Patent Application

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【Title of Invention】	Apparatus and method of dynamic IP address modification
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【Applicant】	
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【Request for Examination】 claimee

【Purport】

Request an application under Article 42 of the Patent Act and an application review under Article 60 of the Patent Act.

【Official Fee】

【Application Fee】 0 page 38,000 won

【Additional Application Fee】 18 pages 0 won

【Priority Fee】 0 case 0 won

【Examination Fee】 11 Clause 461,000 won

【Total】 499,000 won

【Reason for Reduction】 Secure Information

【Fee after Reduction and Exemption】 249,500 won

【Prospect of Technology Transfer】

【Technology Assignment】 Hopes

【Grant of License】 Hopes

【Technology Road Map】 Hopes

【Abstract】

【Summary】

The present invention relates to an apparatus and a method for processing a dynamic IP address change.

The present invention includes a management server which is connected to an embedded system through the Internet, registers and manages dynamic IP address information assigned to an embedded terminal of the embedded system, and changes and stores the IP address information of the corresponding terminal when a change event for the dynamic IP address of the embedded terminal occurs. At this time, the embedded terminal receives a dynamic IP address by the DHCP and transmits an IP address change event for setting and updating the IP address to the management server.

According to the present invention, when an embedded terminal has a dynamic IP address, a management server for managing the IP address of the embedded terminal is added to enable a user terminal to receive the changed address of the embedded terminal, thereby increasing the convenience of use and reducing the load of the embedded system by not directly managing the dynamic address of the embedded terminal in the embedded system.

【Representative Drawing】

Drawing3

【Index Term】

DHCP, Embedded System, Dynamic IP

【Description of the Invention】

【Title of Invention】

APPARATUS AND METHOD FOR PROCESSING DYNAMIC IP ADDRESS CHANGE

【Description of Drawings】

【0001】1 is a block diagram showing a network structure to which DHCP is applied to an embedded system according to an embodiment of the present invention.

【0002】2 is a flowchart illustrating a process of processing a dynamic Internet address change event according to an embodiment of the present invention.

【0003】FIG. 3 is a flowchart of an event processing process of the management server in the dynamic Internet address change event processing process of FIG. 2.

【The Detailed Description of the Invention】

【The Purpose of Invention】

【Technical Field of Invention and the Prior Art】

【0004】The present invention relates to an apparatus and a method for processing a dynamic Internet address change, and more particularly, to an apparatus and a method for processing a dynamic Internet address change when a dynamic address allocation protocol is used in an embedded system.

【0005】Dynamic Host Configuration Protocol; DHCP) is useful when a terminal accesses a server and receives various services, and allows other users to use the DHCP by returning an Internet address used after use.The thing can provide the internet service.

【0006】However, when DHCP is used, a new Internet address is used for each connection, and it is not easy to configure it as a server, so DHCP is generally used for download services.

【0007】 Meanwhile, an embedded system refers to an electronic control system in which hardware and software of a computer are combined to perform a predetermined specific function, and refers to a system in which some machines may be included as needed. This embedded system often requires access from general users and easy access to multiple users, so it often operates dynamic domain name clients and dynamic domain name servers in addition rather than using dynamic domain systems.

【0008】 However, in the case of embedded systems consisting of very small sensors, there is a problem that requires a lot of resources to operate dynamic domain name clients.

【0009】 In addition, when DHCP is applied to an embedded system, when power is turned off or Internet connection is turned off, a new host address is allocated, which causes a problem in use because a remote user cannot know it.

【Technical Problem of Invention】

【0010】 DISCLOSURE Technical Problem Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide an apparatus and a method for processing a dynamic Internet address change event, which are capable of maintaining and managing an Internet address when a dynamic host configuration protocol is used in a terminal of an embedded system.

【Configuration of Invention】

【0011】 According to an embodiment of the present invention, the apparatus for processing a dynamic IP address change comprises: a dynamic host configuration protocol (DHCP) The present invention relates to a dynamic internet protocol address (IP) address change processing device of an embedded system which provides a service by applying DHCP.

【0012】It dynamics with DHCP, it is connected through the embedded terminal and internet of the embedded system endowed with the IP address. The dynamic IP address information given to the embedded terminal is registered and it manages. If the change event toward the dynamic IP address of the embedded terminal is generated, the IP address information of the corresponding terminal is changed and it stores.

【0013】The dynamic IP address change processing unit

【0014】The subscriber module providing the terminal of the service subscriber for to connecting to the terminal of the embedded system through the internet network with the IP address information of the embedded terminal

【0015】The embedded system administration module performing the administration of the addition in the embedded system or the deleted embedded terminal

【0016】The database storing the terminal mapping table the IP address information given to the terminal of the embedded system and

【0017】and a log module for changing an IP address assigned to the terminal of the embedded system or storing event information including the addition or registration of the embedded terminal.

【0018】Meanwhile, the dynamic IP address change processing apparatus according to another feature of the present invention

【0019】The embedded terminal having the dynamic IP address applying DHCP and is allocated the dynamic IP address, and provides the embedded service through the internet network and

【0020】and a management server which is connected to the embedded terminal through the Internet, registers and manages dynamic IP address information assigned to the embedded terminal, and changes and stores the IP address information of the corresponding terminal when a change event

for the dynamic IP address of the embedded terminal occurs.

【0021】 Meanwhile, the dynamic IP address change processing method according to the characteristics of the present invention

【0022】 The dynamic IP address change processing method at the management server processing the dynamic IP address change event of the embedded system applying DHCP and provides the service

【0023】 The step of receiving the corresponding IP address change event information the event in which the IP address of the embedded terminal of the embedded system is changed is generated and

【0024】 and changing and storing an IP address of a corresponding embedded terminal, which is already stored, into a new IP address included in the IP address change event by using embedded terminal information included in the received IP address change event.

【0025】 Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings so that those skilled in the art to which the present invention pertains can easily implement the present invention. The present invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. In the accompanying drawings, parts irrelevant to the description of the present invention are omitted in order to clearly describe the present invention, and the same or similar parts are denoted by the same reference numerals.

【0026】 1 is a block diagram showing a network structure to which DHCP is applied to an embedded system according to an embodiment of the present invention.

【0027】 Referring to FIG. 1, a network according to an embodiment of the present invention includes an embedded system 100 and a dynamic host configuration protocol (DHCP) connected to an Internet network,

respectively. Dynamic host configuration protocol) server(200), and the user terminal(300) and management server(400) are included.

【0028】 The embedded system 100 includes embedded terminals 110 that provide specialized services, and each of the embedded terminals 110 is assigned a dynamic IP address from the DHCP server 200 through the Internet and accesses the Internet to provide various services to the plurality of user terminals 300.

【0029】 The DHCP server 200 allocates a dynamic IP address so that the embedded terminal 110 of the embedded system 100 can access the Internet network and provide a service.

【0030】 The management server 400 manages IP address information given to the embedded terminal 110 by the DHCP 200. When the embedded terminal 110 receives a new IP address from the DHCP server 200, the management server 400 according to an embodiment of the present invention receives the new IP address as an event and stores and manages the new IP address, as in the case where the power of the embedded terminal 110 or the Internet is disconnected and then connected again.

【0031】 The management server 400 according to an embodiment of the present invention includes a web server module 410, a subscriber module 420, an embedded system management module 430, a DB 440, and a log module 450.

【0032】 The web server module 410 is a web service-related module that is connected to the Internet to control and manage the management server 400, and the subscriber module 420 manages information of a subscriber for using the embedded system 100. That is, the subscriber module 420 includes an embedded moduleUpon receiving a request from the user terminal 300 to access the embedded terminal 110 and to provide a service, it is determined whether the user is a service subscriber, and the IP address of the embedded

terminal 110 is provided to the user terminal 300.

【0033】 The embedded system management module 430 enables management of the embedded system 100 at a remote location and performs event processing due to addition, removal, and the like of the embedded terminal 110.

【0034】 The DB 440 includes a terminal mapping table for storing subscriber information and IP address information assigned to the embedded terminal 110.

【0035】 2 is a flowchart illustrating a process of processing a dynamic Internet address change event according to an embodiment of the present invention.

【0036】 Referring to FIG. 2, when the embedded terminal 110 accesses the Internet network again due to a power error or other operations, the embedded terminal 110 initializes an environment (S201) and loads an environment configuration in which a management server 400 is defined in advance (S202).

【0037】 In this case, the initialization environment of the embedded terminal 110 and the configuration environment information of the management server 400 may be basically stored in the embedded terminal 110, may be received from the embedded system 100, or may be received from the management server 400 through the Internet.

【0038】 After the initialization, the embedded terminal 110 accesses the Internet and acquires an IP address from the DHCP server 200 to provide a service (S203).

【0039】 with the IP address which the embedded terminal(110) getting the new IP address previously usesIt is determined whether the newly acquired IP address is the same (S204), and when the newly acquired IP address is the same address, a standby timer is operated (S208). At this time, since the standby timer needs to acquire a new IP address after a predetermined

time has elapsed due to the characteristics of the DHCP, the standby timer acquires a new IP address according to the standby timer time. At this time, if the currently used IP address can be continuously used, the DHCP server 200 re-assigns the current IP address without changing the IP address.

【0040】However, when an IP address used for another embedded terminal 110 is assigned during a new IP address acquisition time, the DHCP server 200 assigns a new IP address to the embedded terminal 110.

【0041】The description of the periodic IP address update is in accordance with the DHCP standard in the related art, and a detailed description thereof will be omitted.

【0042】Meanwhile, as a result of the determination in step S204, when the embedded terminal 110 newly acquires an IP address different from the previous IP address, the embedded terminal 110 notifies the management server 400 that an event in which the IP address is changed has occurred (S205), and the management server 400 updates and stores the terminal mapping table with the IP address of the corresponding embedded terminal 110 using the received IP address change event and stores new log information in the log file (S207).

【0043】In addition, the embedded terminal 110 operates a standby timer while using a new IP address (S208) to periodically update the IP address.

【0044】An operation of the management server 400 of steps S206 and S207 when receiving an IP address change event from the embedded terminal 110 will be described in more detail below.The same is true.

【0045】FIG. 3 is a flowchart of an event processing process of the management server in the dynamic Internet address change event processing process of FIG. 2.

【0046】Referring to FIG. 3, the management server 400 performs environment initialization that is basically set during initial driving (S301), and enters a

standby state while waiting for an event to be received from the embedded terminal 110 of the embedded system 100 (S302).

【0047】 When an event input to the management server 400 occurs (S303), the log module 450 stores log information indicating that the event has been input in the DB 440 (S304), determines whether the corresponding event is about the IP address change of the embedded terminal 110 (S304), determines whether the corresponding event is a user access event transmitted from the user for the embedded service (S307), and determines whether the corresponding event is an initialization event of the server table (S310).

【0048】 As a result of the determination in operation S305, when the received event is the IP address change event of the embedded terminal 110, the terminal mapping table is changed by storing the IP address of the embedded terminal 110 as a new IP address in the DB 440 (S306), a log for the change is stored (S313), and then the standby mode is switched to a standby mode in which a new event input is standby (S302).

【0049】 In addition, when the received event is a user access event, it means that the user terminal 300 accesses the specific embedded terminal 110 to use the service in the embedded system 100, and thus information of the embedded terminal 110 to which the user terminal 300 desires to access is included in the user access event.

【0050】 Therefore, the terminal mapping in which the subscriber module(420) of the management server(400) is stored in the DB(440)The table is inquired (S308), the IP address of the embedded terminal 110 is checked, and the checked IP address information is transmitted to the user terminal 300 (S309) to be notified. Then, the log information is stored (S313), and then the standby mode is switched to a standby mode in which a new event input is waited (S302).

【0051】 Then, the user terminal 300 receiving the IP address information

may access the desired embedded terminal 110 using the corresponding IP address and use the service.

【0052】When the received event is an event for initialization of the server table, the terminal mapping table of the DB 440 is initialized (S311), log information thereof is stored (S313), and a standby mode for waiting for a new event input is switched (S302).

【0053】Meanwhile, when the received event is not the same as the event of steps S305, S307, and S310, the received event is processed as other events (S312) and log information thereof is stored (S313). Then, the standby mode is switched to a standby mode in which a new event input is standby (S302).

【0054】At this time, the other event processing may be changed according to the function of the management server 400, and since it is not related to the present invention, a description thereof will be omitted.

【0055】As described above, according to an embodiment of the present invention, the embedded terminal whose Internet address is dynamically changed transmits an event for address change to the management server, and the management server provides the IP address of the embedded terminal 110 when the user terminal 300 intends to access the specific embedded terminal 110, so that the user terminal 300 can use the service regardless of the IP address change of the embedded terminal 110.

【0056】Although the embodiments of the present invention have been described above, the present invention is not limited thereto.It is not limited to the examples, and other various changes or modifications may be made.

【Effect of Invention】

【0057】Advantageous Effects As described above, an apparatus and a method for processing a dynamic Internet address change event according to the present invention add a management server for managing an IP address of an embedded terminal when the embedded terminal of an embedded system

has a dynamic IP address to enable a user terminal to receive an address of a changed embedded terminal, thereby increasing convenience of use and reducing a load of the embedded system by not directly managing the dynamic address of the embedded terminal in the embedded system.

【Claims】

【Claim 1】

Dynamic Host Configuration Protocol; The present invention relates to an apparatus for processing a dynamic internet protocol address (IP) address change of an embedded system which provides a service by applying DHCP.
An apparatus for processing a dynamic IP address change, which is connected to an embedded terminal of an embedded system to which a dynamic IP address is assigned by a DHCP through the Internet, registers and manages dynamic IP address information assigned to the embedded terminal, and changes and stores IP address information of a corresponding terminal when a change event for the dynamic IP address of the embedded terminal occurs.

【Claim 2】

The method according to claim 1, wherein:
The dynamic IP address change processing unit
The subscriber module providing the terminal of the service subscriber for to connecting to the terminal of the embedded system through the internet network with the IP address information of the embedded terminal
The embedded system administration module performing the administration of the addition in the embedded system or the deleted embedded terminal
The database storing the terminal mapping table the IP address information given to the terminal of the embedded system and
the IP address given to the terminal of the embedded system is changed, or embeddeda log module for storing event information including the addition or registration of a terminal
A dynamic IP address change processing apparatus including the IP address change processing unit.

【Claim 3】

The method according to claim 2, wherein:

The database may include a plurality of databases.

and storing information of a user who wants to subscribe to the embedded system and use a service.

【Claim 4】

The method according to claim 1, wherein:

the dynamic internet address change processing unit

and a web server module for managing a web environment enabling management and control through the Internet network.

【Claim 5】

Dynamic Host Configuration Protocol; An embedded terminal to which a dynamic IP address is allocated by applying DHCP and which has a dynamic IP address for providing an embedded service through the Internet; and

an embedded terminal which is connected to the embedded terminal through the Internet, registers and manages the dynamic IP address information assigned to the embedded terminal, and changes and stores the IP address information of the corresponding terminal when a change event for the dynamic IP address of the embedded terminal occursA dynamic IP address change processing device including a management server.

【Claim 6】

The method according to claim 5, wherein:

The embedded terminal,

The dynamic IP address change processing unit for transmitting the on/OFF of the power source, and the IP address change event about the IP address renewal according to the on/OFF of the internet connection with the management server.

【Claim 7】

Dynamic Host Configuration Protocol; The present invention relates to a dynamic IP address change processing method in a management server which processes a dynamic IP address change event of an embedded system which provides a service by applying DHCP.

The step of receiving the corresponding IP address change event information the event in which the IP address of the embedded terminal of the embedded system is changed is generated and

changing an IP address of a corresponding embedded terminal, which is already stored, into a new IP address included in the IP address change event by using embedded terminal information included in the received IP address change event and storing the new IP address

a dynamic IP address change processing method including

【Claim 8】

The method according to claim 7, wherein:

The change of the IP address of the embedded terminal

New IP addresses are assigned due to periodic IP address updates, or their embedded1. A method of processing a dynamic IP address change event, the method comprising: receiving a new IP address allocation due to power on/off of a terminal and on/off of Internet access.

【Claim 9】

The method according to claim 7, wherein:

The step of receiving the user connection event from the user terminal in which the management server connects with the embedded terminal and searching for an IP address of a corresponding embedded terminal according to embedded terminal information included in the user connection event, and transmitting the searched IP address information to the user terminal

A method for processing a dynamic IP address change event including

【Claim 10】

The method according to claim 7, wherein:

The step of receiving the management server is the initialization event from the embedded terminal and

The method for processing a dynamic IP address change event, further comprising initializing a terminal mapping table according to the initialization event.

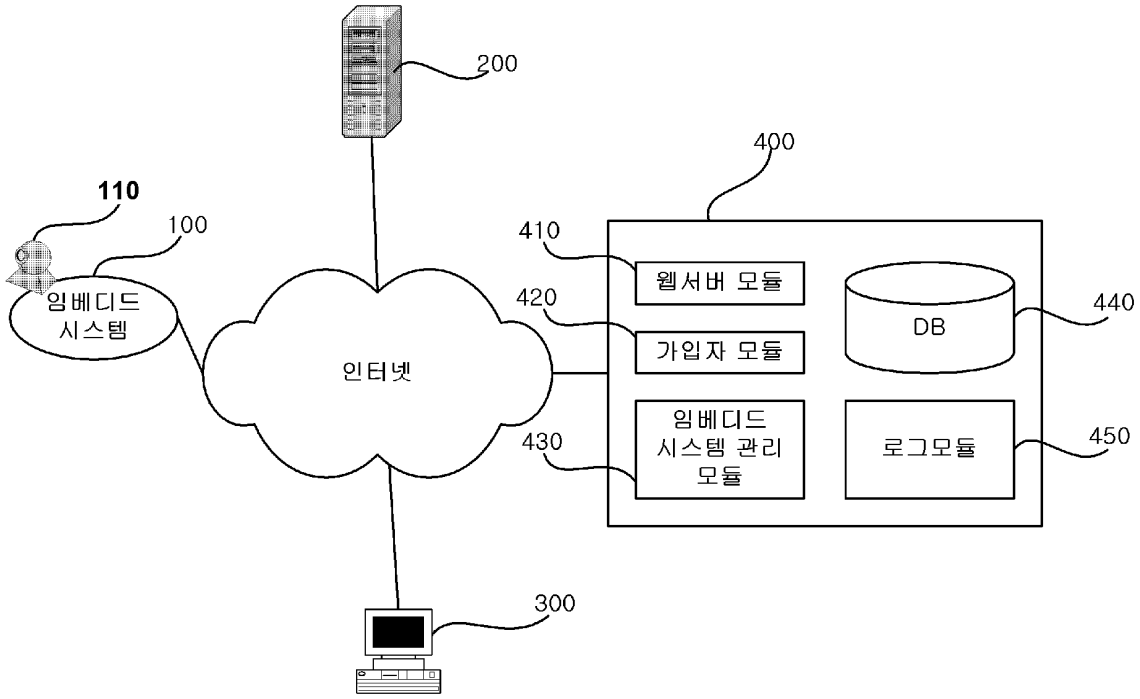
【Claim 11】

The method according to any one of claims 7 to 10,

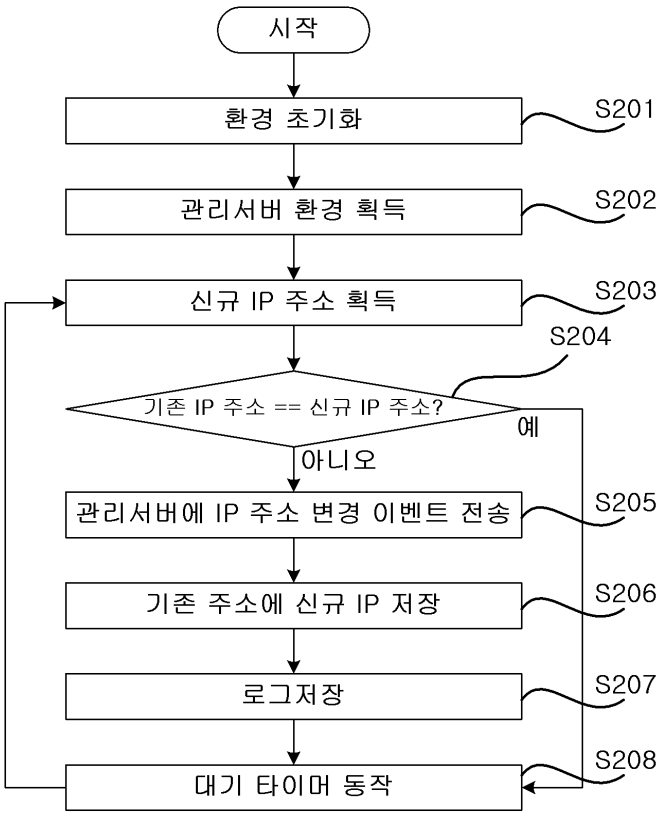
The dynamic IP address change event processing method further includes storing, by the management server, log information according to an input and processing result for the received event.

【Drawings】

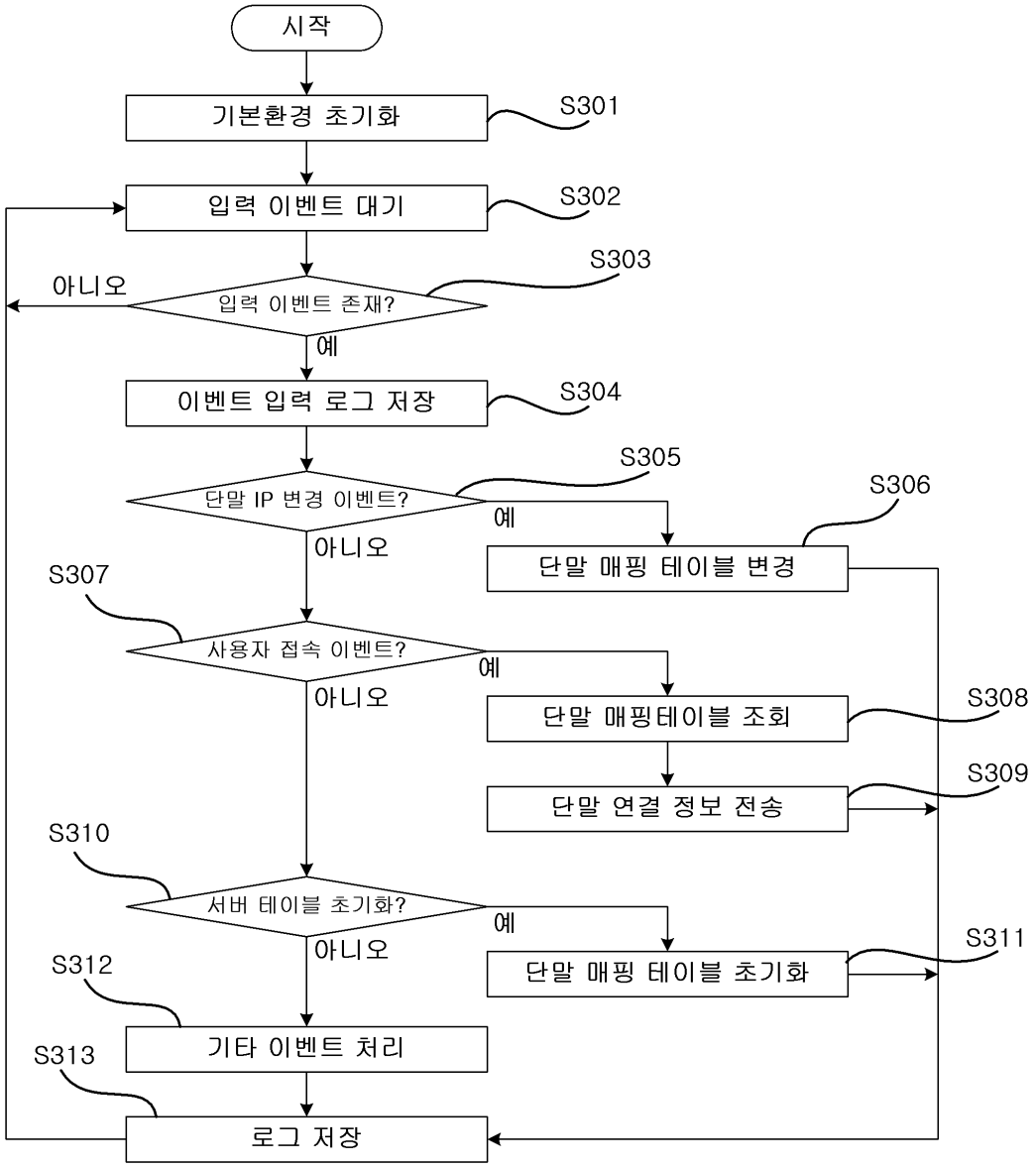
【Drawing 1】



【Drawing 2】


시작
환경 초기화
S201
관리서버 환경 획득
S202
신규 IP 주소 획득
S203
S204
기존 IP 주소 == 신규 IP 주소?
예
아니오
관리서버에 IP 주소 변경 이벤트 전송
S205
기존 주소에 신규 IP 저장
S206
로그저장
S207
대기 타이머 동작
S208

【Drawing 3】


시작
기본환경 초기화
S301
입력 이벤트 대기
S302
S303
아니오
입력 이벤트 존재?
예
이벤트 입력 로그 저장
S304
S305
단말 IP 변경 이벤트?
예
S306
아니오
단말 매핑 테이블 변경
S307
사용자 접속 이벤트?
예
아니오
단말 매핑테이블 조회
S308
단말 연결 정보 전송
S309
S310
서버 테이블 초기화?
예
아니오
S311
단말 매핑 테이블 초기화
S312
기타 이벤트 처리
S313
로그 저장