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(54) METHOD AND SYSTEM FOR ACCESSING LOCAL NETWORK BY MOBILE TERMINAL VIA HOME BASE STATION SYSTEM

VERFAHREN UND SYSTEM ZUM ZUGREIFEN AUF EIN LOKALES NETZWERK ÜBER EIN MOBILGERÄT UND EIN HEIMBASISSTATIONSSYSTEM

PROCÉDÉ ET SYSTÈME D'ACCÈS À UN RÉSEAU LOCAL PAR UN TERMINAL MOBILE PAR L'INTERMÉDIAIRE D'UN SYSTÈME DE STATION DE BASE DOMESTIQUE

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Description

Technical Field

[0001] The present invention relates to wireless communication network, and more particularly, to a method and system for accessing a local network by a mobile terminal via a home base station system.

Background of the Related Art

[0002] A home base station, as a small scale base station installed at home or in office area, is called a home NodeB (HNB) in the 3rd generation (3G) mobile communication system and a home eNodeB (HeNB) in a long term evolution (LTE) system, and can be simplified as H(e)NB for both. In order to reduce the effect to a core network (CN), a home base station gate way is introduced in the home base station system, which is called HNB GW in the 3G system and H(e)NB GW in the LTE system.

[0003] As shown in FIG. 1, the HNB and the HNB GW in the 3G system are network elements in a access network, while serving GPRS (general packet radio service) supporting node (SGSN) and gateway GPRS supporting node (GGSN) are network elements in the CN. The interface between the wireless access network and the core network inherits from the interface between a macro base station and the core network and is also an Iu interface whose physical connection exists in the home base station gate way. From a logical point of view, an application layer protocol of the Iu interface is that a radio access network application part (RANAP) might be distributed in the home base station or the home base station gate way or both, and control messages between the SGSN and the GGSN that are the network elements in the core network use a GPRS tunneling protocol-control (GTP-C) signaling.

[0004] As shown in FIG. 2, the HeNB and the HeNB GW in the LTE system are network elements in the access network, while a mobility management entity (MME), a serving GW and a packet data network gateway (PDN-GW) are network elements in the core network. The interface between the wireless access network and the core network inherits from the interface between the macro base station and the core network and is also a S1 interface whose physical connection exists in the home base station gate way. From a logical point of view, the S1 interface application layer protocol is S1-AP (S1 application part) that might be distributed in the home base station or the home base station gate way or both, and control messages between the MME and the Serving GW, as well as between the Serving GW and the PDN-GW that are the network elements in the core network use the GTP-C signaling.

[0005] For normal mobile services, a mobile terminal (user equipment, UE) initiates a service process via the home base station, and this process has a little distinction from a service process via the macro base station. As shown in FIG. 1, in the 3G system, the procedure for the mobile terminal initiating a data service comprises: after the UE accesses the SGSN, the UE sends a packet data protocol (PDP) context activation request to the SGSN, and the request carries an access point name (APN) of the mobile terminal, that is because for different access points the SGSN might select different GGSN to access. The SGSN acquires address information of the corresponding GGSN node from a database or a server according to the acquired APN of the mobile terminal, and sends a context setup request to the corresponding GGSN; and the GGSN returns a context setup response, then the SGSN returns a PDP context activation acknowledgement to the UE to set up a route between the MS and the GGSN, so as to transmit packet data.

[0006] The home base station is a part of a public land mobile network (PLMN), and it can provide general mobile services for the mobile terminal user; meanwhile, the home base station is a part of the home internal network, so it also should provide the service of accessing the home network for the mobile terminal. Since the home base station already connects to the Internet, for pure surfing service, there is no need to access the Internet via the PLMN core network, and the mobile terminal can directly access the Internet via the home base station completely. Based on the above demands, the 3rd Generation Partnership Project (3GPP) proposed local IP access to provide a method for accessing the home network and directly accessing the services in the Internet via the home base station for the mobile terminal user.

Document D1, MITSUBISHI ELECTRIC: "Addressing Options for S1 inter-HeNB Handovers",3GPP DRAFT; R3-090767, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE, no. Seoul, Korea; 20090318, 18 March 2009 (2009-03-18), XP050341153, describes a home base station subsystem and a home NB gateway, whereby communication with the home subsystem takes place via the HeNB gateway.

[0007] According to the requirements of 3GPP, for all the mobile terminal users that are allowed to access the home base station, the local IP function can be used (on the premise that an operator agrees), that is because the implementation scheme has to not change functions of the mobile terminal users. In one implementation, i.e., when the home base station integrates a part of GGSN functions to work as a local GGSN, for a special APN, the mobile terminal indicates to use a local network access function by selecting the APN. According to the existing method, when the SGSN receives the APN including indicating the local access, the SGSN needs to acquire the address of the local GGSN according to the APN and initiate a bearer setup procedure to the local GGSN. Since the home base station is a user equipment, its address information is not included in a network planning range by the operator or its maintenance cost is extremely high. In this condition, the network elements

in the core network cannot directly acquire the IP address of the home base station just according to the APN so as to initiate the bearer setup procedure to the local GGSN bond to the home base station, which is also the problem existing in the LTE home base station system so that the mobile terminal cannot access the local network via the home base station.

Content of the Invention

[0008] The present invention provides a method and system for accessing a local network by a mobile terminal via a home base station system, and in the condition that GGSN functions are integrated in the home base station, the mobile terminal can access the local network via the home base station as defined in independent claims 1 and 8.

[0009] In order to solve the above-mentioned problem, the present invention provides a method for accessing a local network by a mobile terminal via a home base station system, and the method comprises: a home base station subsystem, in which the mobile terminal is located, sending an identification of a local gateway module in the home base station subsystem to a core network management network element, and the core network management network element determining that the mobile terminal needs to access the local network, and then setting up a GPRS tunneling control bearer with said home base station subsystem according to the identification, so that the mobile terminal is able to access the local network via the home base station subsystem.

[0010] The above-mentioned method might also have the following feature:

in a 3rd generation mobile communication system, the home base station subsystem comprises a home base station, the local gateway module is a local GGSN bond to the home base station, and said core network management network element is a SGSN;

the step of the home base station subsystem, in which the mobile terminal is located, sending the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after said mobile terminal sets up a radio resource control connection with the home base station, said home base station sending an Iu interface message to the SGSN, and carrying the identification of the local GGSN in the message;

the step of said core network management network element setting up a GPRS tunneling control bearer with the home base station subsystem according to the identification comprises: after said SGSN acquires the identification of the local GGSN, said SGSN initiating and setting up the GPRS tunneling control bearer to the local GGSN.

[0011] The above-mentioned method might also have the following feature:

in a long term evolution system, the home base station subsystem comprises a home base station, the local gateway module is a local packet data network gateway bond to the home base station, and said core network management network element is a MME;

the step of the home base station subsystem, in which the mobile terminal is located, sending the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after said mobile terminal sets up a radio resource control connection with the home base station, said home base station sending an S1 interface message to the MME, and carrying the identification of the local packet data network gateway in the message;

the step of said core network management network element setting up a GPRS tunneling control bearer with the home base station subsystem according to the identification comprises: after said MME acquires the identification of the local packet data network gateway, the MME initiating and setting up the GPRS tunneling control bearer to the local packet data network gateway.

[0012] The above-mentioned method might also have the following feature:

in a long term evolution system, the home base station subsystem comprises a home base station and a home base station gateway, said local gateway module is the home base station gateway connecting to the home base station, and said core network management network element is a MME;

said method further comprises: in the procedure of said home base station initiating a registration procedure to the home base station gateway, notifying the home base station gateway of an IP address used to set up the GPRS tunneling control bearer by the home base station gateway;

the step of the home base station subsystem, in which the mobile terminal is located, sending the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after the mobile terminal sets up a radio resource control connection with the home base station, said home base station gateway sending an S1 interface message to the MME, and carrying the IP address used to set up the GPRS tunneling control bearer by the home base station gateway in the message.

[0013] The above-mentioned method might also have the following feature:

after said home base station subsystem sends the identification of the local gateway module to the core network management network element, said method further comprises: said mobile terminal initiating a packet data protocol context request message to the core network management network element, and carrying an access point representing a local access in the message;

the step of said core network management network element determining that the mobile terminal needs to access the local network comprises: said core network management network element determining that the mobile terminal needs to access the local network according to said access point.

[0014] The above-mentioned method might also have the following feature:

said Iu interface message is an initial mobile terminal message, an uplink direct transmission message, a relocation request acknowledgement message or a relocation fulfillment message.

[0015] The above-mentioned method might also have the following feature:

said S1 interface message is an initial mobile terminal message, an uplink non-access stratum transmission message, a switch request acknowledgement message or a switch notification message.

[0016] In order to solve the above-mentioned technical problem, the present invention also provides a system for accessing a local network by a mobile terminal via a home base station system, and the system comprises a home base station subsystem in which the mobile terminal is located and a core network management network element; wherein, said home base station subsystem subsystem is configured to: send an identification of a local gateway module in the home base station subsystem to the core network management network element; and said core network management network element is configured to: when determining that the mobile terminal needs to access the local network, set up a GPRS tunneling control bearer with said home base station subsystem according to said identification, so that the mobile terminal is able to access the local network via the home base station subsystem.

[0017] The above-mentioned system might also have the following feature:

In a 3rd generation mobile communication system, the home base station subsystem comprises a home base station, the local gateway module is a local GGSN bond to the home base station, and said core network management network element is a SGSN;

said home base station is configured to: after setting up a radio resource control connection with the mobile terminal, send an Iu interface message to the SGSN, and carry the identification of the local GGSN in the message;

said SGSN is configured to: after acquiring the identification of the local GGSN, initiate and set up the GPRS tunneling control bearer to the local GGSN.

[0018] The above-mentioned system might also have the following feature:

in a long term evolution system, the home base station subsystem comprises a home base station, the local gateway module is a local packet data network gateway bond to the home base station, and said core network management network element is a MME;

said home base station is configured to: after setting up a radio resource control connection with the mobile terminal, send an S1 interface message to the MME, and carry the identification of the local packet data network gateway in the message;

said MME is configured to: after acquiring the identification of the local packet data network gateway, initiate and set up a GPRS tunneling control bearer to the local packet data network gateway.

[0019] The above-mentioned system might also have the following feature:

in a long term evolution system, the home base station subsystem comprises a home base station and a home base station gateway, said local gateway module is the home base station gateway connecting to the home base station, and said core network management network element is a MME;

said home base station is configured to: in the procedure of initiating a registration procedure to the home base station gateway, notify an IP address used to set up the GPRS tunneling control bearer by the home base station to the home base station gateway;;

said home base station gateway is configured to: after the mobile terminal sets up a radio resource control connection with the home base station, send an S1 interface message to the MME, and carry the IP address used to set up the GPRS channel control bearer by the home base station gateway in the message;

said MME is configured to: after acquiring the IP address used to set up the GPRS tunneling control bearer by the home base station gateway, initiate and set up the GPRS tunneling control bearer to the home base station gateway.

[0020] The above-mentioned system might also have the following feature:

the core network management network element is further configured to: receive a packet data protocol context request message sent by the mobile terminal, wherein the message carries an access point representing a local access, and determine that the mobile terminal needs to access the local network via the access point.

[0021] With the present invention, without manual configuration, the core network can acquire the address of the local GGSN/PDN GW corresponding to the home base station, thereby reducing the complexity of the network configuration; moreover, the present invention allows to dynamically configure the address of the local GGSN/PDN GW for the home base station, thus it is more suitable for massive home base station devices whose locations and operating time cannot be strictly controlled.

Brief Description of Drawings

[0022]

FIG. 1 is an architectural diagram of a home base station network in a 3G system;

FIG. 2 is an architectural diagram of a home base station network in a LTE system;

FIG. 3 is a flow chart of a mobile terminal initiating data in a 3G system;

FIG. 4 is a schematic diagram of a mobile terminal performing local IP access in a 3G system in accordance with a first embodiment;

FIG. 5 is a flow chart of a method for accessing a local network by the mobile terminal via a home base station in accordance with the first embodiment;

FIG. 6 is a schematic diagram of a mobile terminal performing local IP access in a LTE system in accordance with a second embodiment;

FIG. 7 is a flow chart of a method for accessing a local network by the mobile terminal via a home base station in accordance with the second embodiment; and

FIG. 8 is a flow chart of a method for accessing a local network by a mobile terminal via a home base station gateway in accordance with a third embodiment.

Preferred Embodiments of the Present Invention

[0023] A mobile terminal accesses a local network system via a home base station, and the local network system comprises a home base station subsystem in which the mobile terminal is located and a core network management network element;

[0024] The home base station subsystem is used to send an identification of a local gateway module in the home base station subsystem to the core network management network element;

[0025] The core network management network element is used to set up a GPRS tunneling control bearer with the home base station subsystem according to the identification, so that the mobile terminal is able to access the local network via the home base station subsystem.

The first embodiment

[0026] As shown in FIG. 4, in the 3G system, the home base station subsystem comprises a home base station, the local gateway module is a local GGSN bond to the home base station, and the core network management network element is a SGSN. The GTP-C channel is terminated at the home base station, thus it requires the home base station supports the GTP-C protocol while the home base station gateway may not support the GTP-C protocol. The local GGSN module contained in the home base station is used to implement all or a part of the GGSN network element functions, such as saving a PDP context, assigning an IP address to the UE and working as a gateway of a mobile network and an external data network.

[0027] As shown in FIG. 5, the method for accessing the local network by the mobile terminal via the home base station comprises the following steps:

Step 501, the UE initiates a radio resource control (RRC) connection setup request to the c.

Step 502, the home base station sends an initial UE message to the SGSN, where the message contains the identification of the local GGSN bond to the HNB.

[0028] The identification of the local GGSN might be the IP address, or other identification, such as a fully qualified domain name (FQDN), in which the IP address can be extracted.

[0029] Where there is a home base station gateway, in a practical process, the message sent by the home base station to the SGSN is forwarded to the SGSN via the home base station gateway, which is already known in the prior art.

[0030] In this step, the address of the local GGSN is

added by the home base station to the initial UE message, and in another condition, the address can also be added by the home base station gateway to the initial UE message; specifically: the home base station locally configures the address of the local GGSN, and the mobile terminal performs network address conversion when accessing the mobile network, and the home base station gateway takes the converted address as the local GGSN address and adds to the initial UE message.

[0031] Step 503, the UE initiates a PDP context activation request to the SGSN, where the request carries the APN representing the local access.

[0032] Step 504, the SGSN receives the PDP context activation request and determines that the UE needs to access the local network according to the APN, and then the SGSN initiates a bearer setup procedure to the HNB.

[0033] The above-mentioned "initiating the bearer setup procedure to the HNB" is practically initiating a bearer setup procedure (sending a context setup request) to the local GGSN bond to the HNB, and the target IP address is the address acquired in step 502 and this process uses the GTP-C protocol.

[0034] Step 505, the local GGSN bond to the HNB performs admission control to the mobile terminal user according to identification of the mobile terminal user, such as an international mobile subscriber identity (IMSI) or a mobile station international ISDN number (MSISDN); and if the access is allowed, a successful response is returned to the SGSN, otherwise, a failure response is returned.

[0035] This step is optional.

[0036] Step 506, the local GGSN bond to the HNB assigns an IP address to the UE and sends the IP address to the SGSN.

[0037] Step 507, the SGSN sends a PDP context activation accept message to the UE, the PDP context activation procedure ends, and the UE can access the local data network.

[0038] In step 502 of the above first embodiment, besides of the initial UE message, other Iu interface message or connection-oriented message, such as a uplink direct transmission message, a relocation request acknowledgement or a relocation fulfillment message, can be used.

The second embodiment

[0039] As shown in FIG. 6, in the LTE system, the home base station subsystem comprises a home base station, the local gateway module is the local PDN-GW bond to the home base station, and the core network management network element is a MME. The home base station contains a local PDN-GW (L-PGW) module to implement all or a part of the PDN-GW network element functions, such as saving a packet data connection context information, assigning an IP address to the UE and working as a gateway of a mobile network and a external data network; it might also include a part of Serving GW functions, such as buffering downlink data and triggering a paging and so on, as desired.

[0040] In this embodiment, the GTP-C channel is terminated at the home base station, and the method requires that the home base station supports the GTP-C protocol while the home base station gateway does not.

[0041] As shown in FIG. 7, the method for accessing a local network by the mobile terminal via the home base station comprises the following steps.

[0042] Step 701, the UE initiates a RRC connection setup request to the home base station.

[0043] Step 702, the home base station sends an initial UE message to the MME, and the message includes the identification of the local PDN-GW bond to the HeNB.

[0044] The identification of the PDN-GW might be an IP address or other identification, such as a FQDN, that can extract the IP address.

[0045] Where there is a home base station gateway, in practical process, sending the message by the home base station to the MME is forwarded via the home base station gateway, which is already known in the prior art.

[0046] In this step, the address of the local PDN-GW is added by the home base station to the initial UE message, and in another condition, the address can be added by the home base station gateway to the initial UE message; specifically: the home base station locally configures the address of the local PDN-GW, the mobile terminal performs network address conversion when accessing the mobile network, and the home base station gateway takes the converted address as the local PDN-GW address and adds the address to the initial UE message.

[0047] Step 703, the UE sends a PDN connection activation request to the MME, and the request carries the APN representing the local access.

[0048] Step 704, the MME receives the PDN connection activation request and determines that the UE needs to access the local network according to the APN, and the MME initiates a bearer setup procedure to the HeNB.

[0049] The above-mentioned "initiating a bearer setup procedure to the HeNB" is practically initiating a bearer setup procedure to the local PDN-GW bond with the HeNB, and the target IP address is the address acquired in step 702 and this process uses the GTP-C protocol.

[0050] Step 705, the local PDN-GW bond to the HeNB performs admission control to the mobile terminal user according to the identification of the mobile terminal user, such as an IMSI or an MSISDN; if the access is allowed, a successful response is returned to the MME, otherwise, a failure response is returned.

[0051] This step is optional.

[0052] Step 706, the local PDN-GW bond to the HeNB assigns an IP address to the UE and sends the IP address to the MME.

[0053] Step 707, the MME sends a PDN connection activation accept message to the UE, the PDN connection activation process ends, and the UE can access the local data network.

[0054] In step 702 of the above-mentioned second embodiment, besides of the initial UE message, other S1 interface messages or UE related messages, such as an uplink non-access stratum (NAS) transmission message, switch request acknowledgement or switch notification, and so on, can be used.

The third embodiment

[0055] In this application, the IP address of the home base station might be a private IP address, and the core network does not need to identify the routing of this address.

[0056] In this embodiment, in the LTE system, the home base station subsystem comprises a home base station and a home base station gateway, the local gateway module is the home base station gateway connecting to the home base station, and the core network management network element is a MME. The GTP-C channel is terminated at the home base station gateway, and the method requires that both the home base station and the home base station gateway support the GTP-C protocol. A stream control transmission protocol (SCTP) is used between the home base station and the home base station gateway for communication. This embodiment is typically applied in the case that the IP address used to set up a GTP channel by the home base station gateway is different from the SCTP connection address.

[0057] As shown in FIG. 8, the method for accessing the local network by the mobile terminal via the home base station comprises the following steps.

[0058] Step 801, the home base station initiates a registration procedure to the home base station gateway, and a registration request includes an IP address used to set up the GTP channel by the home base station gateway; and the home base station gateway returns a response message to the home base station.

[0059] In the LTE home base station system, the registration procedure multiplexes the S1 setup procedure.

[0060] Step 802, the UE initiates a RRC connection setup request to the home base station.

[0061] Step 803, the home base station sends an initial UE message to the home base station gateway to trigger the Iu connection setup procedure.

[0062] Step 804, the home base station gateway receives the initial UE message, and the home base station gateway includes the IP address used to set up the GTP channel into the initial UE message and sends it to the MME.

[0063] Step 805, the UE initiates a PDN connection activation request to the MME, and the request carries the APN representing the local access.

[0064] Step 806, the MME receives the PDN connection activation request and determines that the UE needs to access the local network according to the APN.

[0065] Step 807, the MME sends a bearer setup request message to the home base station gateway; the message type is GTP-C, and the target address is the IP address used to set up the GTP channel by the home base station gateway, that is, the IP address received from the registration message of the home base station in step 801.

[0066] Step 808, the home base station gateway sends a bearer setup request to the home base station.

[0067] Step 809, the local GGSN bond to the home base station performs admission control to the mobile terminal user according to the identification of the mobile terminal user, such as an IMSI or an MSISDN; if the access is allowed, it performs the bearer setup proced, otherwise, a failure response is returned.

[0068] This step is optional.

[0069] Step 810, the HeNB performs the bearer setup procedure, such as functions that PDN-GW needs to perform, such as storing necessary information, allocating resource, assigning the IP address to the UE; and sends the GTP-C bearer setup response message to the MME.

[0070] Step 811, the HeNB GW receives the bearer setup response message, and forwards the message to the MME.

[0071] In the subsequent procedure, all GTP-C messages between the MME and the home base station are transmitted via two sections of GTP signaling which are the MME-HeNB GW and the HeNB GW-HeNB, and the procedure is not re-described here.

[0072] Step 812, the SGSN sends a PDP context activation accept message to the UE, the PDP context activation procedure ends, and the UE can access the local data network.

[0073] In the application scenarios of the above-mentioned third embodiment, if the IP address used to set up the GTP channel by the home base station gateway is the same as the address of the SCTP, there is no need to notify the IP address used to set up the GTP channel by the home base station gateway to the MME.

[0074] In the three above-mentioned embodiments, besides of the described method that the mobile terminal makes the core network management network element acquire that the mobile terminal needs to access the local network, by notifying the core network management network element of "access point representing the local access", other methods can be used to make the core network management network element know that the mobile terminal needs to access the local network, thus initiating and setting up a GPRS tunneling control bearer to the local gateway module, which are not re-described here.

[0075] Of course, the present invention can also have many other embodiments. For those skilled in the art, it can be understood that there may be a variety of modifications and variations according to the present invention without departing from the scope of the present invention as defined in the appended claims.

Industrial Applicability

[0076] With the present invention, without manual configuration, the core network can acquire the address of

the local GGSN/PDN GW corresponding to the home base station, thereby reducing the complexity of the network configuration; moreover, the present invention allows to dynamically configure the address of the local GGSN/PDN GW for the home base station, thus it is more suitable for massive home base station devices whose locations and operating time cannot be strictly controlled.

Claims

1. A method for accessing a home network to connect to the Internet by a mobile terminal via a home base station system, comprising:

   sending, by a home base station subsystem, in which the mobile terminal is located through an initiation process, wherein the home base station subsystem comprises a home base station and a local gateway module, which is a local general packet radio service, GPRS, supporting node, L-GGSN, or a local packet data network gateway, L-PGW, bond to the home base station, an identification of the local gateway module in the home base station subsystem to a core network management network element, wherein the identification of the local gateway module is an IP address or other identification from which an IP address is extracted; and

   determining, by the core network management network element, that the mobile terminal needs to access the home network to connect to the Internet, and then setting up a GPRS tunneling control bearer with said home base station subsystem according to the identification, so that the mobile terminal is able to access the home network to connect to the Internet via the home base station subsystem.

2. The method of claim 1, wherein,
   in a 3rd generation mobile communication system,
   the local gateway module is a local gateway GPRS supporting node bond to the home base station, and said core network management network element is a serving GPRS supporting node;
   the step of sending, by the home base station subsystem, in which the mobile terminal is located,
   the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after said mobile terminal sets up a radio resource control connection with the home base station, sending, by said home base station,
   an Iu interface message to the serving GPRS supporting node, and carrying the identification of the local gateway GPRS supporting node in the message;
   the step of setting up, by said core network management network element, a GPRS tunneling control bearer with the home base station subsystem according to the identification comprises: after said serving GPRS supporting node acquires the identification of the local gateway GPRS supporting node, initiating and setting up, by said serving GPRS supporting node, the GPRS tunneling control bearer to the local gateway GPRS supporting node.

3. The method of claim 1, wherein,
   in a long term evolution system,
   the local gateway module is a local packet data network gateway bond to the home base station, and said core network management network element is a mobility management entity;
   the step of sending, by the home base station subsystem, in which the mobile terminal is located,
   the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after said mobile terminal sets up a radio resource control connection with the home base station, sending, by said home base station,
   an S1 interface message to the mobility management entity, and carrying the identification of the local packet data network gateway in the message;
   the step of setting up, by said core network management network element,
   a GPRS tunneling control bearer with the home base station subsystem according to the identification comprises: after said mobility management entity acquires the identification of the local packet data network gateway, initiating and setting up, by the mobility management entity, the GPRS tunneling control bearer to the local packet data network gateway.

4. The method of claim 1, wherein,
   in a long term evolution system, the home base station subsystem comprises a home base station gateway, said local gateway module is the home base station gateway connecting to the home base station, and said core network management network element is a mobility management entity;
   said method further comprises: in a procedure of said home base station initiating a registration procedure to the home base station gateway, notifying the home base station gateway of an IP address used to set up the GPRS tunneling control bearer by the home base station gateway;
   the step of sending, by the home base station subsystem, in which the mobile terminal is located,
   the identification of the local gateway module in the home base station subsystem to the core network management network element comprises: after the mobile terminal sets up a radio resource control connection with the home base station, sending, by said home base station gateway,
   an S1 interface message to the mobility manage-

ment entity, and carrying the IP address used to set up the GPRS tunneling control bearer by the home base station gateway in the message.

5. The method of claim 1, 2, 3, or 4, wherein,
after said home base station subsystem sends the identification of the local gateway module to the core network management network element, said method further comprises:

initiating, by said mobile terminal, a packet data protocol context request message to the core network management network element, and carrying an access point representing a local access in the message;
the step of determining, by said core network management network element,
that the mobile terminal needs to access the local network comprises: determining, by said core network management network element, that the mobile terminal needs to access the local network according to said access point.

6. The method of claim 2, wherein,
said Iu interface message is an initial mobile terminal message, an uplink direct transmission message, a relocation request acknowledgement message or a relocation fulfillment message.

7. The method of claim 3 or 4, wherein,
said S1 interface message is an initial mobile terminal message, an uplink non-access stratum transmission message, a switch request acknowledgement message or a switch notification message.

8. A system for accessing a home network to connect to the Internet by a mobile terminal via a home base station system, comprising a home base station subsystem in which the mobile terminal is located through an initiation process and a core network management network element; wherein the home base station subsystem comprises a home base station and a local gateway module, which is a local general packet radio service, GPRS, supporting node, L-GGSN, or a local packet data network gateway, L-PGW, bond to the home base station;
wherein,
said home base station subsystem is configured to: send an identification of the local gateway module in the home base station subsystem to the core network management network element; wherein the identification of the local gateway module is an IP address or other identification from which an IP address is extracted; and
said core network management network element is configured to: when determining that the mobile terminal needs to access the local network to connect to the Internet, set up a general packet radio service, GPRS, tunneling control bearer with said home base station subsystem according to said identification, so that the mobile terminal is able to access the home network via the home base station subsystem.

9. The system of claim 8, wherein,
in a 3rd generation mobile communication system, the local gateway module is a local gateway GPRS supporting node bond to the home base station, and said core network management network element is a serving GPRS supporting node;
said home base station is configured to: after setting up a radio resource control connection with the mobile terminal, send an Iu interface message to the serving GPRS supporting node, and carry the identification of the local gateway GPRS supporting node in the message;
said serving GPRS supporting node is configured to: after acquiring the identification of the local gateway GPRS supporting node, initiate and set up the GPRS tunneling control bearer to the local gateway GPRS supporting node.

10. The system of claim 8, wherein,
in a long term evolution system, the local gateway module is a local packet data network gateway bond to the home base station, and said core network management network element is a mobility management entity;
said home base station is configured to: after setting up a radio resource control connection with the mobile terminal, send an S1 interface message to the mobility management entity, and carry the identification of the local packet data network gateway in the message;
said mobility management entity is configured to: after acquiring the identification of the local packet data network gateway, initiate and set up a GPRS tunneling control bearer to the local packet data network gateway.

11. The system of claim 8, wherein,
in a long term evolution system, the home base station subsystem comprises a home base station gateway, said local gateway module is the home base station gateway connecting to the home base station, and said core network management network element is a mobility management entity;
said home base station is configured to: in a procedure of initiating a registration procedure to the home base station gateway, notify an IP address used to set up the GPRS tunneling control bearer by the home base station to the home base station gateway;
said home base station gateway is configured to: after the mobile terminal sets up a radio resource control connection with the home base station, send an S1 interface message to the mobility manage-

ment entity, and carry the IP address used to set up the GPRS channel control bearer by the home base station gateway in the message;
said mobility management entity is configured to: after acquiring the IP address used to set up the GPRS tunneling control bearer by the home base station gateway, initiate and set up the GPRS tunneling control bearer to the home base station gateway.

12. The system of claim 8, 9, 10 or 11, wherein,
the core network management network element is further configured to: receive a packet data protocol context request message sent by the mobile terminal, wherein the message carries an access point representing a local access, and determine that the mobile terminal needs to access the local network via the access point.

Patentansprüche

1. Verfahren zum Zugreifen auf ein Heimnetz zur Verbindung mit dem Internet durch ein mobiles Endgerät über ein Heimbasisstationssystem, das umfasst, dass:

durch ein Heimbasisstationssubsystem, in dem das mobile Endgerät über einen Initiierungsprozess lokalisiert wird, wobei das Heimbasisstationssubsystem eine Heimbasisstation und ein lokales Gateway-Modul umfasst, welches ein lokaler General Packet Radio Service-, GPRS-, Unterstützungsknoten, L-GGSN, oder ein lokales Paketdatennetz-Gateway, L-PGW, ist und an die Heimbasisstation gebunden ist, eine Identifikation des lokalen Gateway-Moduls in dem Heimbasisstationssubsystem an ein Kernnetzmanagementnetzelement gesendet wird, wobei die Identifikation des lokalen Gateway-Moduls eine IP-Adresse oder eine andere Identifikation, aus der eine IP-Adresse extrahiert wird, ist; und
durch das Kernnetzmanagementnetzelement ermittelt wird, dass das mobile Endgerät für eine Verbindung mit dem Internet auf das Heimnetz zugreifen muss, und dann ein GPRS-Tunneling-Steuerträger mit dem Heimbasisstationssubsystem gemäß der Identifikation aufgebaut wird, so dass das mobile Endgerät für eine Verbindung mit dem Internet über das Heimbasisstationssubsystem auf das Heimnetz zugreifen kann.

2. Verfahren nach Anspruch 1, wobei
in einem Mobilkommunikationssystem der dritten Generation das lokale Gateway-Modul ein lokaler Gateway-GPRS-Unterstützungsknoten ist, der an die Heimbasisstation gebunden ist, und das Kernnetzmanagementnetzelement ein Serving-GPRS-Unterstützungsknoten ist;
der Schritt, dass durch das Heimbasisstationssubsystem, in dem das mobile Endgerät lokalisiert wird, die Identifikation des lokalen Gateway-Moduls in dem Heimbasisstationssubsystem an das Kernnetzmanagementnetzelement gesendet wird, umfasst, dass: nachdem das mobile Endgerät eine Radio Resource Control-Verbindung mit der Heimbasisstation aufgebaut hat, durch die Heimbasisstation eine lu-Schnittstellennachricht an den Serving-GPRS-Unterstützungsknoten gesendet wird und die Identifikation des lokalen Gateway-GPRS-Unterstützungsknotens in der Nachricht mitgeführt wird;
der Schritt, dass durch das Kernnetzmanagementnetzelement ein GPRS-Tunneling-Steuerträger mit dem Heimbasisstationssubsystem gemäß der Identifikation aufgebaut wird, umfasst, dass: nachdem der Serving-GPRS-Unterstützungsknoten die Identifikation des lokalen Gateway-GPRS-Unterstützungsknotens erlangt hat, durch den Serving-GPRS-Unterstützungsknoten der GPRS-Tunneling-Steuerträger hinsichtlich des lokalen Gateway-GPRS-Unterstützungsknotens initiiert und aufgebaut wird.

3. Verfahren nach Anspruch 1, wobei
in einem Long Term Evolution-System das lokale Gateway-Modul ein lokales Paketdatennetz-Gateway ist, das an die Heimbasisstation gebunden ist, und das Kernnetzmanagementnetzelement eine Mobilitätsmanagementeinheit ist;
der Schritt, dass durch das Heimbasisstationssubsystem, in dem das mobile Endgerät lokalisiert wird, die Identifikation des lokalen Gateway-Moduls in dem Heimbasisstationssubsystem an das Kernnetzmanagementnetzelement gesendet wird, umfasst, dass: nachdem das mobile Endgerät eine Radio Resource Control-Verbindung mit der Heimbasisstation aufgebaut hat, durch die Heimbasisstation eine S1-Schnittstellennachricht an die Mobilitätsmanagementeinheit gesendet wird und die Identifikation des lokalen Paketdatennetz-Gateways in der Nachricht mitgeführt wird;
der Schritt, dass durch das Kernnetzmanagementnetzelement ein GPRS-Tunneling-Steuerträger mit dem Heimbasisstationssubsystem gemäß der Identifikation aufgebaut wird, umfasst, dass: nachdem die Mobilitätsmanagementeinheit die Identifikation des lokalen Paketdatennetz-Gateways erlangt hat, durch die Mobilitätsmanagementeinheit der GPRS-Tunneling-Steuerträger hinsichtlich des lokalen Paketdatennetz-Gateways initiiert und aufgebaut wird.

4. Verfahren nach Anspruch 1, wobei
in einem Long Term Evolution-System das Heimbasisstationssubsystem ein Heimbasisstations-Gateway umfasst, wobei das lokale Gateway-Modul das

Heimbasisstations-Gateway ist, das eine Verbindung mit der Heimbasisstation herstellt, und das Kernnetzmanagementnetzelement eine Mobilitätsmanagementeinheit ist;
wobei das Verfahren ferner umfasst, dass: in einer Prozedur, in der die Heimbasisstation eine Registrierungsprozedur hinsichtlich des Heimbasisstations-Gateways initiiert, das Heimbasisstations-Gateway hinsichtlich einer IP-Adresse benachrichtigt wird, die zum Aufbauen des GPRS-Tunneling-Steuerträgers durch das Heimbasisstations-Gateway verwendet wird;
der Schritt, dass durch das Heimbasisstationssubsystem, in dem das mobile Endgerät lokalisiert wird, die Identifikation des lokalen Gateway-Moduls in dem Heimbasisstationssubsystem an das Kernnetzmanagementnetzelement gesendet wird, umfasst, dass: nachdem das mobile Endgerät eine Radio Resource Control-Verbindung mit der Heimbasisstation aufgebaut hat, durch das Heimbasisstations-Gateway eine S1-Schnittstellennachricht an die Mobilitätsmanagementeinheit gesendet wird und die IP-Adresse, die zum Aufbauen des GPRS-Tunneling-Steuerträgers durch das Heimbasisstations-Gateway verwendet wird, in der Nachricht mitgeführt wird.

5. Verfahren nach Anspruch 1, 2, 3 oder 4, wobei
das Verfahren ferner umfasst, dass, nachdem das Heimbasisstationssubsystem die Identifikation des lokalen Gateway-Moduls an das Kernnetzmanagementnetzelement gesendet hat: durch das mobile Endgerät eine Paketdatenprotokoll-Kontextanforderungsnachricht für das Kernnetzmanagementnetzelement initiiert wird und ein Zugriffspunkt, der einen lokalen Zugriff darstellt, in der Nachricht mitgeführt wird;
der Schritt, dass durch das Kernnetzmanagementnetzelement ermittelt wird, dass das mobile Endgerät auf das lokale Netz zugreifen muss, umfasst, dass: durch das Kernnetzmanagementnetzelement ermittelt wird, dass das mobile Endgerät gemäß dem Zugriffspunkt auf das lokale Netz zugreifen muss.

6. Verfahren nach Anspruch 2, wobei
die lu-Schnittstellennachricht eine anfängliche Nachricht des mobilen Endgeräts, eine Uplink-Direktübertragungsnachricht, eine Verschiebungsanforderungsbestätigungsnachricht oder eine Verschiebungsausführungsnachricht ist.

7. Verfahren nach Anspruch 3 oder 4, wobei
die S1-Schnittstellennachricht eine anfängliche Nachricht des mobilen Endgeräts, eine Uplink Non-Access Stratum-Übertragungsnachricht, eine Vermittlungsanforderungsbestätigungsnachricht oder eine Vermittlungsbenachrichtigungsnachricht ist.

8. System zum Zugreifen auf ein Heimnetz zur Verbindung mit dem Internet durch ein mobiles Endgerät über ein Heimbasisstationssystem, umfassend ein Heimbasisstationssubsystem, in dem das mobile Endgerät über einen Initiierungsprozess lokalisiert wird, und ein Kernnetzmanagementnetzelement;
wobei das Heimbasisstationssubsystem eine Heimbasisstation und ein lokales Gateway-Modul umfasst, welches ein lokaler General Packet Radio Service-, GPRS-, Unterstützungsknoten, L-GGSN, oder ein lokales Paketdatennetz-Gateway, L-PGW, ist und an die Heimbasisstation gebunden ist, wobei
das Heimbasisstationssubsystem ausgestaltet ist, um: eine Identifikation des lokalen Gateway-Moduls in dem Heimbasisstationssubsystem an das Kernnetzmanagementnetzelement zu senden; wobei die Identifikation des lokalen Gateway-Moduls eine IP-Adresse oder eine andere Identifikation, aus der eine IP-Adresse extrahiert wird, ist; und
das Kernnetzmanagementnetzelement ausgestaltet ist, um: wenn ermittelt wird, dass das mobile Endgerät für eine Verbindung mit dem Internet auf das lokale Netz zugreifen muss, einen General Packet Radio Service-, GPRS-, Tunneling-Steuerträger mit dem Heimbasisstationssubsystem gemäß der Identifikation aufzubauen, so dass das mobile Endgerät über das Heimbasisstationssubsystem auf das Heimnetz zugreifen kann.

9. System nach Anspruch 8, wobei
in einem Mobilkommunikationssystem der dritten Generation das lokale Gateway-Modul ein lokaler Gateway-GPRS-Unterstützungsknoten ist, der an die Heimbasisstation gebunden ist, und das Kernnetzmanagementnetzelement ein Serving-GPRS-Unterstützungsknoten ist;
die Heimbasisstation ausgestaltet ist, um: nachdem eine Radio Resource Control-Verbindung mit dem mobilen Endgerät aufgebaut wurde, eine luSchnittstellennachricht an den Serving-GPRS-Unterstützungsknoten zu senden und die Identifikation des lokalen Gateway-GPRS-Unterstützungsknotens in der Nachricht mitzuführen;
der Serving-GPRS-Unterstützungsknoten ausgestaltet ist, um: nachdem die Identifikation des lokalen Gateway-GPRS-Unterstützungsknotens erlangt wurde, den GPRS-Tunneling-Steuerträger hinsichtlich des lokalen Gateway-GPRS-Unterstützungsknotens zu initiieren und aufzubauen.

10. System nach Anspruch 8, wobei
in einem Long Term Evolution-System das lokale Gateway-Modul ein lokales Paketdatennetz-Gateway ist, das an die Heimbasisstation gebunden ist, und das Kernnetzmanagementnetzelement eine Mobilitätsmanagementeinheit ist;
die Heimbasisstation ausgestaltet ist, um: nachdem eine Radio Resource Control-Verbindung mit dem

mobilen Endgerät aufgebaut wurde, eine S1-Schnittstellennachricht an die Mobilitätsmanagementeinheit zu senden und die Identifikation des lokalen Paketdatennetz-Gateways in der Nachricht mitzuführen;
die Mobilitätsmanagementeinheit ausgestaltet ist, um: nachdem die Identifikation des lokalen Paketdatennetz-Gateways erlangt wurde, einen GPRS-Tunneling-Steuerträger hinsichtlich des lokalen Paketdatennetz-Gateways zu initiieren und aufzubauen.

11. System nach Anspruch 8, wobei
in einem Long Term Evolution-System das Heimbasisstationssubsystem ein Heimbasisstations-Gateway umfasst, wobei das lokale Gateway-Modul das Heimbasisstations-Gateway ist, das eine Verbindung mit der Heimbasisstation herstellt, und das Kernnetzmanagementnetzelement eine Mobilitätsmanagementeinheit ist;
die Heimbasisstation ausgestaltet ist, um: in einer Prozedur des Initiierens einer Registrierungsprozedur hinsichtlich des Heimbasisstations-Gateways das Heimbasisstations-Gateway hinsichtlich einer IP-Adresse zu benachrichtigen, die zum Aufbauen des GPRS-Tunneling-Steuerträgers durch die Heimbasisstation verwendet wird;
das Heimbasisstations-Gateway ausgestaltet ist, um: nachdem das mobile Endgerät eine Radio Resource Control-Verbindung mit der Heimbasisstation aufgebaut hat, eine S1-Schnittstellennachricht an die Mobilitätsmanagementeinheit zu senden und die IP-Adresse, die zum Aufbauen des GPRS-Kanalsteuerträgers durch das Heimbasisstations-Gateway verwendet wird, in der Nachricht mitzuführen;
die Mobilitätsmanagementeinheit ausgestaltet ist, um: nachdem die IP-Adresse, die zum Aufbauen des GPRS-Tunneling-Steuerträgers durch das Heimbasisstations-Gateway verwendet wird, erlangt wurde, den GPRS-Tunneling-Steuerträger hinsichtlich des Heimbasisstations-Gateways zu initiieren und aufzubauen.

12. System nach Anspruch 8, 9, 10 oder 11, wobei das Kernnetzmanagementnetzelement ferner ausgestaltet ist, um: eine durch das mobile Endgerät gesendete Paketdatenprotokoll-Kontextanforderungsnachricht zu empfangen, wobei die Nachricht einen Zugriffspunkt mitführt, der einen lokalen Zugriff darstellt, und zu ermitteln, dass das mobile Endgerät über den Zugriffspunkt auf das lokale Netz zugreifen muss.

Revendications

1. Procédé d'accès à un réseau domestique pour se connecter à l'Internet par un terminal mobile par l'intermédiaire d'un système de station de base domestique, comprenant :

l'envoi, par un sous-système de station de base domestique, dans lequel le terminal mobile est localisé par l'intermédiaire d'un processus d'initiation, dans lequel le sous-système de station de base domestique comprend une station de base domestique et un module de passerelle locale, qui est un noeud de prise en charge de service radio en paquet général, GPRS, local, L-GGSN, ou une liaison de passerelle de réseau de données en paquet locale, L-PGW, à la station de base domestique, d'une identification du module de passerelle locale dans le sous-système de station de base domestique à un élément de réseau de gestion de réseau de coeur, dans lequel l'identification du module de passerelle locale est une adresse IP ou une autre identification de laquelle une adresse IP est extraite ; et
la détermination, par l'élément de réseau de gestion de réseau de coeur, que le terminal mobile doit accéder au réseau domestique pour se connecter à l'Internet, puis la configuration d'un support de commande de tunnellisation GPRS avec ledit sous-système de station de base domestique en fonction de l'identification, de sorte que le terminal mobile puisse accéder au réseau domestique pour se connecter à l'Internet par l'intermédiaire du sous-système de station de base domestique.

2. Procédé selon la revendication 1, dans lequel, dans un système de communication mobile de troisième génération, le module de passerelle locale est une liaison de noeud de prise en charge GPRS de passerelle locale à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est un noeud de prise en charge GPRS de desserte ;
l'étape de l'envoi, par le sous-système de station de base domestique, dans lequel se trouve le terminal mobile, de l'identification du module de passerelle locale dans le sous-système de station de base domestique à l'élément de réseau de gestion de réseau de coeur comprend : après la configuration, par ledit terminal mobile, d'une connexion de commande de ressources radio à la station de base domestique, l'envoi, par ladite station de base domestique, d'un message d'interface lu au noeud de prise en charge GPRS de desserte, et le transport de l'identification du noeud de prise en charge GPRS de passerelle locale dans le message ;
l'étape de la configuration, par ledit élément de réseau de gestion de réseau de coeur, d'un support de commande de tunnellisation GPRS avec le sous-système de station de base domestique en fonction

de l'identification comprend : après l'acquisition, par ledit noeud de prise en charge GPRS de desserte, de l'identification du noeud de prise en charge GPRS de passerelle locale, l'initiation et la configuration, par ledit noeud de prise en charge GPRS de desserte, du support de commande de tunnellisation GPRS au noeud de prise en charge GPRS de passerelle locale.

3. Procédé selon la revendication 1, dans lequel,
dans un système d'évolution à long terme (LTE), le module de passerelle locale est une liaison de passerelle de réseau de données en paquet locale à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est une entité de gestion de mobilité ;
l'étape de l'envoi, par le sous-système de station de base domestique, dans lequel se trouve le terminal mobile, de l'identification du module de passerelle locale dans le sous-système de station de base domestique à l'élément de réseau de gestion de réseau de coeur comprend : après la configuration, par ledit terminal mobile, d'une connexion de commande de ressources radio à la station de base domestique, l'envoi, par ladite station de base domestique, d'un message d'interface S1 à l'entité de gestion de mobilité, et le transport de l'identification de la passerelle de réseau de données en paquet locale dans le message ;
l'étape de la configuration, par ledit élément de réseau de gestion de réseau de coeur, d'un support de commande de tunnellisation GPRS avec le sous-système de station de base domestique en fonction de l'identification comprend : après l'acquisition, par ladite entité de gestion de mobilité, de l'identification de la passerelle de réseau de données en paquet locale, l'initiation et la configuration, par l'entité de gestion de mobilité, du support de commande de tunnellisation GPRS à la passerelle de réseau de données en paquet locale.

4. Procédé selon la revendication 1, dans lequel,
dans un système d'évolution à long terme (LTE), le sous-système de station de base domestique comprend une passerelle de station de base domestique, ledit module de passerelle locale est la passerelle de station de base domestique se connectant à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est une entité de gestion de mobilité ;
ledit procédé comprend en outre : dans une procédure de ladite station de base domestique, l'initiation d'une procédure d'inscription à la passerelle de station de base domestique, la notification à la passerelle de station de base domestique d'une adresse IP utilisée pour configurer le support de commande de tunnellisation GPRS par la passerelle de station de base domestique ;
l'étape de l'envoi, par le sous-système de station de base domestique, dans lequel se trouve le terminal mobile, de l'identification du module de passerelle locale dans le sous-système de station de base domestique à l'élément de réseau de gestion de réseau de coeur comprend : après la configuration, par le terminal mobile, d'une connexion de commande de ressources radio à la station de base domestique, l'envoi, par ladite station de base domestique, d'un message d'interface S1 à l'entité de gestion de mobilité, et le transport de l'adresse IP utilisée pour configurer le support de commande de tunnellisation GPRS par la passerelle de station de base domestique dans le message.

5. Procédé selon la revendication 1, 2, 3 ou 4, dans lequel,
après l'envoi, par ledit sous-système de station de base domestique, de l'identification du module de passerelle locale à l'élément de réseau de gestion de réseau de coeur, ledit procédé comprend en outre :

l'initiation, par ledit terminal mobile, d'un message de demande de contexte de protocole de données en paquet à l'élément de réseau de gestion de réseau de coeur, et le transport d'un point d'accès représentant un accès local dans le message ;
l'étape de la détermination, par ledit élément de réseau de gestion de réseau de coeur, que le terminal mobile doit accéder au réseau local comprend : la détermination, par ledit élément de réseau de gestion de réseau de coeur, que le terminal mobile doit accéder au réseau local en fonction dudit point d'accès.

6. Procédé selon la revendication 2, dans lequel
ledit message d'interface Iu est un message de terminal mobile initial, un message de transmission directe de liaison montante, un message d'accusé de réception de demande de relocalisation ou un message d'exécution de relocalisation.

7. Procédé selon la revendication 3 ou 4, dans lequel
ledit message d'interface S1 est un message de terminal mobile initial, un message de transmission de strate de non-accès de liaison montante, un message d'accusé de réception de demande de commutation ou un message de notification de commutation.

8. Système d'accès à un réseau domestique pour se connecter à l'Internet par un terminal mobile par l'intermédiaire d'un système de station de base domestique, comprenant un sous-système de station de base domestique dans lequel le terminal mobile est localisé par l'intermédiaire d'un processus d'initia-

tion et un élément de réseau de gestion de réseau de coeur ; dans lequel le sous-système de station de base domestique comprend une station de base domestique et un module de passerelle locale, qui est un noeud de prise en charge de service radio en paquet général, GPRS, local, L-GGSN, ou une liaison de passerelle de réseau de données en paquet locale, L-PGW, à la station de base domestique ; dans lequel

ledit sous-système de station de base domestique est configuré pour effectuer : l'envoi d'une identification du module de passerelle locale dans le sous-système de station de base domestique à l'élément de réseau de gestion de réseau de coeur ; dans lequel l'identification du module de passerelle locale est une adresse IP ou une autre identification de laquelle une adresse IP est extraite ; et

ledit élément de réseau de gestion de réseau de coeur est configuré pour effectuer : lors de la détermination que le terminal mobile doit accéder au réseau pour se connecter à l'Internet, la configuration d'un support de commande de tunnellisation GPRS avec ledit sous-système de station de base domestique en fonction de ladite identification, de sorte que le terminal mobile puisse accéder au réseau domestique par l'intermédiaire du sous-système de station de base domestique.

9. Système selon la revendication 8, dans lequel dans un système de communication mobile de troisième génération, le module de passerelle locale est une liaison de noeud de prise en charge GPRS de passerelle locale à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est un noeud de prise en charge GPRS de desserte ;

ladite station de base domestique est configurée pour effectuer : après la configuration d'une connexion de commande de ressources radio au terminal mobile, l'envoi d'un message d'interface Iu au noeud de prise en charge GPRS de desserte, et le transport de l'identification du noeud de prise en charge GPRS de passerelle locale dans le message ;

ledit noeud de prise en charge GPRS de desserte est configuré pour effectuer : après l'acquisition de l'identification du noeud de prise en charge GPRS de passerelle locale, l'initiation et la configuration du support de commande de tunnellisation GPRS au noeud de prise en charge GPRS de passerelle locale.

10. Système selon la revendication 8, dans lequel dans un système d'évolution à long terme (LTE), le module de passerelle locale est une liaison de passerelle de réseau de données en paquet locale à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est une entité de gestion de mobilité ;

ladite station de base domestique est configurée pour effectuer : après la configuration d'une connexion de commande de ressources radio au terminal mobile, l'envoi d'un message d'interface S1 à l'entité de gestion de mobilité, et le transport de l'identification de la passerelle de réseau de données en paquet locale dans le message ;

ladite entité de gestion de mobilité est configurée pour effectuer : après l'acquisition de l'identification de la passerelle de réseau de données en paquet locale, l'initiation et la configuration d'un support de commande de tunnellisation GPRS à la passerelle de réseau de données en paquet locale.

11. Système selon la revendication 8, dans lequel dans un système d'évolution à long terme (LTE), le sous-système de station de base domestique comprend une passerelle de station de base domestique, ledit module de passerelle locale est la passerelle de station de base domestique se connectant à la station de base domestique, et ledit élément de réseau de gestion de réseau de coeur est une entité de gestion de mobilité ;

ladite station de base domestique est configurée pour effectuer : dans une procédure d'initiation d'une procédure d'inscription à la passerelle de station de base domestique, la notification d'une adresse IP utilisée pour configurer le support de commande de tunnellisation GPRS par la station de base domestique à la passerelle de station de base domestique ;

ladite passerelle de station de base domestique est configurée pour effectuer : après la configuration, par le terminal mobile, d'une connexion de commande de ressources radio à la station de base domestique, l'envoi d'un message d'interface S1 à l'entité de gestion de mobilité, et le transport de l'adresse IP utilisée pour configurer le support de commande de canal GPRS par la passerelle de station de base domestique dans le message ;

ladite entité de gestion de mobilité est configurée pour effectuer : après l'acquisition de l'adresse IP utilisée pour configurer le support de commande de tunnellisation GPRS par la passerelle de station de base domestique, l'initiation et la configuration du support de commande de tunnellisation GPRS à la passerelle de station de base domestique.

12. Système selon la revendication 8, 9, 10 ou 11, dans lequel

l'élément de réseau de gestion de réseau de coeur est en outre configuré pour effectuer : la réception d'un message de demande de contexte de protocole de données en paquet envoyé par le terminal mobile, dans lequel le message transporte un point d'accès représentant un accès local, et la détermination que le terminal mobile doit accéder au réseau local par l'intermédiaire du point d'accès.

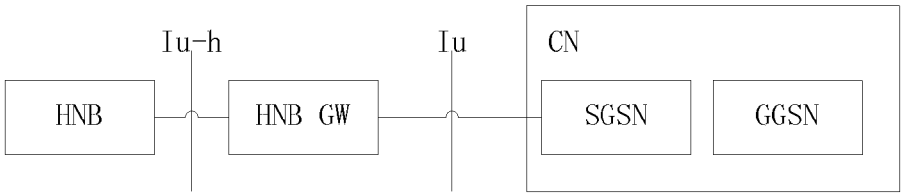

FIG. 1

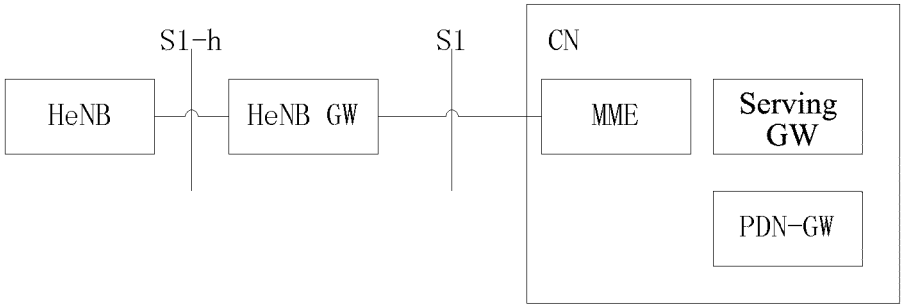

FIG. 2

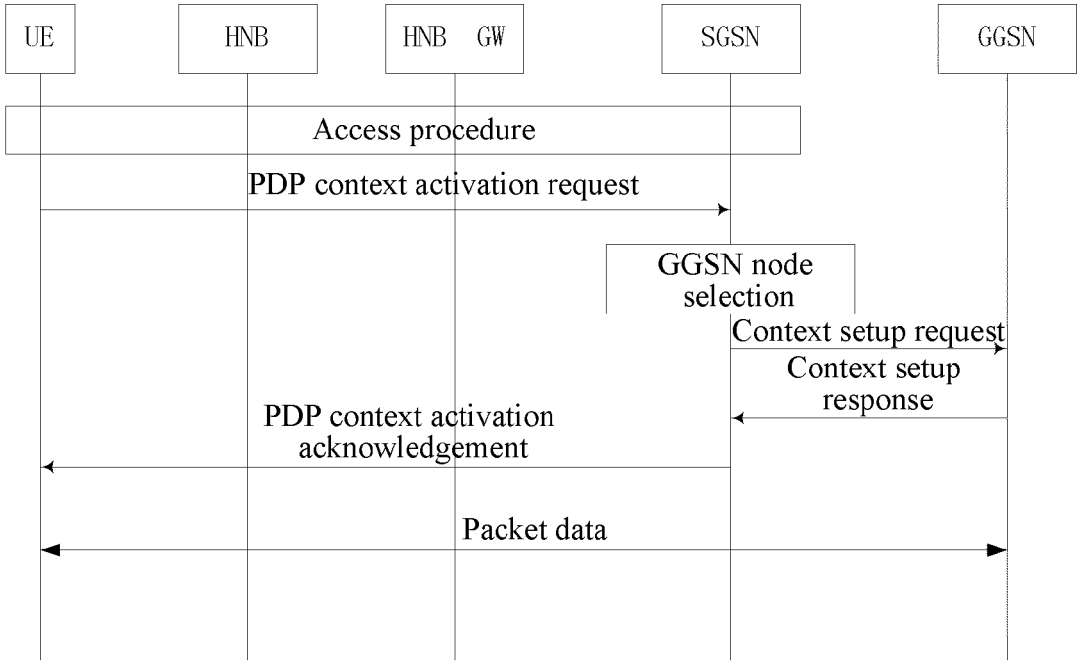

FIG. 3

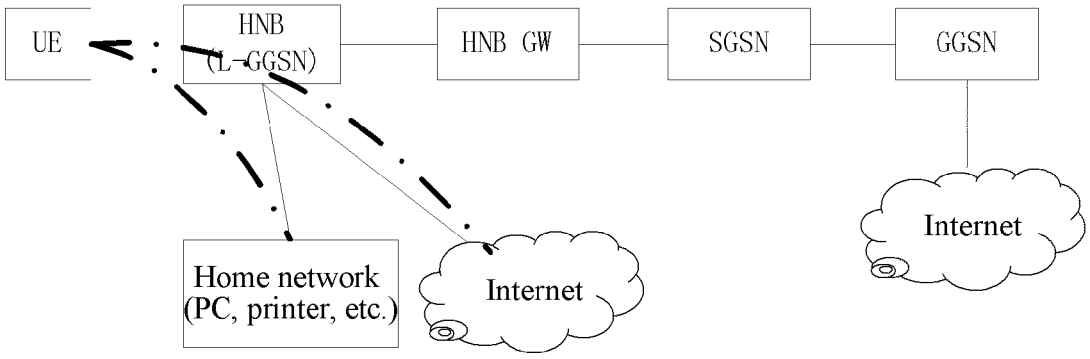
UE
HNB
(L-GGSN)
HNB GW
SGSN
GGSN
Internet
Home network
(PC, printer, etc.)
Internet

FIG. 4

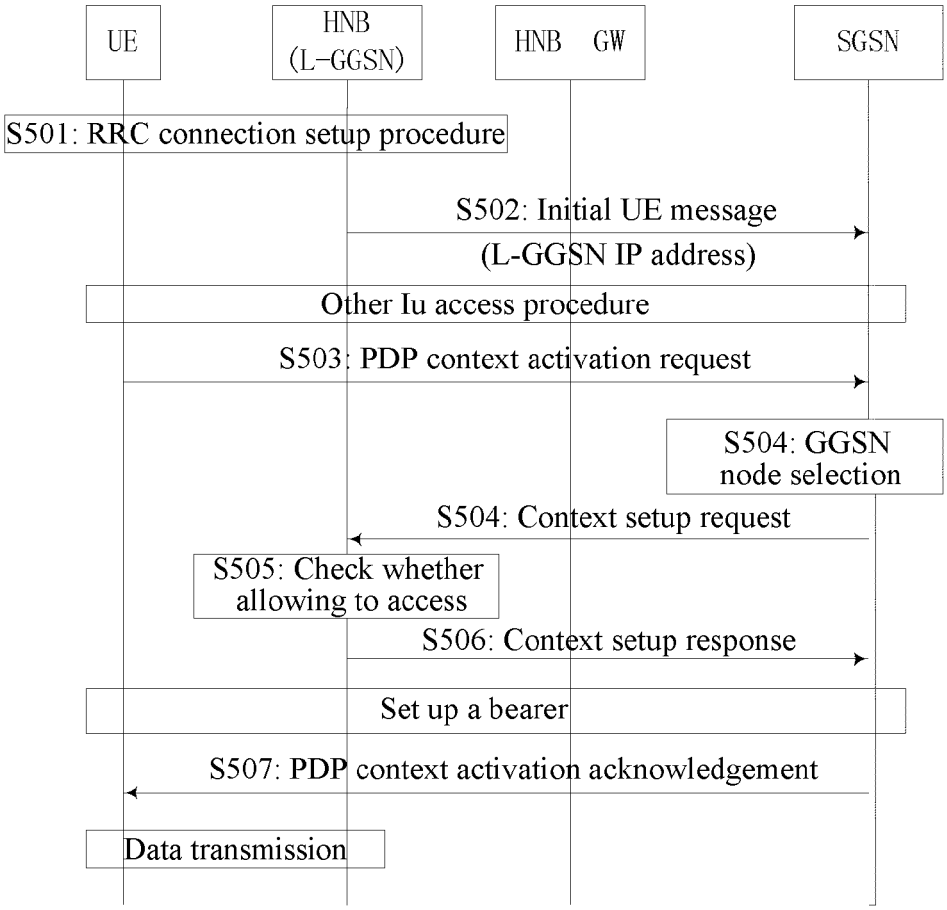
UE
HNB
(L-GGSN)
HNB GW
SGSN
S501: RRC connection setup procedure
S502: Initial UE message
(L-GGSN IP address)
Other Iu access procedure
S503: PDP context activation request
S504: GGSN
node selection
S504: Context setup request
S505: Check whether
allowing to access
S506: Context setup response
Set up a bearer
S507: PDP context activation acknowledgement
Data transmission

FIG. 5

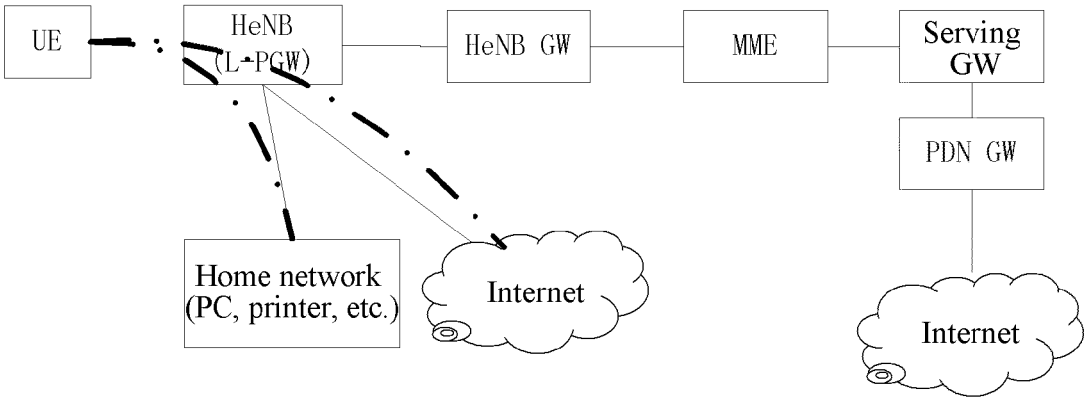
UE
HeNB
(L-PGW)
HeNB GW
MME
Serving
GW
PDN GW
Home network
(PC, printer, etc.)
Internet
Internet

FIG. 6

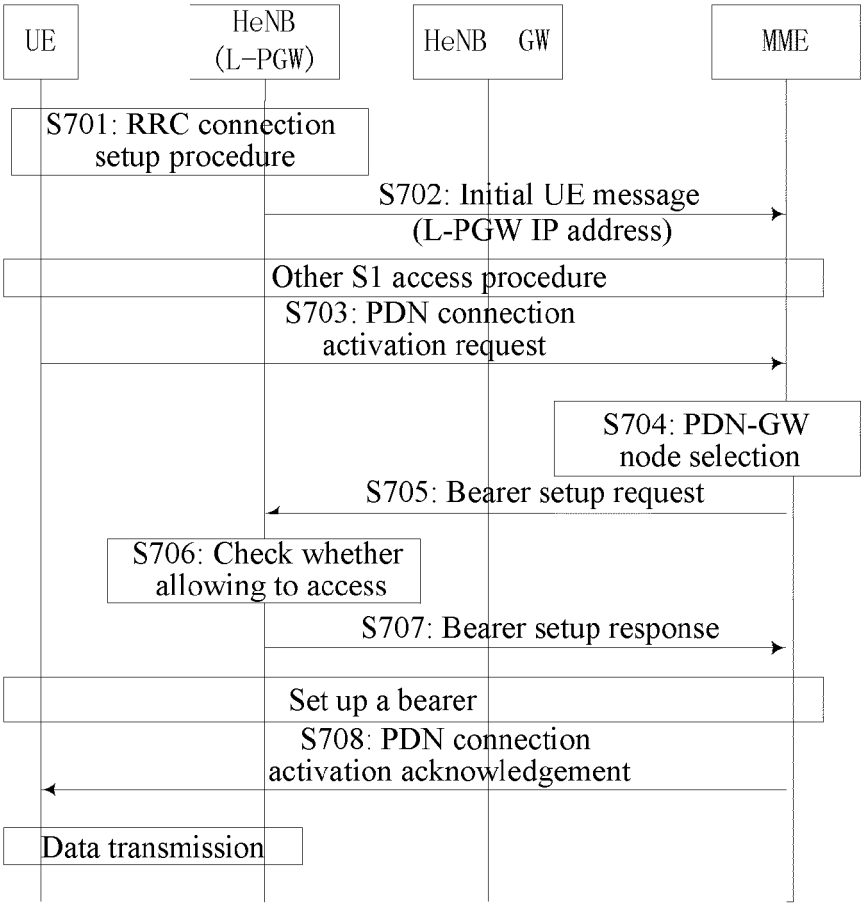
UE
HeNB
(L-PGW)
HeNB GW
MME
S701: RRC connection
setup procedure
S702: Initial UE message
(L-PGW IP address)
Other S1 access procedure
S703: PDN connection
activation request
S704: PDN-GW
node selection
S705: Bearer setup request
S706: Check whether
allowing to access
S707: Bearer setup response
Set up a bearer
S708: PDN connection
activation acknowledgement
Data transmission

FIG. 7

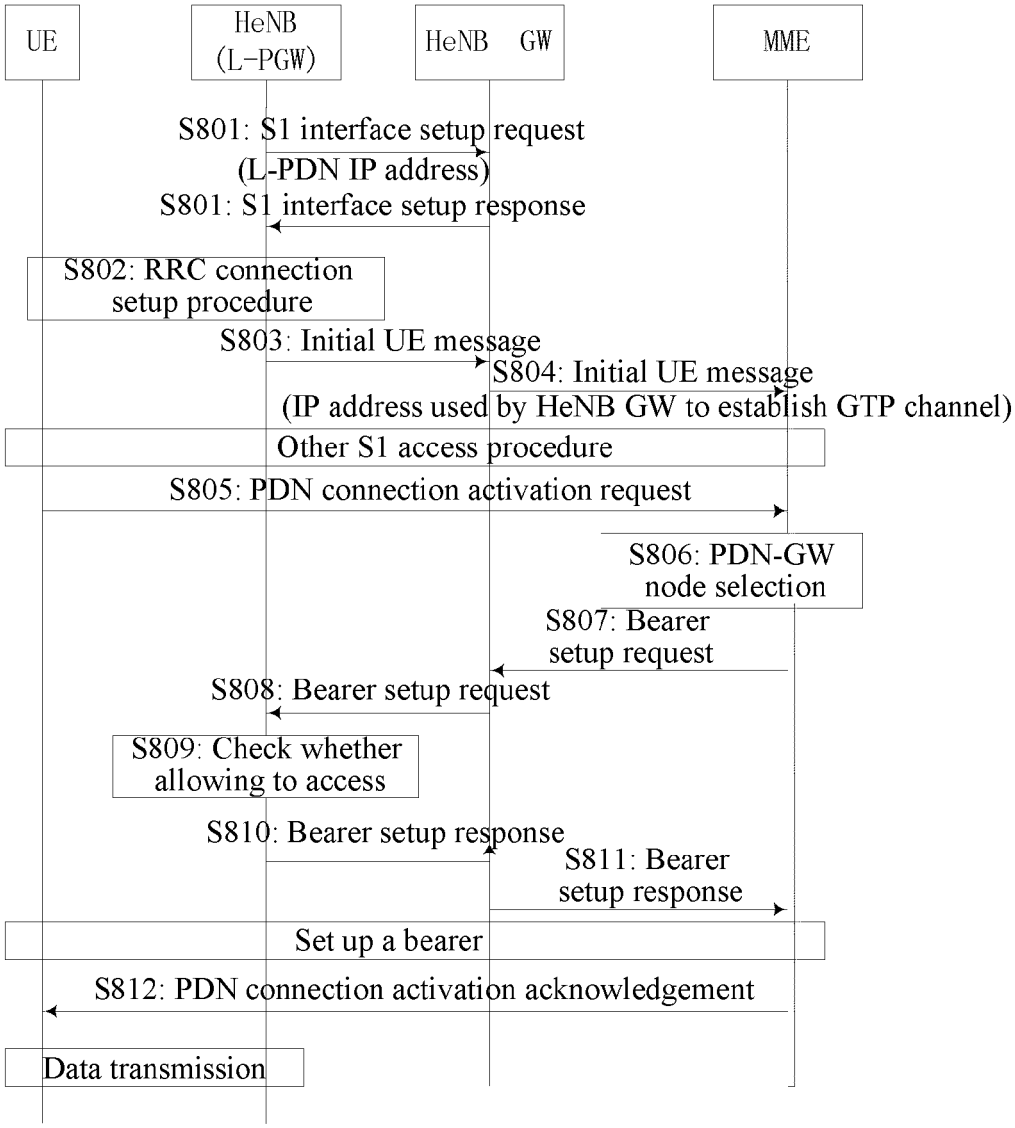
UE
HeNB (L-PGW)
HeNB GW
MME
S801: S1 interface setup request
(L-PDN IP address)
S801: S1 interface setup response
S802: RRC connection setup procedure
S803: Initial UE message
S804: Initial UE message
(IP address used by HeNB GW to establish GTP channel)
Other S1 access procedure
S805: PDN connection activation request
S806: PDN-GW node selection
S807: Bearer setup request
S808: Bearer setup request
S809: Check whether allowing to access
S810: Bearer setup response
S811: Bearer setup response
Set up a bearer
S812: PDN connection activation acknowledgement
Data transmission

FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Non-patent literature cited in the description

- Addressing Options for S1 inter-HeNB Handovers. 3GPP DRAFT; R3-090767, 3RD GENERATION PARTNERSHIP PROJECT (3GPP). MOBILE COMPETENCE CENTRE, 18 March 2009 **[0006]**