Abstract: Methods and systems to notify a party at a given premise when a particular event, such as a fire, an intrusion, an emergency or another event, occurs at another premise. One method comprises: obtaining an indication of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link; establishing a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and causing the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event. Also provided are apparatus and computer-readable media containing a program element executable by a computing system to perform such a method.
"System for End User Premise Event Notification"

FIELD OF THE INVENTION

The invention relates generally to telecommunications and, more particularly, to methods and systems for notifying a party at an end-user premise when a particular event occurs at another end-user premise.

BACKGROUND

When an undesirable event such as a fire, an intrusion or a medical emergency occurs at a given premise (e.g., a residence or other building), phones, computers, alarm system devices and/or other pieces of equipment at the given premise can often be used to effect communications to report or otherwise deal with the undesirable event.

For example, in cases where a detector (e.g., a smoke detector, a glass break detector, etc.) of an alarm system at a given premise detects a fire or an intrusion, the alarm system may, in addition to emitting an audible alarm signal at the given premise, report the fire or intrusion to an alarm monitoring central. As another example, in cases where someone at a given premise experiences a medical emergency (e.g., a heart attack, a poisoning or some other acute injury or illness), a telephone at the given premise may be used to call emergency medical services.

Although this communication capability can be very useful, in some situations, it may be desirable and/or more appropriate to notify individuals at other premises of an undesirable event at a given premise. For example, in cases where a fire breaks out at a given premise, it may sometimes be desirable to notify individuals at neighboring premises such that they may proceed to evacuate in view of potential propagation of
the fire. As another example, in cases where a person at a given premise experiences a medical emergency, it may be desirable to notify people at neighboring premises such that they can perhaps go and help the person in need until emergency medical personnel arrives on scene.

Accordingly, there exists a need for solutions to notify a party at a given premise when a particular event occurs at another premise.

SUMMARY OF THE INVENTION

According to a first broad aspect, the invention provides a method for notifying a party of a particular event at a first end-user premise. The method comprises: obtaining an indication of the particular event; establishing a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise being connected to at least one end-user device at the second end-user premise; and causing the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the second end-user premise via the wireless communication link such that, upon receiving the information, the communication apparatus at the second end-user premise directs the at least one end-user device at the second end-user premise to issue a notification concerning the particular event.

According to a second broad aspect, the invention provides apparatus for notifying a party of a particular event at a first end-user premise. The apparatus comprises a processing entity configured to obtain an indication of the particular event. The apparatus also comprises a notification entity configured to: establish a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise being connected to at least one end-user device at the second end-user premise; and cause the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the second end-
user premise via the wireless communication link such that, upon receiving the information, the communication apparatus at the second end-user premise directs the at least one end-user device at the second end-user premise to issue a notification concerning the particular event.

According to a third broad aspect, the invention provides computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise. The program element comprises: first program code for causing the computing system to obtain an indication of the particular event; second program code for causing the computing system to establish a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise being connected to at least one end-user device at the second end-user premise; and third program code for causing the computing system to cause the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the second end-user premise via the wireless communication link such that, upon receiving the information, the communication apparatus at the second end-user premise directs the at least one end-user device at the second end-user premise to issue a notification concerning the particular event.

According to a fourth broad aspect, the invention provides a method for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, the first end-user premise including a first communication apparatus connected to a communications network via a first communication link, the first communication apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise including a second communication apparatus connected to the communications network via a second communication link, the second communication apparatus controlling data routing within a second local network at the second end-user premise. The method is implemented by the first communication apparatus and comprises: obtaining an indication of the particular event based on information transmitted by an end-user device within the first local network; wirelessly joining the second local network to
establish a wireless communication link between the first communication apparatus and the second communication apparatus; and transmitting information to the second communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the second communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.

According to a fifth broad aspect, the invention provides apparatus for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, the apparatus being located at the first end-user premise and being connected to a communications network via a first communication link, the apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise including a communication apparatus connected to the communications network via a second communication link, the communication apparatus controlling data routing within a second local network at the second end-user premise. The apparatus comprises a processing entity configured to obtain an indication of the particular event based on information transmitted by an end-user device within the first local network. The apparatus also comprises a notification entity configured to: cause the apparatus to wirelessly join the second local network to establish a wireless communication link between the apparatus and the communication apparatus; and transmit information to the communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.

According to a sixth broad aspect, the invention provides computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, the first end-user premise including a first communication apparatus connected to a communications network via a first communication link, the first communication apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise
including a second communication apparatus connected to the communications network via a second communication link, the second communication apparatus controlling data routing within a second local network at the second end-user premise, the computing system being implemented by the first communication apparatus. The program element comprises: first program code for causing the computing system to obtain an indication of the particular event based on information transmitted by an end-user device within the first local network; second program code for causing the computing system to cause the first communication apparatus to wirelessly join the second local network to establish a wireless communication link between the first communication apparatus and the second communication apparatus; and third program code for causing the computing system to transmit information to the second communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the second communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.

According to a seventh broad aspect, the invention provides a method for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link. The method comprises: obtaining an indication of the particular event; establishing a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and causing the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.

According to an eighth broad aspect, the invention provides apparatus for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link. The apparatus comprises a processing entity configured to obtain an indication of the particular event. The apparatus also comprises a notification entity configured to: establish a wireless communication link between the first end-user
equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and cause the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.

According to a ninth broad aspect, the invention provides computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link. The program element comprises: first program code for causing the computing system to obtain an indication of the particular event; second program code for causing the computing system to establish a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and third program code for causing the computing system to cause the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.

These and other aspects of the invention will become apparent to those of ordinary skill in the art upon review of the following description of example embodiments of the invention in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

A detailed description of certain embodiments of the invention is provided herein below, by way of example only, with reference to the accompanying drawings, in which:
Figure 1 shows an example of an architecture comprising a communications network allowing end-user equipment located at respective end-user premises to effect various communications, in accordance with an embodiment of the invention;

Figure 2 shows an example of potential contents of a database of a communication apparatus of the communications network shown in Figure 1:

Figure 3 shows a communication apparatus of the end-user equipment located at one of the end-user premises shown in Figure 1:

Figure 4 shows an example of potential contents of a database of the communication apparatus shown in Figure 3:

Figures 5A and 5B show an example in which a wireless communication link is established between the end-user equipment at a first one of the end-user premises and the end-user equipment at a second one of the end-user premises in order to allow the end-user equipment at the second one of the end-user premises to issue a notification concerning a particular event at the first one of the end-user premises; and

Figures 6A and 6B show a variant of the example considered in Figures 5A and 5B.

It is to be expressly understood that the description and drawings are only for the purpose of illustration of example embodiments of the invention and are an aid for understanding. They are not intended to be a definition of the limits of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS

Figure 1 shows an example of an architecture comprising a communications network allowing end-user equipment $10_1$-$10_N$ located at respective end-user premises $18r$-$18_N$ to effect various communications, including telephone calls, accesses to data network sites (e.g., websites), alarm system communications, and/or other communications (e.g., television signals), in accordance with an embodiment of the
invention. Each of the end-user premises $18_{1-18N}$ may be a residence (such as a house or an apartment) or other building (or a part thereof).

The end-user equipment $1O_x$ $(1 \leq x \leq N)$ at the end-user premise $18_x$ is connected to the communications network 12 via a respective one of a plurality of communication links $21_{1-21_N}$ that reach corresponding ones of the end-user premises $1S_{1-18N}$. In this embodiment, the communication links $21_{1-21_N}$ are part of an access network 13 that is provided by a service provider providing communication services to the end-user premises $18_{1-18N}$. The access network 13 leads to a core network 30 provided by the service provider to enable the end-user equipment $1O_x1O_N$ at the end-user premises $18_{1-18N}$ to effect communications over various networks of the communications network 12, including a packet-switched network 32 (e.g., the Internet), a circuit-switched network 34 (e.g., the Public Switched Telephone Network (PSTN)) and a mobile network 36 (e.g., a Global System for Mobile Communications (GSM) network or other cellular network).

More particularly, in this embodiment, each of the communication links $21_{1-21_N}$ comprises a metallic twisted-pair cable (e.g., a copper twisted-pair cable) or a coaxial cable that is connected to a network element 31 of the access network 13. Also, in this embodiment, the access network 13 is based on a fiber-to-the-node or -neighborhood (FTTN) infrastructure such that the network element 31 comprises a FTTN platform (e.g., an Alcatel 7330 Intelligent Services Access Manager (ISAM) Fiber to the Node (FTTN) platform) which, in addition to being connected to the communication links $2h_{1-21_N}$, is connected to optical fiber cabling of the access network 13. The optical fiber cabling is connected to other components of the access network 13 (e.g., one or more routers or switches, an optical Ethernet network, etc.) that interface with the core network 30.

The access network 13 and the communication links $21_{1-21_N}$ may be implemented in various other ways in other embodiments. For example, in some embodiments, the access network 13 may be based on a fiber-to-the-curb (FTTC) infrastructure and the network element 31 may be a FTTC platform. In other embodiments, the network element 31 may be omitted depending on the nature of the access network 13. For
instance, in some embodiments, the access network 13 may be based on a fiber-to-the-premises (FTTP) infrastructure (e.g., fiber-to-the-building (FTTB) or fiber-to-the-house (FTTH) infrastructures) in which case the communication links 21₁-2₁₇ may comprise optical fiber cables leading to optical network terminals (ONTs) that may be part of the end-user equipment 10₁-10₇ at the end-user premises 18₁-18₇. In yet other embodiments, the communication links 21₁-2₁₇ may comprise a wireless link portion (e.g., a WiMAX link, a satellite-based link).

The core network 30 comprises a communication apparatus 40 configured to perform various operations when a communication, such as a telephone call, an access to a data network site or an alarm system communication, is originated by, destined for, in progress at certain end-user equipment (such as any of the end-user equipment 10₁-10₇). The communication apparatus 40 comprises suitable hardware, firmware, software or a combination thereof for implementing a plurality of functional entities, including a processing entity 42, a routing entity 44 and a database 48.

The processing entity 42 implements a processing logic to process communications originated by, destined for, or in progress at end-user equipment (such as any of the end-user equipment 10₁-10₇). The processing logic may be defined by a sequence of decisions to be taken with respect to a given communication, which may lead to one or more actions being performed based on those decisions. Each decision taken with respect to the given communication may be based on one or more factors. One example of such a factor is an origin of the given communication which, for instance, may be specified by: a telephone number, an Internet Protocol (IP) address, a Uniform Resource Identifier (URI) (e.g., a Session Initiation Protocol (SIP) URI), and/or another identifier identifying a device that originated the given communication; a name or other identifier of a party that originated the given communication; a time at which the given communication was originated (e.g., a day, hour, minute, etc.); and/or a location (e.g., a civic address) where the given communication was originated.

Another example of such a factor is a destination of the given communication which, for instance, may be specified by: a telephone number, an IP address, a URI (e.g., a SIP URI), and/or another identifier identifying a device for which the given communication is destined; a name or other identifier of a party for which the given communication was destined; a telephone number, an IP address, a URI (e.g., a SIP URI), and/or another identifier identifying a device for which the given communication was destined; a name or other identifier of a party for which the given communication was destined.
communication is destined; and/or a location (e.g., a civic address) for which the
given communication is destined. In some cases, a factor on which may be based a
decision to be taken with respect to the given communication may also be defined in
terms of certain information included in the database 48 that may be accessed by the
processing entity 42 (e.g., where the given communication is a telephone call, certain
information in the database 48 on how to process calls involving a party having
originated the telephone call or for which the telephone call is destined may be used
by the processing entity 42).

Figure 2 shows an example of potential contents of the database 48. In this example,
the database 48 stores a plurality of records 200 J-200N, where each of these records is
associated with a subscription to communication services provided by the service
provider to a respective one of the end-user premises 181-18N. In other words, each of
the end-user premises 181-18N is associated with a different subscriber (i.e., a person
or a group of persons) to which the service provider provides communication services.
The database 48 may store other records associated with other subscriptions that are
associated with other end-user premises which are served by the service provider.

The record 200_X is associated with the subscriber to which communication services
are provided at the end-user premise 18_X and includes various types of information.
More particularly, in this example, the record 200_X includes:
- subscriber identification information 19 identifying the subscriber. For example,
  the subscriber identification information 19 may include an account number (e.g.,
  a phone number) and/or another subscriber identifier (e.g., a name);
- location information 23 indicating a physical location of the end-user premise 18_X.
  For example, the location information 23 may include a civic address, a set of
  geo-coordinates, and/or any other information that indicates the physical location
  of the end-user premise 18_X;
- end-user equipment information 27 regarding the end-user equipment 10_X at the
  end-user premises 18_X which includes information regarding each of one or more
  pieces of equipment of the end-user equipment 10_X. For example, the information
  regarding a given piece of equipment of the end-user equipment 10_X may include
  an identifier of the given piece of equipment, such as: a Media Access Control
(MAC) address, an Ethernet hardware address (EHA), or another hardware identifier of the given piece of equipment; an IP address assigned to the given piece of equipment; a URI (e.g., a SIP URI) identifying the given piece of equipment; or any other information that identifies the given piece of equipment; and

- service information 25 regarding one or more communication services provided to the subscriber by the service provider. For example, the service information 25 may comprise call processing information that is related to processing of calls destined for or originated by the subscriber and that is used by the communication apparatus 40 to process such calls. In some cases, the call processing information may relate to one or more telephony features (e.g., call forwarding, call waiting, calling line identification (CLID) display, etc.) that may be subscribed to by the subscriber.

While this example illustrates certain information that can be included in the records 200 -200ON of the database 48, various other information may be included in these records in other embodiments. In addition, while it is depicted in Figure 1 as being one component, the database 48 may be distributed in nature. For example, in some embodiments, the database 48 can have portions of its content stored in different data storage media possibly located in different components of the communication apparatus 40 that are linked by one or more physical (i.e., wired or wireless) links.

The routing entity 44 is operative to cause one or more actions to be performed based on one or more decisions taken by the processing entity 42 with respect to a given communication, such as route information conveyed by the given communication to a certain piece of equipment which may be, for instance, a certain end-user device or a certain network element (e.g., a router). For example, the routing entity 44 may cause information pertaining to the given communication to be routed via the packet-switched network 32, the circuit-switched network 34, or the mobile network 36. To that end, the routing entity 44 may interact with one or more gateways interfacing with the packet-switched network 32, the circuit-switched network 34, and the mobile network 36.
In some embodiments, the processing entity 42, the routing entity 44 and the database 48 may be implemented by a common network component. For example, in some embodiments, the processing entity 42, the routing entity 44 and the database 48 may be implemented by a Softswitch or other computer platform. Alternatively, in other embodiments, the processing entity 42, the routing entity 44 and the database 48 may be implemented by two or more different network components that are linked by one or more physical (i.e., wired or wireless) links. For example, in some embodiments, the processing entity 42, the routing entity 44 and the database 48 may be implemented by two or more softswitches or other computer platforms.

The end-user equipment 10 \( \sim \) at the end-user premise 18 \( \sim \) comprises various pieces of equipment that can be used to effect communications, including telephone calls, accesses to data network sites, alarm system communications, and/or other communications (e.g., television signals). More particularly, the end-user equipment 10 \( \sim \) at the end-user premise 18 \( \sim \) comprises one or more end-user devices configured to effect communications, such as: one or more telephones, each of which may be, for instance, a wired Plain Old Telephony System (POTS) phone (including a cordless phone), a Voice-over-Internet Protocol (VoIP) phone, a POTS phone equipped with an analog terminal adapter (ATA), a softphone (i.e., a computer equipped with telephony software), or a telephony-enabled television unit (e.g., a set-top box connected to a television and a remote control); one or more computers, each of which may comprise, for instance, a desktop computer, a laptop computer or another personal computer (PC); one or more alarm system devices of an alarm system (sometimes also referred to as a "security system"), each of which may comprise, for instance, a door or window opening detector, a smoke detector, a motion detector, a glass break detector and/or another detector, a controller, and/or another piece of equipment of the alarm system; and/or one or more other end-user devices (e.g., a television unit).

Also, in this embodiment, the end-user equipment 10 \( \sim \) at the end-user premise 18 \( \sim \) comprises a communication apparatus 20 \( \sim \) that is connected to the one or more end-user devices at the end-user premise 18 \( \sim \) and to the communication link 21 \( \sim \) reaching the end-user premise 18 \( \sim \) in order to allow these one or more end-user devices to
communicate over the communications network 12 via the communication link 21x. The communication apparatus 2Ox at the end-user premise 18x can thus be viewed as a communications center or hub through which communications originated by, destined for, or in progress at the one or more end-user devices at the end-user premise 18x are effected via the communication link 21x reaching the end-user premise 18x. Also, as they are interconnected via one or more wired links and/or wireless links at the end-user premise 18x, the communication apparatus 2Ox and the one or more end-user devices at the end-user premise 18x are part of a local network at the end-user premise 18x.

In some situations, an undesirable event such as a fire, an intrusion or a medical emergency may occur at the end-user premise 18x. In such situations, phones, computers, alarm system devices and/or other pieces of equipment of the end-user equipment 1Ox at the end-user premise 18x may be used to effect communications to report or otherwise deal with the undesirable event. For example, if a detector (e.g., a smoke detector, a glass break detector, etc.) of an alarm system of the end-user equipment 1Ox detects a fire or an intrusion at the end-user premise 18x, the alarm system may, in addition to emitting an audible alarm signal at the end-user premise 18x, report the fire or intrusion to an alarm monitoring central. As another example, if someone at the end-user premise 18x experiences a medical emergency (i.e., an injury or illness that is acute and poses an immediate risk to that person’s life or long term health), a telephone of the end-user equipment 1Ox may be used to call emergency medical services.

However, it may sometimes be desirable and/or more appropriate to notify individuals at other ones of the end-user premises 18x-18N of an undesirable event at the end-user premise 1Ox. For example, if a fire breaks out at the end-user premise 1Ox, it may be desirable to notify individuals at neighboring ones of the end-user premises 18x-18N such that they may proceed to evacuate in view of potential propagation of the fire. As another example, if a person at the end-user premise 1Ox experiences a medical emergency, it may be desirable to notify people at neighboring ones of the end-user premises 18x-18N such that they can perhaps go and help the person in need until emergency medical personnel arrives on scene.
In accordance with an embodiment of the invention, and as further discussed below, upon occurrence of a particular event at the end-user premise 18\textsubscript{X} the communication apparatus 2O\textsubscript{X} of the end-user equipment 1O\textsubscript{X} at the end-user premise 18\textsubscript{X} can cause a wireless communication link to be established between the end-user equipment 1O\textsubscript{X} and the end-user equipment 10\textsubscript{Y} (1 \leq y \leq N; y \neq x) at the end-user premise 18\textsubscript{Y} in order to transmit information to the end-user equipment 10\textsubscript{Y} via this wireless communication link to instruct the end-user equipment 10\textsubscript{Y} to issue a notification concerning the particular event. For example, the notification may comprise a message displayed on a screen of an end-user device (e.g., a phone, a computer, a television unit, etc.) of the end-user equipment 10\textsubscript{Y} and/or an audible alarm signal emitted by a speaker of the end-user device 10\textsubscript{Y} to notify a party (i.e., a person or group of persons) at the end-user premise 18\textsubscript{Y} of the particular event at the end-user premise 18\textsubscript{X} and/or of a certain action to be performed with respect to the particular event at the end-user premise 18\textsubscript{X} (e.g., evacuate the end-user premise 18\textsubscript{Y}, check on the end-user premise 18\textsubscript{X} and/or someone at the end-user premise 18\textsubscript{X} etc.). This provides a "local" notification mechanism that may assist in avoiding negative, and in some cases, harmful or fatal consequences.

With additional reference to Figure 3, the communication apparatus 2O\textsubscript{X} of the end-user equipment 1O\textsubscript{X} at the end-user premise 18\textsubscript{X} comprises suitable hardware, firmware, software or a combination thereof for implementing a plurality of functional entities, including, in this embodiment, a network interface 50, a plurality of connectors 52\textsubscript{1}-52\textsubscript{M}, a wireless interface 80, a wireless interface 70, a processing entity 54, a notification entity 68, a routing entity 62, a database 66, and a power supply 56. In some embodiments, these entities of the communication apparatus 2O\textsubscript{X} may be integrated into a terminal installed at a suitable location (e.g., a basement or other location) at the end-user premise 18\textsubscript{X}. In other embodiments, these entities of the communication apparatus 2O\textsubscript{X} may be part of two or more devices interconnected to one another via one or more physical links.

The network interface 50 is connected to the communication link 21\textsubscript{X} reaching the end-user premise 18\textsubscript{X} in order to provide an interface between the end-user equipment
and the communications network 12. For example, in some embodiments, the network interface 50 may be implemented by a network interface device (NID) and a channel service unit / data service unit (CSU/DSU). In other embodiments, the network interface 50 may be implemented in various other manners depending on the nature of the communication link 2I_x.

The connectors 52_1-52_M enable connection of one or more end-user devices of the end-user equipment 10_x to the communication apparatus 20_x. For example, each of the connectors 52_1-52_M may be an RJ11 connector (e.g., for connecting a wired POTS phone), an RJ45 connector (e.g., for connecting a computer or a VoIP phone), an alarm system connector for connecting an alarm system device (e.g., a controller or a detector of an alarm system) or any other type of connector (e.g., a connector for connecting a television set-top box).

The wireless interface 80 is configured to wirelessly exchange information with one or more end-user devices of the end-user equipment 10_x at the end-user premise 18_x. More particularly, the wireless interface 80 comprises a wireless transmitter and a wireless receiver to wirelessly exchange information with one or more end-user devices of the end-user equipment 10_x. For example, in some embodiments, the wireless interface 80 may be implemented by a wireless router based on WiFi (IEEE 802.11) technology or other wireless communication technologies.

The wireless interface 70 can be used to establish a wireless communication link between the end-user equipment 10_x at the end-user premise 18_x and the end-user equipment 10_y at the end-user premise 18_y. More particularly, the wireless interface 70 comprises a wireless transmitter and a wireless receiver to wirelessly exchange information with the end-user equipment 10_y at the end-user premise 18_y. For example, in some embodiments, the wireless interface 70 may be based on WiFi technology or other wireless communication technologies.

The processing entity 54 is configured to receive requests for communications originated by one or more end-user devices of the end-user equipment 10_x. For example, the processing entity 54 may receive a request for a telephone call originated
by a telephone of the end-user equipment $1O_x$, a request for an access to a data network site originated by a computer of the end-user equipment $1O_x$, a request for an alarm system communication originated by an alarm system device, and/or a request for another type of communication originated by another end-user device of the end-user equipment $1O_x$.

The processing entity 54 is also configured to process information pertaining to communications effected by the end-user equipment $1O_x$. More particularly, in this embodiment, the processing entity 54 comprises a modem 60 and an analog telephony adapter (ATA) 64. The modem 60 is configured to modulate an analog carrier signal to encode digital information for transmission via the network interface 50 and to demodulate an analog carrier signal received via the network interface 50 to decode information it conveys. For example, in some embodiments, the modem 60 may be a digital subscriber line (DSL) modem or a cable modem, depending on the nature of the communication link $I_1x$. The ATA 64 is configured to convert analog telephony signals from any wired POTS phone that may be part of the end-user equipment $1O_x$ and connected to one of the connectors $52_1-52_M$ into digital information to be processed by the routing entity 62 and the modem 60, and vice versa.

The routing entity 62 is configured to cause information transmitted by or destined for the end-user equipment $1O_x$ to be exchanged over the communications network 12. More particularly, in this embodiment, the routing entity 62 routes information received via the connectors $52_1-52_M$ and/or the wireless interface 80 towards the modem 60 for transmission via the network interface 50 and routes information received from the modem 60 towards the connectors $52_1-52_M$ and/or the wireless interface 80 for transmission to one or more end-user devices of the end-user equipment $1O_x$.

When certain events occur at the end-user premise $18_x$, the processing entity 54 is configured to obtain indications of these events. For instance, in some embodiments, the processing entity 54 may obtain an indication of a particular event at the end-user premise $18_x$ based on information received at the communication apparatus $2O_x$ in relation to the particular event, such as information transmitted by one or more end-
user devices of the end-user equipment \(10_\text{x}\) that are used in relation to the particular event. For example, if a detector (e.g., a smoke detector, a glass break detector, etc.) of an alarm system of the end-user equipment \(10_\text{x}\) detects a fire or an intrusion at the end-user premise \(18_\text{x}\), the alarm system may, in addition to emitting an audible alarm signal at the end-user premise \(18_\text{x}\), effect an alarm system communication through the communication apparatus \(20_\text{x}\) and over the communications network \(12\) to report the fire or intrusion to an alarm monitoring central. Based on information pertaining to the alarm system communication (e.g., an identifier of the alarm system that originated the alarm system communication), the processing entity \(54\) obtains an indication of the fire or intrusion at the end-user premise \(18_\text{x}\). As another example, if someone at the end-user premise \(18_\text{x}\) experiences an emergency (e.g., a medical emergency), a telephone of the end-user equipment \(10_\text{Q}\) may be used to initiate an emergency phone call (e.g., a "911" call) to request emergency services. Based on information pertaining to the emergency phone call (e.g., the "911" telephone number being called), the processing entity \(54\) obtains an indication of the emergency at the end-user premise \(18_\text{x}\).

Upon obtaining an indication of a particular event at the end-user premise \(18_\text{x}\), the processing entity \(54\) determines whether a notification concerning the particular event is to be issued at another one of the end-user premises \(18_\text{r}-18_\text{N}\), say the end-user premise \(18_\text{y}\). That is, depending on the nature of the particular event, it may be desirable and/or more appropriate to notify a party at the end-user premise \(18_\text{y}\) of the particular event at the end-user premise \(18_\text{x}\) and/or of a certain action to be performed with respect to the particular event at the end-user premise \(18_\text{x}\) (e.g., evacuate the end-user premise \(18_\text{y}\), check on the end-user premise \(18_\text{x}\) and/or someone at the end-user premise \(18_\text{x}\) etc.) For example, if it obtains an indication of a fire, an intrusion or an emergency at the end-user premise \(18_\text{x}\), the processing entity \(54\) may determine that a notification concerning the fire, intrusion or emergency is to be issued at the end-user premise \(18_\text{y}\), in view of the potential criticality of such an event. In other cases, the processing entity \(54\) may obtain indications of events at the end-user premise \(18_\text{x}\) for which it determines that no notification is to be issued at other ones of the end-user premises \(18_\text{r}-18_\text{N}\).
When the processing entity 54 determines that a notification concerning a particular event is to be issued at the end-user premise 18_y, the notification entity 68 causes the wireless interface 70 to establish a wireless communication link with the end-user equipment 10_y at the end-user premise 18_y. The notification entity 68 can proceed to cause the wireless interface 70 to transmit information to the end-user equipment 10_y via the established wireless communication link to instruct the end-user equipment 10_y to issue a notification concerning the particular event. For example, the notification may comprise a message displayed on a screen of an end-user device (e.g., a phone, a computer, a television unit, etc.) of the end-user equipment 10_y and/or an audible alarm signal emitted by a speaker of the end-user device 10_y. The notification serves to notify a party at the end-user premise 18_y of the particular event at the end-user premise 18_x and/or of a certain action to be performed with respect to the particular event at the end-user premise 18_x (e.g., evacuate the end-user premise 18_y, check on the end-user premise 18_x and/or someone at the end-user premise 18_x, etc.).

The database 66 stores information that can be used by the communication apparatus 20_x in operation. Figure 4 shows an example of potential contents of the database 66.

In this example, the database 66 stores end-user equipment information 41 regarding the end-user equipment 10_x, which includes information regarding each of one or more pieces of equipment of the end-user equipment 10_x (e.g., the communication apparatus 20_x and the one or more end-user devices at the end-user premise 18_x). More particularly, in this example, the information regarding a given piece of equipment of the end-user equipment 10_x may include:

- an identifier of the given piece of equipment, such as a MAC address, EHA, or other hardware identifier of that piece of equipment, an IP address assigned to that piece of equipment, a URI (e.g., a SIP URI) identifying the given piece of equipment, or any other information that identifies that piece of equipment; and

- depending on the nature of the given piece of equipment, access information to be provided to the given piece of equipment in order to access (i.e., make use of) that piece of equipment. For example, the access information for the given piece of
equipment may comprise a code, such as a password or a wireless network key (e.g., a Wi-Fi Protected Access (WPA) key).

In addition, in this example, the database 66 stores end-user equipment information 43 regarding end-user equipment at one or more other ones of the end-user premises 18i-18N that is within wireless range of the end-user equipment 10x at the end-user premise 18X. For example, if the end-user equipment 10z (1 ≤ z ≤ N; z ≠ x) at the end-user premise 18z is within wireless range of the end-user equipment 10x at the end-user premise 18x, the end-user equipment information 43 may include information regarding each of one or more pieces of equipment of the end-user equipment 10z (e.g., the communication apparatus 20z and the one or more end-user devices at the end-user premise 18z). For instance, the information regarding a given piece of equipment of the end-user equipment 10z may include: an identifier of the given piece of equipment such as a MAC address, EHA, or other hardware identifier of that piece of equipment, an IP address assigned to that piece of equipment, a URI (e.g., a SIP URI) identifying the given piece of equipment, or any other information that identifies that piece of equipment; and, depending on the nature of the given piece of equipment, access information to be provided to the given piece of equipment in order to make use of that piece of equipment (e.g., a password or a wireless network key).

The end-user equipment information 41 regarding the end-user equipment 10x may be provided in the database 66 in various ways. For example, in some cases, the identifier of and/or access information for any piece of equipment of the end-user equipment 10x may be provided in the database 66 by a user at the end-user premise 18x when setting up that piece of equipment. In other cases, the identifier of and/or access information for any piece of equipment of the end-user equipment 10x may be provided in the database 66 by the service provider, for example, by the communication apparatus 40 transmitting this information via the communication link 21x.

Similarly, the end-user equipment information 43 regarding end-user equipment at one or more other ones of the end-user premises 18i-18N that is within wireless range of the end-user equipment 10x at the end-user premise 18x may be provided in the
database 66 in various ways. For example, in some cases, the end-user equipment information 43 may be provided in the database 66 by the service provider, for example, by the communication apparatus 40 transmitting this information via the communication link 2I_x. In other cases, the end-user equipment information 43 may be provided in the database 66 during a provisioning phase (e.g., when the communication apparatus 2O_x is initially set up at the end-user premise 18_X) using an exchange of information between the communication apparatus 2O_x at the end-user premise 18_X and the communication apparatus at each of these one or more other ones of the end-user premises 18_i-18_N that is within wireless range of the end-user equipment 1O_x at the end-user premise 18_X.

Furthermore, in this example, the database 66 stores event information 47 regarding one or more events that may occur at the end-user premise 18_X and that require issuance of notifications concerning these events at one or more other ones of the end-user premises 18_i-18_N. For example, in some embodiments, the event information 47 may comprise an identifier of each of one or more pieces of equipment that, when specifying an origin or a destination of information conveyed via the communication apparatus 2O_x, can be indicative of a particular event at the end-user premise 18_X for which a notification is to be issued at another one of the end-user premises 18_i-18_N.

As mentioned previously, the identifier of a given piece of equipment may comprise a MAC address, EHA, or other hardware identifier of that piece of equipment, an IP address assigned to that piece of equipment, a URI (e.g., a SIP URI) identifying that piece of equipment, a telephone number, or any other information that identifies that piece of equipment.

For instance, in some embodiments, the event information 47 may comprise: a MAC address, EHA, or other hardware identifier, an IP address, a URI (e.g., a SIP URI) or any other information identifying a given alarm system device (e.g., a detector or controller) of an alarm system of the end-user equipment 1O_x, which is such that any alarm system communication effected using the given alarm system device is indicative of a particular event (e.g., a fire or intrusion) at the end-user premise 18_X; a telephone number, an IP address, a URI (e.g., a SIP URI), a MAC address, EHA, or other hardware identifier, or any other information identifying a given phone, which is
such that any telephone call originated by or destined for the given phone is indicative of a particular event (e.g., an emergency such as a medical emergency when the telephone call is a "911" or other emergency call) at the end-user premise $18_X$ and/or any other identifier of a piece of equipment which, when specifying an origin or a destination of information conveyed via the communication apparatus $20_X$, can be indicative of a particular event at the end-user premise $18_X$.

The event information 47 may be provided in the database 66 in various ways. For example, in some cases, part or all of the event information 47 may be provided in the database 66 by a user at the end-user premise $18_X$ when setting up the communication apparatus $20_X$. In other cases, part or all of the event information 47 may be provided in the database 66 by the service provider, for example, by the communication apparatus 40 transmitting this information via the communication link $21_X$.

Also, in this example, the database 66 stores location information 53 indicating the physical location of the end-user premise $18_X$. For instance, the location information 53 may comprise a civic address, a set of geo-coordinates, and/or any other information that indicates the physical location of the end-user premise $18_X$. The location information 53 may be provided in the database 66 in various ways. For example, in some cases, the location information 53 may be provided in the database 66 by a user at the end-user premise $18_X$ when setting up the communication apparatus $20_X$. In other cases, the location information 53 may be provided in the database 66 by the service provider, for instance, by the communication apparatus 40 transmitting this location information via the communication link $21_X$.

While this example illustrates certain information that can be included in the database 66, other information may be included in that database in other embodiments. Also, while it is depicted in Figure 3 as being one component, the database 66 may be distributed in nature. For example, in some embodiments, the database 66 can have portions of its content stored in different data storage media of the communication apparatus $20_X$. 

21
The power supply 56 is configured to power the communication apparatus 20\textsubscript{X} using electrical power from an electrical network of the end-user premise 18\textsubscript{X}. In addition, the power supply 56 is capable of powering the communication apparatus 20\textsubscript{X} in cases where the electrical network of the end-user premise 18\textsubscript{X} does not provide sufficient electrical power (including no electrical power at all) for operation of the communication apparatus 20\textsubscript{X} (e.g., due to a power outage or a malfunction in the electrical network). For example, the power supply 56 may comprise one or more batteries capable of powering the communication apparatus 20\textsubscript{X} for a prolonged period of time (e.g., several hours or a few days) before being depleted. The power supply 56 may also comprise charging circuitry for recharging the one or more batteries using electrical power from the electrical network of the end-user premise 18\textsubscript{X}.

While they are shown as distinct entities, different ones of the functional entities of the communication apparatus 20\textsubscript{X} may be implemented by a common device. For example, the wireless interface 70 and the wireless interface 80 may be implemented by a common wireless router (e.g., a WiFi router). As another example, one or more of the connectors 52\textsubscript{1}-52\textsubscript{M} and the ATA 64 may be implemented by a common ATA device. As yet another example, the modem 60 and the network interface 50 may be implemented by a common network interface device. As yet another example, the routing entity 62 and the notification entity 68 may be implemented by a common routing device. As yet another example, the processing entity 54, the routing entity 62 and the notification entity 68 may be implemented by a common processing platform. As yet another example, the wireless interface 70, the wireless interface 80, the processing entity 54, the routing entity 62 and the notification entity 68 may be implemented by a common device.

Also, while the communication apparatus 20\textsubscript{X} is configured in a particular manner in this embodiment, the communication apparatus 20\textsubscript{X} may be configured in various manners in other embodiments. For example, in some embodiments, the ATA 64 may be omitted in cases where the end-user equipment 10\textsubscript{X} at the end-user premise 18\textsubscript{X} does not comprise any POTS phone.
Turning to Figures 5A and 5B, an example illustrating how a party at the end-user premise 18, can be notified when a particular event occurs at the end-user premise 18, will now be considered.

In this example, the end-user equipment 10, comprises, in addition to the communication apparatus 20, a plurality of end-user devices, including a computer 14, a VoIP phone 15, a POTS phone 16, and alarm system devices (e.g., detectors, a controller) of an alarm system 17, which are connected to the communication apparatus 20, via its connectors 52-52M and/or its wireless interface 80. Thus, in this case, the communication apparatus 20, the computer 14, the VoIP phone 15, the POTS phone 16, and the alarm system 17 are part of a local network at the end-user premise 18.

For purposes of this example, it is assumed that a particular event occurs at the end-user premise 18. More particularly, in this example, it is assumed that a fire breaks out at the end-user premise 18. A smoke detector of the alarm system 17 detects smoke produced by the fire and issues a signal indicative of the fire which, upon being received by a controller of the alarm system 17, results in the alarm system 17, effecting an alarm system communication over the communications network 12 to report the fire to an alarm monitoring central 73. In this example, the alarm system communication is destined for communication equipment 79 located at the alarm monitoring central 73. For instance, the communication equipment 79 may comprise a telephone and/or a computer for which the alarm system communication is destined.

As shown in Figure 5A, the communication apparatus 20 receives information 305 from the alarm system 17. The information 305 pertains to the alarm system communication effected by the alarm system 17 due to issuance of the signal by the smoke detector.

The information 305 comprises information indicative of a destination of the alarm system communication. For instance, in this case, the destination of the alarm system communication is specified by an identifier of the communication equipment 79, such as a telephone number, an IP address, a URI (e.g., a SIP URI), a MAC address, EHA
or other hardware identifier, and/or any other information identifying the communication equipment 79.

The information 305 also comprises information indicative of detection of the fire at the end-user premise 18_{X}. For example, in this embodiment, the information 305 comprises an identifier of the smoke detector of the alarm system 17_{j} which has detected the smoke produced by the fire, such as an IP address, a URI (e.g., a SIP URI), a MAC address, EHA or other hardware identifier, and/or any other information identifying the smoke detector. For purposes of this example, it is assumed that the identifier of the smoke detector included in the information 305 is an IP address, say "10.10.2.7".

The routing entity 62 of the communication apparatus 2Q transmits the information 305 to the communication equipment 79 over the communications network 12 via the communication link 21_{j}. An operator and/or a computer at the alarm monitoring central 73 can perform certain actions to handle the alarm system communication reporting the fire at the end-user premise 18_{X} such as dispatch firefighters and possibly other emergency personnel on scene.

Meanwhile, the processing entity 54 of the communication apparatus 2Q determines whether the information 305 transmitted by the alarm system 17_{j} is indicative of any event at the end-user premise 18_{X} for which a notification is to be issued at another one of the end-user premises 18_{1-18_{N}}. More particularly, in this embodiment, the processing entity 54 determines whether any identifier included in the information 305 corresponds to any identifier included in the event information 47 in the database 66. Thus, in this example, the processing entity 54 determines whether the identifier of the communication equipment 79 of the alarm monitoring central 73 or the IP address "10.10.2.7" identifying the smoke detector of the alarm system 17, included in the information 305 corresponds to any identifier included in the event information 47 in the database 66. If not, the processing entity 54 performs no further action directed to issuance of a notification at another one of the end-user premises 18_{1-18_{N}}.
For purposes of this example, assume that the event information 47 in the database 66 of the communication apparatus 20, includes: the IP address "10.10.2.7" identifying the smoke detector of the alarm system 17_i; the IP address, say "10.10.2.9", identifying a glass break detector of the alarm system 17_j; the emergency telephone number "91 1"; and the telephone number, say "(555) 555-8894", of a poison control center. The processing entity 54 thus determines that the IP address "10.10.2.7" included in the information 305 corresponds to the IP address "10.10.2.7" included in the event information 47 in the database 66. Accordingly, since the IP address "10.10.2.7" identifies the smoke detector of the alarm system 17_i, the processing entity 54 obtains an indication of the fire at the end-user premise 18_i, and determines that a notification concerning this fire is to be issued at another one of the end-user premises 18_j.-ISN-

Thus, the communication apparatus 20 attempts to cause issuance of a notification concerning the fire at the end-user premise 18_i at another one of the end-user premises 18_j. More particularly, the communication apparatus 20, attempts to establish a wireless communication link via which it can transmit information causing issuance of such a notification at another one of the end-user premises 18_i.-18_j.

The processing entity 54 of the communication apparatus 20, accesses the database 66 of the communication apparatus 20, to obtain the end-user equipment information 43 regarding end-user equipment at one or more other ones of the end-user premises 18_i.-18_j that is within wireless range of the end-user equipment 10, at the end-user premise 18_j.

In this example, it is assumed that the end-user equipment information 43 in the database 66 of the communication apparatus 20, includes end-user equipment information regarding the end-user equipment 10_i at the end-user premise 18_i, which is within wireless range of the end-user equipment 10, at the end-user premise 18_j. The end-user equipment 10, comprises, in addition to the communication apparatus 20_i, a plurality of end-user devices, including a computer 14_i, a VoIP phone 15_i, another VoIP phone 16_i and a television unit 29_i, which are connected to the communication apparatus 20_i via its connectors 52_i.-52_m and/or its wireless interface 80. Thus, in this
case, the communication apparatus 20, the computer 14, the VoIP phone 15, the VoIP phone 16, and the television unit 29, are part of a local network at the end-user premise 18. It is also assumed in this example that the end-user equipment information 43 included in the database 66 of the communication apparatus 20, at the end-user premise 18, includes an identifier of the communication apparatus 20, (e.g., a MAC address, EHA, or other hardware identifier of the communication apparatus 20, an IP address assigned to communication apparatus 20, a URI such as a SIP URI, or any other information that identifies the communication apparatus 20) and access information to be provided to the communication apparatus 20 in order to make use of the communication apparatus 20 (e.g., a password or a wireless network key).

While in this example the end-user equipment information 43 in the database 66 pertains only to the end-user equipment 10 at the end-user premise 18, in other examples, the end-user equipment information 43 in the database 66 may include identifiers and access information for end-user equipment at other ones of the end-user premises 18-18. In such a case, the processing entity 54 of communication apparatus 20 may use a selection process to select one or more of the communication apparatuses 20-20 listed in the database 66 with which it may attempt to establish a wireless communication link. For example, the selection process may define one or more "preferred" ones of the communication apparatuses 20-20 listed in the database 66 that are predetermined by one or more components of the communications network 12, such as the communication apparatus 40 of the core network 30. As another example, the selection process may allow the processing entity 54 of the communication apparatus 20, to decide with which of the other ones of the communication apparatuses 20-20 listed in the database 66 it should attempt to establish a wireless communication link. For instance, the processing entity 54 may evaluate the other ones of the communication apparatuses 20-20 listed in the database 66 based on criteria such as their physical proximity, wireless signal strength and/or reported network traffic load, and/or other factors.

Upon retrieving the identifier and access information of the communication apparatus 20, the processing entity 54 of the communication apparatus 20 causes the notification entity 68 of the communication apparatus 20, to attempt to establish a
wireless communication link between the communication apparatus 20, and the communication apparatus 20, More particularly, the processing entity 54 causes the notification entity 68 to wirelessly transmit information 315 to the communication apparatus 20, via the wireless interface 70 of the communication apparatus 20, The information 315 can be viewed as a request to access the communication apparatus 20.. In this example, the information 315 includes the identifier and access information of the communication apparatus 20, as well as the identifier and access information of the communication apparatus 20, which the processing entity 54 retrieved from the end-user equipment information 41 included in the database 66 of the communication apparatus 20,.

When it receives the information 315, the communication apparatus 20, attempts to validate the identifier and access information of the communication apparatus 20, that are included in the information 315. More particularly, the processing entity 54 of the communication apparatus 20, verifies whether the identifier and access information of the communication apparatus 20, that are included in the information 315 correspond to the identifier and access information of the communication apparatus 20, that are included in the end-user equipment information 41 in the database 66 of the communication apparatus 20,. If not, the communication apparatus 20, may deny the request of the communication apparatus 20, to access the communication apparatus 20, and may take some other action. For instance, the communication apparatus 20, may send information back to the communication apparatus 20, indicating that access to the communication apparatus 20, is denied, and/or may send information to the communication apparatus 40 of the core network 30 to indicate that a failed connection attempt has occurred due to invalid credentials.

In this example, it is assumed that the identifier and access information of the communication apparatus 20, that are included in the information 315 indeed correspond to the identifier and access information of the communication apparatus 20, that are included in the end-user equipment information 41 in the database 66 of the communication apparatus 20,. Therefore, as shown in Figure 5B, the communication apparatus 20, grants access to the communication apparatus 20, resulting in establishment of a wireless communication link 95 between the
communication apparatus 20, and the communication apparatus 20. In other words, in this example, the communication apparatus 20, wirelessly joins the local network at the end-user premise 18.

With the wireless communication link 95 being established, the notification entity 68 of the communication apparatus 20 transmits information 325 to the communication apparatus 20, via the wireless communication link 95. The information 325 instructs the end-user equipment 10, at the end-user premise 18, to issue a notification concerning the fire at the end-user premise 18.

More particularly, in this embodiment, the information 325 comprises information indicative of the fire at the end-user premise 18. Also, in this embodiment, the information 325 comprises the location information 53 indicative of the physical location of the end-user premise 18 at which the fire occurs, which is retrieved from the database 66 of the communication apparatus 20. The information 325 may also comprise information advising a party at the end-user premise 18, to evacuate this premise in view of the fire.

Upon receiving the information 325, the notification entity 68 of the communication apparatus 20 causes the end-user equipment 10 at the end-user premise 18, to issue a notification concerning the fire at the end-user premise 18. This notification can take on many forms in various embodiments.

For example, in some embodiments, the notification concerning the fire at the end-user premise 18 may comprise one or more visual messages displayed on one or more end-user devices of the end-user equipment 10. More particularly, in this example, the notification entity 68 of the communication apparatus 20 transmits information 335, 337, 339, 341 to the computer 14, the VoIP phone 15, the VoIP phone 16, and the television unit 29, via the connectors 52]-52 and/or the wireless interface 80 of the communication apparatus 20, to direct these end-user devices to display respective messages concerning the fire at the end-user premise 18. Upon receiving the information 335, 337, 339, 341, the computer 14, the VoIP phone 15, the VoIP phone 16, and the television unit 29, display respective visual messages concerning
the fire at the end-user premise \(18_j\). These visual messages may have different content and/or formats, for instance, depending on display capabilities of the computer \(14_i\), the VoIP phone \(15_i\), the VoIP phone \(16_i\), and the television unit \(29_i\). For example, each message may be "Fire at neighbor's house! Evacuate immediately!" or any conceivable variant thereof.

Alternatively or additionally, in some embodiments, the notification concerning the fire at the end-user premise \(18_j\) may comprise one or more audible messages emitted by one or more end-user devices of the end-user equipment \(10_i\). For instance, in this example, the information \(335, 337, 339, 341\) transmitted to the computer \(14_i\), the VoIP phone \(15_i\), the VoIP phone \(16_i\), and the television unit \(29_i\), may also direct speakers of these end-user devices to emit audible messages accompanying the visual messages that they display.

As yet another possibility, in some embodiments, the notification concerning the fire at the end-user premise \(18_j\) may comprise an audible warning signal emitted by one or more end-user devices of the end-user equipment \(10_i\). For instance, in this example, the notification entity \(68\) of the communication apparatus \(20\), may transmit information to one or more of the computer \(14_i\), the VoIP phone \(15_i\), the VoIP phone \(16_i\), and the television unit \(29_i\), and/or to another end-user device (e.g., a siren) of the end-user equipment \(10_i\), to direct a speaker to emit a ring, a siren-like sound or any outer distinctive warning sound.

As yet a further possibility, in some embodiments, the notification concerning the fire at the end-user premise \(18_j\) may comprise a simulated phone call at the VoIP phone \(15_i\), and/or the VoIP phone \(16_i\), which, upon being answered by someone at the end-user premise \(18_i\), plays an audible message concerning the fire at the end-user premise \(18_j\).

In this example, it is assumed that a party \(71\) is currently at the end-user premise \(18_i\) and observes one or more of the visual messages displayed by the computer \(14_i\), the VoIP phone \(15_i\), the VoIP phone \(16_i\), and the television unit \(29_i\), (and/or any audible message accompanying any of these visual messages, if applicable). The party \(71\) is
thus notified of the fire at the end-user premise 18, and may take various actions depending on the circumstances, such as evacuate the end-user premise 18, call emergency services, etc.

5 In some embodiments, the wireless communication link 95 may remain established between the communication apparatus 2O and the communication apparatus 2O until the alarm system communication is terminated. Upon determining that the alarm system communication with the communication equipment 79 at the alarm monitoring central 73 is terminated, the processing entity 54 of the communication apparatus 20 may cause the notification entity 68 of the communication apparatus 20 to wirelessly transmit information to the communication apparatus 2O via the wireless interface 70 of the communication apparatus 2O in order to disestablish the wireless communication link 95.

10 In other embodiments, the wireless communication link 95 may remain established between the communication apparatus 20, and the communication apparatus 20, until the fire at the end-user premise 18 is resolved. In other words, the wireless communication link 95 may remain established even after the termination of the alarm system communication (e.g., to allow the notification entity 68 of the communication apparatus 2O to repeatedly transmit information such as the information 325 to instruct the end-user equipment 1O to issue other notifications concerning the fire at the end-user premise 18). When the wireless communication link 95 becomes unnecessary, for instance, because the fire has been resolved, it may be disestablished. To determine when the wireless communication link 95 may be disestablished, a command may be provided to the notification entity 68 of the communication apparatus 2O. For example, a user may input a command to disestablish the wireless communication link 95 via an end-user device (e.g., the VoIP phone 15) connected to the communication apparatus 2O. The notification entity 68 of the communication apparatus 20, may proceed to wirelessly transmit information to the communication apparatus 2O via the wireless interface 70 of the communication apparatus 20, in order to disestablish the wireless communication link 95.
While in the example presented above the processing entity 54 of the communication apparatus 20, determines that a notification concerning the fire at the end-user premise 18, is to be issued at another one of the end-user premises 181-18N upon receiving the information indicative that the smoke detector of the alarm system 17 detected smoke produced by the fire, in other examples, a more stringent condition may need to be met in order for the processing entity 54 to make such a determination. For instance, in some cases, the processing entity 54 may determine that a notification concerning the fire at the end-user premise 18 is to be issued at another one of the end-user premises 181-18N upon receiving information indicative that multiple smoke detectors of the alarm system 17, detected smoke produced by the fire and/or that one or more smoke detectors of the alarm system 17 have detected smoke produced by the fire for a threshold period of time (e.g., five (5) minutes), as this suggests that the fire is widespread and/or spreading. This can avoid unnecessary issuance of notifications at another one of the end-user premises 181-18N for minor fires or accidental activations of a smoke detector of the alarm system 17, (e.g., due to burnt food in an oven or microwave).

Also, while the example presented above involved a fire at the end-user premise 18, similar operations may occur for other types of events that may occur at the end-user premise 18 in order to issue notifications concerning such events at another one of the end-user premises 181-18N. Generally, any event at the end-user premise 18 for which a notification is to be issued at another one of the end-user premises 181-18N can be defined by various conditions.

For example, if an emergency phone call is placed to the emergency telephone number "911" using the VoIP phone 15 or the POTS phone 16, because a person at the end-user premise 18 experiences an emergency (e.g., a medical emergency), the processing entity 54 of the communication apparatus 20, determines that the called telephone number corresponds to the telephone number "911" included in the event information 47 in the database 66 and thus obtains an indication of the emergency at the end-user premise 18. The notification entity 68 of the communication apparatus 20 proceeds to establish a wireless communication link between the end-user equipment 10 at the end-user premise 18 and the end-user equipment 10 at the end-
user premise 18, and transmits information to the end-user equipment 10, via this
wireless communication link to instruct the end-user equipment 10, to issue a
notification concerning the emergency at the end-user premise 18\textsubscript{j} (e.g., a visual
message and/or an audible message advising a party at the end-user premise 18, that
an emergency phone call has been placed by someone at the end-user premise 18\textsubscript{j}).
Such a notification may allow a party at the end-user premise 18, to go and help the
person in need at the end-user premise 18\textsubscript{j} until emergency personnel arrives on scene.

As another example, assume that the end-user premise 18\textsubscript{j} is a house in which lives an
individual under certain medication. Also assume for purposes of this example that
the end-user equipment 10, at the end-user premise 18\textsubscript{j} comprises a detector
monitoring a medicine cabinet at the end-user premise 18\textsubscript{j} in which the individual keeps his/her medication whereby the detector detects every opening of the medicine
cabinet. Assuming that the individual is required to take his/her medication three (3)
times a day and that any additional medication during that day may have significant
adverse effects on the individual's health, the communication apparatus 20 may be
configured to invoke the local notification mechanism contemplated herein if it
receives information from the detector which indicates that the medicine cabinet was
opened more than three (3) times in one day. In such cases, the notification entity 68
may proceed to establish a wireless communication link between the end-user
equipment 10, at the end-user premise 18\textsubscript{j} and the end-user equipment 10, at the end-
user premise 18, and transmit information to the end-user equipment 10, via this
wireless communication link to instruct the end-user equipment 10, to issue a
notification concerning the fact that the medicine cabinet at the end-user premise 18\textsubscript{j}
was opened a number of times which is of potential concern. Such a notification may
allow a party at the end-user premise 18, to go and check on the individual at the end-
user premise 18\textsubscript{j} to ensure that he/she is fine.

It will thus be appreciated that, in this embodiment, interaction between the
communication apparatus 20 at the end-user premise 18\textsubscript{j} and the communication
apparatus 20, at the end-user premise 18, provides a local notification mechanism
enabling a notification concerning a particular event at the end-user premise 18\textsubscript{j} to be
issued at the end-user premise 18,.
The local notification mechanism contemplated herein may be implemented in various other ways in other embodiments.

For example, in some embodiments, one or more end-user devices of the end-user equipment \(10,\) at the end-user premise \(18,\) may have wireless capabilities that can be exploited to implement the local notification mechanism contemplated herein.

With reference to Figure 6A, a variant to the example considered above will be discussed in which it is assumed that the alarm system \(17,\) which detected the fire at the end-user premise \(18,\) is a wireless alarm system. That is, in this example, each of one or more devices of the alarm system \(17_j\) comprises a wireless interface comprising a wireless transmitter and a wireless receiver that can wirelessly exchange information with another device of the alarm system \(\backslash I_j\) and/or the wireless interface \(80\) of the communication apparatus \(20.\) More particularly, in this example, it is assumed that each of the smoke detector and the controller of the alarm system \(17_j\) comprises a wireless interface allowing them to wirelessly exchange information with one another and with any other wireless-enabled device within range.

As in the example considered above, upon the smoke detector of the alarm system \(17,\) detecting the smoke produced by the fire at the end-user premise \(18,\) the communication apparatus \(20,\) receives the information \(305\) from the alarm system \(17,\) pertaining to the alarm system communication effected by the alarm system \(17.\) Also, as in the example considered above, the processing entity \(54\) of the communication apparatus \(20,\) determines that the IP address "10.10.2.7" included in the information \(305\) corresponds to the IP address "10.10.2.7" included in the event information \(47\) in the database \(66.\) Accordingly, like in the example considered above, since the IP address "10.10.2.7" identifies the smoke detector of the alarm system \(17,\) the processing entity \(54\) obtains an indication of the fire at the end-user premise \(18\) and determines that a notification concerning this fire is to be issued at another one of the end-user premises \(18_1-18_N.\)
Thus, the communication apparatus 20, attempts to cause issuance of a notification concerning the fire at the end-user premise 18; at another one of the end-user premises 181-18N. More particularly, the communication apparatus 20, attempts to establish a wireless communication link via which it can transmit information causing issuance of such a notification at another one of the end-user premises 181-18N.

The processing entity 54 of the communication apparatus 20, accesses the database 66 of the communication apparatus 20, to obtain the end-user equipment information 43 regarding end-user equipment at one or more other ones of the end-user premises 18i-18N that is within wireless range of the end-user equipment 10, at the end-user premise 18;.

As in the example considered above, in this variant example, it is assumed that the end-user equipment information 43 in the database 66 of the communication apparatus 20, includes an identifier of the communication apparatus 20; (e.g., a MAC address, EHA, or other hardware identifier of the communication apparatus 20; an IP address assigned to the communication apparatus 20; a URI such as a SIP URI or any other information that identifies the communication apparatus 20; and access information to be provided to the communication apparatus 20; in order to make use of the communication apparatus 20; (e.g., a password or a wireless network key).

The processing entity 54 of the communication apparatus 20; retrieves the identifier and access information of the communication apparatus 20;. In the embodiment considered above, the communication apparatus 20, uses this identifier and access information to establish the wireless communication link 95 between itself and the communication apparatus 20;. In this variant, however, the communication apparatus 20; attempts to establish a wireless communication link between the alarm system 17; and the communication apparatus 20; instead.

More particularly, the notification entity 68 of the communication apparatus 20; transmits information 355 to the alarm system 17;.. In this embodiment, the information 355 is transmitted to the controller of the alarm system 17;.. The information 355 includes the identifier and access information for the communication
apparatus 2O₁ retrieved from the database 66 as well as an indication to establish a wireless communication link between itself, i.e., the alarm system 17, and the communication apparatus 2O₁.

Upon receipt of the information 355, the controller of the alarm system 17, wirelessly sends information 361 to the communication apparatus 2O₁ via its wireless interface. The information 361 includes the identifier and access information of the communication apparatus 2O₁ that was retrieved from the database 66 by the processing entity 54 of the communication apparatus 20. In this example, the information 361 also includes an identifier of the controller of the alarm system 17.

When it receives the information 361, the communication apparatus 2O₁ attempts to validate the identifier and access information of the communication apparatus 2O₁ that are included in the information 361. More particularly, the processing entity 54 of the communication apparatus 2O₁ verifies whether the identifier and access information of the communication apparatus 2O₁ that are included in the information 361 correspond to the identifier and access information of the communication apparatus 2O₁ that are included in the end-user equipment information 41 in the database 66 of the communication apparatus 20. If not, the communication apparatus 2O₁ may deny to the request of the alarm system 17, to access the communication apparatus 2O₁ and may take some other action. For instance, the communication apparatus 2O₁ may send information back to the alarm system 17 indicating that access to the communication apparatus 2O₁ is denied, and/or may send information to the communication apparatus 40 of the core network 30 to indicate that a failed connection attempt has occurred due to invalid credentials.

In this example, it is assumed that the identifier and access information of the communication apparatus 2O₁ that are included in the information 361 indeed correspond to the identifier and access information of the communication apparatus 2O₁ that are included in the end-user equipment information 41 in the database 66 of the communication apparatus 2O₁. Therefore, as shown in Figure 6B, the communication apparatus 2O₁ grants access to the alarm system 17, resulting in establishment of a wireless communications link 97 between the alarm system 1I and
the communication apparatus 20. In other words, in this example, the alarm system 17, wirelessly joins the local network at the end-user premise 18.

With the wireless communication link 97 being established, the alarm system 17 transmits information 375 to the communication apparatus 20, via the wireless communication link 97. The information 375 instructs the end-user equipment 10 at the end-user premise 18 to issue a notification concerning the fire at the end-user premise 18.

More particularly, in this embodiment, the information 375 comprises information indicative of the fire at the end-user premise 18. Also, in this embodiment, the information 375 comprises the location information 53 indicative of the physical location of the end-user premise 18 at which the fire occurs, which may be included in the information 361 upon being retrieved from the database 66 of the communication apparatus 20. The information 375 may also comprise information advising a party at the end-user premise 18 to evacuate this premise in view of the fire.

Upon receiving the information 375, the notification entity 68 of the communication apparatus 20 causes the end-user equipment 10, at the end-user premise 18, to issue a notification concerning the fire at the end-user premise 18. This notification can take on many forms in various embodiments.

For example, in some embodiments, the notification concerning the fire at the end-user premise 18 may comprise one or more visual messages displayed on one or more end-user devices of the end-user equipment 10. More particularly, in this example, the notification entity 68 of the communication apparatus 20 transmits information 335', 337', 339', 341' to the computer 14, the VoIP phone 15, the VoIP phone 16, and the television unit 29, via the connectors 52_1-52_M and/or the wireless interface 80 of the communication apparatus 20, to direct these end-user devices to display respective visual messages concerning the fire at the end-user premise 18. Upon receiving the information 335', 337', 339', 341', the computer 14, the VoIP phone 15, the VoIP phone 16, and the television unit 29, display respective visual messages
concerning the fire at the end-user premise 18.. These visual messages may have different content and/or formats, for instance, depending on display capabilities of the computer 14., the VoIP phone 15., the VoIP phone 16., and the television unit 29.. For example, each message may be "Fire at neighbor's house! Evacuate immediately!" or any conceivable variant thereof.

Alternatively or additionally, in some embodiments, the notification concerning the fire at the end-user premise 18., may comprise one or more audible messages emitted by one or more end-user devices of the end-user equipment 10.. For instance, in this example, the information 335', 337', 339', 341' transmitted to the computer 14., the VoIP phone 15., the VoIP phone 16., and the television unit 29., may also direct speakers of these end-user devices to emit audible messages accompanying the visual messages that they display.

As yet another possibility, in some embodiments, the notification concerning the fire at the end-user premise 18., may comprise an audible warning signal emitted by one or more end-user devices of the end-user equipment 10.. For instance, in this example, the notification entity 68 of the communication apparatus 20., may transmit information to one or more of the computer 14., the VoIP phone 15., the VoIP phone 16., and the television unit 29., and/or to another end-user device (e.g., a siren) of the end-user equipment 10., to direct a speaker to emit a ring, a siren-like sound or any outer distinctive warning sound.

As yet a further possibility, in some embodiments, the notification concerning the fire at the end-user premise 18., may comprise a simulated phone call at the VoIP phone 15., and/or the VoIP phone 16., whereby upon being answered by someone at the end-user premise 18., plays an audible message concerning the fire at the end-user premise 18.,

In this variant example, as in the example considered above, it is assumed that the party 71 at the end-user premise 18., observes one or more of the visual messages displayed by the computer 14., the VoIP phone 15., the VoIP phone 16., and the television unit 29., (and/or any audible message accompanying any of these visual
messages, if applicable). The party 71 is thus notified of the fire at the end-user premise 18j and may take various actions depending on the circumstances, such as evacuate the end-user premise 18j, call emergency services, etc.

5 While this embodiment illustrates one way in which the local notification mechanism contemplated herein may be implemented using wireless capabilities of one or more end-user devices of the end-user equipment 10x at the end-user premise 18x such wireless capabilities may be exploited in other ways in other embodiments to implement the failover mechanism.

10 For example, in some embodiments, upon obtaining an indication of a particular event at the end-user premise 18x for which a notification is to be issued at another one of the end-user premises 181-18n, the communication apparatus 20x at the end-user premise 18x may establish a wireless communication link with a wireless-enabled end-user device that is part of the end-user equipment 10y at the end-user premise 18y rather than with the communication apparatus 20y directly. For instance, in the example considered above, the communication apparatus 20, at the end-user premise 18j may establish one or more wireless communication link between itself and the computer 14, the VoIP phone 15, the VoIP phone 16, and/or the television unit 29, (using an identifier and possibly access information for each of these end-user devices retrieved from the database 66 of the communication apparatus 20,) and transmit information to the computer 14, the VoIP phone 15b the VoIP phone 16b, and/or the television unit 29b, via these one or more wireless communication links in order to instruct any of these end-user devices to present a visual message (possibly accompanied by an audible message) concerning the fire at the end-user premise 18j.

As another example, in some embodiments, upon obtaining an indication of a particular event at the end-user premise 18x for which a notification is to be issued at another one of the end-user premises 181-18n, the communication apparatus 20x at the end-user premise 18x may establish a wireless communication link between a wireless-enabled end-user device that is part of the end-user equipment 10x and a wireless-enabled end-user device that is part of the end-user equipment 10y at the end-user premise 18y. For instance, in the example considered above, the communication
apparatus 20, at the end-user premise 18, may establish one or more wireless communication link between the alarm system 17, and the computer 14, the VoIP phone 15., the VoIP phone 16., and/or the television unit 29, (using an identifier and possibly access information for each of these end-user devices retrieved from the database 66 of the communication apparatus 20,) and cause the alarm system 17, to transmit information to the computer H, the VoIP phone 15., the VoIP phone 16., and/or the television unit 29, via these one or more wireless communication links in order to instruct any of these end-user devices to present a visual message (possibly accompanied by an audible message) concerning the fire at the end-user premise 18.

The embodiments considered above illustrate that, in some cases, it is useful or necessary to know the physical location of the end-user premise 18 at which a particular event occurs. Although in the embodiments considered above, the physical location of the end-user premise 18 at which a particular event occurs is derived from the location information 53 included in the database 66 of the communication apparatus 20 at the end-user premise 18, this physical location may be derived in various other ways in other embodiments.

For example, in some embodiments, the physical location of the end-user premise 18 at which a particular event occurs may be determined using the location information 23 included in the database 48 of the communication apparatus 40 of the core network 30. In such embodiments, upon receiving an identifier of a piece of equipment at the end-user premise 18 at which a particular event occurs (e.g., in the example considered above, the identifier of the communication apparatus 20 which may be included in the information 325, 375 transmitted by the end-user equipment 10,), the communication apparatus 20 at the end-user premise 18 may obtain the location information 23 indicating the physical location of the end-user premise 18 by communicating with the communication apparatus 40 via the communication link 21. Once obtained, the location information 23 indicating the physical location of the end-user premise 18 may be used by the communication apparatus 20 at the end-user premise 18, to know the physical location of the end-user premise 18 at which the particular event occurs.
As another example, in some embodiments, the physical location of the end-user premise 18_X at which a particular event occurs may be determined using triangulation techniques (e.g., multilateration or trilateration). For instance, location algorithms may determine the physical location of the end-user premise 18_X based on three or more times of arrival of a signal wirelessly transmitted by a piece of equipment of the end-user equipment 10_X (e.g., the communication apparatus 20_X) at three (3) or more wireless receivers having known locations that are distributed among the end-user equipment 10_1-10_N at the end-user premises 18_1-18_N and/or equipment at various other places. Such triangulation techniques, which can be based on times of arrival either explicitly (i.e., on the times of arrival themselves) or implicitly (i.e., on differences between the times of arrival), are well known and need not be described here. An example of a system enabling such location capabilities is the Wi-Fi Positioning System (WPS) provided by Skyhook Wireless Inc. and described at http://www.skyhookwireless.com/, which is hereby incorporated by reference herein.

Thus, using triangulation techniques, a "location" database including location information indicating the physical locations of the end-user equipment 10_1-10_N at the end-user premises 18_1-18_N (and possibly equipment at various other places) can be created and maintained by the service provider serving the end-user premises 18_1-18_N or by another party. The location database may associate the location information indicating the physical location of the end-user equipment 10_X to an identifier of a piece of equipment of the end-user equipment 10_X (e.g., the identifier of the communication apparatus 20_X). In such embodiments, upon receiving an identifier of a piece of equipment of the end-user premise 18_X at which a particular event occurs (e.g., in the example considered above, the identifier of the communication apparatus 20_y which may be included in the information 325, 375 transmitted by the end-user equipment 10_y), the communication apparatus 20_y at the end-user premise 18_y may obtain the location information indicating the physical location of the end-user premise 18_X from the location database by communicating with equipment of the service provider or other party managing the location database via the communication link 21_y. Once obtained, the location information indicating the physical location of the end-user premise 18_X may be used by the communication apparatus 20_y at the end-
user premise $18_\gamma$ to know the physical location of the end-user premise $18_\chi$ at which the particular event occurs.

In the embodiments considered above, the processing entity 54 of the communication apparatus $2O_\chi$ can obtain an indication of a particular event at the end-user premise $18_\chi$ and determine that a notification concerning this event is to be issued at another one of the end-user premises $18_1-18_N$ by determining that an identifier (e.g., a telephone number, an IP address, a URI such as a SIP URI, a MAC address, EHA or other hardware identifier, etc.) included in information received at the communication apparatus $2O_\chi$ in relation to the particular event (e.g., the information 305 in the examples considered above) corresponds to a predetermined identifier specified by the event information 47 in the database 66 of the communication apparatus $2O_\chi$. The processing entity 54 of the communication apparatus $2O_\chi$ may obtain an indication of a particular event at the end-user premise $18_\chi$ and determine that a notification concerning this event is to be issued at another one of the end-user premises $18_1-18_N$ in various other ways in other embodiments based on information received in relation to the particular event.

For example, in some embodiments, the processing entity 54 of the communication apparatus $2O_\chi$ can obtain an indication of a particular event at the end-user premise $18_\chi$ and determine that a notification concerning this event is to be issued at another one of the end-user premises $18_1-18_N$ by determining that an identifier included in information received at the communication apparatus $2O_\chi$ in relation to the particular event (e.g., the information 305 in the examples considered above) corresponds to a predetermined identifier specified by a processing logic implemented by the processing entity 54. For instance, the processing logic implemented by the processing entity 54 may include one or more conditional statements checking whether an identifier included in received information corresponds to a predetermined identifier (e.g., "if IP address "10.10.2.7" included in received information, then conclude there is a fire at premise and effect issuance of notification concerning fire"; "if telephone number "911" included in received information, then conclude there is an emergency at premise and effect issuance of notification concerning emergency"; etc.).
As another example, in some embodiments, information received at the communication apparatus 2O_x may specify an occurrence of a particular event at the end-user premise 18_X. For instance, such information may comprise a code having an assigned meaning which, when received by the processing entity 54 of the communication apparatus 2O_x, results in the processing entity 54 obtaining an indication of the particular event and determining that a notification concerning this event is to be issued at another one of the end-user premises 18_j-18_N. Considering as an illustration the examples considered above, the information 305 transmitted by the alarm system 17_j may comprise a code specifying that the fire at the end-user premise 18_j has been detected. Upon receiving this code, the processing entity 54 of the communication apparatus 2O_j obtains an indication of the fire at the end-user premise 18_j and determines that a notification concerning this fire is to be issued at another one of the end-user premises 18i-18_N.

As yet another example, in some embodiments, the reception of certain information at the communication apparatus 2O_x may in itself (without consideration of the content of this information) result in the processing entity 54 of the communication apparatus 2O_x obtaining an indication of a particular event at the end-user premise 18_X and determining that a notification concerning this event is to be issued at another one of the end-user premises 18_j-18_N. For instance, an end-user device connected to a given one of the connectors 52i-52_M of the communication apparatus 2O_x may be associated with a certain type of event that may occur at the end-user premise 18_X such that reception of information at that given connector may constitute an indication of such an event at the end-user premise 18_X. Considering as an illustration a variant to the examples considered above, in some embodiments, instead of being connected to the communication apparatus 20_j, the controller of the alarm system 17_j may be part of the communication apparatus 20, (e.g., be implemented by the processing entity 54) while one or more other alarm system devices of the alarm system 17, may be connected to the communication apparatus 2O_j via one or more of its connectors 52i-52M and/or its wireless interface 80. In such embodiments, assuming that the smoke detector which detected the smoke produced by the fire is connected to a given one of the connectors 52r52_M, the reception at that given connector of information

42
transmitted by the smoke detector upon detecting the smoke results in the processing entity 54 of the communication apparatus 20 obtaining an indication of the fire at the end-user premise 18, and determining that a notification concerning this fire is to be issued at another one of the end-user premises 18_1-18_N.

In the embodiments considered above, the communication apparatus 20_x at the end-user premise 18_x can obtain an indication of a particular event at the end-user premise 18_x and establish a wireless communication link with the end-user equipment 10_y at the end-user premise 18_y in order to transmit information to the end-user equipment 10_y for causing the end-user equipment 10_y to issue a notification concerning this event. In other embodiments, such functions may be implemented by other pieces of equipment of the end-user equipment 10_x at the end-user premise 18_x.

For example, in some embodiments, a given end-user device (e.g., a phone, computer, or alarm system device) at the end-user premise 18_x may itself obtain an indication of a particular event at the end-user premise 18_x and establish a wireless communication link with the end-user equipment 10_y at the end-user premise 18_y in order to transmit information to the end-user equipment 10_y for causing the end-user equipment 10_y to issue a notification concerning this event. In such embodiments, the given end-user device constitutes an apparatus implementing a processing entity and a notification entity operating in a manner similar to the processing entity 54 and the notification entity 68 of the communication apparatus 20_x in connection with the local notification mechanism contemplated herein. For instance, in a variant to the example considered above, the controller or the smoke detector of the wireless alarm system 17_j may obtain an indication of the fire at the end-user premise 18_j upon detection of the smoke by the smoke detector and may proceed to establish a wireless communication link (such as the wireless communication link 97) with the communication apparatus 20_1 at the end-user premise 18.. In such a variant, the controller or the smoke detector of the wireless alarm system 17_j, may store the identifier and access information of the communication apparatus 20_1 in memory or request them from the database 66 of the communication apparatus 20, and may use this information to establish the wireless communication link in a manner similar to that described above. Upon establishment of the wireless communication link, the controller or the smoke detector of the
wireless alarm system \( I_f \) may proceed to transmit information to the communication apparatus \( 2O_l \) via the wireless communication link to instruct the end-user equipment \( 10 \), to issue a notification concerning the fire at the end-user premise \( 18_j \).

In some embodiments, the end-user equipment \( 1O_x \) at the end-user premise \( 18_x \) may use a private network address space for one or more end-user devices of the end-user equipment \( 1O_x \), while the communication apparatus \( 2O_x \) may communicate via the communication link \( 2I_x \) using a public network address space. For example, the communication apparatus \( 2O_x \) may be assigned a public IP address by the communications network \( 12 \) (e.g., by the communication apparatus \( 40 \) of the core network \( 30 \)) and the one or more end-user devices of the end-user equipment \( 1O_x \) may be assigned private IP addresses by the communication apparatus \( 2O_x \). In such embodiments, the routing entity \( 62 \) of the communication apparatus \( 2O_x \) performs a network address translation (NAT) process on data packets passing therethrough to translate their addresses from the private network address space to the public network address space, and vice versa.

When the local notification mechanism contemplated herein is invoked in these embodiments, in cases where a wireless communication link is established between the communication apparatus \( 2O_x \) at the end-user premise \( 18_x \) and the communication apparatus \( 2O_y \) at the end-user premise \( 18_y \), the NAT process performed by the communication apparatus \( 2O_x \) and, if applicable, the NAT process performed by the communication apparatus \( 2O_y \) can take into account the establishment of the wireless communication link in order to avoid potential private network address clashes.

For example, considering the previous example discussed in connection with Figures 5A and 5B where the wireless communication link \( 95 \) is established between the communication apparatus \( 2O_J \) at the end-user premise \( 18_j \) and the communication apparatus \( 2O_l \) at the end-user premise \( 18_l \), it is assumed that (prior to the wireless communication link \( 95 \) being established) the computer \( 14_J \), the VoIP phone \( 15_J \), an ATA associated with the POTS phone \( 16_J \), and the alarm system devices of the alarm system \( 17 \), are assigned private IP addresses by the communication apparatus \( 2O_J \) which is itself assigned a public IP address by the communications network \( 12 \), and
that the computer 14,, the VoIP phone 15,, the VoIP phone 16, and the television unit
are assigned private IP addresses by the communication apparatus 20, which is
itself assigned a public IP address by the communications network 12. More
particularly, for purposes of this example, assume that the public IP address assigned
to the communication apparatus 20, is "122.1.17.6" and the public IP address assigned
to the communication apparatus 20, is "122.28.5.18".

In establishment of the wireless communication link 95, the notification entity 68 of
the communication apparatus 20, assigns a private IP address to the communication
apparatus 20, say "10.50.50.3" for purposes of this example. In other words, the
communication apparatus 20 can be viewed as becoming part of the private network
address space used by the end-user equipment 10, at the end-user premise 18.

The notification entity 68 of the communication apparatus 20 takes note of the private
IP address "10.50.50.3" assigned to it by the communication apparatus 20, such that
data packets transmitted to the communication apparatus 20, via the wireless
communication link 95 to convey the information 325 have the private IP address
"10.50.50.3" as their source address.

When it receives the data packets transmitted by the communication apparatus 20,
which have the private IP address "10.50.50.3" as their source address, the routing
entity 62 of the communication apparatus 20, knows that these packets come from the
communication apparatus 20, at the end-user premise 18. Therefore, potential private
network address clashes can be avoided.

While the embodiment considered above illustrates one way in which NAT may be
taken into account in implementing the local notification mechanism contemplated
herein, NAT may be taken into account in various other ways in other embodiments.
Also, in some embodiments, NAT may not be needed and/or may not be performed
(e.g., in cases where an IPv6 addressing scheme is used).

In the embodiments considered above the end-user equipment 10 at the end-user
premise 18 can cause the end-user equipment 10 at the end-user premise 18 to issue
a notification concerning a particular event at the end-user premise 18_X. In other
embodiments, instead of this notification being issued only at the end-user premise
18_y, a corresponding notification can be issued at one or more other ones of the end-
user premises 18i-18_N.

For example, in some embodiments, the end-user equipment 10_X at the end-user
premise 18_X may establish two (2) or more wireless communication links with the
end-user equipment at two (2) or more other ones of the end-user premises 18i-18_N
that are within its wireless range and transmit information to that end-user equipment
via these wireless communication links in order to instruct that end-user equipment to
issue respective notifications of the particular event at these other end-user premises.

As another example, in some embodiments, upon issuance by the end-user equipment
10_Y at the end-user premise 18_Y of a notification concerning a particular event at the
end-user premise 18_X further to receipt of information transmitted by the end-user
equipment 10_X via a first wireless communication link established between the end-
user equipment 10_X and the end-user equipment 10_Y, the end-user equipment 10_Y at the
end-user premise 18_Y may establish a second wireless communication link between
itself and the end-user equipment 10_Z at the end-user premise 18_Z (which is within
wireless range of the end-user equipment 10_Y) and transmit information to the end-
user equipment 10_Z via this second wireless communication link in order to instruct
the end-user equipment 10_Z to issue a corresponding notification at the end-user
premise 18_Z. This "daisy chaining" process can allow parties at various ones of the
end-user premises 18i-18_N to be notified of the particular event at the end-user
premise 18_X even if they are not within wireless range of the end-user equipment 10_X
at the end-user premise 18_X.

Those skilled in the art will appreciate that, in some embodiments, certain
functionality of a given element described herein (e.g., the communication apparatus
40, any piece of equipment of the end-user equipment 10_X such as the communication
apparatus 20_X) may be implemented as pre-programmed hardware or firmware
components (e.g., application specific integrated circuits (ASICs), electrically
erasable programmable read-only memories (EEPROMs), etc.) or other related
components. In other embodiments, a given element described herein (e.g., the communication apparatus 40, any piece of equipment of the end-user equipment 10x such as the communication apparatus 20x) may comprise a processor having access to a memory which stores program instructions for execution by the processor to implement certain functionality of that given element. The program instructions may be stored on data storage media that is fixed, tangible, and readable directly by the processor. The data storage media may store data optically (e.g., an optical disk such as a CD-ROM or a DVD), magnetically (e.g., a hard disk drive, a removable diskette), electrically (e.g., semiconductor memory, floating-gate transistor memory, etc.), and/or in various other ways. Alternatively, the program instructions may be stored remotely but transmittable to the given element via a modem or other interface device connected to a network over a transmission medium. The transmission medium may be either a tangible medium (e.g., optical or analog communications lines) or a medium implemented using wireless techniques (e.g., microwave, infrared or other wireless transmission schemes).

Although various embodiments of the invention have been described and illustrated, it will be apparent to those skilled in the art that numerous modifications and variations can be made without departing from the scope of the invention, which is defined in the appended claims.
CLAIMS

1. A method for notifying a party of a particular event at a first end-user premise, comprising:
   - obtaining an indication of the particular event;
   - establishing a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise being connected to at least one end-user device at the second end-user premise; and
   - causing the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the second end-user premise via the wireless communication link such that, upon receiving the information, the communication apparatus at the second end-user premise directs the at least one end-user device at the second end-user premise to issue a notification concerning the particular event.

2. A method as claimed in claim 1, the end-user equipment at the first end-user premise comprising a communication apparatus connected to at least one end-user device at the first end-user premise, said establishing comprising establishing the wireless communication link between the communication apparatus at the first end-user premise and the communication apparatus at the second end-user premise.

3. A method as claimed in claim 1, the end-user equipment at the first end-user premise comprising a communication apparatus connected to at least one end-user device at the first end-user premise, said establishing comprising establishing the wireless communication link between a given end-user device of the at least one end-user device at the first end-user premise and the communication apparatus at the second end-user premise.

4. A method as claimed in claim 1, said establishing comprising causing the end-user equipment at the first end-user premise to wirelessly transmit certain information
to the communication apparatus at the second end-user premise to establish the wireless communication link.

5. A method as claimed in claim 4, the certain information comprising an identifier of the communication apparatus at the second end-user premise.

6. A method as claimed in claim 5, the identifier of the communication apparatus at the second end-user premise comprising at least one of a hardware identifier and an Internet Protocol (IP) address.

7. A method as claimed in claim 6, the hardware identifier comprising at least one of a Media Access Control (MAC) address and an Ethernet hardware address.

8. A method as claimed in claim 5, the certain information comprising access information for the communication apparatus at the second end-user premise.

9. A method as claimed in claim 8, the access information for the communication apparatus at the second end-user premise comprising at least one of a password and a wireless network key.

10. A method as claimed in claim 1, the end-user equipment at the first end-user premise comprising a communication apparatus connected to at least one end-user device at the first end-user premise, said method being performed by the communication apparatus at the first end-user premise.

11. A method as claimed in claim 10, said establishing comprising wirelessly transmitting certain information to the communication apparatus at the second end-user premise to establish the wireless communication link between the communication apparatus at the first end-user premise and the communication apparatus at the second end-user premise.

12. A method as claimed in claim 10, said establishing comprising causing a given end-user device of the at least one end-user device at the first end-user premise to
wirelessly transmit certain information to the communication apparatus at the second end-user premise to establish the wireless communication link between the given end-user device at the first end-user premise and the communication apparatus at the second end-user premise.

13. A method as claimed in claim 1, said obtaining comprising receiving certain information associated with occurrence of the particular event.

14. A method as claimed in claim 13, the certain information comprising an identifier of a given piece of equipment of the end-user equipment at the first end-user premise used in relation to the particular event, said obtaining comprising determining that the identifier corresponds to a predetermined identifier.

15. A method as claimed in claim 14, the identifier comprising at least one of an IP address, a Uniform Resource Identifier (URI), a telephone number, and a hardware identifier.

16. A method as claimed in claim 15, the hardware identifier comprising at least one of a MAC address and an Ethernet hardware address.

17. A method as claimed in claim 14, said determining that the identifier corresponds to the predetermined identifier comprising accessing a database and concluding that the identifier corresponds to a given identifier specified in the database.

18. A method as claimed in claim 13, the certain information specifying the occurrence of the particular event.

19. A method as claimed in claim 1, the notification comprising a visual message displayed by a given end-user device of the at least one end-user device at the second end-user premise.
20. A method as claimed in claim 19, the given end-user device of the at least one end-user device at the second end-user premise being a telephone, a computer or a television unit.

21. A method as claimed in claim 19, the visual message specifying the particular event at the first end-user premise.

22. A method as claimed in claim 19, the visual message specifying an action to be performed by the party in relation to the particular event at the first end-user premise.

23. A method as claimed in claim 1, the notification comprising an audible message emitted by a given end-user device of the at least one end-user device at the second end-user premise.

24. A method as claimed in claim 23, the given end-user device of the at least one end-user device at the second end-user premise being a telephone, a computer or a television unit.

25. A method as claimed in claim 23, the audible message specifying the particular event at the first end-user premise.

26. A method as claimed in claim 23, the audible message specifying an action to be performed by the party in relation to the particular event at the first end-user premise.

27. A method as claimed in claim 1, the at least one end-user device at the second end-user premise comprising a plurality of end-user devices, the notification comprising a plurality of messages presented by the end-user devices at the second end-user premise.

28. A method as claimed in claim 24, the plurality of end-user devices comprising at least one of a telephone, a computer and a television unit.
29. A method as claimed in claim 1, the notification comprising an audible warning signal emitted by a given end-user device of the at least one end-user device at the second end-user premise.

30. A method as claimed in claim 1, the notification indicating a physical location of the first end-user premise.

31. A method as claimed in claim 30, the information transmitted to the communication apparatus at the second end-user equipment via the wireless communication link allowing the communication apparatus at the second end-user premise to identify the physical location of the first end-user premise.

32. A method as claimed in claim 31, the information transmitted to the communication apparatus at the second end-user premise via the wireless communication link comprising location information indicative of the physical location of the first end-user premise.

33. A method as claimed in claim 31, the information transmitted to the communication apparatus at the second end-user premise via the wireless communication link comprising an identifier of the end-user equipment at the first end-user premise, the identifier being associated in a database with location information indicative of the physical location of the first end-user premise.

34. A method as claimed in claim 1, the wireless communication link being a first wireless communication link, the notification being a first notification, said method comprising:
   - establishing a second wireless communication link between the end-user equipment at the first end-user premise and a communication apparatus at a third end-user premise, the communication apparatus at the third end-user premise being connected to at least one end-user device at the third end-user premise; and
causing the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the third end-user premise via the second wireless communication link such that, upon receiving the information transmitted via the second wireless communication link, the communication apparatus at the third end-user premise directs the at least one end-user premise at the third end-user premise to issue a second notification concerning the particular event.

35. A method as claimed in claim 1, the wireless communication link being a first wireless communication link, the notification being a first notification, said method comprising:

- establishing a second wireless communication link between the communication apparatus at the second end-user premise and a communication apparatus at a third end-user premise, the communication apparatus at the third end-user premise being connected to at least one end-user device at the third end-user premise; and

- causing the communication apparatus at the second end-user premise to transmit information to the communication apparatus at the third end-user premise via the second wireless communication link such that, upon receiving the information transmitted via the second wireless communication link, the communication apparatus at the third end-user premise directs the at least one end-user device at the third end-user premise to issue a second notification concerning the particular event.

36. Apparatus for notifying a party of a particular event at a first end-user premise, said apparatus comprising:

- a processing entity configured to obtain an indication of the particular event; and

- a notification entity configured to:

- establish a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise
being connected to at least one end-user device at the second end-user premise; and
- cause the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the second end-user premise via the wireless communication link such that, upon receiving the information, the communication apparatus at the second end-user premise directs the at least one end-user device at the second end-user premise to issue a notification concerning the particular event.

37. Apparatus as claimed in claim 36, said apparatus being part of the end-user equipment at the first end-user premise and being connected to at least one end-user device at the first end-user premise, wherein, to establish the wireless communication link, said notification entity is configured to said establish the wireless communication link between said apparatus at the first end-user premise and the communication apparatus at the second end-user premise.

38. Apparatus as claimed in claim 36, said apparatus being part of the end-user equipment at the first end-user premise and being connected to at least one end-user device at the first end-user premise, wherein, to establish the wireless communication link, said notification entity is configured to establish the wireless communication link between a given end-user device of the at least one end-user device at the first end-user premise and the communication apparatus at the second end-user premise.

39. Apparatus as claimed in claim 36, wherein, to establish the wireless communication link, said notification entity is configured to cause the end-user equipment at the first end-user premise to wirelessly transmit certain information to the communication apparatus at the second end-user premise to establish the wireless communication link.

40. Apparatus as claimed in claim 39, the certain information comprising an identifier of the communication apparatus at the second end-user premise.
41. Apparatus as claimed in claim 40, the identifier of the communication apparatus at the second end-user premise comprising at least one of a hardware identifier and an Internet Protocol (IP) address.

42. Apparatus as claimed in claim 41, the hardware identifier comprising at least one of a Media Access Control (MAC) address and an Ethernet hardware address.

43. Apparatus as claimed in claim 40, the certain information comprising access information for the communication apparatus at the second end-user premise.

44. Apparatus as claimed in claim 43, the access information for the communication apparatus at the second end-user premise comprising at least one of a password and a wireless network key.

45. Apparatus as claimed in claim 36, said apparatus being part of the end-user equipment at the first end-user premise and being connected to at least one end-user device at the first end-user premise.

46. Apparatus as claimed in claim 45, comprising a wireless interface, wherein, to establish the wireless communication link, said notification entity is configured to cause said wireless interface to wirelessly transmit certain information to the communication apparatus at the second end-user premise to establish the wireless communication link between said apparatus at the first end-user premise and the communication apparatus at the second end-user premise.

47. Apparatus as claimed in claim 45, wherein, to establish the wireless communication link, said notification entity is configured to cause a given end-user device of the at least one end-user device at the first end-user premise to wirelessly transmit certain information to the communication apparatus at the second end-user premise to establish the wireless communication link between the given end-user device at the first end-user premise and the communication apparatus at the second end-user premise.
48. Apparatus as claimed in claim 36, wherein, to obtain the indication of the particular event, said processing entity is configured to receive certain information associated with occurrence of the particular event.

49. Apparatus as claimed in claim 48, the certain information comprising an identifier of a given piece of equipment of the end-user equipment at the first end-user premise used in relation to the particular event, wherein, to obtain the indication of the particular event, said processing entity is configured to determine that the identifier corresponds to a predetermined identifier.

50. Apparatus as claimed in claim 49, the identifier comprising at least one of an IP address, a Uniform Resource Identifier (URI), a telephone number, and a hardware identifier.

51. Apparatus as claimed in claim 50, the hardware identifier comprising at least one of a MAC address and an Ethernet hardware address.

52. Apparatus as claimed in claim 49, wherein, to determine that the identifier corresponds to a predetermined identifier, said processing entity is configured to access a database and conclude that the identifier corresponds to a given identifier specified in the database.

53. Apparatus as claimed in claim 48, the certain information specifying the occurrence of the particular event.

54. Apparatus as claimed in claim 36, the notification comprising a visual message displayed by a given end-user device of the at least one end-user device at the second end-user premise.

55. Apparatus as claimed in claim 54, the given end-user device of the at least one end-user device at the second end-user premise being a telephone, a computer or a television unit.
56. Apparatus as claimed in claim 54, the visual message specifying the particular event at the first end-user premise.

57. Apparatus as claimed in claim 54, the visual message specifying an action to be performed by the party in relation to the particular event at the first end-user premise.

58. Apparatus as claimed in claim 36, the notification comprising an audible message emitted by a given end-user device of the at least one end-user device at the second end-user premise.

59. Apparatus as claimed in claim 58, the given end-user device of the at least one end-user device at the second end-user premise being a telephone, a computer or a television unit.

60. Apparatus as claimed in claim 58, the audible message specifying the particular event at the first end-user premise.

61. Apparatus as claimed in claim 58, the audible message specifying an action to be performed by the party in relation to the particular event at the first end-user premise.

62. Apparatus as claimed in claim 36, the at least one end-user device at the second end-user premise comprising a plurality of end-user devices, the notification comprising a plurality of messages presented by the end-user devices at the second end-user premise.

63. Apparatus as claimed in claim 62, the plurality of end-user devices comprising at least one of a telephone, a computer and a television unit.

64. Apparatus as claimed in claim 36, the notification comprising an audible warning signal emitted by a given end-user device of the at least one end-user device at the second end-user premise.
65. Apparatus as claimed in claim 36, the notification indicating a physical location of the first end-user premise.

66. Apparatus as claimed in claim 65, the information transmitted to the communication apparatus at the second end-user equipment via the wireless communication link allowing the communication apparatus at the second end-user premise to identify the physical location of the first end-user premise.

67. Apparatus as claimed in claim 66, the information transmitted to the communication apparatus at the second end-user premise via the wireless communication link comprising location information indicative of the physical location of the first end-user premise.

68. Apparatus as claimed in claim 66, the information transmitted to the communication apparatus at the second end-user premise via the wireless communication link comprising an identifier of the end-user equipment at the first end-user premise, the identifier being associated in a database with location information indicative of the physical location of the first end-user premise.

69. Apparatus as claimed in claim 36, the wireless communication link being a first wireless communication link, the notification being a first notification, said notification entity being configured to:

- establish a second wireless communication link between the end-user equipment at the first end-user premise and a communication apparatus at a third end-user premise, the communication apparatus at the third end-user premise being connected to at least one end-user device at the third end-user premise; and

- cause the end-user equipment at the first end-user premise to transmit information to the communication apparatus at the third end-user premise via the second wireless communication link such that, upon receiving the information transmitted via the second wireless communication link, the communication apparatus at the third end-user premise directs the at least one
end-user premise at the third end-user premise to issue a second notification concerning the particular event.

70. Apparatus as claimed in claim 36, the wireless communication link being a first wireless communication link, the notification being a first notification, the information transmitted to the communication apparatus at the second end-user premise via the first wireless communication link causing the communication apparatus at the second end-user premise to:

- establish a second wireless communication link between the communication apparatus at the second end-user premise and a communication apparatus at a third end-user premise, the communication apparatus at the third end-user premise being connected to at least one end-user device at the third end-user premise; and
- cause the communication apparatus at the second end-user premise to transmit information to the communication apparatus at the third end-user premise via the second wireless communication link such that, upon receiving the information transmitted via the second wireless communication link, the communication apparatus at the third end-user premise directs the at least one end-user device at the third end-user premise to issue a second notification concerning the particular event.

71. Computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise, said program element comprising:

- first program code for causing the computing system to obtain an indication of the particular event;
- second program code for causing the computing system to establish a wireless communication link between end-user equipment at the first end-user premise and a communication apparatus at a second end-user premise, the communication apparatus at the second end-user premise being connected to at least one end-user device at the second end-user premise; and
- third program code for causing the computing system to cause the end-user equipment at the first end-user premise to transmit information to the
A method for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, the first end-user premise including a first communication apparatus connected to a communications network via a first communication link, the first communication apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise including a second communication apparatus connected to the communications network via a second communication link, the second communication apparatus controlling data routing within a second local network at the second end-user premise, said method being implemented by the first communication apparatus and comprising:

- obtaining an indication of the particular event based on information transmitted by an end-user device within the first local network;
- wirelessly joining the second local network to establish a wireless communication link between the first communication apparatus and the second communication apparatus; and
- transmitting information to the second communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the second communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.

A method as claimed in claim 72, said wirelessly joining the second local network comprising wirelessly transmitting access information to the second communication apparatus.

A method as claimed in claim 73, the access information comprising at least one of a password and a wireless network key.
75. A method as claimed in claim 72, said wirelessly joining the second local network comprising being assigned an Internet Protocol (IP) address by the second communication apparatus.

76. Apparatus for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, said apparatus being located at the first end-user premise and being connected to a communications network via a first communication link, said apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise including a communication apparatus connected to the communications network via a second communication link, the communication apparatus controlling data routing within a second local network at the second end-user premise, said apparatus comprising:

- a processing entity configured to obtain an indication of the particular event based on information transmitted by an end-user device within the first local network; and
- a notification entity configured to:
  - cause said apparatus to wirelessly join the second local network to establish a wireless communication link between said apparatus and the communication apparatus; and
  - transmit information to the communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.

77. Apparatus as claimed in claim 76, wherein, to cause said apparatus to wirelessly join the second local network, said notification entity is configured to wirelessly transmit access information to the second communication apparatus.

78. Apparatus as claimed in claim 77, the access information comprising at least one of a password and a wireless network key.
79. Apparatus as claimed in claim 76, wherein, to cause said apparatus to wirelessly join the second local network, said notification entity is configured to cause said apparatus to be assigned an Internet Protocol (IP) address by the second communication apparatus.

80. Computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise, the party being located at a second end-user premise, the first end-user premise including a first communication apparatus connected to a communications network via a first communication link, the first communication apparatus controlling data routing within a first local network at the first end-user premise, the second end-user premise including a second communication apparatus connected to the communications network via a second communication link, the second communication apparatus controlling data routing within a second local network at the second end-user premise, the computing system being implemented by the first communication apparatus, said program element comprising:

- first program code for causing the computing system to obtain an indication of the particular event based on information transmitted by an end-user device within the first local network;

- second program code for causing the computing system to cause the first communication apparatus to wirelessly join the second local network to establish a wireless communication link between the first communication apparatus and the second communication apparatus; and

- third program code for causing the computing system to transmit information to the second communication apparatus via the wireless communication link such that, upon receiving the information transmitted via the wireless communication link, the second communication apparatus directs at least one end-user device within the second local network to issue a notification concerning the particular event.
81. A method for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link, said method comprising:
- obtaining an indication of the particular event;
- establishing a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and
- causing the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.

82. A method as claimed in claim 81, the first end-user premise being associated with a first subscription to communication services provided by a service provider using the first communication link, the second end-user premise being associated with a second subscription to communication services provided by the service provider using the second communication link.

83. Apparatus for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link, said apparatus comprising:
- a processing entity configured to obtain an indication of the particular event; and
- a notification entity configured to:
  - establish a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and
  - cause the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.
84. Apparatus as claimed in claim 83, the first end-user premise being associated with a first subscription to communication services provided by a service provider using the first communication link, the second end-user premise being associated with a second subscription to communication services provided by the service provider using the second communication link.

85. Computer-readable media containing a program element executable by a computing system to perform a method for notifying a party of a particular event at a first end-user premise, the first end-user premise including first end-user equipment connected to a communications network via a first communication link, said program element comprising:
- first program code for causing the computing system to obtain an indication of the particular event;
- second program code for causing the computing system to establish a wireless communication link between the first end-user equipment and second end-user equipment at a second end-user premise, the second end-user equipment being connected to the communications network via a second communication link; and
- third program code for causing the computing system to cause the first end-user equipment to transmit information to the second end-user equipment via the wireless communication link to instruct the second end-user equipment to issue a notification concerning the particular event.
**INTERNATIONAL SEARCH REPORT**

**A CLASSIFICATION OF SUBJECT MATTER**

**IPC G08B 25/10 (2006 01)**

According to International Patent Classification (FPC) or to both national classification and IPC

**B FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

P C (2006 01) G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)


**Keywords** event, notif*, wireless, alarm, end, user, network, communication, premise, transmi*

**C DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
</tr>
</thead>
</table>

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

[X] later document published after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention

[X] document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

[Y] document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents such combination being obvious to a person skilled in the art

[X & Y] document member of the same patent family

**Date of the actual completion of the international search**

03 June 2009 (03-06-2009)

**Date of mailing of the international search report**

24 September 2009 (24-09-2009)

**Name and mailing address of the ISA/CA**

Canadian Intellectual Property Office

Place du Portage I, Cl 14 - 1st Floor, Box PCT

50 Victoria Street

Gatineau, Quebec K1A 0C9

Facsimile No 001-819-953-2476

Authorized officer

Sajith Bandaranayake 819-934-6754

Form PCT/ISA/210 (second sheet) (July 2008)
<table>
<thead>
<tr>
<th>Patent Document</th>
<th>Publication Date</th>
<th>Patent Family</th>
<th>Publication Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU 7545501A</td>
<td>17-12-2001</td>
<td>BR 9913280A</td>
<td>13-02-2002</td>
</tr>
<tr>
<td>CA 2358701A</td>
<td>04-05-2000</td>
<td>CA 2362115A</td>
<td>20-04-2000</td>
</tr>
<tr>
<td>WO 0025284A3</td>
<td>31-08-2000</td>
<td>WO 0193926A2</td>
<td>13-12-2001</td>
</tr>
<tr>
<td>ZA 200102373A</td>
<td>14-05-2002</td>
<td>ZA 200104212A</td>
<td>24-02-2003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patent Document</th>
<th>Publication Date</th>
<th>Patent Family</th>
<th>Publication Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 6829478B1</td>
<td>07-12-2004</td>
<td>AU 1621401A</td>
<td>30-05-2001</td>
</tr>
<tr>
<td>Patent Document</td>
<td>Publication Date</td>
<td>Patent Family</td>
<td>Publication Date</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 2706000A</td>
<td>01-05-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 7545501A</td>
<td>17-12-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BR 9913280A</td>
<td>13-02-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2353870A1</td>
<td>04-05-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2362115A1</td>
<td>20-04-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1149368A2</td>
<td>31-10-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1149368A4</td>
<td>13-04-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1159716A2</td>
<td>05-12-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1159716A4</td>
<td>13-10-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6356192B1</td>
<td>12-03-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6517517B1</td>
<td>11-02-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6608567B1</td>
<td>19-08-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6667688B1</td>
<td>23-12-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6671351B2</td>
<td>30-12-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6759956B2</td>
<td>06-07-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 6847293B2</td>
<td>25-01-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 7088233B2</td>
<td>08-08-2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 7103344B2</td>
<td>05-09-2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 7138902B2</td>
<td>21-11-2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2001026223A1</td>
<td>04-10-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2002060029A1</td>
<td>27-06-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2002168599A1</td>
<td>14-11-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2003001743A1</td>
<td>02-01-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2003119568A1</td>
<td>26-06-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2003150028A1</td>
<td>21-08-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2003171717A1</td>
<td>11-09-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2004027244A9</td>
<td>12-02-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2004100374A1</td>
<td>27-05-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2004201475A1</td>
<td>14-10-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2004218732A1</td>
<td>04-11-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2004246128A1</td>
<td>09-12-2004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0022586A2</td>
<td>20-04-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0022586A3</td>
<td>12-10-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0022586A9</td>
<td>08-03-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0025284A2</td>
<td>04-05-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0025284A3</td>
<td>31-08-2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0193928A2</td>
<td>13-12-2001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 0193928A3</td>
<td>17-10-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 03023322A1</td>
<td>27-03-2003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZA 200102373A</td>
<td>14-05-2002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZA 200104212A</td>
<td>24-02-2003</td>
</tr>
</tbody>
</table>