

(51) International Patent Classification:
H04W 8/04 (2009.01) *H04W 80/10* (2009.01)

Technology Park of Malaysia, Bukit Jalil, 57000 Kuala Lumpur (MY).

(21) International Application Number:
PCT/MY2010/000263(74) Agent: **MOHAN, K.**; Adastra Intellectual Property SDN BHD, A-28-10 Menara Uoa, Bangsar Utama 1, N°5 Jalan Bangsar, Utama 1, 59000 Kuala Lumpur (MY).(22) International Filing Date:
10 November 2010 (10.11.2010)

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

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PI2010001469 1 April 2010 (01.04.2010) MY(71) Applicant (for all designated States except US): **MIMOS BERHAD** [MY/MY]; Technology Park of Malaysia, Bukit Jalil, 57000 Kuala Lumpur (MY).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEE, Cheng, Suan** [MY/MY]; c/o Mimos Berhad, Technology Park of Malaysia, Bukit Jalil, 57000 Kuala Lumpur (MY).
CHOONG, Khong Neng [MY/MY]; c/o Mimos Berhad,

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

[Continued on next page]

(54) Title: SYSTEM AND METHOD OF SESSION TRANSFER USING NON-POST ACTIVE DEVICE

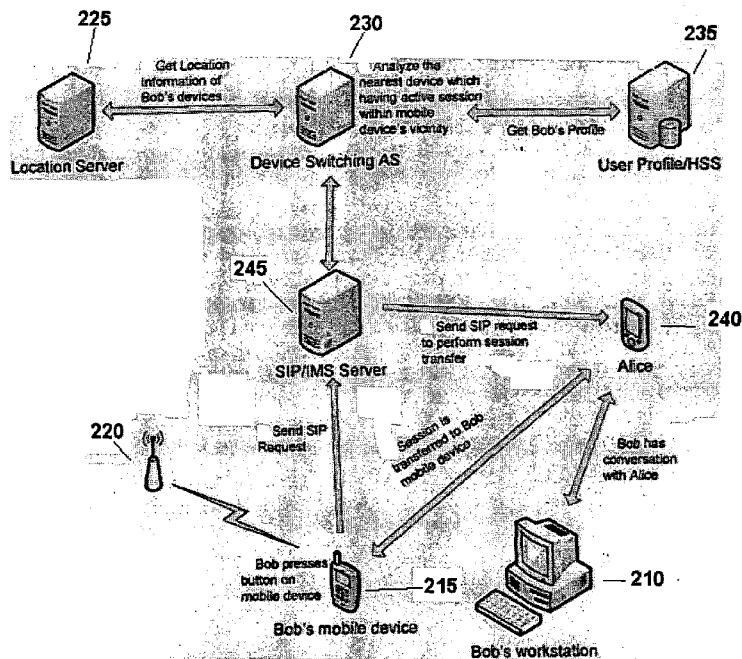
300

FIGURE 3

(57) Abstract: A system of session transfer using non-post active device comprising at least a Device Switching Application Server connected to at least a location server and a user profile/HSS server, at least an SIP/IMS server connected to the DSAS, at least a bob's mobile device connected to the SIP/IMS server, at least an Alice's device connected to the SIP/IMS server and at least a communication means connected to Alice's mobile device.



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*

Published:

— *with international search report (Art. 21(3))*

SYSTEM AND METHOD OF SESSION TRANSFER USING NON-POST ACTIVE DEVICE

Technical Field

5

The present invention relates to session transfer, and more particularly, to a system and method of session transfer using non-post active device.

Background Art

10

In a situation when users have many devices around, they wish to have more convenient way to handle those devices with them especially during on-going call. If possible, these users will pick up any device that is convenient at the current point of time for the call, for reasons of cost, convenience, battery consumption or mobility.

15

Conventionally, there are few ways to handle the on-going call with alternative device for example there is "call pick up" feature used in telephone system especially Private Branch Exchange (PBX), that allows a user to answer someone else's telephone call. This feature requires the user to press a special sequence of buttons on his device in order to transfer the incoming call session from one's device to his alternative device. There is also another conventional feature used in telephone system which called "call parking" that allows the user to put the on-going call on hold first on his active device and continue conversation from the other device. This feature also required the user to

20

press a special sequence of buttons on active device to transfer or park the on-going call to another device until that parked call device is answered by someone. By doing these, the procedure may be cumbersome due to mistake to memorize and enter the special sequence of codes. Furthermore, the conversation needs to be paused
5 especially for "call parking" feature.

Patent no EP1353270 A3 discloses a system where it allows user to retrieve the same active session on one device to another device. The prior art needs the user to save the active session to the server so that another device can retrieve the session from the
10 server. Apparently it uses snap and save approach and only applicable to static and non-real time data/services. Hence, it is not suitable to handle real-time and dynamic content/ services which will cause impact to QoS. The session in the present invention handles the dynamic content/services in real-time.

15 Patent no. US6501952 discloses an apparatus, method and system for hand-off of a communication session utilizing directed call pick up with barge-in, in which the communication session of a mobile unit is transferred from a serving base station to a target base station. The system includes a switch coupled to a serving base station and a target base station, wherein the target base station includes instruction to generate a
20 barge-in call path to a switch. The switch includes instructions to connect the barge-in call path to the communication session of the mobile unit to form a reverse three-way communication session. Nevertheless, no such inactive or non-post active condition of

session transfer is introduced for any of the stations in the prior art in comparison to the present invention.

Therefore, there exists a need for a system and method of session transfer using non-
5 post active device which capable of handling the dynamic content/services in real time mode.

Summary of the Invention

10 The present invention aims to provide a session transfer, and more particularly to a system and method of session transfer using non-post active device.

In one embodiment of the present invention, a system of session transfer using non-post active device comprising at least a Device Switching Application Server connected
15 to at least a location server and a user profile/HSS server, at least an SIP/IMS server connected to the DSAS, at least a bob's mobile device connected to the SIP/IMS server, at least an Alice's device connected to the SIP/IMS server and at least a communication means connected to Alice's mobile device.

20 While the invention is described herein by way of example using several embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the embodiments of drawing or drawings described, and are not intended to represent the scale of the various components. Further, some components that may

form a part of the invention may not be illustrated in certain figures, for ease of illustration, and such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and detailed description thereto are not intended to limit the invention to the particular form disclosed, but on the contrary, the invention is to cover all modification, equivalents and alternatives falling within the spirit and scope of the present invention as defined by the appended claims. The headings used herein are for organizational purposes only and are not meant to be used to limit the scope of the description or the claims. As used throughout this application, the word "may" is used in a permissive sense (i.e., meaning having the potential to), rather than the mandatory sense (i.e., meaning must). Similarly, the words "include," "including," and "includes" mean including, but not limited to. Further, the words "a" or "an" mean "at least one" and the word "plurality" means one or more, unless otherwise mentioned.

Description of Drawings and Best Mode for Carrying Out the Invention

15

So that the manner in which the above recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may be had by reference to embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

20

FIG. 1 shows type of device switching as was disclosed by a prior art (100).

FIG. 2 shows device switching methods by active and inactive devices (200).

FIG. 3 shows the system and method of session transfer using non-post active device (300).

5

FIG. 4 shows architecture of device switching system (400).

FIG. 5 shows flow diagram for device switching on SIP/IMS client device (500).

10 FIG. 6 shows flow diagram for device switching application server (600).

Detailed Description of the Preferred Embodiments

According to Fig. 1, device switching (10) is divided into active (30) and inactive (15)
15 device switching. This prior art shows an example of inactive device (15) switching
whereby the device switching could be triggered by the inactive device (15), with the
condition that it must have previously run the same session. This is termed as post
active condition (25) or post active device switching (25). The present invention as
proposed works with Non-Post Active (25) condition whereby any authenticated device
20 could be used to trigger the device switching, i.e. "pull" the session from another device.
With such capability, ubiquitous computing is made simpler and more flexible.

Fig. 2 summarizes the differences of different types of Device Switching. As shown in session 1 (130) in Fig. 2, the Mobile 1(110) uses a “push” mechanism (135) to perform device switching. Mobile 1 (110) becomes an inactive device after the session has been transferred to Desktop 2 (115) as session 2, but Mobile 1 (110) which is called the post active device keeps the previous session ID so that it can claim the session back as shown in Session 3 (155) by using a “pull” mechanism (150). The present invention introduces a method (160) to enable session transfer using non-post active device from mobile 2 (120) to retrieve session 3 (155) from mobile 1 (110). This allows Mobile 2 (120) to now communicate with the corresponding node (125) as shown in session 4 (165). This is a much more flexible approach than the existing prior arts.

According to FIG. 3, the figure shows each individual message flow in the system. The system starts off with Bob (on his desktop) (210) having a conversation with Alice (240). As Bob has an appointment with his friend, he needs to be mobile, hence he picks up his mobile phone (215) and presses the switching button. This action triggers a SIP Subscribe message to the DSAS (230) via the SIP/IMS server (245) from Bob's mobile device (215). Upon receiving this message, the DSAS (230) shall first check the sender of this message and then send a request to the IMS server (245) asking for all the registered/ authenticated devices under this sender (i.e. Bob). The IMS server (245) shall reply all the registered devices as requested by checking on Bob's active session list and profile information from the location server (225) and HSS server (230) respectively. Upon receiving the reply from the IMS server (245), the DSAS (230) will then pick the active device (i.e. the current conversation with Alice (240)) from the list of

devices. Next, the DSAS (230) will issue a request back to the IMS server (245) again to retrieve the SIPURI (contact of Alice) of the corresponding node (240). The IMS server (245) will serve the request and provide a response. With the SIPURI received, the DSAS (230) will complete its task by sending a SIP Refer message to the
5 corresponding node (Alice) (240). The corresponding node (Alice) (240) will then respond to the SIP Refer message according to the standard SIP flow sequence as found in any literature, as to complete the session transfer.

According to Fig. 4, the overall architecture of the components consists of DSAS (310),
10 IMS server (315), the SIP location server (317), the SIP/IMS client (312) and the corresponding node (320). The SIP/IMS client (312) is where the user application is running on. In this case, it is a VoIP application (330). The device switching may be performed by shaking the mobile device (i.e. accelerometer or g-sensor embedded device) or by issuing voice command. These are made possible by incorporating
15 specific 3rd party module that specializes on capturing such input means from the user. The Device Switching Triggering (DST) (335) module as shown in Fig. 4 is incorporated with these 3rd part modules through a wrapper function, and offer a standard set of API calls to the VoIP application (330). In registering using these special triggering methods, the VoIP application (330) must first register to our DST module (335), specifying the
20 input of triggering it what it wants to associate with, and also provide a callback function for the DST (335) to invoke whenever the user trigger certain event using these triggering system. Whenever the callback function is invoked, the underlying Device

Switching Handler (DSH) (325) will be subsequently invoked to send the device switching request to the remote DSAS (310).

The DSAS (310) consists of 3 modules, which are the Device Switching Request
5 Handler (DSRH) (350), DSAS Handler (DSH) (340) and the IMS communication handler
(ICH) (345). DSRH (350) is the module that will receive the client request. Whenever a
new device switching request is received, it will forward it to the DSH (340). DSH (340)
will extract the sender of this request from the SIP message header. Thereafter, it will
contact the ICH (345) to send a message to the IMS server (315) asking for all the
10 registered and authenticated devices belonged to this client/sender and also to the
location server (317) asking for nearby devices which are accessible by client device
(312). After receiving the list of devices from the IMS server (315), DSH (340) will scan
through and pick the device that is nearby and currently engaging in an active session
and further request from the IMS server (315) the SIPURI of the corresponding node in
15 this active session. When the requested SIPURI is received, DSH (34) will send a SIP
Refer message directly to the corresponding node (320).

According to Fig.5, the SIP/IMS client starts (410) by listening to any input (415) to
trigger device switching. Upon receiving a triggering event for device switching, it will
20 send a SIP subscribe message (420) to the DSAS. A timer will be started to count the
duration for waiting a response back from the DSAS. If the timer expires before the
response returned, the process will start from beginning waiting for another triggering
input. Otherwise, it continuously waits for the DSAS response. When a positive

response is received (435), it will continue to perform the device switching or session transfer (440). A negative response (430) will put the process back to the waiting for trigger input cycle again.

5 According to Fig. 6, the process starts (610) off with waiting for incoming request (620) by Bob's mobile phone. If there is no request (615), the process starts (610) all over again. SIP subscribe message will be triggered from Bob's mobile device to the DSAS via the SIP/IMS server. The DSAS will then analyzes the request (625) by sending request to the location server asking for location information (630) and to the IMS server
10 asking for user profile information (635) of Bob's mobile device. After receiving Bob's device location info (645) and user profile (640), the DSAS gathers all information (650) received from IMS server and analyze device state and device location (655) in a list of devices available. If the server found any nearby active device (660), the server will send a positive status response (665) back to Bob's mobile device so as to perform
15 session transfer (675 or 440 of Figure 5) and end the process (680). If there is no device available, the server will send response with an error message (670) and ends the process (680).

In the foregoing specification, specific embodiments of the present invention have been
20 described. However, one of ordinary skill in the art will appreciate that various modifications and changes can be made without departing from the spirit and scope of the present invention as set forth in the various embodiments discussed above and the claims that follow. Accordingly, the specification and figures are to be regarded in an

illustrative rather than a restrictive sense, and all such modifications are intended to be included within the scope of present invention. The benefits, advantages, solutions to problems, and any element(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or
5 essential features or elements as described herein.

CLAIMS

1. A system of session transfer using non-post active device comprising:

at least a Device Switching Application Server connected to at least a location

5 server and a user profile/HSS server;

at least an SIP/IMS server connected to the DSAS,

at least a bob's mobile device connected to the SIP/IMS server;

at least an Alice's device connected to the SIP/IMS server; and

at least a communication means connected to Alice's mobile device.

10

2. The system according to claim 1 wherein the Device Switching Application Server includes at least a Device Switching Application Server handler, an IMS communication handler and Device Switching request handler.

15 3. The system according to claim 1 wherein Alice's device is a corresponding node.

4. The system according to claim 1 wherein the communication means preferably a computer or communicable devices.

20 5. The system according to claim 1 further comprising the method of:
preparing ongoing real-time communication by bob's mobile device with
corresponding node;
sending SIP Subscribe message to Device Switching Application Server;

retrieving registered devices from IMS server;
selecting an active device from the list;
sending a query to the IMS server to find out SIP contact of the corresponding
node;

5 sending a SIP refer message to the corresponding node; and
 sending SIP invite to bob's device by the corresponding node.

5. The claim as according to claim 4 wherein sending SIP subscribe message to
Device Switching Application Server is performed by Bob's mobile device.

10

7. The claim as according to claim 5 wherein retrieving registered devices from IMS
server is performed by the Device Switching Application Server.

8. The claim as according to claim 5 wherein selecting an active device is
15 performed by the Device Switching Application Server.

9. The claim as according to claim 5 wherein sending a query to the IMS server to
find out SIP contact of the corresponding node is performed by the Device Switching
Application Server.

20

10. The claim as according to claim 5 wherein sending a SIP refer message to the
corresponding node is performed by the Device Switching Application Server.

11. The claim as according to claim 5 wherein sending a SIP invite to bob's mobile device by the corresponding node to start the standard SIP session establishment handshaking process.

1/6

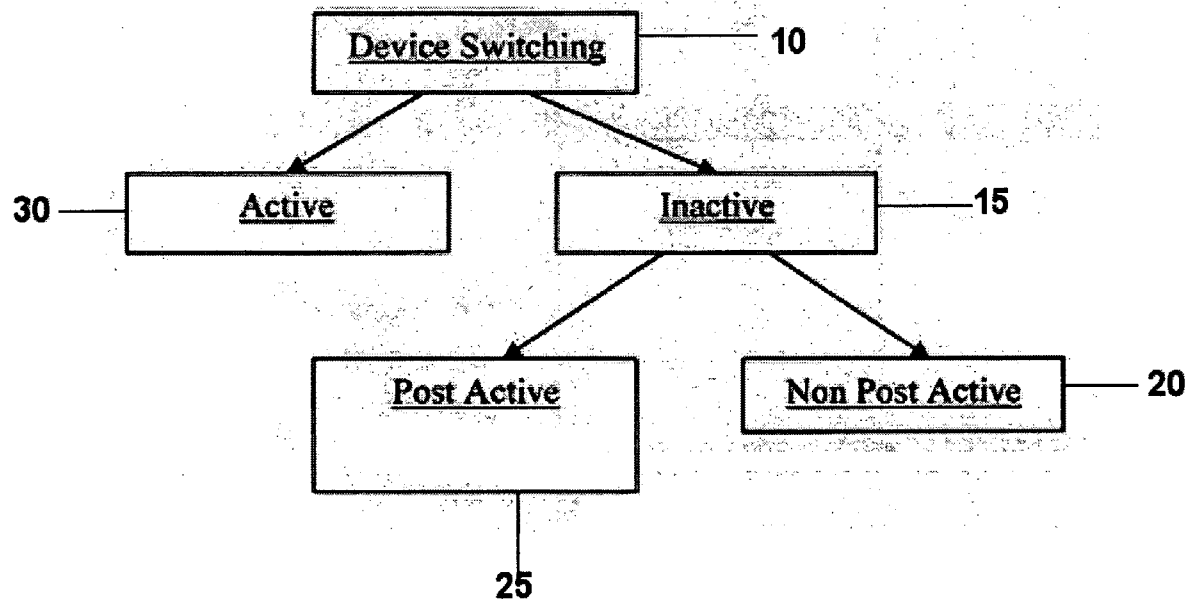
100

FIGURE 1

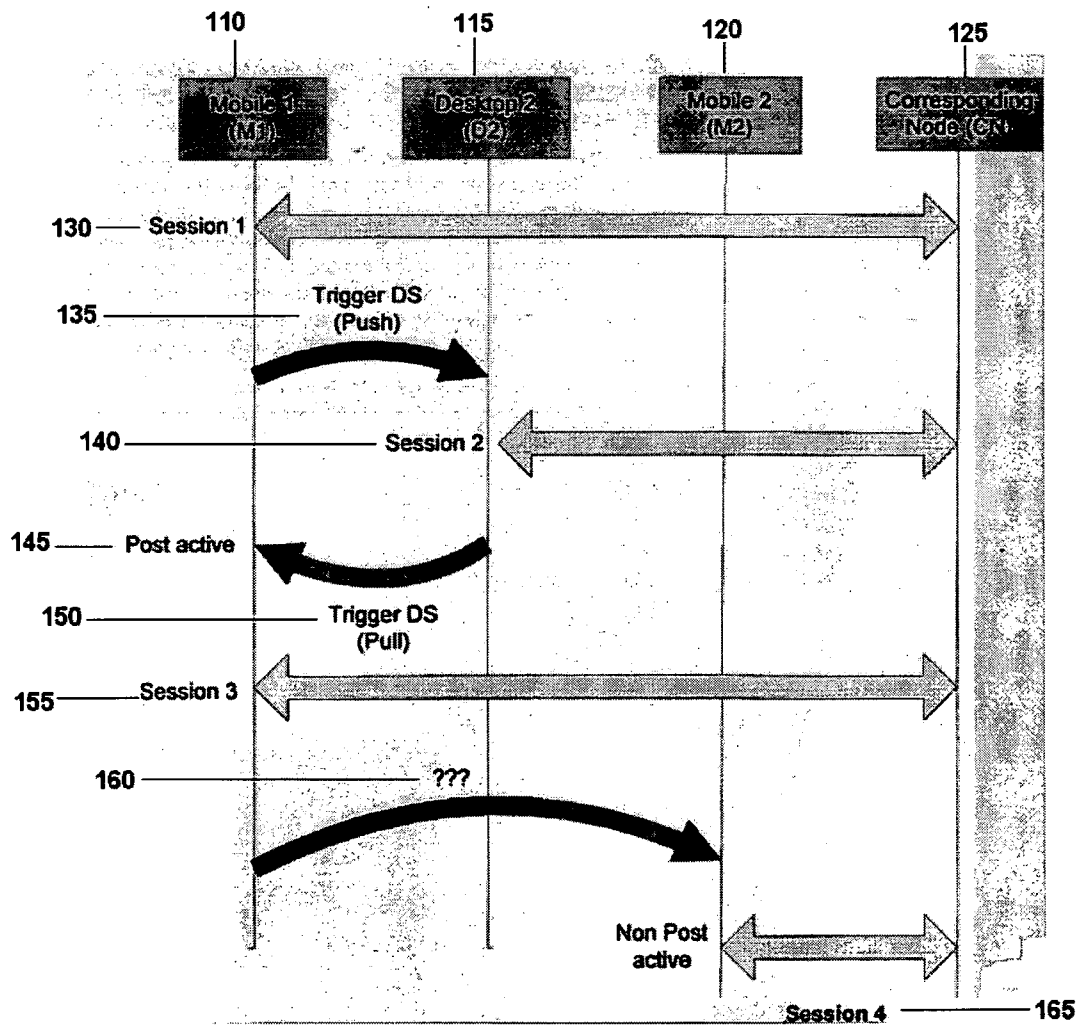


FIGURE 2

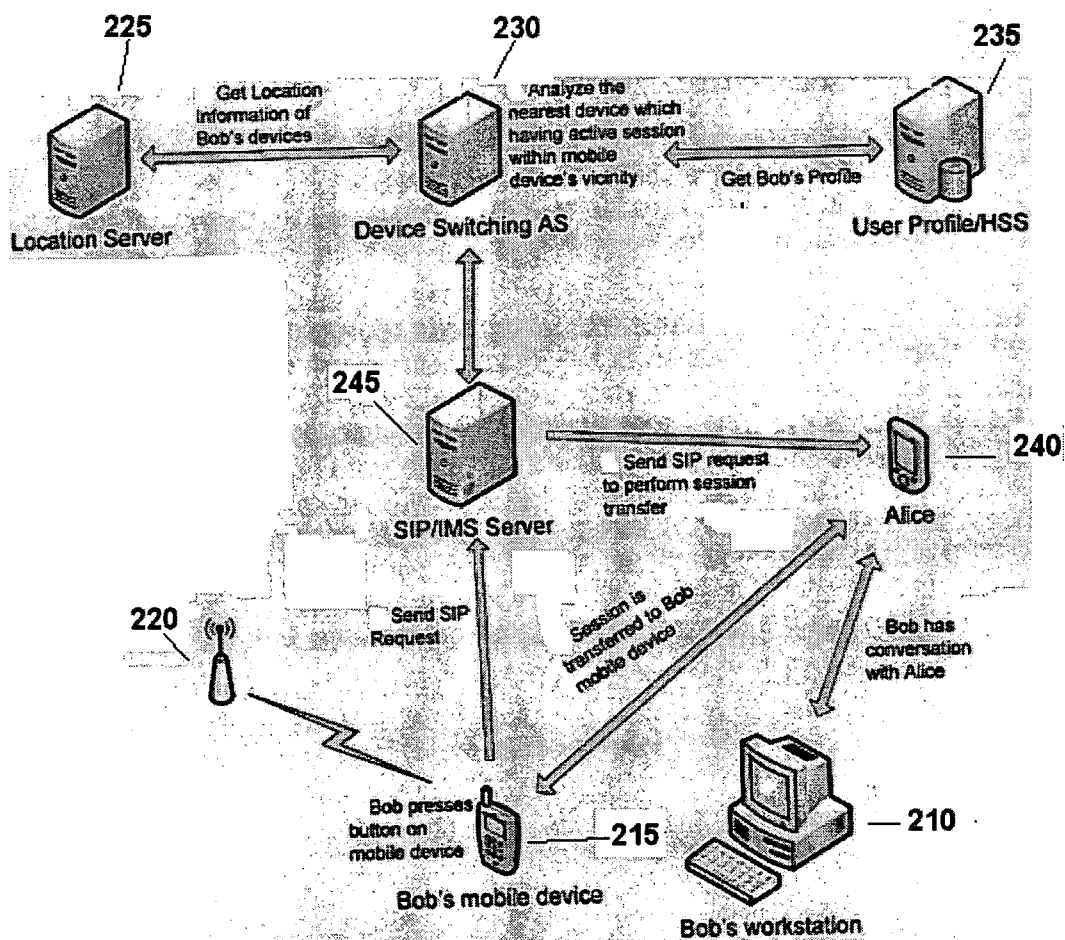
300

FIGURE 3

4/6

400

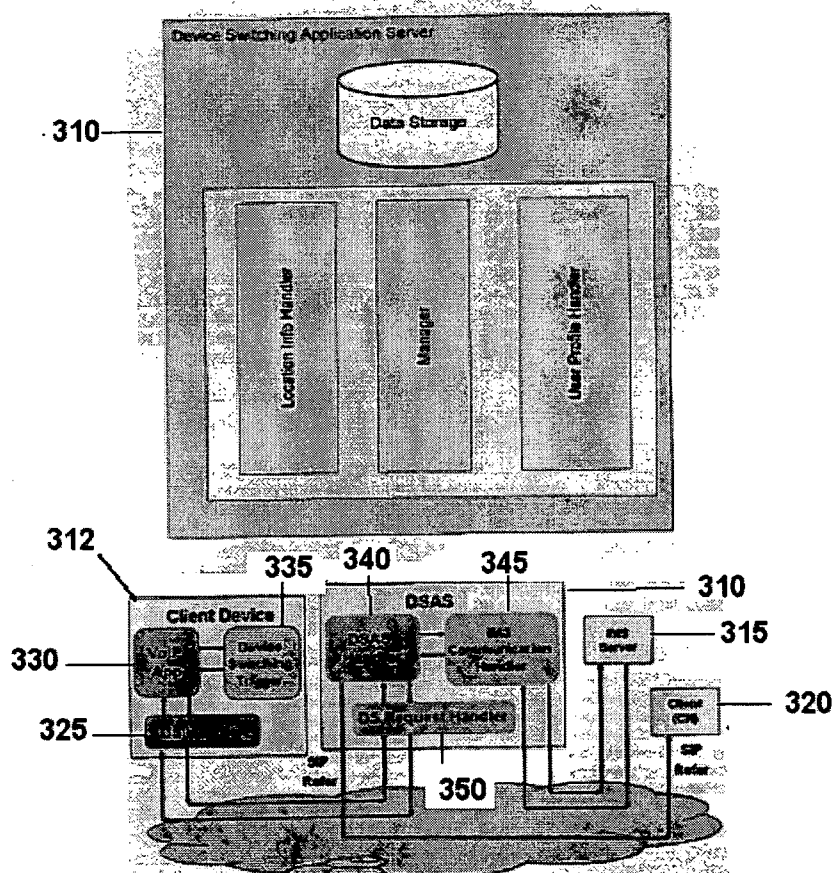


FIGURE 4

5/6

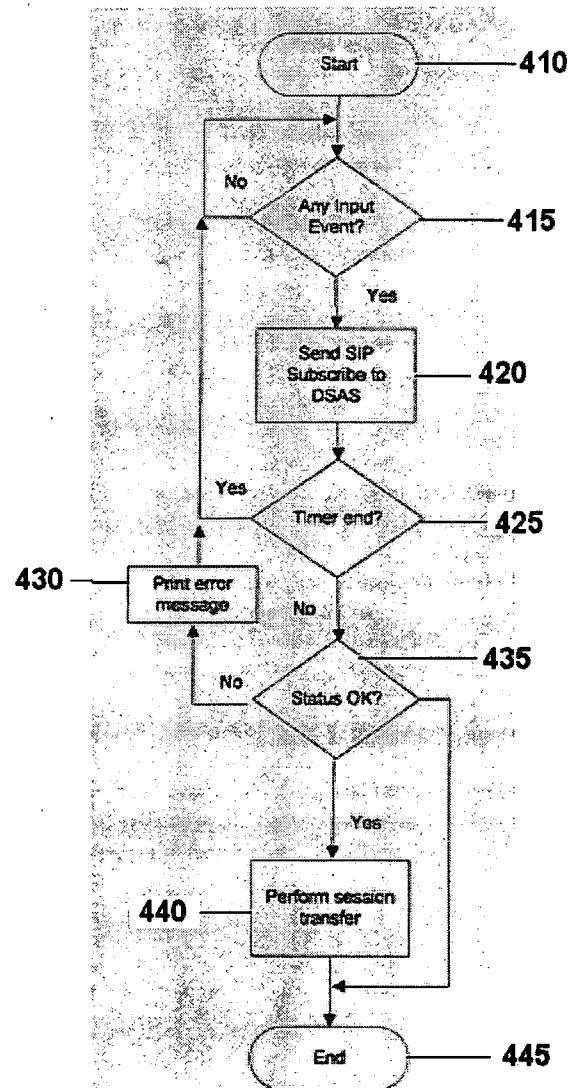
500

FIGURE 5

6/6

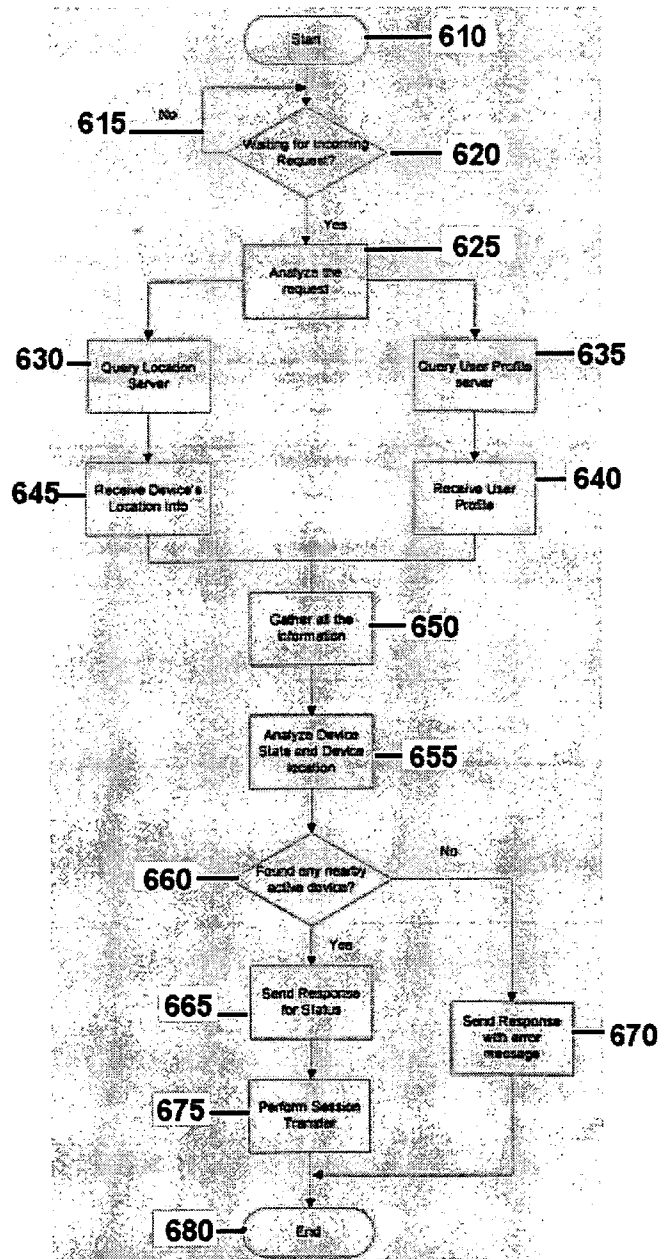
600

FIGURE 6

A. CLASSIFICATION OF SUBJECT MATTER***H04W 8/04(2009.01)i, H04W 80/10(2009.01)i***

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)

H04W 8/04; H04B 7/26; H04W 36/14; H04W 80/04; H04W 76/02; H04W 28/24; H04W 88/06

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: session , transfer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2008-0023878 A (SAMSUNG ELECTRONICS CO., LTD.) 17 March 2008 See claims 1-12 and figures 1-7.	1-5,5(1),7-11
A	KR 10-2008-0098320 A (SAMSUNG ELECTRONICS CO., LTD.) 07 November 2008 See claims 1-37 and figures 1-15.	1-5,5(1),7-11
A	KR 10-2008-0068510 A (LG ELECTRONICS INC.) 23 July 2008 See claims 1-29 and figures 1-10. *Note : For the claim 5(1), the claim was renumbered by this authority because the claim 5 was found twice.	1-5,5(1),7-11



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 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

29 AUGUST 2011 (29.08.2011)

Date of mailing of the international search report

30 AUGUST 2011 (30.08.2011)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsu-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

JUNG, Yun Seok

Telephone No. 82-42-481-8123



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/MY2010/000263

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-2008-0023878 A	17.03.2008	None	
KR 10-2008-0098320 A	07.11.2008	KR 10-2008-0098313 A US 2008-0273520 A1 WO 2008-136604 A1	07.11.2008 06.11.2008 13.11.2008
KR 10-2008-0068510 A	23.07.2008	WO 2008-088126 A1	24.07.2008