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(54) **PEER TO PEER CONNECTION**

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H04L 29/12	(2006.01)
H04W 4/14	(2009.01)

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CPC ***H04L 67/1068*** (2013.01); ***H04L 29/06027*** (2013.01); ***H04L 61/106*** (2013.01); ***H04L 69/329*** (2013.01); ***H04W 4/14*** (2013.01)

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CPC G06F 21/6218; G06Q 10/10; H04L 41/0893; H04L 63/10; H04L 63/20
See application file for complete search history.

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(57) **ABSTRACT**

A method in a first device for setting up a peer-to-peer IP connection between the first device and a second device may include sending a request to a second device for setting up the peer-to-peer IP connection between the first device and the second device. The request may include an IP address of the first device. Alternatively, an IP address of the second device may be received in a message from the second device. The peer-to-peer IP connection between the first device and the second device is then set up. The setting up may be initiated by one of the parties associated with the first device or the second device by connecting to the other party using the IP address of the other party.

20 Claims, 3 Drawing Sheets

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Fig 1

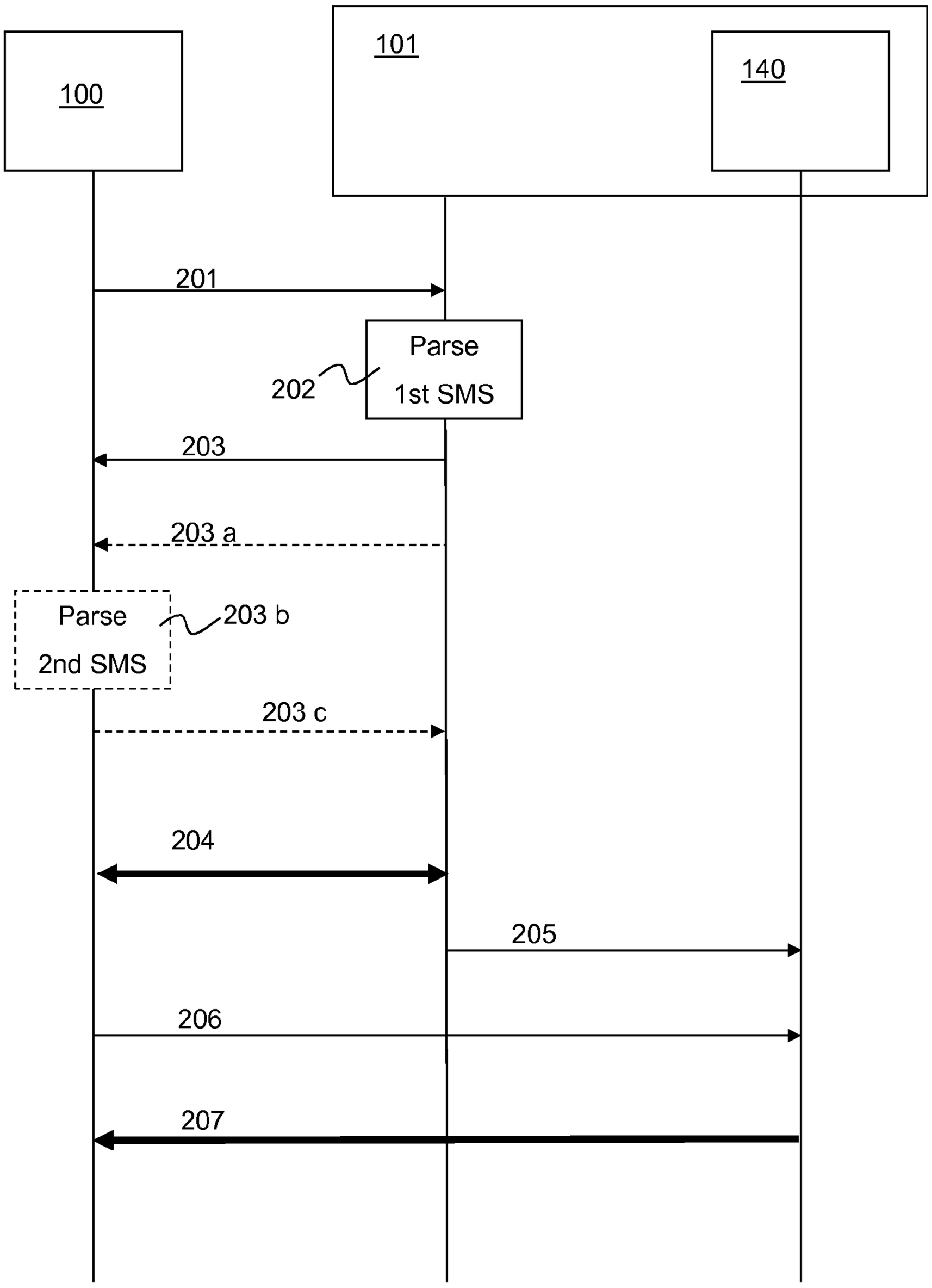
100
101
140
201
Parse
1st SMS
202
203
203 a
Parse
2nd SMS
203 b
203 c
204
205
206
207

Fig 2

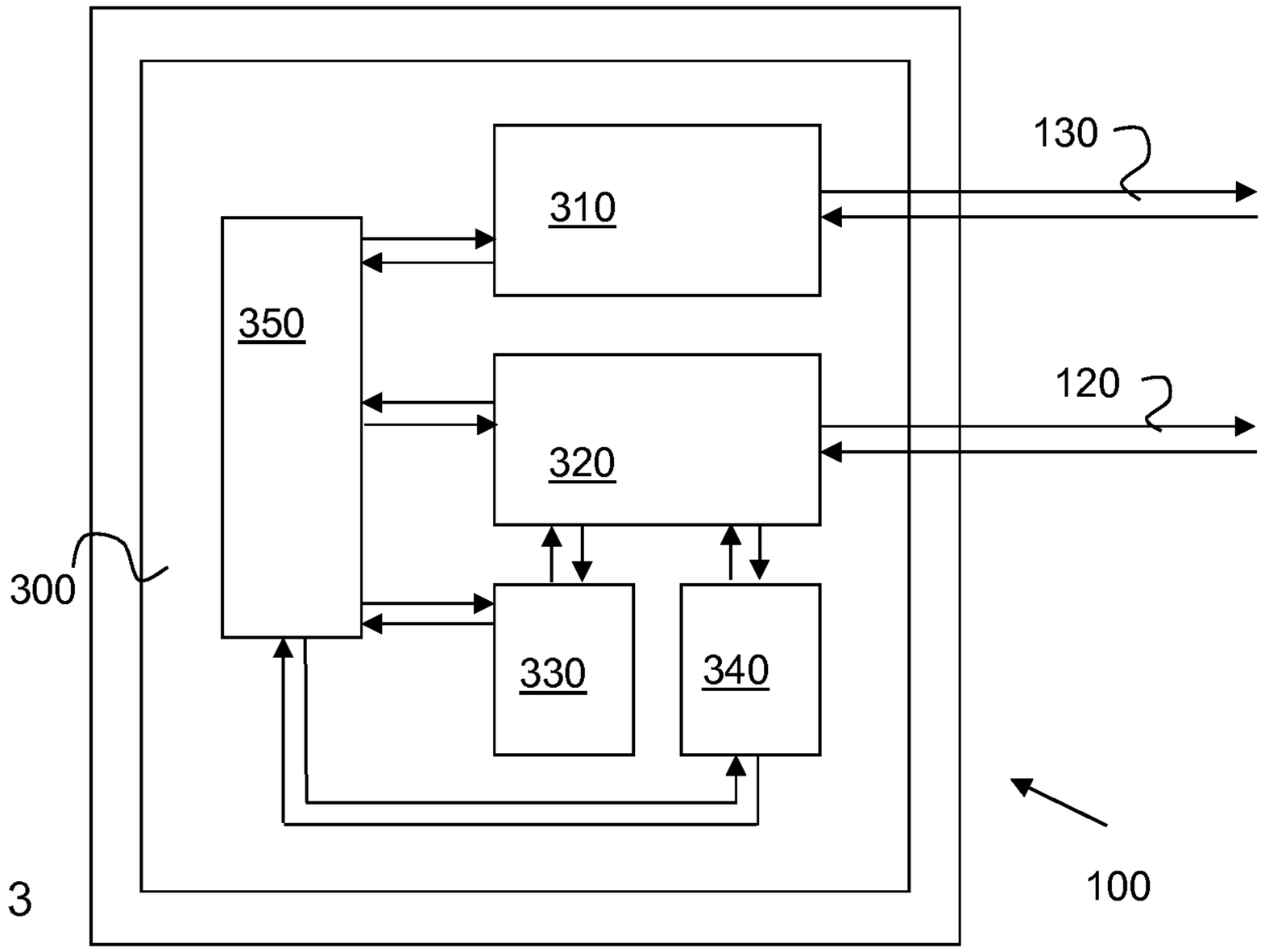
130
310
350
120
320
300
330
340
100

Fig. 3

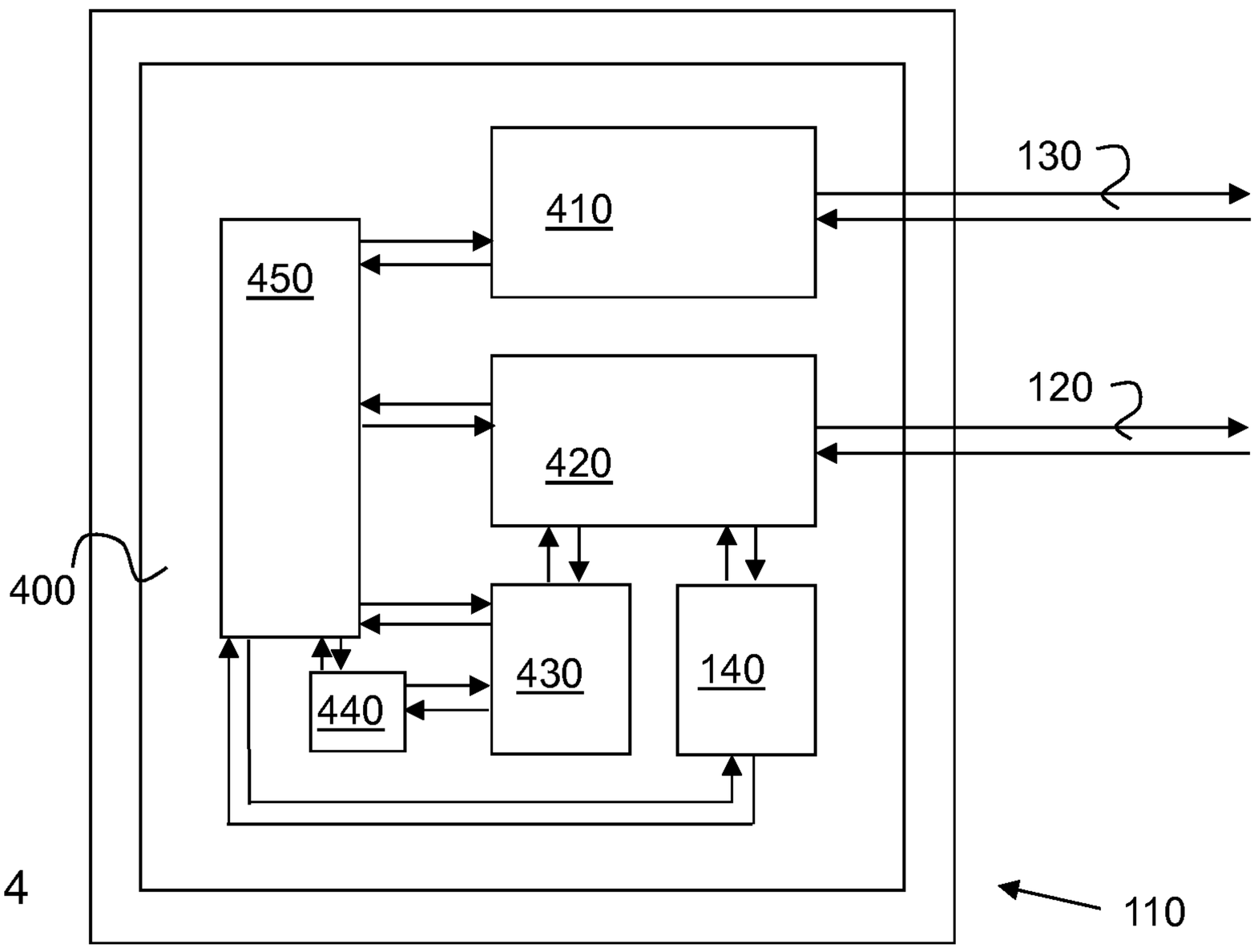
130
410
450
120
420
400
430
140
440
110

Fig. 4

PEER TO PEER CONNECTION

RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 11/469,680, filed Sep. 1, 2006 (now U.S. Pat. No. 8,798,075), which claims priority under 35 U.S.C. §119 based on U.S. Provisional Application No. 60/806,274, filed Jun. 30, 2006, the disclosures of which are hereby incorporated herein by reference.

TECHNICAL FIELD

The present invention relates generally to setting up connections and, more particularly, to setting up a peer-to-peer IP connection between communication devices.

BACKGROUND OF THE INVENTION

With the proliferation of portable multimedia devices and larger, cheaper memories for storing content, there is a growing desire for consumers to share personal media content between several portable devices. It has become more and more frequent for consumers to store media content on a portable device, such as, e.g., a mobile telephone, with a wireless data connection. Unfortunately, a connection between two mobile telephones is not sufficient to provide a peer-to-peer Internet Protocol (IP) connection and an access to the content. In today's solutions, a server is required to set up a peer-to-peer IP connection, which is time consuming and cumbersome. The server is used to keep track of IP addresses and to enable the connection. The server is effectively contacted by all possible parties and the server thus holds IP addresses associated with all the parties. Then when one party wished to call a second party, it contacts the server. The server finds the current IP address associated with the second party. The connection can be routed through the server.

SUMMARY OF THE INVENTION

Aspects of the invention provide a mechanism for setting up a peer-to-peer IP connection, where the mechanism is fast and easy for the users of the first and second devices.

In accordance with a first aspect of the present invention, a method in a first communication device (first device) for setting up a peer-to-peer IP connection between the first device and a second communication device (second device) is provided. The method comprises the steps of: sending in an Short Message Service (SMS), Multimedia Messaging Service (MMS) or similar message to the second device, a request for setting up the peer-to-peer IP connection between the first device and the second device; sending an IP address of the first device in a message to the second device, or receiving an IP address of the second device in a message from the second device; and setting up the peer-to-peer IP connection between the first device and the second device. The setting up is initiated by any one of the parties of the first device and the second device, having obtained the IP address of the other party in the step above, by connecting to the other party by means of the IP address of the other party.

In accordance with a second aspect of the present invention, a method in a second communication device (second device) for setting up a peer-to-peer IP connection between a first communication device (first device) and the second device is provided. The method comprises the steps of: receiving in an Short Message Service (SMS), Multimedia Messaging Service (MMS) or similar message from the first device, a request for setting up the peer-to-peer IP connection between the first device and the second device; receiving an IP address of the first device in a message from the first device, or sending an IP address of the second device in a message to the first device; and setting up the peer-to-peer IP connection between the first device and the second device. The setting up is initiated by any one of the parties of the first device and the second device, having obtained the IP address of the other party in the step above, by connecting to the other party by means of the IP address of the other party.

In accordance with a third aspect of the present invention, an arrangement in a first communication device is provided. The first device arrangement comprises a Short Message Service (SMS), Multimedia Messaging Service (MMS) or similar message communication unit, adapted to send, in an SMS, MMS or similar message to the second device, a request for setting up a peer-to-peer IP connection between the first device and a second communication device. The message communication unit is further adapted to send an IP address of the first device in a message to the second device, or receive an IP address of the second device in a message from the second device. The first device arrangement further comprises an IP communication unit adapted to set up the peer-to-peer IP connection between the first device and the second device. The setting up is initiated by any one of the parties of the first device and the second device, having obtained the IP address of the other party, by connecting to the other party by means of the IP address of the other party.

In accordance with a fourth aspect of the present invention, an arrangement in a second communication device is provided. The second device arrangement comprises a Short Message Service (SMS), Multimedia Messaging Service (MMS) or similar message communication unit adapted to receive, in an SMS, MMS or similar message from the first device, a request for setting up the peer-to-peer IP connection between the first device and the second device. The message communication unit is further adapted to receive an IP address of the first device in a message from the first device, or send an IP address of the second device in a message to the first device; and the second device arrangement further comprises an IP communication unit adapted to set up the peer-to-peer IP connection between the first device and the second device. The setting up is initiated by any one of the parties of the first device and the second device, having obtained the IP address of the other party, by connecting to the other party by means of the IP address of the other party.

Since the request for setting up a peer-to-peer IP connection and the IP address are sent in a SMS, MMS or similar message, the peer-to-peer IP connection can be set up in a fast and easy way.

An advantage of the present invention is that standard network protocols may be used, which implies that networks do not require upgrades for the technology of the invention to work. Therefore, there is no need for any changes with respect to standard network protocols.

Another advantage associated with the present invention is that no server is required for setting up the peer-to-peer IP connection. Still another advantage is that communication devices also are easier to port. A further advantage of the present invention is that it does not require users to upload content to a public server.

Yet another advantage of the present invention is that it does not require a subscription to a third-party service. A further advantage of the present invention is that the mechanism is also easily extendible to media content stored on a home personal computer (PC) or media server. Another advantage of the present invention is that it will work with any

device that has a temporary IP address and a secondary means of communication that has a stable address known to other parties.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic block diagram illustrating a first device communicating with a second device according to the present invention.

FIG. **2** is a combined flow chart and message sequence diagram describing a method for setting up a peer-to-peer IP connection between the first device and the second device according to the present invention.

FIG. **3** is a schematic block diagram illustrating an arrangement in a first communication device according to the present invention.

FIG. **4** is a schematic block diagram illustrating an arrangement in a second communication device according to the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The invention is defined as a method and an arrangement which may be put into practice in the embodiments described below.

FIG. **1** shows a first communication device **100** (referred to herein as first device **100**), adapted to communicate with a second communication device **110** (referred to herein as second device **110**). The first device **100** and second device **110** are included in a communication system, such as, e.g., a radio communication system using technologies such as, e.g., Global System for Mobile communication (GSM), Wideband Code Division Multiple Access (WCDMA), a Plain Old Telephone Service system (POTS), or the Internet. The first device **100** and second device **110** may be, e.g., a portable device, a mobile phone, a Personal Digital Computer, a POTS device, a computer or any other communication device. The first device **100** and the second device **110** further have a respective IP address and a respective telephone number or some other kind of address that make them capable of communicating via Short Message Service (SMS), Multimedia Messaging Service (MMS) or similar, using an SMS, MMS bearer or a similar bearer that may be circuit switched or packet switched. This means that the respective first and second device **100**, **110** may communicate via an IP route **120** and/or an SMS, MMS and/or similar route **130**. For example, the first device **100** and second device **110** may include a Subscriber Identity Module (SIM) card or similar function, such as Universal Mobile Telecommunications System SIM (USIM) or IP Multimedia Subsystem SIM (ISIM), which function includes the telephone number or an other kind of address of the device. When describing the invention, the term "message" is used for any SMS, MMS or any similar message and/or service. The present method uses the feature of a communication system in which devices with a SIM card or a similar card/device, or a telephone number can directly be contacted as soon as the devices are turned on, via the SMS, MMS or similar bearer.

The present method may further use a feature used in SMS, MMS or similar, defined in some communication systems, such as radio communications systems, which directly address a specified port, not appearing in the device's normal SMS inbox and thereby auto start certain applications.

For example, if the first device **100** or the second device **110** is a computer with a SIM (or ISIM or USIM) card, it can connect to the Internet using, e.g., General Packet Radio Service (GPRS), and can send and receive an SMS, MMS or similar message using GSM. Such a computer can potentially also be connected to the Internet through a landline cable, such as, e.g., Asymmetric Digital Subscriber Line (ADSL) or a broadband access. With the SIM (or USIM, or ISIM or similar) card, it has an identity which makes it reachable. This identity can be its Mobile Station International Integrated Service Digital Network (MS ISDN) number, such as in the SMS case, or it can be a Session Initiation Protocol Uniform Resource Identifier (SIP URI), as is the case with ISIM (ISIM is the SIM card application used in the IMS case). The first device **110** and the second device can, e.g., send and receive SMS, MMS or similar messages over the GSM network or alternatively over the land line cable over the Internet with a direct connection to the Short Message Service Center (SMSC). In this document, the term "telephone number" is used, but the term also covers any similar address making it possible to send and receive.

It is not unlikely that the SMS service over time is replaced by something else. A feature of the SMS, MMS or similar service that the first device **100** and second device **110** use is that the second device **110** is always available as soon as the user of the second device **110** installs the SIM (or USIM or ISIM) card into the second device **110**. A similar service in the present method should also have this feature, but can be more efficiently implemented by using, e.g., the SIP URI identity instead of the MS ISDN. Therefore the present invention also covers alternative services to SMS.

Assume that the first device **100** wishes to set up a peer-to-peer IP connection between the first device **100** and the second device **110**. The second device **110** is addressable by its telephone number or similar, independent of its actual IP address.

FIG. **2** is a combined flow chart and message sequence diagram describing a method for initiating a peer-to-peer IP connection between the first device **100** and the second device **110** by using an SMS, MMS or similar message to initialize the IP connection. The method may comprise the following steps:

201. The first device **100** wishes to initiate a peer-to-peer IP connection between the first device **100** and the second device **110**. An exemplary scenario may be that the user of the first device **100** wishes to share multimedia content with user of the second device **110** over the peer-to peer connection. The first device **100** sends a message to the second device **110**, using the telephone number (or similar) of the second device **110**. This message is also referred to as the first message herein. The message comprises a request for setting up a peer-to-peer IP connection between the first device **100** and the second device **110**. The message may further comprise the IP address of the first device **100**. In an alternative embodiment, the IP address of the second device **110** may be sent in a second message, which will be described below. The first message may further comprise the telephone number of the first device **100**. This is performed in a common way, i.e., information about the telephone number of a sender of an SMS, MMS or similar message is included in the SMS, MMS or similar message. This may be performed automatically, for example, by an application such as Internet browser application or an IP telephony application, e.g., if the first device **100** wishes to share an application with the second device **110**, such as an IP telephony application that the first device **100** wishes to use for communicating with the second device **110**. The user of the first device **100** then starts the application and chooses or enters the telephone number of the second device **110**. The application then automatically sends the message to the same application in the second device **110**. In that case,

the message further comprises a trigger to start the application in the second device. This may, e.g., be accomplished by the first device **100** addressing the first message to a specific port at the second device **110**, which port is associated with the application. If the second device includes that application, it has registered that any message addressed to that specific port is associated with the application. The message then auto starts the application in the second device **110**.

202. The message is parsed in the second device **110**. In the parsing step, the request is identified, i.e., that the first device **100** wishes to initiate a peer-to-peer IP connection between the first device **100** and the second device **110**. In this step, the sender may also be identified. This may be performed by identifying the telephone number, e.g., by checking the telephone number against a phone book in the second device. The second device **110** may comprise a user-defined list of user of devices who are allowed to form peer-to-peer IP connections to the second device **110**. If there is such a list and the user of the second device **110** and/or the first device **100** is not on the list, the procedure ends and no peer-to-peer IP connection is set up.

203. When the request is identified, and if the IP address was included in the first message of the second device **110**, the first device **100** is connected to the second device **110** for setting up a peer-to-peer IP connection between the first device **100** and the second device **110**, using the IP address comprised in the first message. As described above, one example of performing the setting up automatically is if the first message was sent to a specific port in the second device **110**. In this case, the port being associated to a specific application, the application in the second device **110** is started automatically. The application in the second device **110** then initiates the peer-to-peer IP connection between the application in the first device **100** and the same application in the second device **110**. The first device **100** may be informed of the IP address of the second device **110** and an identification identifying the second device **110** during the set up.

In an alternative to step **203**, three steps **203** *a*, **203** *b* and **203** *c* may be taken, which steps are illustrated as dashed arrows and square **203** *a*, **203** *b* and **203** *c*. In this alternative embodiment, no IP address was included in the first message and therefore the second device cannot initiate the peer-to-peer IP connection. Instead, the second device **110** provides the first device **100** with the IP address of the second device **110** and the first device **100** initiates the start up of the peer-to-peer IP connection.

203 *a*. When the request is identified, the second device **110** replies to the first message from the first device **100** by sending a second message. This may be performed automatically without involving the user of the second device **110**. The second message includes the current IP address of the second device **110**. The second message may further include an identification number and a request for a peer-to-peer IP connection between the first device **100** and the second device **110**.

203 *b*. When the first device **100** receives the second message, i.e., the reply from the second device **110**, the first device **100** parses the second message and extracts the IP address and also the identification if included.

203 *c*. The first device **100** connects to the second device **110** for setting up a peer-to-peer IP connection between the first device **100** and the second device **110**, using the IP address included in the second message. This may be performed automatically without involving the user of the first device **100**.

204. The first device **100** may now communicate with the second device **110** using the set up peer-to-peer IP connection. In some implementations, as described in more detail below, the first device **100** and the second **110** may share the application.

In one embodiment, the user of the first device **100** wishes to use the peer-to-peer IP connection to browse on a server **140**, e.g., a HyperText Transfer Protocol (HTTP) server, in the second device **110**. The second device **110** includes the server **140** that provides any generic content that can be associated with any type of rendering program such as a browser, audio and or video codecs and also Global Positioning System (GPS) positions, Personal Information Management (PIM) and similar. The first device **100** and the second device **110** may include a respective Internet browser application. An Internet browser is a software application that enables a device to display and interact with text, images, and other information located on a HTTP server. Internet browsers communicate with HTTP servers to fetch information stored at the HTTP server. A simple Hypertext Markup Language (HTML) page can be dynamically generated to provide a list of available files. According to this embodiment, the present method includes further steps described in detail below.

205. The second device **110** starts an application to act as a server **140**. This is performed by the trigger to start an application, e.g., an Internet browser application. In an exemplary implementation, the first message may be a trigger to start a server application in the second device **110**, i.e., a software process to act as a multimedia network server at the Internet.

206. The first device **100** starts its Internet browser if not already started (e.g., the Internet browser may be started already in step **201** when sending the first message, as discussed above). The first device **100** uses the IP address of the second device **110** and possibly also the identification identifying the first device **100** included in the first or second message. By means of, e.g., the Internet browser, the first device **100** uses the IP address of the second device **110** for accessing server **140**. This may be performed by the first device **100** sending a request to access the server **140** in the second device **110**, to the IP address of the second device **110**. The identification may be included in this request as an authentication measure and in this case, the server **140** lets the first device **100** access the server **140** if the identification is identified as authorized. Note that the identification may be further processed by the first device **100** in a previously agreed way, so that the second device **110** is further assured that the request to set up the peer-to-peer IP connection is from a legitimate user (e.g., the first device **100**). The second device **110** recognizes the new signature from the identification it sent out and stores information indicating how the identification it sent out would be further processed by the first device **100**. This enables the second device **110** to recognize the new signature.

207. The user of the first device **100** now can browse the content of the second device **110** and stream or download media files accessible from the Internet browser of the first device **100** and/or the second device **110**.

In a similar way, the present method may be used to start instant messaging sessions, voice over IP connections, or any IP-based service between two devices. Also, by running a background task on a personal computer or media server, the personal computer can send an SMS, MMS or similar message to inform the device whenever the dynamic IP address of the server associated with the personal computer is updated. This allows the user of the device to access all content stored on the server associated with the computer.

In an exemplary implementation, to perform the steps described above in FIG. **2**, the first device **100** includes an

arrangement **300** as depicted in FIG. **3**. The first device arrangement **300** comprises an SMS, MMS or similar message communication unit **310** (referred to herein as message communication unit **310**) adapted to send in an SMS, MMS or similar message (referred to herein as the message) to the second device **110**, a request for setting up a peer-to-peer IP connection between the first device **100** and the second device **110**. The message communication unit **310** further is adapted to send an IP address of the first device **100** in a message to the second device **110**, or receive an IP address of the second device **110** in a message from the second device **110**. The message communication unit **310** may further be adapted to send, in a message to the second device **110**, an identification identifying the first device **100**.

The first device arrangement **300** further comprises an IP communication unit **320** adapted to set up the peer-to-peer IP connection between the first device **100** and the second device **110**, where the setting up is initiated by any one of the parties of the first device **100** and the second device **110**, having obtained the IP address of the other party, by connecting to the other party by means of the IP address of the other party. The IP communication unit **320** may further be adapted to use the set up peer-to-peer IP connection for sending a request to the second device **110**, requesting to access a server **140** in the second device **110**.

The second device **110** may comprise an application to act as a server, e.g., an HTTP server, and the message communication unit **310** may further be adapted to send in a message to the second device **110**, a trigger to start the application in the second device **110**. The IP communication unit **320** may further be adapted to send to the second device **110**, the identification together with the request to access the server **140**, where the identification is adapted to be used by the second device **110** as an authentication measure before letting the first device **100** access the server **140**. The first device arrangement **300** may comprise an Internet browser application **330** and the IP communication unit **320** may further be adapted to browse a server in the second device **110**, using the Internet browser application **330** in the first device **100**.

The first device arrangement **300** may further include an application **340**, where the IP communication unit **320** may be configured to share the application **340** with the second device **110** using, for example, the set up peer-to-peer IP connection.

In one embodiment, the message communication unit **310** may be adapted to send the request for setting up the peer-to-peer IP connection between the first device **100** and the second device **110**, and the IP address of the first device **100** in the same message to the second device **110** (e.g., the first message). The IP communication unit **320** may then be adapted to be connected by the second device **110**, wherein the second device **110** is initiating the setting up of the peer-to-peer IP connection by means of the IP address of the first device **100** sent in the first message.

In another embodiment, the message communication unit **310** may be adapted to send the request for setting up the peer-to-peer IP connection between the first device **100** and the second device **110** in a first message, and receive the IP address of the second device **110** in a second message from the second device **110**, which second message is a reply of the first message. The IP communication unit **320** may then be adapted to initiate the setting up of the peer-to-peer IP connection such that the first device **100** connects to the second device **110** by means of the IP address of second device **110** received in the second message.

The identification identifying the first device may be included in the first message in any of the above embodiments.

In an exemplary implementation, to perform the steps described in FIG. **2**, the second device **110** may include an arrangement **400** as depicted in FIG. **4**. The second device arrangement **400** comprises an SMS, MMS or similar message communication unit **410** (message communication unit **410**) adapted to receive in an SMS, MMS or similar message (message) from the first device **100**, a request for setting up the peer-to-peer IP connection between the first device **100** and the second device **110**. The message communication unit **410** is further adapted to receive an IP address of the first device **100** in a message from the first device **100**, or send an IP address of the second device **110** in a message to the first device **100**. The message communication unit **410** may further be adapted to receive in a message from the first device **100**, an identification identifying the first device **100**.

The second device arrangement **400** further comprises an IP communication unit **420** adapted to set up the peer-to-peer IP connection between the first device **100** and the second device **110**, which setting up is initiated by any one of the parties of the first device **100** and the second device **110**, having obtained the IP address of the other party, by connecting to the other party by means of the IP address of the other party. The IP communication unit **420** may be adapted to share an application with the first device **100**, using the set up peer-to-peer IP connection.

The second device may include the server **140** and the IP communication unit **420** may further be adapted to receive on the set up peer-to-peer IP connection, a request from the first device **100** to access the server **140** in the second device **110**. In other implementations, server **140** may be located externally from second device **110** and may be accessible to second device **110**. The IP communication unit **420** may further be adapted to receive from the first device **100**, the identification together with the request to access the server **140**, which identification is adapted to be used by the second device **110** as an authentication measure before letting the first device **100** access the server **140**. The second device **110** may include an application to act as a server **430** and the message communication unit **410** may further be adapted to receive a trigger to start the application in the second device **110**, in a message from the first device **100**. The second device arrangement **400** may further include means **440** for starting the application **430** to act as a server **140** by means of the trigger. The first device **100** may include an Internet browser application. The server **140** in the second device **110** may be adapted to be browsed on by the first device **100** using its Internet browser application.

In one embodiment, the message communication unit **410** may be adapted to receive the request for setting up the peer-to-peer IP connection between the first device **100** and the second device **110**, and the IP address of the first device **100**, in the same message from the first device **100**. The IP communication unit **420** may then be adapted to initiate the set up of the peer-to-peer IP connection such that the second device **110** is connecting to the first device **100** by means of the IP address of the first device **100** received in the first message.

In another embodiment, the message communication unit **410** may be adapted to receive the request for setting up the peer-to-peer IP connection between the first device **100** and the second device **110** in a first message from the first device **100**. The message communication unit **410** may further be adapted to send the IP address of the second device **110** in a second message to the first device **100**, which second mes-

sage is a reply of the first message. The IP communication unit **420** may then be adapted to be connected by the first device **100** by means of the IP address of second device **110** sent in the second message, for setting up of the peer-to-peer IP connection.

The identification identifying the first device **100** may be included in the first message.

The present mechanism for setting up a peer-to-peer IP connection can be implemented through one or more processors, such as processor **350** in the first device **100** depicted in FIG. **3** and/or the processor **450** in the second device **110** depicted in FIG. **4**, together with computer program code for performing the functions described herein. The program code mentioned above may also be provided as a computer program product, for instance in the form of a data carrier carrying computer program code for performing the present method when being loaded into the first device. One such carrier may be in the form of a CD ROM disc. It is, however, feasible to use other data carriers, such as a memory stick or any other computer readable medium. The computer program code can furthermore be provided as pure program code on a server and downloaded to the first device **100** and/or second device **110** remotely.

It should be emphasized that the term "comprises/comprising" when used in this specification is taken to specify the presence of stated features, integers, steps, or components, but does not preclude the presence or addition of one or more other features, integers, steps, components, or groups thereof.

No element, act, or instruction used in the description of the present application should be construed as critical or essential to the invention unless explicitly described as such. Also, as used herein, the article "a" is intended to include one or more items. Where only one item is intended, the term "one" or similar language is used. Further, the phrase "based on," as used herein is intended to mean "based, at least in part, on" unless explicitly stated otherwise.

The present invention is not limited to the above-describe preferred embodiments. Various alternatives, modifications and equivalents may be used. Therefore, the above embodiments should not be taken as limiting the scope of the invention, which is defined by the appending claims and their equivalents.

What is claimed:

1. A method comprising:

sending, by a first communication device and to a second communication device, a request for establishing a peer-to-peer Internet Protocol (IP) connection between the first communication device and the second communication device;

receiving, by the first communication device, a message from the second communication device,

the message including information identifying:

an identifier associated with the first communication device, and

an IP address associated with the second communication device;

generating, by the first communication device and based on the identifier, a signature associated with the first communication device; and

sending, by the first communication device, the signature to the IP address of the second communication device to establish the peer-to-peer IP connection,

the second communication device authenticating the first communication device based on the signature, and

the peer-to-peer IP connection being established based on the second communication device authenticating the first communication device.

2. The method of claim **1**, further comprising:

using the peer-to-peer IP connection to share an application with the second communication device.

3. The method of claim **1**, where sending the request to establish the peer-to-peer IP connection includes:

sending one of a short message service message or a multimedia messaging service message,

the one of the short message service message or the multimedia messaging service message including the request to establish the peer-to-peer IP connection.

4. The method of claim **1**, where sending the request to establish the peer-to-peer IP connection includes:

sending a trigger to the second communication device,

where the trigger causes the second communication device to start an application for enabling the second communication device to act as a server.

5. The method of claim **4**, where sending the trigger includes:

addressing the request to establish the peer-to-peer IP connection to a particular port of the second communication device,

where the particular port is associated with the application.

6. The method of claim **1**, further comprising:

sending, via the peer-to-peer IP connection, a request to access a server associated with the second communication device.

7. The method of claim **6**, where the server is external to the second communication device.

8. A first device comprising:

a processor to:

send, to a second device, a request for establishing a peer-to-peer Internet Protocol (IP) connection between the first device and the second device;

receive, from the second device, a message that includes information identifying:

an identifier associated with the first device, and

an IP address associated with the second device;

generate, based on the identifier, a signature associated with the first device; and

send the signature to the IP address of the second device to establish the peer-to-peer IP connection,

the second device authenticating the first device based on the signature, and

the peer-to-peer IP connection being established based on the second device authenticating the first device.

9. The first device of claim **8**, where the processor is further to:

share multimedia content with the second device via the peer-to-peer IP connection.

10. The first device of claim **8**, where, when sending the request to establish the peer-to-peer IP connection, the processor is to:

use a telephone number associated with the second device to send one of a short message service message or a multimedia messaging service message to the second device,

the one of the short message service message or the multimedia messaging service message including the request to establish the peer-to-peer IP connection.

11. The first device of claim **8**, where, when sending the request to establish the peer-to-peer IP connection, the processor is to:

use an application to send a trigger to the second device, where the trigger causes the second device to start a same application on the second device.

12. The first device of claim **8**, where, when sending the request to establish the peer-to-peer IP connection, the processor is to:

direct the request to establish the peer-to-peer IP connection to a particular port of the second device,

where receiving the request to establish the peer-to-peer IP connection at the particular port causes the second device to automatically start an application that is associated with the particular port.

13. The first device of claim **8**, where the processor is further to:

send, via the peer-to-peer IP connection, a request to access a server associated with the second device.

14. The first device of claim **8**, where, when receiving the message from the second device, the processor is to:

receive, from the second device, one of:

a short message service message, or

a multimedia messaging service message.

15. A non-transitory computer-readable medium storing instructions, the instructions comprising:

one or more instructions that, when executed by a processor of a first device, cause the processor to:

send, to a second device, a request for establishing a peer-to-peer Internet Protocol (IP) connection between the first device and the second device;

receive, from the second device, a message that includes information identifying:

an identifier associated with the first device, and

an IP address associated with the second device;

generate, based on the identifier, a signature associated with the first device; and

send the signature to the IP address of the second device to establish the peer-to-peer IP connection,

the second device authenticating the first device based on the signature, and

the peer-to-peer IP connection being established based on the second device authenticating the first device.

16. The non-transitory computer-readable medium of claim **15**, where the instructions further comprise:

one or more instructions to share multimedia content with the second device via the peer-to-peer IP connection.

17. The non-transitory computer-readable medium of claim **15**, where the one or more instructions to send the request for establishing the peer-to-peer IP connection include:

one or more instructions to use a telephone number associated with the second device to send one of a short message service message or a multimedia messaging service message to the second device,

the one of the short message service message or the multimedia messaging service message including the request for establishing the peer-to-peer IP connection.

18. The non-transitory computer-readable medium of claim **15**, where the one or more instructions to send the request to establish the peer-to-peer IP connection include:

one or more instructions to use an application to send the request for establishing the peer-to-peer connection to the second device,

where the request for establishing the peer-to-peer connection includes a trigger,

where the trigger causes the second device to start a same application on the second device.

19. The non-transitory computer-readable medium of claim **15**, where the one or more instructions to send the request for establishing the peer-to-peer IP connection include:

direct the request for establishing the peer-to-peer IP connection to a particular port of the second device,

where the particular port is associated with a particular application, and

where receiving the request for establishing the peer-to-peer IP connection at the particular port causes the second device to automatically start the particular application.

20. The non-transitory computer-readable medium of claim **15**, where the instructions further comprise:

one or more instructions to browse a server associated with the second device via the peer-to-peer IP connection.

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