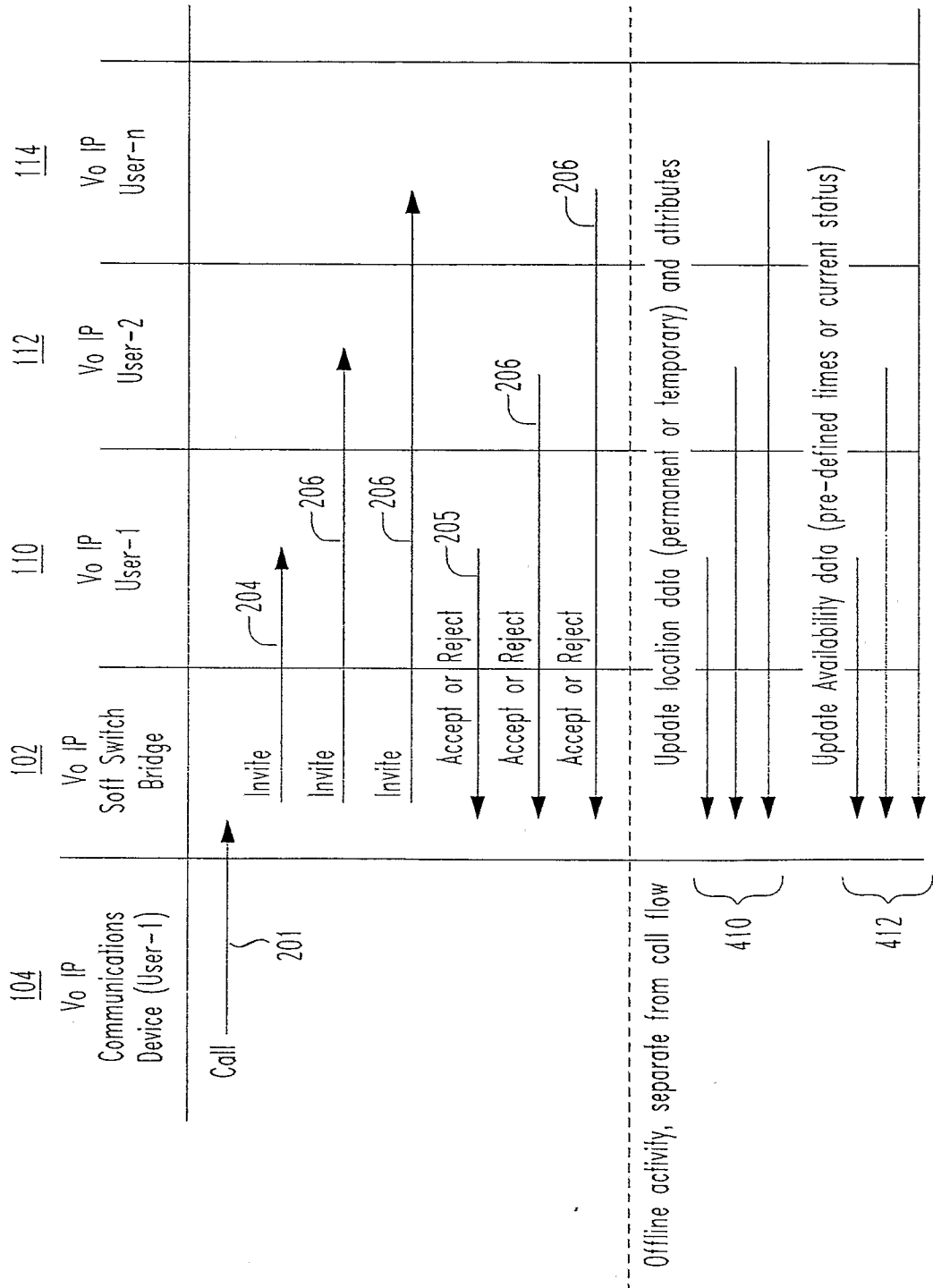


FIG. 5

Scenario 2: Peer to Peer / Consumer to Consumer

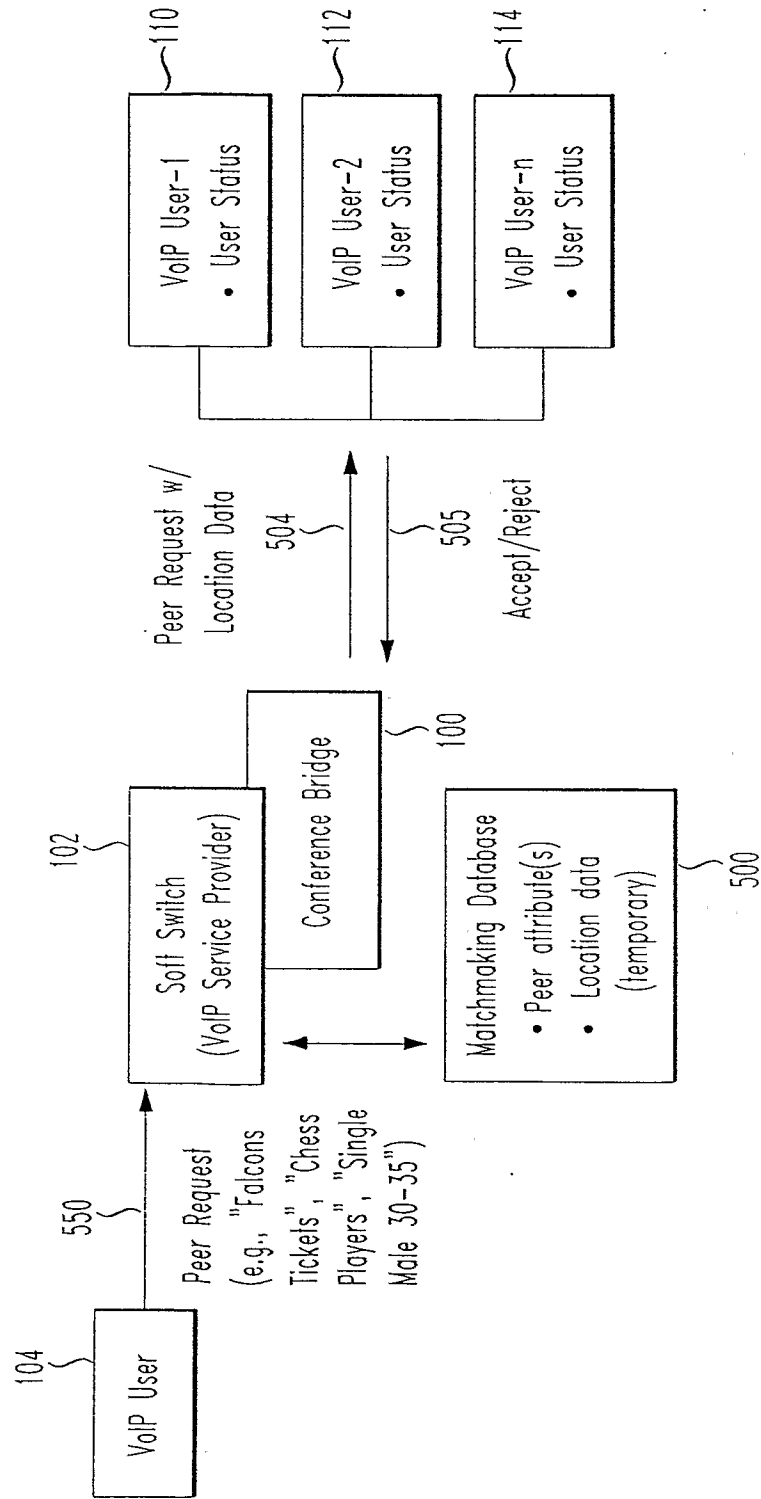


FIG. 6

Scenario 2 Signal / Call Flow

