

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 November 2007 (29.11.2007)

PCT

(10) International Publication Number
WO 2007/136490 A2

(51) International Patent Classification:
H04L 29/08 (2006.01)

(US). **SAHIM, Faramarz F.** [US/US]; 9310 Vedra Pointe Lane, Boca Raton, fl 33431 (US).

(21) International Application Number:
PCT/US2007/009717

(74) Agents: **CHUNG, David D.** et al.; Siemens Corporation-Intellectual Property Dept., 170 Wood Avenue South, Iselin, New Jersey 08830 (US).

(22) International Filing Date: 23 April 2007 (23.04.2007)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/434,693 16 May 2006 (16.05.2006) US

(71) Applicant (for all designated States except US):
SIEMENS COMMUNICATIONS, INC. [US/US]; 900 Broken Sound Parkway, Boca Raton, Florida 33487-3587 (US).

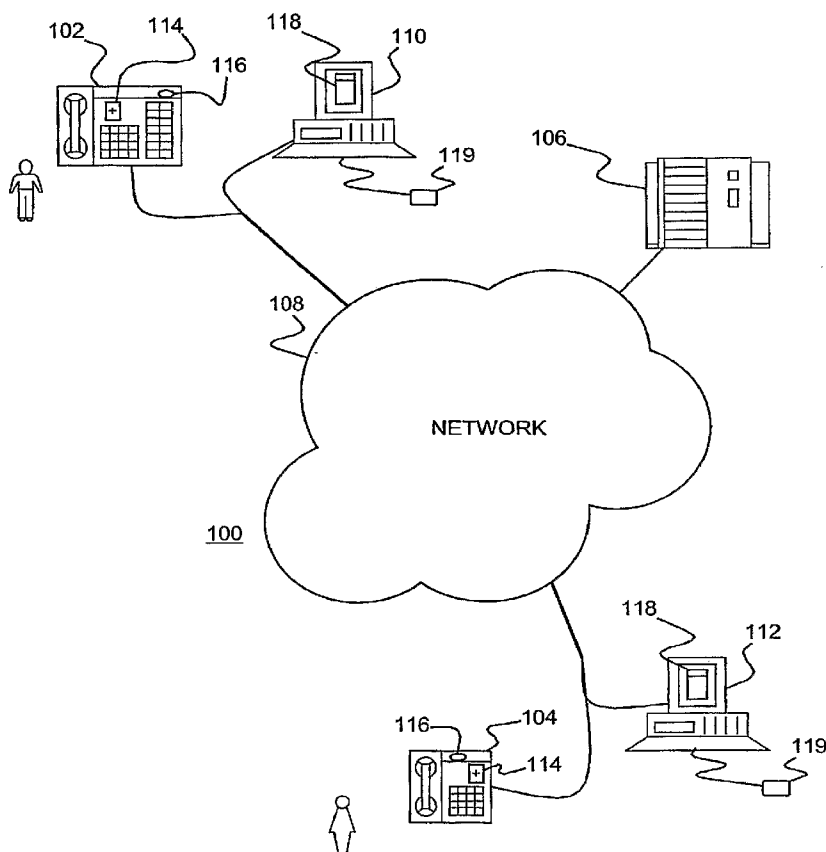
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ARABI, Hamid** [CA/US]; 8195 Copenhagen Way, Boca Raton, fl 33434

[Continued on next page]

(54) Title: TELECOMMUNICATIONS SYSTEM AND METHOD OF INITIATING FILE TRANSFERS FROM VOICE ENDPOINTS



(57) Abstract: A communications system and method of transferring data over the communications system. The system includes audio communications devices (telephones and/or, soft phones) connected to Session Initiation Protocol (SIP) endpoints with multiple line capabilities and a unique Uniform Resource Identifier (URI) associated with audio communications that has the form x@y.z. A file transfer agent system running a File Transfer Application Agent (FTAA) application is also connected at each of SIP endpoints, and has a unique URI that has the form ft.x@y.z. Parties conducting a phone conversation at SIP endpoints can initiate file transfers between the file transfer agent system from respective audio communications devices without otherwise accessing the file transfer agent system.



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*

TELECOMMUNICATIONS SYSTEM AND METHOD OF INITIATING FILE TRANSFERS FROM VOICE ENDPOINTS

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention is related to telecommunications systems and more particularly, to transferring data files over digital telecommunications networks.

Background Description

Commercial telecommunications platforms have allowed service providers to deliver Internet Protocol (IP) based telecommunications services. Typical such IP telecommunications services feature common channel telecommunications packet switching capabilities, such as Signaling System Number 7 (SS7) signaling capabilities. These capabilities allow for legacy feature support and, further, interconnection with Public Switched Telephone Networks (PSTN). Digital communications such as Voice over IP (VoIP), for example, normally use Session Initiation Protocol (SIP) protocol for establishing and clearing of connections between network stations. VoIP calls using SIP protocol work well for a relatively simple connection with simple user control, e.g., using a typical user interface.

[0002] Frequently, parties engaged in such a VoIP call may find it necessary for one party to pass data (e.g., stored on a local computer) to the other party. For example, a project manager may wish to pass employees project information, e.g., locally stored sensitive project data. If the manager feels that the information is too sensitive for e-mail because, for example, it may reside on a server somewhere for some period of time before it is downloaded; then it may be necessary to contact the recipients and find some more secure means of transfer. Once the recipients are contacted, e.g., by a VoIP call, the data can be passed with reasonable certainty that the intended recipient is actually receiving it. So, provided the parties have access to

computers at both ends, after placing the call, they can establish a file transfer session and transfer the data, e.g., from the manager's computer to the employees. After the transfer, the parties can verify that the data passed safely, e.g., by a second telephone call.

[0003] Unfortunately, however, such a transfer requires that both parties have access to their computers, that any data transfer occurs independently of the personal contact and, that only after the transfer can either party determine/verify that a valid transfer took place. If either party cannot access their respective computer, the transfer cannot be made. Also, ending the call and setting up the transfer is time consuming and, potentially, problematic. If, for example, the originating party enters the wrong address for the destination, only after the files are transferred to the wrong location is either party notified.

[0004] Thus, there is a need for a seamless way to safely transfer files among the parties involved in a SIP voice call and, especially, where either or both of the parties, initiating the file transfers and the recipients of the transferred files, are not required to have access to their respective computers during the entire file transfer.

SUMMARY OF THE INVENTION

[0005] It is a purpose of the invention to initiate file transfers between recipients that may or may not have access to a computer during the entire file transfer process;

[0006] It is another purpose of the invention to simply transfer files among parties involved in Session Initiation Protocol (SIP) voice calls without entering IP addresses of devices involved in the file transfers.

[0007] The present invention relates to a communications system and method of transferring data over the communications system. The system includes audio communications devices (telephones and/or, soft phones) connected to Session

Initiation Protocol (SIP) endpoints with multiple line capabilities and a unique Uniform Resource Identifier (URI) associated with audio communications that has the form $x@y.z$. A file transfer agent system running a File Transfer Application Agent (FTAA) application is also connected at each of SIP endpoints, and has a unique URI that has the form $ft.x@y.z$. Parties conducting a phone conversation at SIP endpoints can initiate file transfers between the file transfer agent system from respective audio communications devices without otherwise accessing the file transfer agent system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The foregoing and other objects, aspects and advantages will be better understood from the following detailed description of a preferred embodiment of the invention with reference to the drawings, in which:

[0009] Figure 1 shows an example of a communications system including Session Initiation Protocol (SIP) endpoints capable of transferring files between the endpoints according to a preferred embodiment of the present invention;

[0010] Figure 2 shows an example of initiating file transfer between SIP endpoints;

[0011] Figure 3 shows an example of operation in the file transfer agent of the FTAA application in setting up the file transfer session.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0012] Turning now to the drawings and more particularly, Figure 1 shows an example of a preferred Session Initiation Protocol (SIP) based system 100 including SIP endpoints 102, 104, some of which have multiple line capabilities. The SIP endpoints 102, 104 may be any suitable audio communications devices, such as telephones and/or, soft phones that are connected for voice communications and may be connected to one or more appropriate SIP server(s) 106 (e.g., a registrar server, a

location server, a redirect server, a proxy server and/or a presence server) over a network 108, e.g., the Internet, the public switched telephone network/public land mobile network (PSTN/PLMN) or a 3rd Generation Partnership Project (3GPP) wireless network. Also, a station 110, 112 acting as a file transfer agent system is connected to one of the lines at each of the SIP endpoints 102, 104, respectively.

[0013] Thus, according to a preferred embodiment of the present invention, users carrying on conversations over the SIP endpoints 102, 104 can initiate remote file transfers to each other between respective file transfer agent systems 110, 112. Further, the file transfer may be initiated from the SIP endpoints 102, 104 without either user directly accessing the file transfer agent systems 110, 112. So, the SIP endpoints 102, 104 can be at separate geographical locations from each respective file transfer agent systems 110, 112. Each file transfer agent system 110, 112 may be, for example, a personal computer (PC), running a File Transfer Application Agent (FTAA) application. So, each SIP endpoint 102, 104 passes commands to a respective transfer agent system 110, 112. The FTAA locates pre-selected files and manages the transfer.

[0014] So for example, voice communications at each of the SIP endpoints 102, 104, may be associated with a unique Uniform Resource Identifier (URI) of the form 102x@y.z, 104x@y.z. Similarly, the file transfer agent systems 110, 112 are configured with a special URI that has the format ft.102x@y.z, ft.104x@y.z. The FTAA provides the file transfer agents 110, 112 with a number of special capabilities in addition to SIP capabilities. During a normal voice conversation, for example, the respective file transfer agent 110, 112 can search a configured subset of files in the computer file system for files that may be transferred. Also, a voice user can select of those files from a respective SIP endpoint 102, 104 through SIP audio or a computer user interface. Preferably, to provide for selecting these files, the SIP endpoints 102, 104 may include additional phone keys 114 that are also configured as SIP endpoints to act as next/previous/select functions. The URI of each of these endpoints is next.102x@y.z/previous.102x@y.z/select.102x@y.z, and

next.104x@y.z/previous.104x@y.z/select.104x@y.z, respectively. Also, each SIP endpoint 102, 104 may include a file transfer indicator 116. Each transfer agent system 110, 112 may include a file selection window 118 and mouse 119.

[0015] Activating an appropriate key on each of these endpoints initiates a SIP call to the FTAA. The respective file transfer agent system 110, 112 answers the call to start the transfer process and, immediately, releases the SIP call. Similarly, once the file transfer is complete, the respective file transfer agent system 110, 112 releases SIP call related resources.

[0016] Figure 2 shows an example of initiating file transfer, e.g., between SIP endpoints 102, 104 in Figure 1, according to a preferred embodiment of the present invention. A file transfer begins after SIP endpoints 102, 104 are engaged in a voice conversation in 120, where, typically, the users agree to the file transfer. So, in step 122 one user presses the transfer button on one SIP endpoint, e.g., 102, to initiate the transfer, which places that initiating SIP endpoint 102 on hold. Then, in step 124 the FTAA sets up a message in the associated file transfer agent system 110 that contains the SIP URI for the other, destination SIP endpoint 104. So, for example, initiating endpoint 102 uses the special SIP URI to initiate a SIP call to the FTAA in the associated file transfer agent system 110. The initiating SIP endpoint 102 also passes the SIP URI for the other, destination SIP endpoint 104 to the FTAA. Next in step 126, the FTAA in the file transfer agent 110 verifies that the call is from SIP endpoint 102. If the call is not from SIP endpoint 102 the file transfer agent system 110 ignores the message in step 128 and the call continues normally. Otherwise in step 130, the file transfer agent system 110 answers the call and the FTAA presents an audible menu to SIP initiating endpoint 102 to allow the endpoint user to select a file or files for transfer. Thereafter, in step 132, the FTAA in the file transfer agent system 110 sets up the rest of the file transfer session as explained in further detail hereinbelow. In step 134, the file transfer agent system 110 transfers the selected file(s) to the destination file transfer agent system 112. In step 136 when the file transfer is complete, the FTAA in each file transfer agent system 110, 112 clears the

file transfer related calls, which turns off a file transfer indications, e.g., button LED's on SIP endpoints 102, 104.

[0017] In step 130, if the call is being placed through the voice interface in SIP endpoint 102, then for example, the audible menu presented in step 130 may begin with the message "Please press select to choose computer or next for more options." If nothing is entered in the respective SIP endpoint 102 within a set time period, then the file transfer agent 110 uses a default response. Likewise, if the "next" button is pressed to select the same response, the audio menu plays the message "for audio press select or press previous." If the "select" button is chosen, the file transfer agent 110 enters file transfer selection mode. In file transfer selection mode an audible list of transferable files are presented that can be traversed using the next/previous/select keys 114 to navigate and select one or more files.

[0018] If however, in step 130, the call is being placed through the computer interface in SIP endpoint 102, then for example, the audible menu presented in step 130 may begin with the message "Please press select to choose computer or next for more options." Again, if nothing is entered in the respective SIP endpoint 102 within a set time period, then the file transfer agent 110 uses a default response. Likewise, if the "select" button is chosen to select the same response, the file transfer agent 110 enters file transfer selection mode and the file transfer agent 110 presents a file selection window. Files are then selected from the file selection menu 118 using a suitable input device, e.g., using the mouse 119.

[0019] Figure 3 shows an example of operation of the FTAA application in setting up the file transfer session in step 132 in the file transfer agent system. After selecting the files for transfer, in step 1320 the file transfer agent (e.g., 110 in Figure 1) constructs the SIP address of the destination file transfer agent 112 from the destination SIP endpoint 104. So, in this example, the constructed address is ft.104x@y.z. In step 1322 the originating file transfer agent system 110 calls the destination file transfer agent system 112 using the constructed address. Upon receiving the call, in step 1324 the destination file transfer agent system 112 sends a

setup message to the destination SIP endpoint 104. The destination SIP endpoint 104 provides an indication of an incoming file transfer request from SIP endpoint 102, e.g., blinking indicator 116. In step 1326 a user at the destination SIP endpoint 104 acknowledges the file transfer and indicates acceptance by pressing a file transfer button or sequence of buttons, e.g., ##*. The destination SIP endpoint 104 acknowledges acceptance to file transfer agent system 112 in step 1328 and in step 1330, the destination file transfer agent system 112 forwards that acknowledgement to the originating file transfer agent system 110. In step 1332, the originating file transfer agent system 110 forwards the acknowledgement to SIP endpoint 102, and in step 1334 the user at SIP endpoint 102 is notified that the destination has accepted the request for transfer, e.g., by a tone, verbal message or flashing indicator 116. Finally, in step 134, the file transfer agent system 110 transfers the selected file(s) to other SIP endpoint 104 file transfer destination, i.e., file transfer agent system 112.

[0020] Advantageously, the present invention provides a communications system for transferring files between the parties involved in a SIP voice call with the push of a button on the SIP phone. The transfers can be made regardless of whether the parties have access to their computers during the entire file transfer process. Further, both the party initiating the file transfer and the recipient(s) can transfer the file(s) without even knowing, much less entering, the IP addresses of devices involved in the file transfer.

[0021] While the invention has been described in terms of preferred embodiments, those skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the appended claims. It is intended that all such variations and modifications fall within the scope of the appended claims. Examples and drawings are, accordingly, to be regarded as illustrative rather than restrictive.

CLAIMS

What is claimed is:

1. A communications system comprising:
at least two Session Initiation Protocol (SIP) endpoints with multiple line capabilities;
an audio communications device connected to each of said at least two SIP endpoints, voice communications being carried out between said at least two SIP endpoints over a respective said audio communications device;
a file transfer agent system at each of said at least two SIP endpoints; and
a File Transfer Application Agent (FTAA) application on each local file transfer agent system, each said FTAA application managing file transfers between file transfer agent systems responsive to file transfer requests from corresponding audio communications devices.
2. A communications system as in claim 1, wherein each said audio communications device includes a file transfer button and a transfer request indicator.
3. A communications system as in claim 1, wherein a unique Uniform Resource Identifier (URI) is associated with each said audio communications device having the form $x@y.z$ and with each said file transfer agent system having the form $ft.x@y.z$.
4. A communications system as in claim 3, wherein each audio communications device further includes next/previous/select keys configured as SIP endpoints with unique URIs having the form $next.x@y.z/previous.x@y.z/select.x@y.z$.
5. A communications system as in claim 4, wherein said file transfer agent system comprises means for presenting a navigable said voice menu responsive to said next/previous/select keys.
6. A communications system as in claim 4, wherein file transfer agent system

comprises:

means for presenting a file selection window; and

means for receiving file selection responsive to said file selection window.

7. A method of transferring files between stations in a communications system, said method comprising the steps of:

a) sending a file transfer request from a first audio communications device at a first network endpoint to a local file transfer agent at a first station at said first network endpoint;

b) presenting a voice menu at said first audio communications device;

c) selecting files for transfer from said first station to a second station responsive to said voice menu, said second station being at a second network endpoint, a second audio communications device at said second network endpoint being in voice communication with said first audio communications device; and

d) transferring selected said files from said first station to said second station.

8. A method of transferring files as in claim 7, wherein the step (a) of sending said transfer request comprises selecting a button on said first audio communications device.

9. A method of transferring files as in claim 7, wherein a unique Uniform Resource Identifier (URI) is associated with audio communications at each network endpoint, said unique URI having the form x@y.z and, wherein another unique URI is associated with said file transfer agent in each of said first station and said second station, said other unique URI having the form ft.x@y.z.

10. A method of transferring files as in claim 9, wherein said each network endpoint is a Session Initiation Protocol (SIP) endpoint and the step (a) of sending said transfer request comprises initiating a SIP call at said first SIP endpoint from said first audio communications device to said first local file transfer agent using a

corresponding said other unique URL.

11. A method of transferring files as in claim 10, wherein each audio communications device includes next/previous/select keys configured as SIP endpoints with unique URIs of the form next.x@y.z/previous.x@y.z/select.x@y.z.

12. A method of transferring files as in claim 11, wherein the step (c) of selecting files comprises navigating said voice menu using said next/previous/select keys.

13. A method of transferring files as in claim 10, wherein the step (c) of selecting files comprises the steps of:

- i) presenting a file selection window at said first station; and
- ii) selecting files through said file selection window.

14. A method of transferring files as in claim 10, wherein before the step (a) of sending a file transfer request, said method further comprises running a File Transfer Application Agent (FTAA) application on each station.

15. A method of transferring files as in claim 14, wherein said FTAA application in said each station manages transferring said selected files in step (d).

16. A method of transferring files as in claim 15, wherein the step (d) of transferring files comprises the steps of:

- i) notifying said FTAA application in said second station of a pending file transfer;
- ii) notifying said second audio communications device of an incoming said pending file transfer;
- iii) acknowledging said incoming pending file transfer;
- iv) receiving acknowledgement from said second audio communications device in said second station;
- v) notifying said first audio communications device of said acknowledgement; and

vi) transferring selected said files from said first station to said second station.

17. A method of transferring files as in claim 16, wherein the step (i) of notifying said second station comprises the steps of:

- 1) constructing said other SIP address of said second station from said unique URI for said second audio communications device; and
- 2) calling the constructed said other SIP address.

18. A method of transferring files as in claim 16, wherein the step (ii) of notifying said second audio communications device comprises sending a setup message to said second audio communications device.

19. A method of transferring files as in claim 16, wherein the step (iii) of acknowledging said pending file transfer comprises:

- 1) providing an indication of an incoming file transfer at said second audio communications device;
- 2) receiving an indication of acceptance at said second audio communications device; and
- 3) returning an indication of acceptance to said second station as an acknowledgement.

20. A method of transferring files between Session Initiation Protocol (SIP) endpoints, said method comprising the steps of:

- a) establishing voice contact between audio communications devices at a pair of SIP endpoints, each audio communications device being associated with a unique Uniform Resource Identifier (URI) having the form x@y.z;
- b) requesting a file transfer from a first said audio communications device at a first SIP endpoint of said pair;
- c) sending a notification of a pending file transfer from a first station associated with said first SIP endpoint to a second station associated with a second SIP endpoint of said pair;

- d) providing notification of said pending file transfer to a second said audio communications device at said second SIP endpoint;
- e) acknowledging said pending file transfer at said second audio communications device;
- f) receiving acknowledgement at said first station from said second station;
- g) notifying said first audio communications device of said acknowledgement; and
- h) transferring selected said files from said first station to said second station.

21. A method of transferring files as in claim 20, wherein a unique URI associated with each of said first station and said second station has the form ft.x@y.z and the step (c) of sending a notification to said second station comprises the steps of:

- i) constructing the SIP address of said second station from said unique URI for said second SIP endpoint; and
- ii) calling the constructed said SIP address.

22. A method of transferring files as in claim 20, wherein the step (d) of providing notification of said pending file transfer to said second audio communications device comprises sending a setup message to said second audio communications device.

23. A method of transferring files as in claim 20, wherein the step (e) of acknowledging said pending file transfer comprises the steps of:

- i) providing an indication of an incoming file transfer at said second audio communications device;
- ii) receiving an indication of acceptance at said second audio communications device; and
- iii) returning an indication of acceptance to said second station as an acknowledgement.

24. A computer-readable medium having stored thereon a plurality of instructions,

the plurality of instructions including instructions that, when executed by a processor, cause the processor to:

- a) receive a file transfer request from a first audio communications device at a first Session Initiation Protocol (SIP) endpoint communicating with a second audio communications device at a second SIP endpoint each, each audio communications device being associated with a unique Uniform Resource Identifier (URI) having the form $x@y.z$;
- b) send a notification of a pending file transfer to a station associated with said second SIP endpoint;
- c) receive acknowledgement of said pending file transfer from said station;
- d) notify said first audio communications device of said acknowledgement; and
- e) transfer selected said files to said second station.

25. A computer-readable medium as in claim 24, wherein a unique URI associated with said first processor and said second station has the form $ft.x@y.z$ and the step (b) of sending a notification to said second station causes the processor to:

- i) construct the SIP address of said station from said unique URI for said second SIP endpoint; and
- ii) call the constructed said SIP address.

26. A computer-readable medium as in claim 24, wherein when a notification of a pending file transfer is sent from said station, said plurality of instructions cause the processor to:

- b1) provide notification of said pending file transfer to said first audio communications device;
- b2) receive acknowledgement of said pending file transfer at said first audio communications device; and
- b3) return said acknowledgement to said station.

27. A computer-readable medium as in claim 26, wherein the step (b1) of

providing notification of said pending file transfer to said first audio communications device causes the processor to send a setup message to said first audio communications device.

28. A computer-readable medium as in claim 26, wherein the step (b3) of return said acknowledgement causes the processor to:

- i) provide an indication of an incoming file transfer at said first audio communications device;
- ii) receive an indication of acceptance at said first audio communications device; and
- iii) return said indication of acceptance to said station as an acknowledgement.

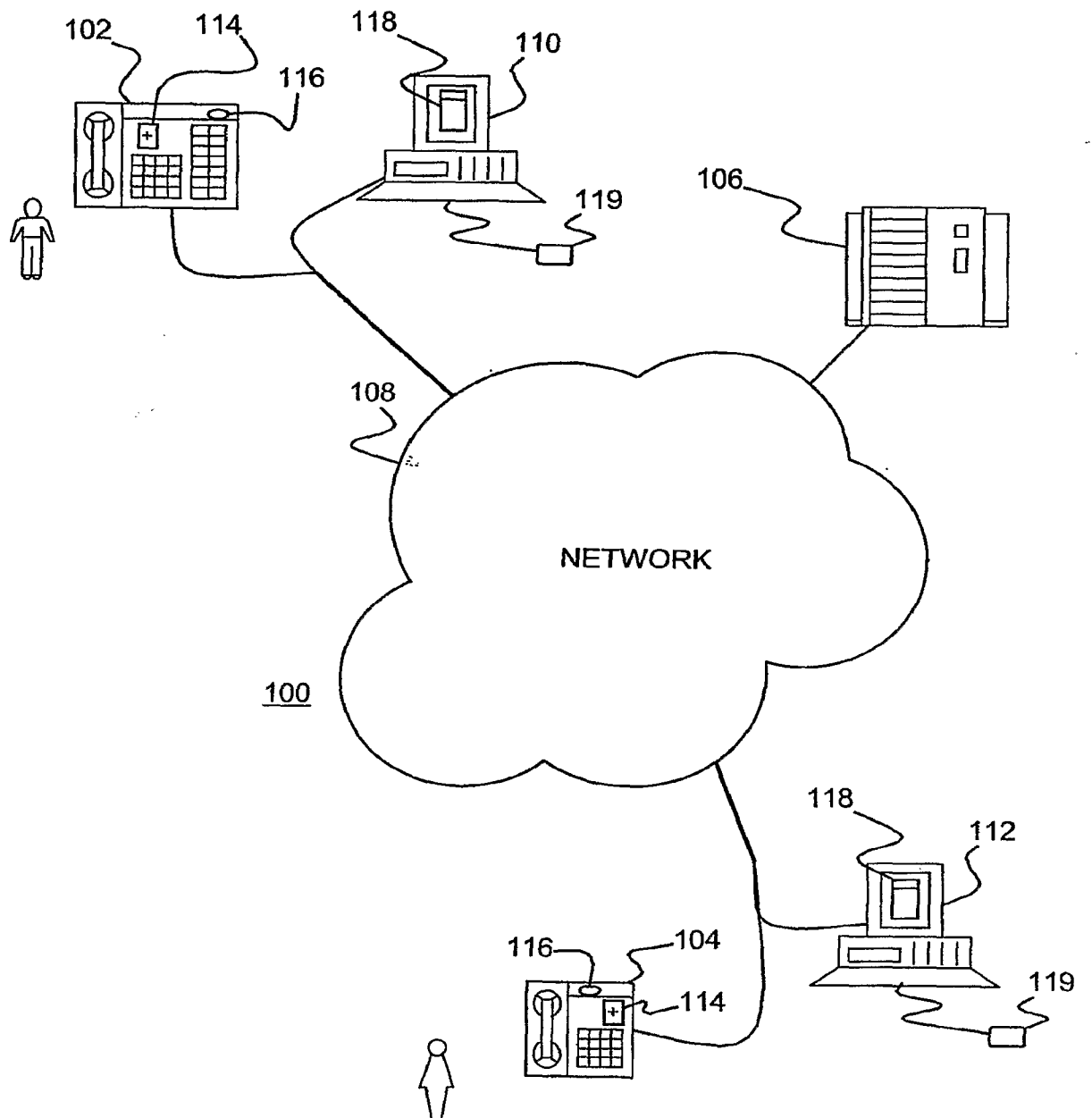


Fig. 1

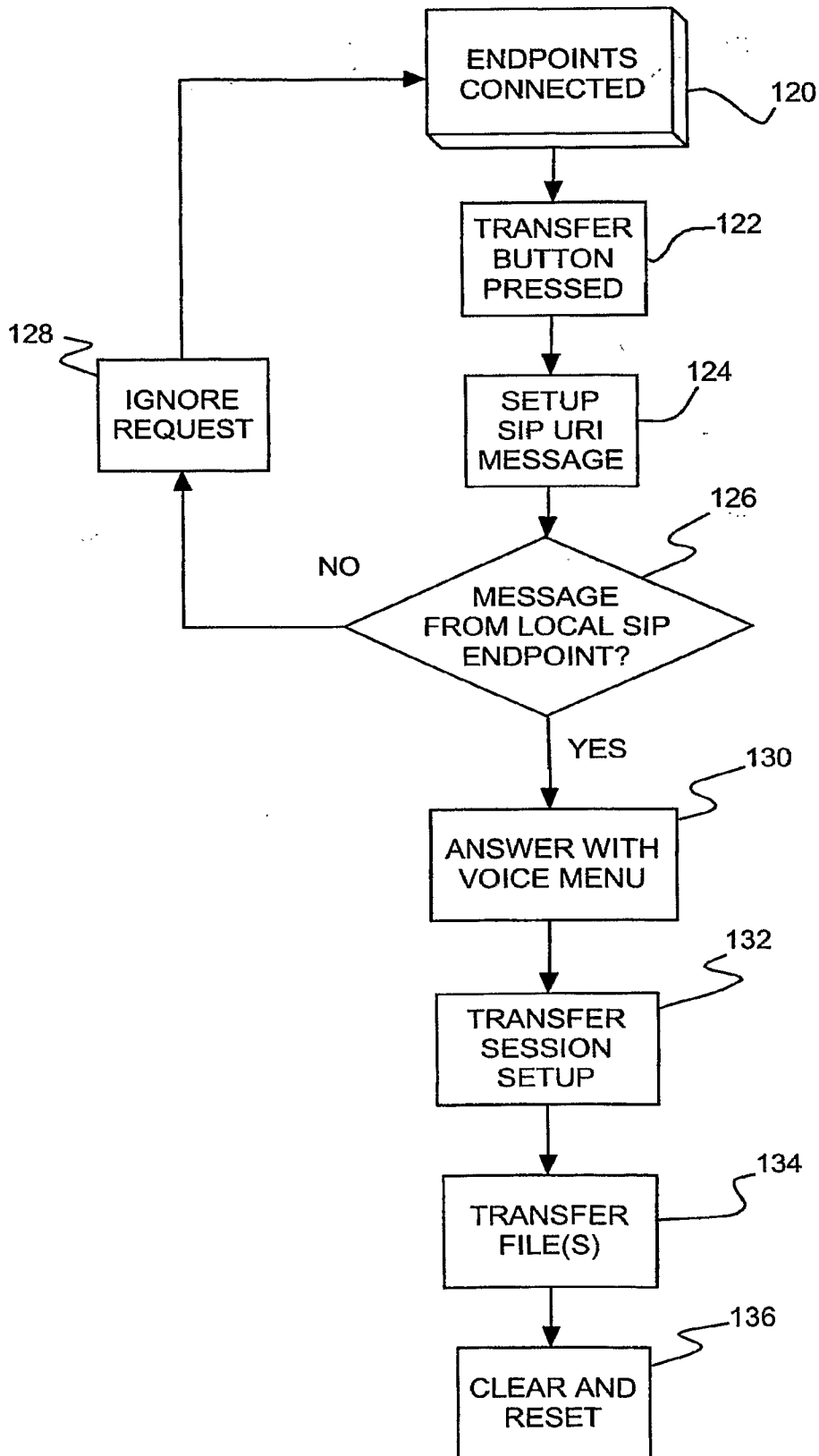


Fig. 2

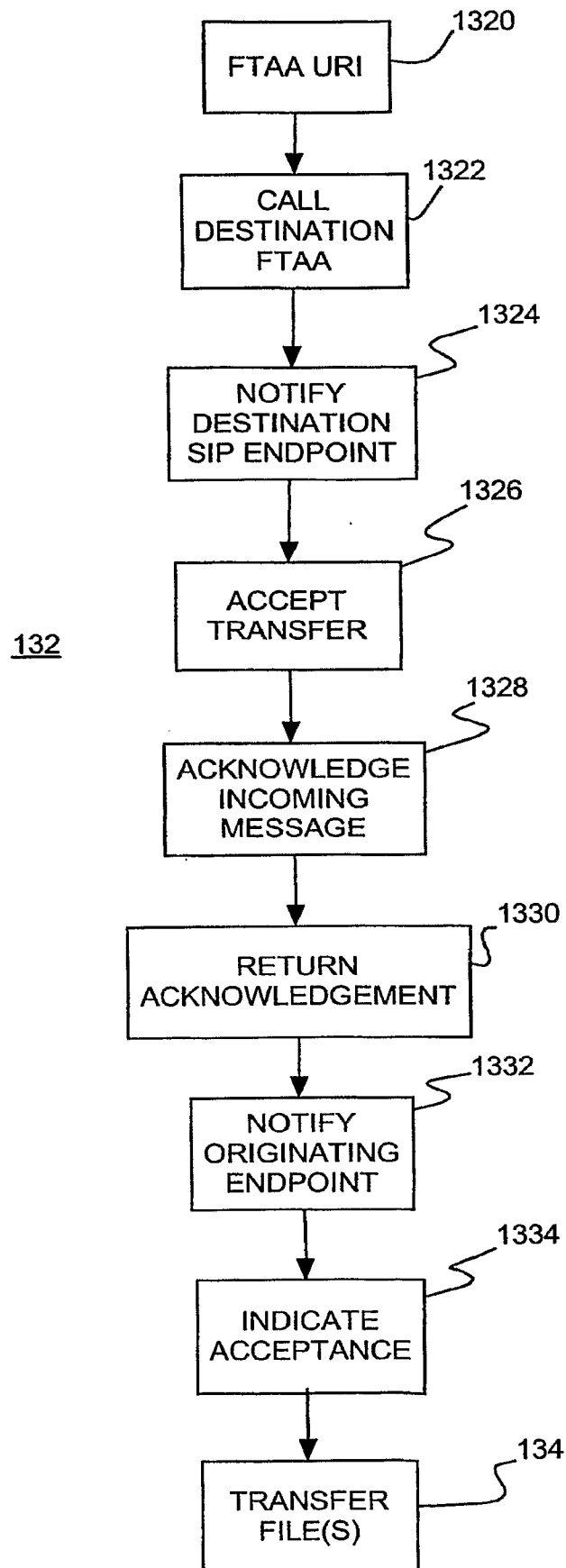


Fig. 3