

TRANSFERRING SERVICE PARAMETERS OVER A LOW ENERGY LINK

[001] The subject matter described herein relates to wireless communications.

BACKGROUND

[002] Applications are increasingly accessible from a remote server providing a service. For example, a service provider may provide a service, such as the application providing streaming music, video, and the like, over the Internet to a device. Specifically, a user of the device, such as a smart phone and the like, may register with the service provider over the Internet by providing user identity information, payment information, and the like, and, in return, the user may receive login credentials, such as a login identifier, to allow the user to login and access to the service. Moreover, the registered user may configure aspects, such as user preferences and the like, of the service.

SUMMARY

[003] Methods and apparatus, including computer program products, are provided for allowing a service to be transferred from a mobile device to another device.

[004] In some example embodiments, there may be provided a method. The method may include establishing a short range radio link between a mobile device and a device; receiving, from the mobile device and the short range radio link, one or more parameters representative of a service being accessed by the mobile device; and establishing, at the device, the service based on at least the one or more parameters.

[005] In some variations of some of the embodiments disclosed herein, one or more of the following may be included. The short range radio link may comprise at least

one of a Bluetooth link, a Bluetooth Low Energy link, and a near field communications link. The mobile device may comprise a user equipment. The device may comprise at least one of another mobile device, a user equipment, the device including a short range radio transceiver, a video player including the short range radio transceiver, a music player including the short range radio transceiver, a television including the short range radio transceiver, and a computer including the short range radio transceiver. The service may comprise at least one of an application accessible via the Internet, a music service configured to stream music, a video service configured to stream video, and a cloud-based service. The one or more parameters may include parameters configuring the service. The one or more parameters may include at least one of a login information to allow access to the service, an address of the service, a user preference, a security credential, a usage information, a volume setting, a widget, code, an applet, a web session, and a state of a cloud-based operating system. The device may transmit a beacon configured in accordance with at least one of a Bluetooth, a Bluetooth Low Energy, and a near field communications, wherein the beacon enables the mobile device to detect the device. The device may send an activation message to the mobile device to confirm establishment, at the device, of the service based on the one or more parameters.

[006] The above-noted aspects and features may be implemented in systems, apparatus, methods, and/or articles depending on the desired configuration. The details of one or more variations of the subject matter described herein are set forth in the accompanying drawings and the description below. Features and advantages of the subject matter described herein will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

[007] In the drawings,

[008] FIG. 1 depicts an example of a system configured for transferring a service from a first device to a second device, in accordance with some example embodiments;

[009] FIG. 2 depicts an example of a process for transferring a service of a service provider, in accordance with some example embodiments;

[010] FIG. 3 depicts an example of a device, in accordance with some example embodiments; and

[011] Like labels are used to refer to same or similar items in the drawings.

DETAILED DESCRIPTION

[012] In some example embodiments, the subject matter disclosed herein relates to allowing a device, such as a user equipment, coupled to a service provider including an application providing a service over the Internet to send one or more configuration parameters to another device over a short range radio link, such as a Bluetooth link, a Bluetooth Low-energy (BT-LE) link, a near field communication, and/or the like. This transfer of the configuration parameters from the first device to the second device may allow the service to be transferred from the first device to the second device. To illustrate with an example, the first device may comprise a smart phone wirelessly coupled to an Internet service provider providing a music service to the smart phone. In this example, the user of the smart phone may be mobile, and at a certain time seek to utilize another device configured to play music at, for example, work or home to continue to access and thus receive the music service. To that end, the smart phone may wirelessly transfer via a short range link one or more configuration parameters to allow the establishment (e.g.,

transfer) of the music service to the other device. Although the previous example referred to the service being transferred as a music service, the service being transferred may be any other service as well.

[013] Before providing additional examples of implementations of the devices including short range radio transceivers, the following provides an example system framework, although other frameworks may be used as well.

[014] FIG. 1 depicts a system 100 according to some example embodiments. System 100 may include one or more devices, such as user equipment 114A-C, one or more base stations, such as base station 110A, and one or more wireless access points, such as wireless access point 110B. The base station 110A may serve cell 112A, and wireless access point 110B may serve cell 112B. Moreover, base station 110A and/or wireless access point 110B may have wired and/or wireless backhaul links to other network nodes, other base stations, a radio network controller, a core network, a serving gateway, the Internet, service provider 198 providing a service (e.g., a music service, etc.), and the like.

[015] In some example embodiments, user equipment 114A-C may be implemented as a mobile device and/or a stationary device. The user equipment 114A-C are often referred to as, for example, mobile stations, mobile units, subscriber stations, wireless terminals, tablets, smart phones, or any other device including a short range radio transceiver, such as a transceiver configured in accordance with Bluetooth, Bluetooth Low-energy (BT-LE), Near Field Communication (NFC), and/or the like. Examples of standards related to NFC include ISO 18000-3, ISO 13157, and the like, and examples of standards related to BT-LE include IEEE 802.15.1 and the like. For example, the devices/user

equipment may take the form of a wireless speaker including a short range radio transceiver, a video player including a short range radio transceiver, a music player including a short range radio transceiver, a television including a short range radio transceiver, a computer including a short range radio transceiver, and/or and other device including a short range radio transceiver. These short range transceivers may be characterized as having low energy to cover areas on the order of about a few inches to about 100 meters, although other ranges may be used as well. The short range radio transceivers may allow the devices to send and/or receive one or more configuration parameters for the service being transferred from a first device to a second device. In some example embodiments, the device may include a processor, a computer-readable storage medium (e.g., memory, storage, and the like), a short range radio transceiver, and/or a user interface. In some implementations, one or more of the user equipment 114A-C may be implemented as a desktop computer including a short range radio transceiver including a wired/wireless Internet to service provider 198.

[016] In some example embodiments, the user equipment 114A-C may be implemented as multi-mode user devices configured to operate using a plurality of radio access technologies. For example, user equipment 114A-C may be configured to operate using a plurality of radio access technologies including one or more of the following: Long Term Evolution (LTE), wireless local area network (WLAN) technology, such as 802.11 WiFi and the like, Bluetooth, Bluetooth low energy (BT-LE), NFC, and other radio technologies as well. Moreover, the user equipment may be configured to have established connections through base stations/wireless access points to the Internet using the plurality of the radio technologies (although the devices may also have wired

connections to the Internet as well). For example, user equipment 114B may connect to the Internet and service provider 198 by coupling to cellular base station 110A based on a cellular standard, such as LTE, or coupling to wireless access point 110B based on WiFi and the like.

[017] In some example embodiments, the short range radio links 115 may be configured in accordance with BT-LE, although other short range transceiver technologies may be used as well. BT-LE transceivers may be configured to operate in a mode characterized by low duty cycles and small bursts to reduce power consumption, although other modes of operation may be used as well. Moreover, the devices/user equipment may include a connection manager to control the short range transceiver, such as the BT-LE transceiver implemented therein, to control scanning performed by the transceiver while discovering other devices/user equipment or wireless local area network access points with BT-LE, to control obtaining information about the discovered (or target) wireless local area network/WiFi access points or other user equipment, and/or to control transfer of the service from one device to another.

[018] The base station 110A may, in some example embodiments, be implemented as an evolved Node B (eNB) type base station, although other types of radio access points may be implemented as well. When the evolved Node B (eNB) type base station is used, base station 110A may be configured in accordance with standards, including the Long Term Evolution (LTE) standards, such as 3GPP TS 36.201, Evolved Universal Terrestrial Radio Access (E-UTRA); Long Term Evolution (LTE) physical layer; General description, 3GPP TS 36.211, Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation, 3GPP TS 36.212, Evolved Universal Terrestrial

Radio Access (E-UTRA); Multiplexing and channel coding, 3GPP TS 36.213, Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures, 3GPP TS 36.214, Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer - Measurements, and any subsequent additions or revisions to these and other 3GPP series of standards (collectively referred to as LTE standards). The base station 110A may also be configured to serve cell 112A using a WLAN technology, such as WiFi (e.g., the IEEE 802.11 series of standards), and any other radio access technology capable of serving cell 112A.

[019] In some example embodiments, system 100 may include access cellular links, such as cellular links 122. The cellular access links 122 may include a downlink 116 for transmitting to the user equipment 114A and an uplink 126 for transmitting from user equipment 114A to the base station 110A. The downlink 116 may comprise a modulated radio frequency carrying information, such as user data, radio resource control (RRC) messages, location information, and the like, to the user equipment 114A, and the uplink 126 may comprise a modulated radio frequency carrying information, such as user data, RRC messages, location information, measurement reports associated with handovers, and the like, from the user equipment 114A to base station 110A. The downlink 116 and uplink 126 may, in some example embodiments, each represent a radio frequency (RF) signal. The RF signal may, as noted above, include data, such as voice, video, images, Internet Protocol (IP) packets, control information, and any other type of information and/or messages. For example, when LTE is used, the RF signal may use OFDMA. OFDMA is a multi-user version of orthogonal frequency division multiplexing (OFDM). In OFDMA, multiple access is achieved by assigning, to individual users, groups of subcarriers (also

referred to as subchannels or tones). The subcarriers are modulated using BPSK (binary phase shift keying), QPSK (quadrature phase shift keying), or QAM (quadrature amplitude modulation), and carry symbols (also referred to as OFDMA symbols) including data coded using a forward error-correction code. The subject matter described herein is not limited to application to OFDMA systems, LTE, LTE-Advanced, or to the noted standards, specifications, and/or technologies.

[020] The wireless access point 110B may, in some example embodiments, be implemented to serve cell 112B. Moreover, wireless access point 110B may be configured to operate with a plurality of radio access technologies including LTE, WiFi, BT-LE, and/or any other wireless local area network standards. In some example embodiments, the wireless access point 110B may be implemented as a home evolved node B (HeNB) base station serving cell 112B, which covers a structure or a predefined area, such as a home, an office building, and the like.

[021] User equipment 114A-C may wirelessly couple to service provider 198 via wireless access point 110B and/or base station 110A. For example, service provider 198 may comprise an Internet service, such as a website providing a video service, a music service, and the like. Moreover, user equipment 114C may scan for beacons transmitted by other short range radio transceivers at other devices, such as user equipment 114B, to allow the user equipment 114C to transfer to user equipment 114B one or more configuration parameters for the service provided by service provider 198. For example, when the user equipment 114C detects a beacon from user equipment 114B, user equipment 114C may establish one or more short range radio access links 115 to user equipment 114B. The user equipment 114C may then send one or more configuration

parameters to user equipment 114B to allow user equipment 114B to establish access to the service at service provider 198 using the parameters sent by user equipment 114C. Moreover, the transfer of the parameters from user equipment 114C to 114B via the short range radio access links 115, such as BT-LE and the like, may allow user equipment 114C to seamlessly transfer to user equipment 114B access to the service.

[022] FIG. 2 depicts an example of a process 200 for enabling the transfer of configuration parameters for a service from a first device to a second device, in accordance with some example embodiments. The description of process 200 also refers to FIG. 1.

[023] At 202, user equipment 114C may detect a neighboring device, such as user equipment 114B, in accordance with some example embodiments. For example, user equipment 114C may include a short range radio transceiver that scans for, and detects, beacons transmitted by another a short range radio transceiver at user equipment 114B. The short range radio transceivers may be configured in accordance with Bluetooth, Bluetooth Low-energy (BT-LE) link, Near Field Communication (NFC) or the like.

[024] At 204, communication may be established with a neighboring device, using a short range radio access link, in accordance with some example embodiments. For example, when user equipment 114C detects at 202 a neighboring device, such as user equipment 114B, user equipment 114C may initiate, at 204, the establishment of one or more short range radio links between user equipment 114C and user equipment 114B. Moreover, user equipment 114C may send a request message to user equipment 114B to establish the one or more short range radio access links, and receive a reply from user

equipment 114B granting the request to establish the link(s), although some short range radio access links may not require a reply to allow establishment of the link(s).

[025] At 205, user equipment 114C may determine whether to transfer one or more configuration parameters of a service at service provider 198, in accordance with some example embodiments. For example, user equipment 114C may present information, such as a window, indicating whether the one or more configuration parameters of the service at service provider 198 are to be transferred (e.g., sent) to the neighboring device. For example, after establishing a connection between user equipment 114C and user equipment 114B, a pop-up window or an icon on user equipment 114C may allow selection by the user of user equipment 114C to transfer to user equipment 114B the one or more configuration parameters of the service at service provider 198. The user equipment 114C may also include default information representative of an indication to allow transfer of the one or more configuration parameters, or the indication may represent that the user has previously requested automatic transfer of the one or more configuration parameters to user equipment 114B.

[026] At 206, user equipment 114C may send to user equipment 114B the one or more configuration parameters of the service at service provider 198, in accordance with some example embodiments. The one or more configuration parameters may include configuration information to allow the service to be established at user equipment 114B in a way that is similar, at least from the perspective of the user, to the configuration of the service at user equipment 114C. For example, the configuration parameters (also referred to as service parameters) may contain login information to allow login/access to the service and/or service provider, the address, such as a website or uniform resource locator

(URL) of the service, user preferences, security credentials, usage information (e.g., and/or sound volume setting, program state, session information (such as web session, cloud based operating system session, and the like)), a widget, code, data, an applet, and any other information to access and/or configure the service. Usage information may describe content (e.g., a song, a movie, a program, a data file, and the like) being used at user equipment 114C, when the process 200 including 206 takes place. The usage information may also include the state of the content (e.g., progress information) representative of where to start in a song, a video, a program, a data file, and the like once the service is established at the neighboring user equipment 114B. To illustrate with a service at service provider 198 providing music, user equipment 114C may send, at 206, the URL for the service, login information for the user, and one or more songs of a playlist including the song currently being consumed by user equipment 114C.

[027] At 208, user equipment 114B may determine whether access to the service at service provider 198 is available, in accordance with some example embodiments. For example, user equipment 114B may verify access by determining whether it can establish a connection to the service at service provider 198 and establish the service using, for example, the parameters sent at 206. If so, the user equipment 114B may send a message to confirm, at 210, to user equipment 114C that the service at service provider 198 can be accessed. In some instances, the service may not be accessible at neighboring device 114B. For example, user equipment 114B may not have a connection of sufficient quality or data rate to support the service at service provider 198.

[028] At 214, user equipment 114B may establish the service at service provider 198 using the configuration parameters provided at 206, in accordance with some example

embodiments. For example, user equipment 114B may establish the service with service provider 198 using configuration parameters including one or more of a service provider URL, login information (e.g., a user name and a password), and/or any other information provided at 206.

[029] At 216, user equipment 114B may, in accordance with some example embodiments, confirm to user equipment 114C that the service has been established based on the parameters provided at 206.

[030] At 218, user equipment 114C may terminate the service at the service provider 198, in accordance with some example embodiments. For example, when the user equipment 114B has established the service, the service is no longer necessary at user equipment 114C, so the service may be terminated by user equipment 114C (although user equipment 114C may also continue to keep the service active as well).

[031] FIG. 3 depicts a block diagram 300 of a device, such as user equipment 114A-C, in accordance with some example embodiments. The description of user equipment 300 also refers to FIG. 1. The user equipment may take the form of a wireless speaker including a short range radio transceiver, a video player including a short range radio transceiver, a music player including a short range radio transceiver, a computer including a short range radio transceiver, and/or any other device including a short range transceiver, such as Bluetooth, BT-LE and/or NFC, and configurable based on parameters transferred via the transceiver. The user equipment may include one or more antennas 320 (e.g., one or more of a BT-LE antenna, a WiFi antenna, an LTE antenna, or a combination thereof) for receiving and transmitting. The user equipment 114A-C may also include a plurality of radio interfaces 340 coupled to the antenna 320. The radio interfaces

may correspond to a plurality of radio access technologies including, LTE, WLAN, Bluetooth, BT-LE, NFC, radio frequency identifier (RFID), ultrawide band (UWB), ZigBee, and the like. The radio interfaces 340 may include other components, such as wired Ethernet, filters, converters (e.g., digital-to-analog converters and the like), symbol demappers, signal shaping components, an Inverse Fast Fourier Transform (IFFT) module, and the like, to process symbols, such as OFDMA symbols, carried by a downlink or an uplink and/or to detect beacons. The user equipment 114A-C may further include at least one processor, such as processor 330, for controlling user equipment 114A-C and for accessing and executing program code stored in memory 335.

[032] The subject matter described herein may be embodied in systems, apparatus, methods, and/or articles depending on the desired configuration. For example, the base stations and user equipment (or one or more components therein) and/or the processes described herein can be implemented using one or more of the following: a processor executing program code, an application-specific integrated circuit (ASIC), a digital signal processor (DSP), an embedded processor, a field programmable gate array (FPGA), and/or combinations thereof. These various implementations may include implementation in one or more computer programs that are executable and/or interpretable on a programmable system including at least one programmable processor, which may be special or general purpose, coupled to receive data and instructions from, and to transmit data and instructions to, a storage system, at least one input device, and at least one output device. These computer programs (also known as programs, software, software applications, applications, components, program code, or code) include machine instructions for a programmable processor, and may be implemented in a high-level

procedural and/or object-oriented programming language, and/or in assembly/machine language. As used herein, the term “machine-readable medium” refers to any computer program product, computer-readable medium, computer-readable storage medium, apparatus and/or device (e.g., magnetic discs, optical disks, memory, Programmable Logic Devices (PLDs)) used to provide machine instructions and/or data to a programmable processor, including a machine-readable medium that receives machine instructions. Similarly, systems are also described herein that may include a processor and a memory coupled to the processor. The memory may include one or more programs that cause the processor to perform one or more of the operations described herein.

[033] Although some of the examples described herein refer to the use of specific technologies, such as BT-LE, WiFi, NFC, LTE, and the like, the subject matter described herein is not limited to those technologies, and, as such, can be used with other radio technologies as well.

[034] Although a few variations have been described in detail above, other modifications or additions are possible. In particular, further features and/or variations may be provided in addition to those set forth herein. Moreover, the implementations described above may be directed to various combinations and subcombinations of the disclosed features and/or combinations and subcombinations of several further features disclosed above. In addition, the logic flow depicted in the accompanying figures and/or described herein does not require the particular order shown, or sequential order, to achieve desirable results. Other embodiments may be within the scope of the following claims.

WHAT IS CLAIMED:

1. A method comprising:
establishing a short range radio link between a mobile device and a device;
receiving, from the mobile device and the short range radio link, one or more parameters representative of a service being accessed by the mobile device;
and
establishing, at the device, the service based on at least the one or more parameters.
2. The method of claim 1, wherein the short range radio link comprises at least one of a Bluetooth link, a Bluetooth Low Energy link, and a near field communications link.
3. A method as in claims 1-2, wherein the mobile device comprises a user equipment, and wherein the device comprises at least one of another mobile device, a user equipment, the device including a short range radio transceiver, a video player including the short range radio transceiver, a music player including the short range radio transceiver, a television including the short range radio transceiver, and a computer including the short range radio transceiver.
4. A method as in claims 1-3, wherein the service comprises at least one of an application accessible via the Internet, a music service configured to stream music, a video service configured to stream video, and a cloud-based service.
5. A method as in claims 1-4, wherein the one or more parameters include parameters configuring the service.

6. A method as in claims 1-5, wherein the one or more parameters include at least one of a login information to allow access to the service, an address of the service, a user preference, a security credential, a usage information, a volume setting, a widget, code, an applet, a web session, and a state of a cloud-based operating system.

7. A method as in claims 1-6 further comprising:

transmitting, by the device, a beacon configured in accordance with at least one of a Bluetooth, a Bluetooth Low Energy, and a near field communications, wherein the beacon enables the mobile device to detect the device.

8. A method as in claims 1-7 further comprising:

sending, by the device, an activation message to the mobile device to confirm establishment, at the device, of the service based on the one or more parameters.

9. An apparatus comprising:

at least one processor; and

at least one memory including code which when executed by the at least one processor provides operations comprising:

establishing a short range radio link between a mobile device and a device;

receiving, from the mobile device and the short range radio link, one or more parameters representative of a service being accessed by the mobile device; and

establishing, at the device, the service based on at least the one or more parameters.

10. The apparatus of claim 9, wherein the short range radio link comprises at least one of a Bluetooth link, a Bluetooth Low Energy link, and a near field communications link.

11. An apparatus as in claims 9-10, wherein the mobile device comprises a user equipment, and wherein the device comprises at least one of another mobile device, a user equipment, the device including a short range radio transceiver, a video player including the short range radio transceiver, a music player including the short range radio transceiver, a television including the short range radio transceiver, and a computer including the short range radio transceiver.

12. An apparatus as in claims 9-11, wherein the service comprises at least one of an application accessible via the Internet, a music service configured to stream music, a video service configured to stream video, and a cloud-based service.

13. An apparatus as in claims 9-12, wherein the one or more parameters include parameters configuring the service.

14. An apparatus as in claims 9-13, wherein the one or more parameters include at least one of a login information to allow access to the service, an address of the service, a user preference, a security credential, a usage information, a volume setting, a widget, code, an applet, a web session, and a state of a cloud-based operating system.

15. An apparatus as in claims 9-14 further comprising:

transmitting, by the device, a beacon configured in accordance with at least one of a Bluetooth, a Bluetooth Low Energy, and a near field communications, wherein the beacon enables the mobile device to detect the device.

16. An apparatus as in claims 9-15 further comprising:

sending, by the device, an activation message to the mobile device to confirm establishment, at the device, of the service based on the one or more parameters.

17. A non-transitory computer-readable medium including code which when executed by at least one processor provides operations comprising:

establishing a short range radio link between a mobile device and a device;

receiving, from the mobile device and the short range radio link, one or more parameters representative of a service being accessed by the mobile device; and

establishing, at the device, the service based on at least the one or more parameters.

1/3

100

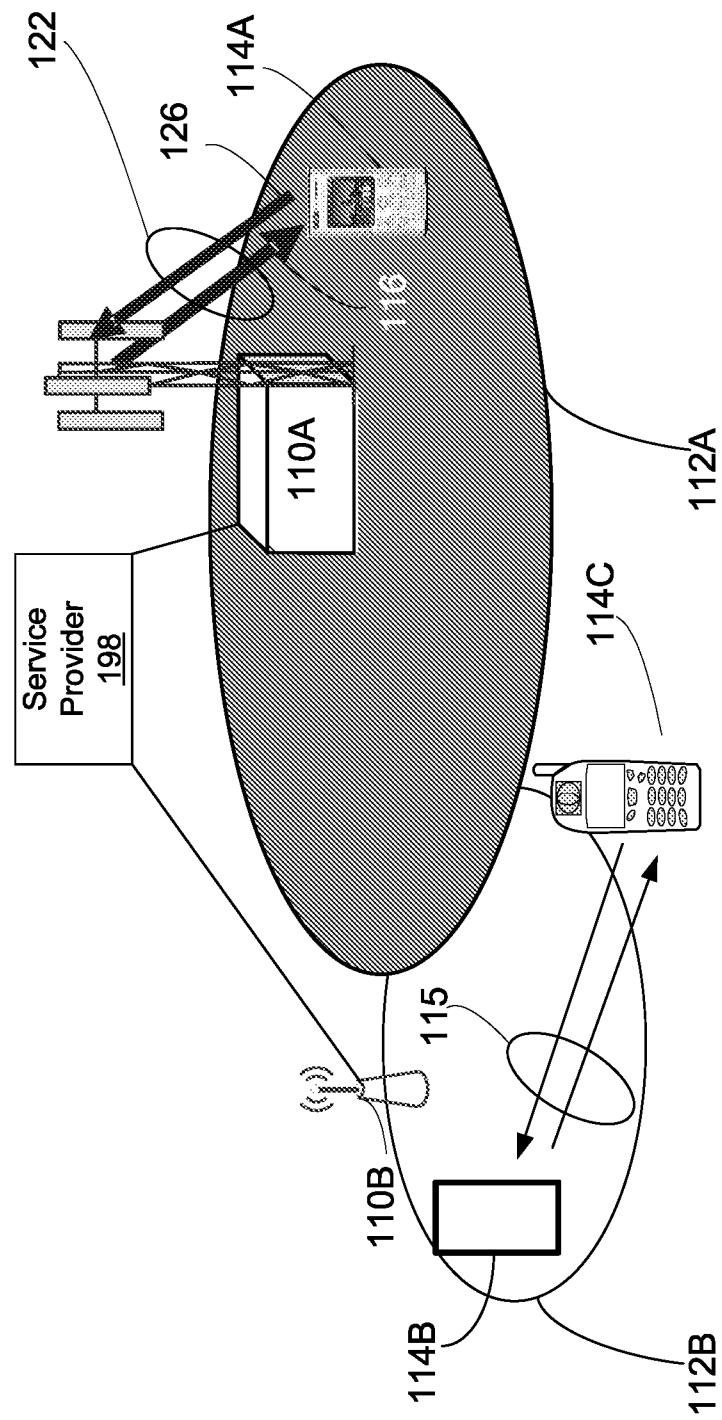
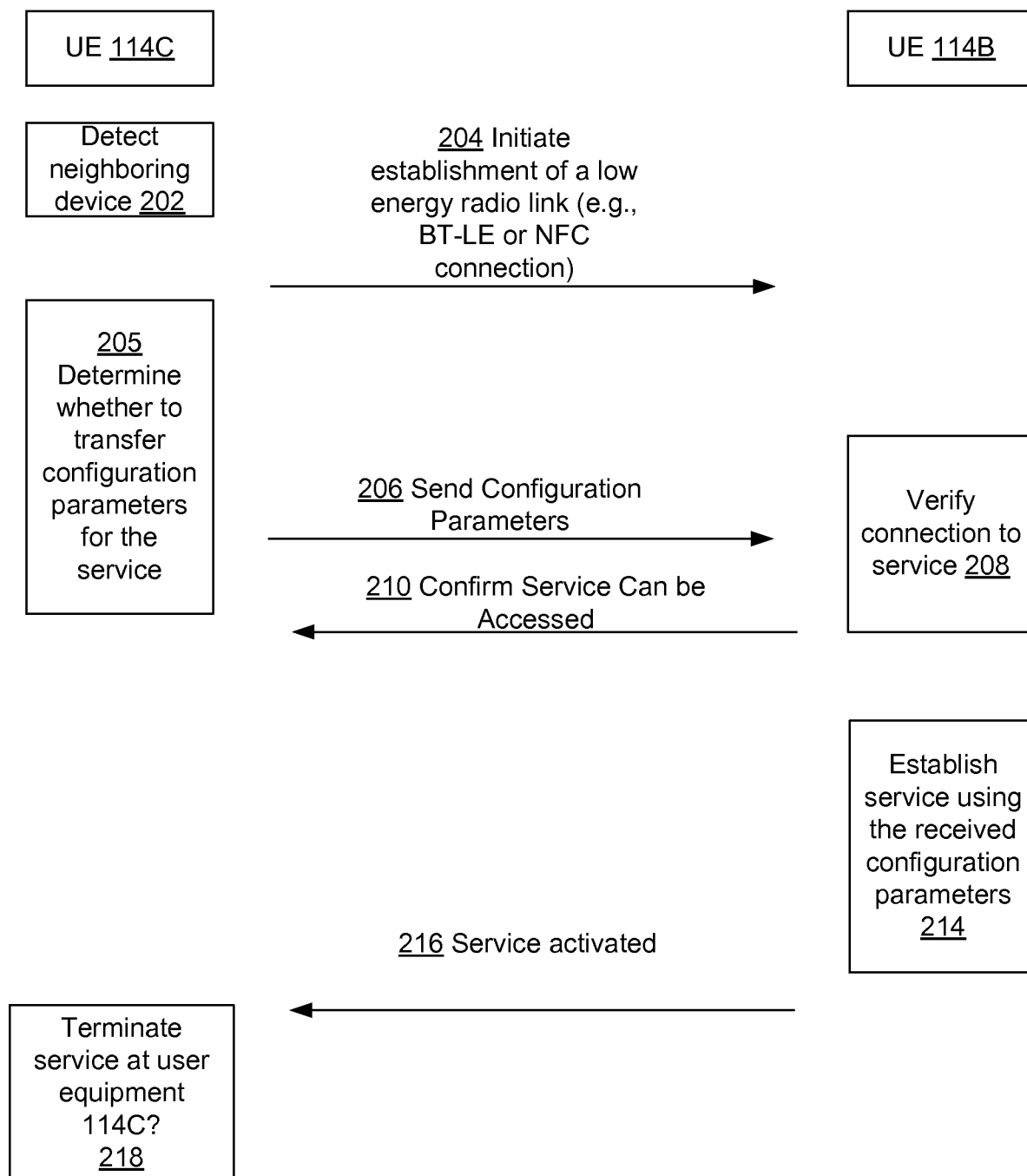


FIG. 1

2/3

200**FIG. 2**

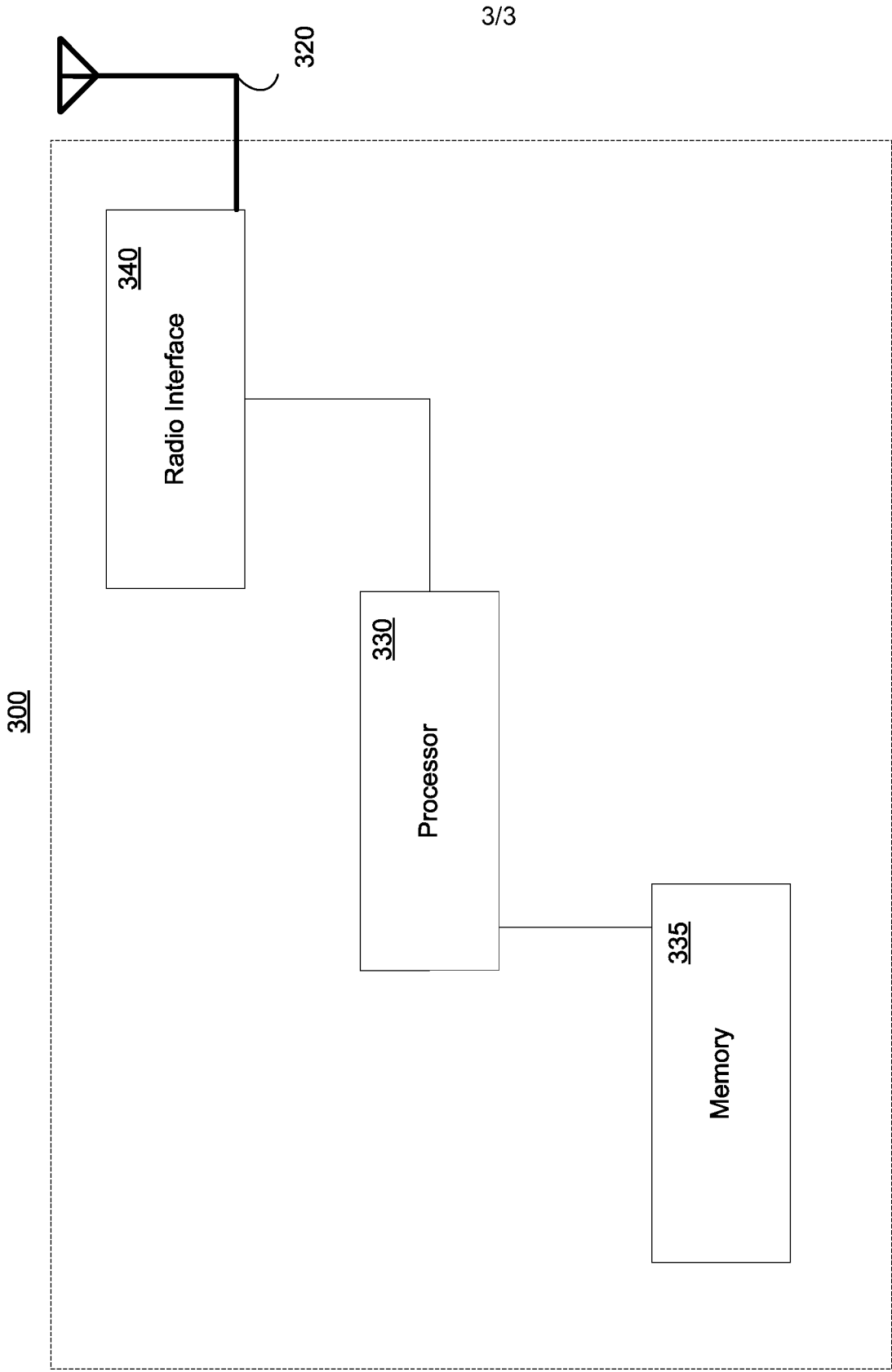


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/047236

A. CLASSIFICATION OF SUBJECT MATTER

INV. G06F9/48 H04L29/08 H04W4/00
ADD. H04M1/725

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F H04L H04W

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

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

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/065384 A1 (CADER MUHAMMAD ABDUL [IN] ET AL) 17 March 2011 (2011-03-17) abstract; figures 1-6 paragraphs [0002], [0022] - [0059] -----	1-17
X	US 8 224 894 B1 (PARKS JASON [US] ET AL) 17 July 2012 (2012-07-17) abstract; claim 11; figures 1-6 column 1, lines 20-36 column 3, line 33 - column 4, line 32 column 5, line 25 - column 6, line 19 column 7, line 27 - column 8, line 25 column 13, lines 12-24 ----- -/--	1-17



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" 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

"&" document member of the same patent family

Date of the actual completion of the international search

22 January 2013

Date of mailing of the international search report

31/01/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Kanlis, Angelos

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/047236

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/314153 A1 (BATHICHE STEVEN N [US] ET AL) 22 December 2011 (2011-12-22) abstract; figures 2,7 paragraphs [0002], [0023] - [0034], [0042], [0049], [0054], [0065], [0066], [0069], [0072] - [0081], [0086] - [0088], [0098], [0099], [0129] -----	1-17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/047236

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011065384	A1	17-03-2011	NONE

US 8224894	B1	17-07-2012	AU 2012100567 A4 07-06-2012
			DE 102012207696 A1 15-11-2012
			DE 202012004619 U1 29-08-2012
			EP 2523475 A1 14-11-2012
			FR 2975800 A1 30-11-2012
			GB 2490800 A 14-11-2012
			US 8224894 B1 17-07-2012
			US 2012290669 A1 15-11-2012
			WO 2012154752 A1 15-11-2012

US 2011314153	A1	22-12-2011	CN 102255896 A 23-11-2011
			US 2011314153 A1 22-12-2011
