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(54) **Title:** NETWORK SYSTEM AND METHOD FOR ENABLING A MOBILE DEVICE TO SELF-CONFIGURE WITHOUT USER INTERVENTION

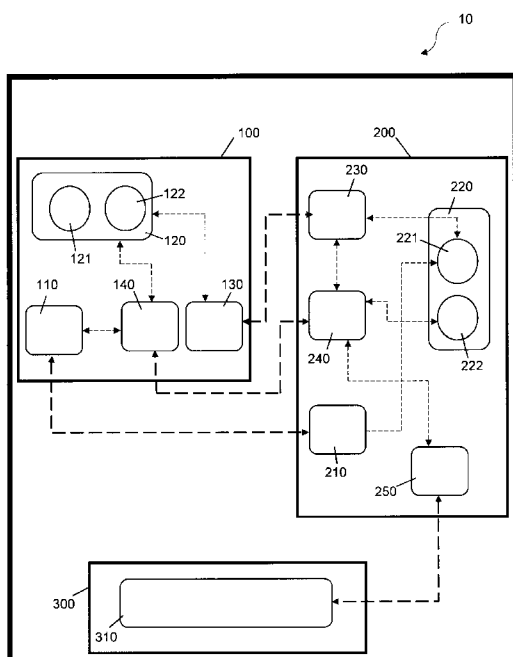


Figure 1

(57) **Abstract:** The present invention relates to a network system (10) and a method for enabling a mobile device (100) to self-configure without user intervention. The network system comprises a mobile device (100), a gateway device (200), and a service provider device (300). In the mobile device (100), there are at least four main modules, while in the gateway device (200), there are at least five main modules and in the service provider device (300), there is at least one main module, wherein all modules operate in the network system (10) to achieve a network system (10) that ensures the mobile device (100) is able to self-configure its functionality without user intervention based on services provided by the gateway device (200) in the network system (10). The operation of the modules is also disclosed in the method of the present invention to achieve the self-configuration without user intervention.

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NETWORK SYSTEM AND METHOD FOR ENABLING A MOBILE DEVICE TO SELF-CONFIGURE WITHOUT USER INTERVENTION

5 TECHNICAL FIELD OF THE INVENTION

This invention relates to a dynamic service configuration in a network system, more particularly to a network system and a method for enabling a mobile device to self-configure its functionality based on services provided by a gateway device in the network system.

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BACKGROUND OF THE INVENTION

At the present time, technology is becoming more advance towards realizing the concept of Internet of Things (IoT). It is expected that most devices will be mobile and require different configurations as the devices move in and out of different network environments. Some devices will have different functions according to the network they are attached to. This type of service flexibilities in a mobile device is highly anticipated in IoT.

20 In the current technology, most of the existing mobile devices have been pre-configured to load the operating system and services in order for the mobile devices to operate in the network environment. Before the mobile devices enter into a new network environment, the mobile devices have to install certain services, configuration, or application into the mobile devices. The installation is usually triggered and performed by the user that is using the mobile device. The installation and re-configuration of the mobile devices when the mobile devices move to a different network environment can be a tedious and cumbersome process especially when a large number of mobile devices enter the same network environment. Besides that, most of the mobile devices do not usually have sufficient memory to load all the required services and it is very often difficult to enquire the type of service the mobile device needs in a particular network environment. Commonly, it requires user intervention to add or delete services in the mobile devices.

With the increasing use of mobile devices, there is a need to have an improved method for providing services required by a particular network environment without collapsing the mobile device and flooding the network during the re-configuration of the mobile devices. There is also a need to ensure that the services required are installed automatically by at least a gateway device into the mobile device without user intervention, and enabling the services to be installed based on a decision included in the system. A new invention is required to improve on the existing problems so that the mobile devices are able to efficiently function in the network environment using only the required services, without overloading the memory capacity of the mobile devices and consume too much power.

There are a few prior arts which are related to the field of technology which allow the mobile devices to self-configure themselves. Patent Publication No. WO 2010/069332 A1 disclosed an invention in a similar field of technology. The invention requires a reference node and the selection of the reference node is made based on the results of transmission link between at least two reference cells. The dependency on the transmission link between the two reference cells may not be accurate as the wireless transmission may change between the cells of the network. The reliance on the reference cells can also be easily interrupted if one of the reference cells is faulty or is calculated at a wrong position.

US Patent No. 5,448,608 requires its invention to have the configuration information, which is the geographic coordinates, to be entered manually into the system. Although manual configuration is an option, however, with the advancement of technology towards IoT, manual configuration may not be favorable in the future.

US Patent No. 8,339,991 B2 disclosed a network system that decides on the delivery of services based on the determination of responding device that have signal-to-noise ratio value greater than a threshold value. Said system and

method of the prior art might not be an accurate indicator as the ratio is changeable when the delivery of services occur.

US Patent No. 8,027,324 B2 also disclosed an invention employs dynamic
5 frequency algorithm and includes scanning all available wireless channels for possible connections while building and maintaining a record of RSSI values that are used by each access point device. One of the drawbacks in US Patent No. 8,027,324 B2 is concerning the RSSI values which may involve a tedious process maintaining and calculating the RSSI values. The possible delay while
10 doing so may eventually disrupt the communication and connection. Besides that, the scanning of all available wireless channels may also consume more time and could overload the system.

The prior arts demonstrated different systems and methods to enable the mobile
15 devices to be configured according to the requirement set by a network environment. Most of them may overload the system as pre-installation of software or algorithm are required beforehand, and such processes may consume too much energy and battery. It may also be costly and require frequent maintenance.

20

Accordingly, it can be seen in the prior arts that there exists a need to provide a system and a method for enabling the mobile device to self-configure its functionality without user intervention based on services provided by the gateway device in the network system.

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SUMMARY OF THE INVENTION

The present invention is generally related to a dynamic service configuration in a network system which allows a mobile device to self-configure its functionalities
30 based on the services provided by the gateway device in the network system. Said dynamic service configuration does not require user intervention to select the required service for the mobile device.

It is an objective of the present invention to have a network system that allows automatic installation of only the required services into the mobile device without consuming too much power and time.

5 Furthermore, it is an objective of the present invention to provide a network system having at least three devices to operate in the network system, preferably, a mobile device, a gateway device, and a service provider device. Each device preferably operates by a multiple modules programmed in the device, and the modules allow only the required services to be installed into the
10 mobile device that has available memory capacity.

Accordingly, this may be achieved in accordance with a preferred embodiment of the present invention, a network system comprising a mobile device, a gateway device, and a service provider device, for enabling the mobile device to self-
15 configure its functionality without user intervention based on services provided by the gateway device in the network system, wherein the network system is characterized by: the mobile device further comprising: a gateway management module for discovering a service provided by the gateway device, registering the mobile device to the gateway device, and detecting if the mobile device leaves
20 the network system; a mobile device service module comprising a permanent service sub-module and a dynamic service sub-module for storing services and functionalities of the mobile device; a device profile module for storing information of the mobile device; and a mobile device service management module for configuring and installing the service in the mobile device, deleting
25 the service once the mobile device leaves the gateway device, and restoring default service in the mobile device; the gateway device further comprising: a node discovery module for detecting the mobile device, registering information on the mobile device, and sending termination notification to the mobile device; a network management module comprising a mobile node profile sub-module for
30 storing information of all registered mobile devices in the gateway device, and a list of services sub-module for storing a list of functionalities and location of the services; a node management module for requesting information from the mobile device and registering the information in the network management module; a

gateway service module for providing the service required to be installed in the mobile device; a service module for storing details of the services in the gateway device, and retrieving unavailable services from the service provider device; and the service provider device further comprising: a service provider management
5 module for providing the services that are unavailable in the gateway device.

It is also an objective of the present invention to provide a method for enabling the mobile service to self-configure its functionalities based on the services provided by the gateway device in the network system. Said method does not
10 allow user intervention. Said method allows the modules in each device to interact with one another thus allowing the mobile device to be able to self-configure its functionality without user intervention. Said method also allows the gateway device to identify and locate the services required by the mobile device.

15 There is also provided in accordance with a preferred embodiment of the present invention a method for enabling a mobile device to self-configure its functionality without user intervention based on services provided by a gateway device in a network system comprising the mobile device, the gateway device, and a service provider device the method is characterized by the steps of: registering the
20 mobile device to the gateway device; determining the service required by the mobile device as a permanent service or a dynamic service; selecting a service for the mobile device based on the availability of the service in the network system; delivering the service to the mobile device; removing the service after the mobile device leaves the network system; and restoring the default
25 configuration of the mobile device.

Furthermore, an objective of the present invention in accordance with the step of registering the mobile device to the gateway device, the method involves verifying the registration of the mobile device in the gateway device and decide if
30 information can be retrieved from previous registration or if new information is required from the mobile device for registration. Said objective can be achieved by detecting an available gateway device using the gateway management module in the mobile device; verifying the registration of the mobile device in the

gateway device; registering the mobile device to the gateway device; and storing the information of the mobile device in the network management module. The information may include the identity, hardware profile, and memory capacity of the mobile device, and availability of permanent service in the mobile device.

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It is an objective of the present invention in accordance to the step of selecting the service for the mobile device based on the availability of the service in the network system, to include the steps of checking the availability of a permanent service; and determining if a new service is required. If no permanent service is
10 available and no new service is required, the mobile device stays idle and the selection of the service is terminated.

The step of checking the availability of a permanent service (41) also include the step of: if no permanent service is available and no new service is required, the
15 mobile device (100) stays idle (45) and selection of the service is terminated (46).

In another objective of the present invention, the step of determining if a new service is required, also involving the steps of: checking the sufficiency of the memory capacity of the mobile device; and locating the availability of the new
20 service in the gateway device; wherein if a new service is not required, an available permanent service is loaded to the mobile device; if a new service is required, have sufficient memory capacity, and the new service is available in the gateway device, the selection of the service for the mobile device ends; if a new service is required, have sufficient memory capacity, and the new service is
25 not available in the gateway device, the gateway service module retrieves the service from the service provider device and the selection of the service for the mobile device ends; and if a new service is required, and have insufficient memory capacity, the mobile device stays idle and selection of the service is terminated.

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BRIEF DESCRIPTION OF THE DRAWINGS

The features of the invention will be more readily understood and appreciated from the following detailed description when read in conjunction with the accompanying drawings of the preferred embodiment of the present invention, in which:

Figure 1 is a diagram showing a network system and the flow of communication between mobile device, gateway device, and service provider device in the network system.

Figure 2 is a flow chart showing a method for enabling the mobile device to self-configure its functionality without user intervention based on services provided by the gateway device in the network system.

Figure 3 a flow chart showing steps for registering the mobile device to the gateway device.

Figure 4 is a flow chart showing a service selection for the mobile device.

Figure 5 is a flow chart showing steps for removing the service after the mobile device leaves the network system.

DETAILED DESCRIPTION OF THE INVENTION

The above mentioned and other features and objects of this invention will become more apparent and better understood by reference to the following detailed description. It should be understood that the detailed description made known below is not intended to be exhaustive or to limit the invention to the precise disclosed form as the invention may assume various alternative forms.

On the contrary, the detailed description covers all the relevant modifications and alterations made to the present invention, unless the claims expressly state otherwise.

Referring to Figure 1, the present invention relates to a network system (10) comprising a mobile device (100), a gateway device (200), and a service provider device (300), for enabling the mobile device (100) to self-configure its functionality without user intervention based on services provided by the gateway device (200) in the network system (10), wherein the network system (10) is characterized by: the mobile device (100) further comprising: a gateway management module (110) for discovering a service provided by the gateway device (200), registering the mobile device (100) to the gateway device (200), and detecting if the mobile device (100) leaves the network system (10); a mobile device service module (120) comprising a permanent service sub-module (121) and a dynamic service sub-module (122) for storing services and functionalities of the mobile device (100); a device profile module (130) for storing information of the mobile device (100); and a mobile device service management module (140) for configuring and installing the service in the mobile device (100), deleting the service once the mobile device (100) leaves the gateway device (200), and restoring default service in the mobile device (100); the gateway device (200) further comprising: a node discovery module (210) for detecting the mobile device (100), registering information on the mobile device (100), and sending termination notification to the mobile device (100); a network management module (220) comprising a mobile node profile sub-module (221) for storing information of all registered mobile devices in the gateway device (200), and a list of services sub-module (222) for storing a list of functionalities and location of the services; a node management module (230) for requesting information from the mobile device (100) and registering the information into the network management module (220); a gateway service module (240) for providing the service required to be installed in the mobile device (100); a service module (250) for storing details of the services in the gateway device (200), and retrieving unavailable services from the service provider device (300); and the service provider device (300) further comprising: a service provider management module (310) for providing the services that are unavailable in the gateway device (200).

Referring to Figure 1, the dotted line represents the flow of communication between the mobile device (100), gateway device (200), and the service provider device (300) in the network system (10). The flow of communication can be further understood by a method for enabling the mobile device (100) to self-configure its functionality without user intervention based on services provided by the gateway device (200) in the network system (10).

In an embodiment of the present invention, the permanent service sub-module (121) stores pre-installed services in the mobile device (100).

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In another embodiment of the present invention, the dynamic service sub-module (122) stores new services retrieved from the gateway device (200) in the mobile device (100).

15 In a further embodiment of the present invention, the device profile module (130) in the mobile device (100) stores information including the identity, hardware profile, and memory capacity of the mobile device (100), and availability of permanent service in the mobile device (100). The information stored in the device profile module (130) will be readily available to the gateway device (200) when the mobile device (100) has registered itself to the gateway device (200).

In a further explanation of the present invention, the mobile device (100) is constantly attaching and de-attaching itself from different network system (10). The mobile device (100) requires minimal configuration with a pre-defined set of communication messages to learn of the services required in the network system (10).

25

The gateway device (200) may act as an interface between the mobile device (100) and the network system (10). The gateway device (200) communicate with the mobile device (100) using a pre-defined set of communication protocol. The gateway device (200) may also fetch service from the service provider device (300) if the service is not available in the gateway device (200). The gateway device (200) of the present invention knows the services that are required in the

30

network system (100) and decides on the services for the mobile device (100) and distributing the services according to the capabilities of the mobile device (100).

- 5 In an embodiment of the present invention, the communication between the mobile device (100), the gateway device (200), and the service provider device (300) is based on a pre-defined set of messages that are loaded into the network system (10) prior to deployment.
- 10 The embodiments of the present invention has also enable the mobile device (100) to adapt automatically to the network system (10) and reduce the consumption of power due to the suspension of unnecessary services. Besides that, the mobile device (100) performs only what the network system (100) requires it to do. The service configuration is also executed with minimal
- 15 interference from the user as the decision regarding the suitable services is performed by the gateway device (200).

As shown in Figure 2, the present invention disclosed the method for enabling the mobile device (100) to self-configure its functionality without user intervention

20 based on services provided by the gateway device (200) in the network system (10) comprising the mobile device (100), the gateway device (200), and the service provider device (300) the method is characterized by the steps of: registering the mobile device (100) to the gateway device (200) (20); determining the service required by the mobile device (100) as a permanent service or a

25 dynamic service (30); selecting a service for the mobile device (100) based on the availability of the service in the network system (10) (40); delivering the service to the mobile device (100) (50); removing the service after the mobile device (100) leaves the network system (10) (60); and restoring the default configuration of the mobile device (100) (70).

30

Referring to Figure 3, in an embodiment of the present invention, the step of registering the mobile device (100) to the gateway device (200) (20) further comprising the steps of: detecting an available gateway device (200) using the

gateway management module (110) in the mobile device (100) (21); verifying the registration of the mobile device (100) in the gateway device (200) (22); registering the mobile device (100) to the gateway device (200) (23); and storing the information of the mobile device (100) in the network management module
5 (220) (24), wherein the information includes the identity, hardware profile, and memory capacity of the mobile device (100), and availability of permanent service in the mobile device (100).

In another embodiment of the present invention and by referring to Figure 3, the
10 step of verifying the registration of the mobile device (100) in the gateway device (200) (22) includes the steps of: requesting information from the mobile device (100) through the node management module (230) if the mobile device (100) has not been registered (22a); and if the mobile device (100) has been registered previously by confirming the information of the mobile device (100) is stored in
15 the network management module (220) in the gateway device (200), the information of the mobile device (100) will be retrieved from the network management module (220) in the gateway device (200) (22b).

Referring to Figure 4, in a further embodiment of the present invention, the step
20 of selecting the service for the mobile device (100) based on the availability of the service in the network system (10) (40), further comprising the steps of: checking the availability of a permanent service (41); and determining if a new service is required (42).

25 In an embodiment of the present invention, the step of checking the availability of a permanent service (41) further comprising the step of: if no permanent service is available and no new service is required, the mobile device (100) stays idle (45) and selection of the service is terminated (46).

30 In another embodiment of the present invention, the step of determining if a new service is required (42), further comprising the steps of: checking the sufficiency of the memory capacity of the mobile device (100); locating the availability of the new service in the gateway device (200); and wherein if no new service is

required, an available permanent service is loaded to the mobile device (100) (43); if a new service is required, have sufficient memory capacity, and the new service is available in the gateway device (200), the selection of the service for the mobile device (100) ends; if a new service is required, have sufficient
5 memory capacity, and the new service is not available in the gateway device (200), the gateway service module (240) retrieves the service from the service provider device (300) (44) and the selection of the service for the mobile device (100) ends; and if a new service is required, and have insufficient memory capacity, the mobile device (100) stays idle (45) and selection of the service is
10 terminated (46).

The gateway service module (240) may load the permanent service that is available in the permanent service sub-module (121) into the mobile device (100) if no new service is required. In a preferred embodiment, the new service may be
15 installed into the mobile device (100) by the mobile device management module (140).

In an embodiment of the present invention, the step of delivering the service to the mobile device (100) (50), further includes, if the service is available in the
20 gateway device (200), the gateway service module (240) will deliver the service to the mobile device (100), preferably to the dynamic service sub-module (122) in the mobile device (100).

Further describing an embodiment of the present invention and by referring to
25 Figure 5, the step of removing the service after the mobile device (100) leaves the network system (10) (60) further comprising the steps of: detecting via the gateway management module (110), the exit of the mobile device (100) from the gateway device (200) (61); and removing via the mobile device service management module (140), the service installed previously in the mobile device
30 (100) (62). In an embodiment of the present invention, the removal of the services can be done by the common process of clearing up the memory capacity of the mobile device (100).

In another embodiment of the present invention, the step of restoring the default configuration of the mobile device (100) (70) is performed by the mobile device service management module (140).

- 5 The node discovery module (210) may send a termination notification to the mobile device (100) after the default configuration is restored. Thereafter, the mobile device (100) will be able to attach and re-configure itself to another new network environment,
- 10 Although the present invention has been described with reference to specific embodiments, it will be apparent for those skilled in the art that many variations and modifications can be done within the scope of the invention as described in the specification and defined in the following claims.

CLAIMS

- 1) A network system (10) comprising a mobile device (100), a gateway device (200), and a service provider device (300), for enabling the mobile device (100) to self-configure its functionality without user intervention based on services provided by the gateway device (200) in the network system (10), wherein the network system (10) is characterized by:
- a) the mobile device (100) further comprising:
- i) a gateway management module (110) for discovering a service provided by the gateway device (200), registering the mobile device (100) to the gateway device (200), and detecting if the mobile device (100) leaves the network system (10);
- ii) a mobile device service module (120) comprising a permanent service sub-module (121) and a dynamic service sub-module (122) for storing services and functionalities of the mobile device (100);
- iii) a device profile module (130) for storing information of the mobile device (100); and
- iv) a mobile device service management module (140) for configuring and installing the service in the mobile device (100), deleting the service once the mobile device (100) leaves the gateway device (200), and restoring default service in the mobile device (100);
- b) the gateway device (200) further comprising:
- i) a node discovery module (210) for detecting the mobile device (100), registering information on the mobile device (100), and sending termination notification to the mobile device (100);

- 5 ii) a network management module (220) comprising a mobile node profile sub-module (221) for storing information of all registered mobile devices (100) into the gateway device (200), and a list of services sub-module (222) for storing a list of functionalities and location of the services;
- iii) a node management module (230) for requesting information from the mobile device (100) and registering the information in the network management module (220);
- 10 iv) a gateway service module (240) for providing the service required to be installed in the mobile device (100);
- v) a service module (250) for storing details of the services available in the gateway device (200), and retrieving unavailable services from the service provider device (300);
- 15 c) the service provider device (300) further comprising:
- i) a service provider management module (310) for providing the services that are unavailable in the gateway device (200).
- 20
- 2) A network system (10) according to claim 1, wherein the permanent service sub-module (121) stores a pre-installed service in the mobile device (100).
- 25 3) A network system (10) according to claim 1, wherein the dynamic service sub-module (122) stores new service retrieved from the gateway device (20) in the mobile device (100).
- 30 4) A network system according to claim 1, wherein the device profile module (130) in the mobile device (100) stores information including the identity, hardware profile, and memory capacity of the mobile device (100), and availability of permanent service in the mobile device (100).

- 5) A method for enabling a mobile device (100) to self-configure its functionality without user intervention based on services provided by a gateway device (200) in a network system (10) comprising the mobile device (100), the gateway device (200), and a service provider device (300), the method is characterized by the steps of:
- 5 a) registering the mobile device (100) to the gateway device (200) (20);
- b) determining the service required by the mobile device (100) as a permanent service or a dynamic service (30);
- 10 c) selecting a service for the mobile device (100) based on the availability of the service in the network system (10) (40);
- d) delivering the service to the mobile device (100) (50),
- e) removing the service after the mobile device (100) leaves the network system (10) (60); and
- 15 f) restoring the default configuration of the mobile device (100) (70).
- 6) A method according to claim 5, wherein the step of registering the mobile device (100) (20) to a gateway device (200) further comprising the steps of:
- 20 a) detecting an available gateway device (200) using the gateway management module (110) in the mobile device (100) (21);
- b) verifying the registration of the mobile device (100) in the gateway device (200) (22);
- c) registering the mobile device (100) to the gateway device (200) (23); and
- 25 d) storing the information of the mobile device (100) in the network management module (220) (24), wherein the information includes the identity, hardware profile, and memory capacity of the mobile device (100), and availability of permanent service in the mobile device (100).
- 30

- 7) A method according to claim 5, wherein the step of selecting a service for the mobile device (100) based on the availability of the service in the network system (10) (40) further comprising the steps of:
- 5 a) checking the availability of a permanent service (41); and
- b) determining if a new service is required (42).
- 8) A method according to claim 7, wherein the step of checking the availability of a permanent service (41) further comprising the step of: if no permanent service is available and no new service is required, the mobile device (100) stays idle (45) and the selection of the service is terminated (46).
- 10 (46).
- 9) A method according to claim 7, wherein the step of determining if a new service is required (42), further comprising the steps of:
- 15 a) checking the sufficiency of the memory capacity of the mobile device (100); and
- b) locating the availability of the new service in the gateway device (200);
- i) wherein if no new service is required, an available permanent service is loaded to the mobile device (100) (43);
- 20 ii) wherein if a new service is required, have sufficient memory capacity, and the new service is available in the gateway device (200), the selection of the service for the mobile device (100) ends;
- 25 iii) wherein if a new service is required, have sufficient memory capacity, and the new service is not available in the gateway device (200), the gateway service module (240) retrieves the service from the service provider device (300) (44) and the selection of the service for the mobile device (100) ends;
- 30 and
- iv) wherein if a new service is required, and has insufficient memory capacity, the mobile device (100) stays idle (45) and selection of the service is terminated (46).

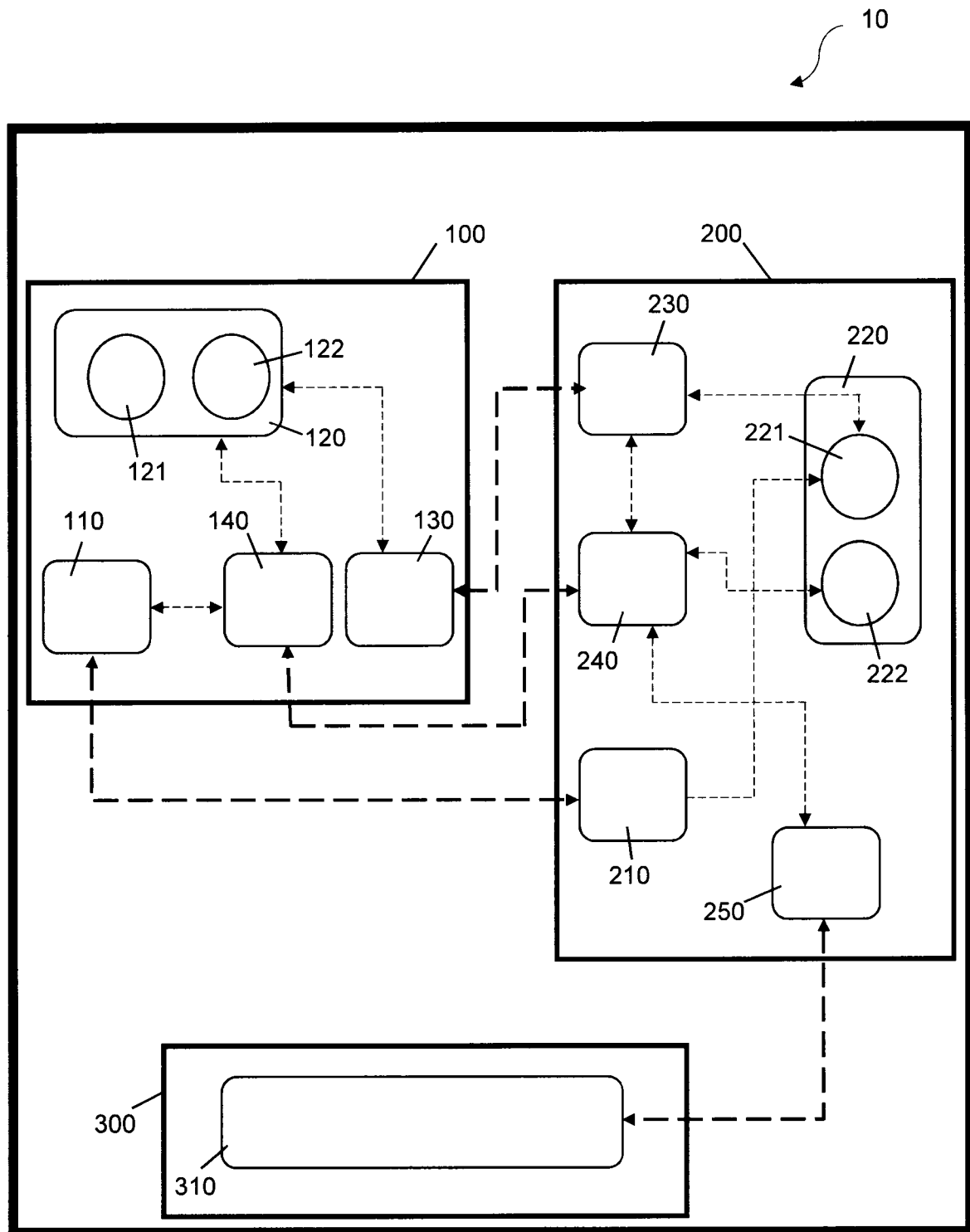
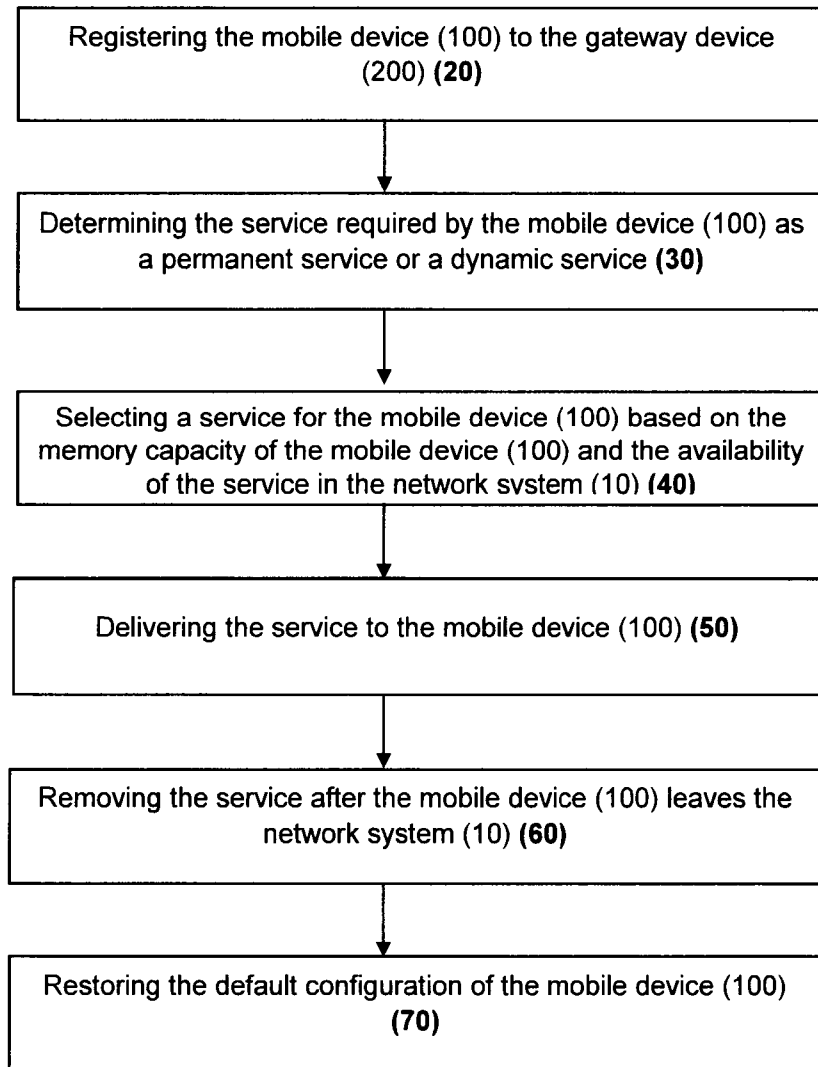


Figure 1

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**Figure 2**

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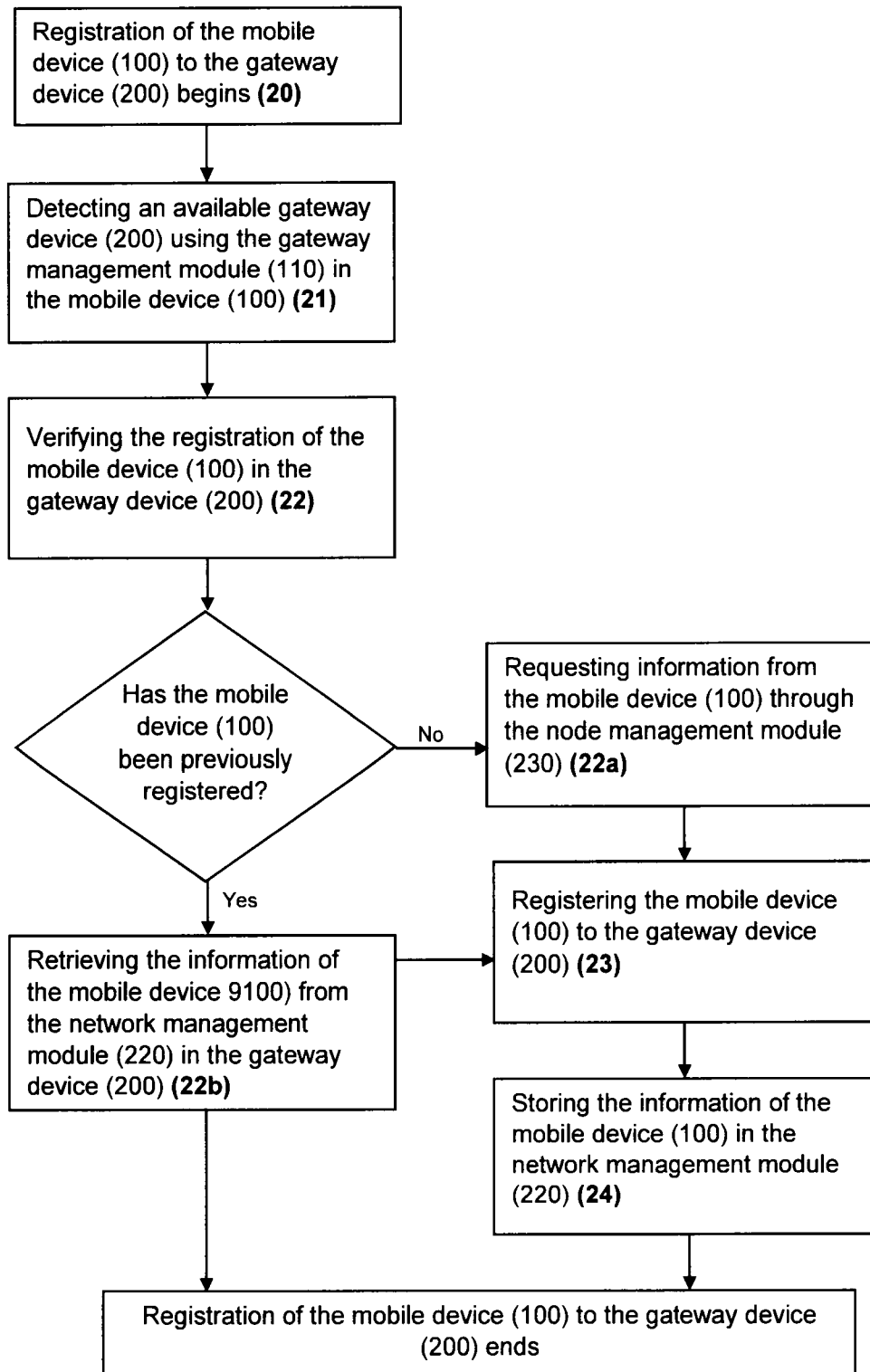


Figure 3

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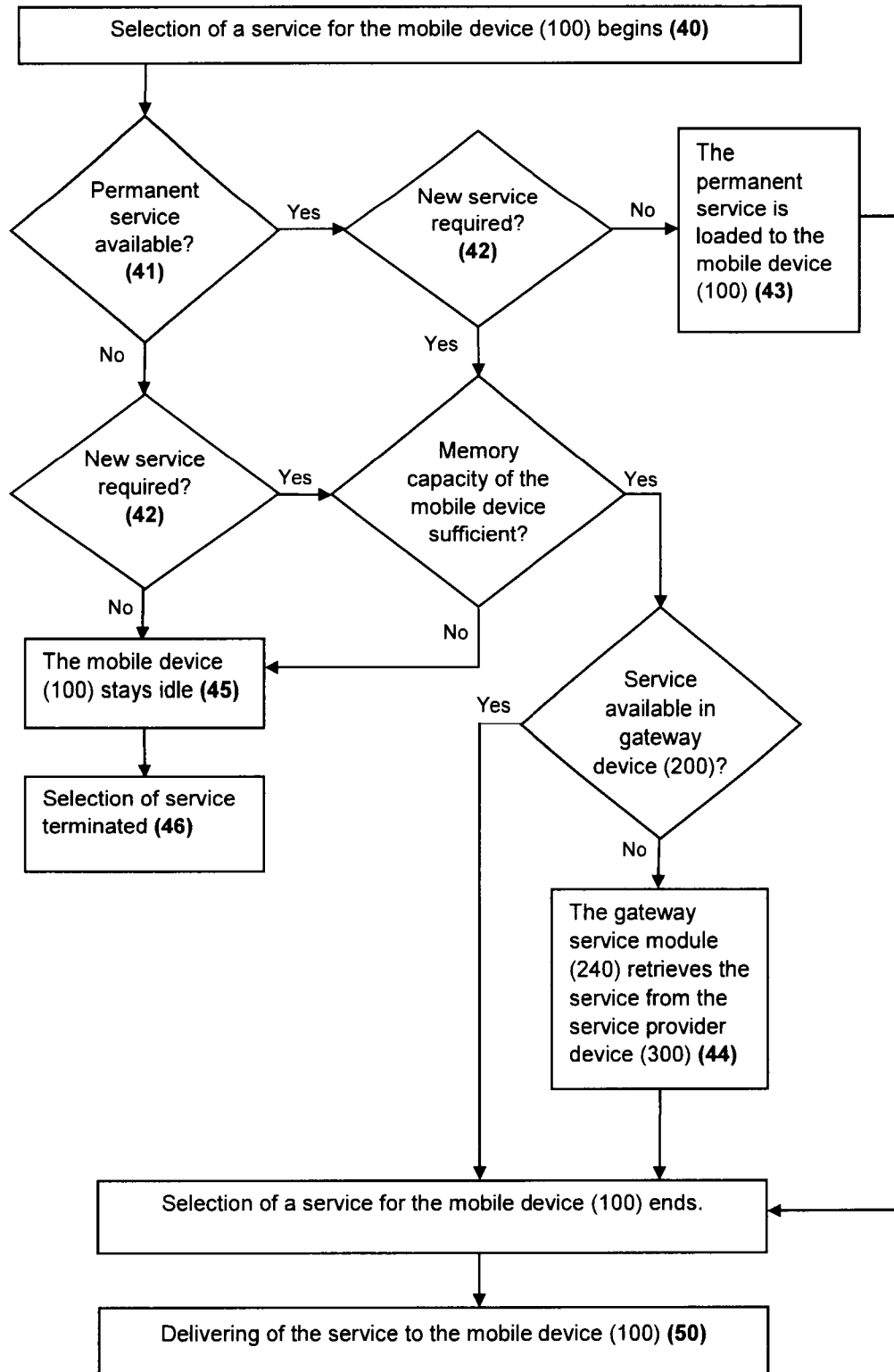


Figure 4

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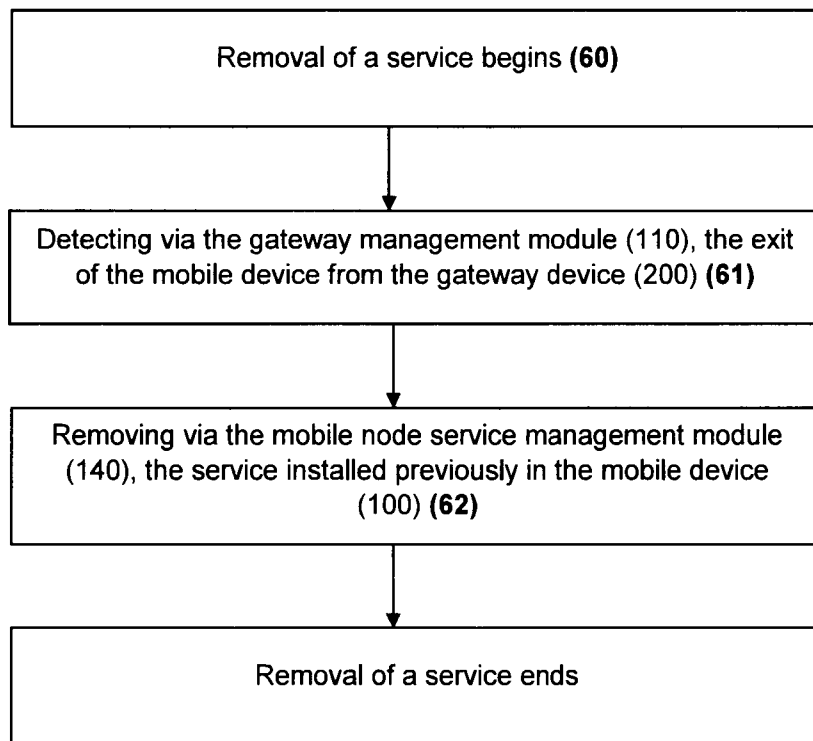


Figure 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/MY2015/000034

A. CLASSIFICATION OF SUBJECT MATTER		
Int.Cl. H04M3/42 (2006.01) i, G06F9/445 (2006.01) i, H04M3/487 (2006.01) i, H04W8/20 (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)		
Int.Cl. H04M3/42, G06F9/445, H04M3/487, H04W8/20		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Published examined utility model applications of Japan 1922-1996 Published unexamined utility model applications of Japan 1971-2015 Registered utility model specifications of Japan 1996-2015 Published registered utility model applications of Japan 1994-2015		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2005-215898 A (SANYO Electric Co., Ltd.) 2005.08.11, pars. [0024]-[0053], [0070], figs. 1-4 (No Family)	1 - 9
A	EP 1670191 A1 (NTT DOCOMO, INC.) 2006.06.14, pars. [0014]-[0059], figs. 1-8 & JP 2006-191540 A & US 2006/0138224 A1 & CN 1787579 A	1 - 9
A	WO 2004/040923 A1 (NOKIA CORPORATION) 2004.05.13, p. 5, line 9 - p. 21, line 7, figs. 1-5 & JP 2006-505182 A & US 2005/0222918 A1 & CA 2503977 A & KR 10-2005-0062650 A	1 - 9
☒ 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		Date of mailing of the international search report
29.07.2015		11.08.2015
Name and mailing address of the ISA/JP		Authorized officer
Japan Patent Office		Hide MATSUHIRA
3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan		5G 3146
		Telephone No. +81-3-3581-1101 Ext. 3526

INTERNATIONAL SEARCH REPORT

International application No.

PCT/MY2015/000034

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-269207 A (Sony Ericsson Mobile Communications Japan, Inc.) 2008.11.06, abstract, pars.[0007]-[0008], [0079] (No Family)	1 - 9
A	JP 2009-88917 A (Casio Hitachi Mobile Communications Co., Ltd.) 2009.04.23, pars.[0039], [0093], [0115] (No Family)	1 - 9