~~DESCRIPTION~~

~~TITLE~~

COMMUNICATION SYSTEM, METHOD, AND APPRATUS

TECHNICAL FIELD

[0001]

(REFERENCE TO RELATED APPLICATION)

The present invention is based upon and claims the benefit of the priority of Japanese patent application No. 2011-217384, filed on September 30, 2011, the disclosure of which is incorporated herein in its entirety by reference thereto.

[0002]

The present invention relates to a communication system, a method, and an apparatus.

BACKGROUND

[0003]

In a core network of a mobile communication system, in order to provide various services to various kind of terminals (mobile stations), it is necessary that all of the nodes in the core network are provided with functions required for each service. In large-scale mobile communication network and the like, many nodes are arranged in the core network. A terminal, on every location registration, is connected in a distributed manner to nodes in the core network.

[0004]

Thus, all the nodes in the core network need to have necessary functions for each service (service providing functions). When even a part of the nodes in the core network do not have the necessary service providing functions for each service, service continuity for a terminal cannot be ensured.

[0005]

For example, Patent Literature 1 discloses an arrangement for optimizing a packet forwarding path based on a type of a service utilized by a mobile station, wherein, when the mobile station utilizes a service from an external network, a constraint is given to a packet

forwarding path so that packet flow through a specific packet forwarding apparatus based on the external network. When the mobile station utilized a service provided by a mobile communication network, no constraint is given to a packet forwarding path.

~~CITATION LIST~~

~~PATENT LITERATURE~~

[0006]

[Patent Literature 1]

Japanese Patent Kokai Publication No. 2003-338832A

SUMMARY

~~TECHNICAL PROBLEM~~

[0007]

The following describes some analysis of the related technique.

[0008]

As described above, since each node in a core network has all service providing functions, each node is required to have high functionality and high performance. Consequently, each core network node becomes expensive.

[0009]

For example, since a relatively small number of mobile terminals are compatible with an MBMS (Multimedia Broadcast Multicast Service) service (a simultaneous delivery service), which is a bearer service that is standardized by 3GPP (3rd Generation Partnership Project) and that implements broadcast type delivery, there is not much opportunity to provide the MBMS service. However, to provide the service to a small number of MBMS users, it is necessary for a communication operator to have all the nodes in the core network equipped with the MBMS functions. Otherwise, the communication operator cannot provide the service to the small number of MBMS users.

[0010]

If a node in the core network can be selected based on whether or not a mobile terminal needs to use the MBMS service, the communication operator can install a relatively small number of expensive core network nodes that are compatible with the MBMS and

[0014]

If this is the case, compared with installing relatively expensive core network nodes, each of which is compatible with both of a handset terminal and a MTC device, an equipment cost in a whole system can be reduced more efficiently (third knowledge of the present inventors).

[0015]

~~Thus,~~Embodiments of the present invention ~~has been made to solve the above issues, and an object of the present invention is to~~ provide a system, a method, and a device for reducing an equipment cost in an entirety of a system more efficiently and achieving cost reduction.

~~SOLUTION TO PROBLEM~~

[0016]

~~The~~Embodiments of the present invention ~~that solves the above issues generally has~~ provide the following configuration (but not limited thereto).

[0017]

~~According to an aspect of the present invention, there is provided~~ Disclosed herein is a communication system including a core network for a mobile communication system, wherein the core network comprises a plurality of nodes, each node serving as a node to manage mobility of a terminal, the plurality of nodes being different to each other with regard to service functions that the nodes provide to a terminal, and

wherein based on subscriber information and terminal information, a node to be connected to the terminal is selected from among the plurality of nodes, depending on a service characteristic utilized by the terminal or on a type of the terminal, and the terminal is connected to the selected node.

[0018]

~~According to another aspect of the present invention, there is provided~~Disclosed herein is a communication method, comprising:

arranging a plurality of nodes for the terminal in a mobile communication system core network, the nodes serving as nodes for managing mobility of a terminal, and being different to each other with regard to service functions that the nodes provide to a terminal;

selecting, based on subscriber information and terminal

information, a node to be connected to the terminal from among the plurality of nodes, depending on characteristics of a service used by the terminal or on a type of the terminal; and

connecting the terminal to the selected node.

[0019]

~~According to another aspect of the present invention, there is provided~~Disclosed herein is a node apparatus that performs control to select, as a mobility management node apparatus to manage mobility of a terminal, another mobility management node apparatus compatible with a service characteristic utilized by the terminal or a type of the terminal, based on subscriber information and terminal information to connect the terminal to the selected another mobility management node apparatus.

[0019a] Disclosed herein is a communication system, comprising:

a general MME (Mobility Management Entity) or a general SGSN (Serving GPRS Support Node) for a general terminal other than a predetermined specific terminal, as a core network node managing mobility of a terminal; and

a customized MME or a customized SGSN that includes a function to provide a predetermined specific service to the specific terminal or that is customized to be compatible with the specific terminal of a predetermined type,

wherein the general MME, the general SGSN, or the specific terminal selects the customized MME or the customized SGSN as a node to which the specific terminal is connected.

[0019b] According to a first aspect of the present invention, there is provided a mobile communication system, comprising:

a terminal (UE(User Equipment) or MS (Mobile Station)) supporting a function associated with MTC (Machine Type Communication);

a base station; and

a specific MME (Mobility Management Entity) or SGSN (a Serving GPRS (General Packet Radio Service) Support Node),

wherein the terminal supporting the function associated with MTC is configured to provide the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function, and

wherein the base station is configured to use the indication information provided by the terminal supporting the function to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

[0019c] According to a second aspect of the present invention, there is provided a base station in a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication) and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the base station comprises:

a unit configured to receive information indicating that an RRC (Radio Resource Control) connection request includes the function from the terminal supporting the function; and

a unit configured to use the indication information provided by the terminal supporting the function to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

[0019d] According to a third aspect of the present invention, there is provided a terminal in a mobile communication system comprising at least a base station and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), and that is a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication), characterized in that the terminal comprises:

a unit configured to provide the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

a unit configured to cause the base station to use the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

[0019e] According to a fourth aspect of the present invention, there is provided a communication method for a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication), a base station, and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the method comprises:

the terminal supporting the function providing the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

the base station using the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

[0019f] According to a fifth aspect of the present invention, there is provided a communication method for a base station used in a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication) and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the method comprises:

receiving information indicating that an RRC (Radio Resource Control) connection request includes the function from the terminal supporting the function; and

using the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

[0019g] According to a sixth aspect of the present invention, there is provided a communication method for a terminal (UE (User Equipment) or an MS (Mobile Station)) in a mobile communication system comprising at least a base station and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node) and that supports a function relating to MTC (Machine Type Communication), characterized in that the method comprises:

providing the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

causing the base station to use the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

~~ADVANTAGEOUS EFFECTS OF INVENTION~~

[0020]

According to embodiments of the present invention, cost reduction can be achieved by reducing the equipment cost in the whole core network system more efficiently.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

Fig. 1 is a diagram illustrating a system configuration according to a first exemplary embodiment of the present invention.

Fig. 2 is a diagram illustrating a system configuration according to a second exemplary embodiment of the present invention.

Fig. 3 is a diagram illustrating a sequence according to a first example of the present invention.

Fig. 4 is a diagram illustrating a sequence according to a second example of the present invention.

Fig. 5 is a diagram illustrating a sequence according to a third example of the present invention.

Fig. 6 is a diagram illustrating a sequence according to the third example of the present invention.

Fig. 7 is a diagram illustrating a sequence according to a fourth example of the present invention.

Fig. 8 is a diagram illustrating a sequence according to a fifth example

of the present invention.

Fig. 9 is a diagram illustrating a sequence according to the fifth example of the present invention.

Fig. 10 is a diagram illustrating a sequence according to a sixth example of the present invention.

Fig. 11 is a diagram illustrating a sequence according to a seventh example of the present invention.

Fig. 12 is a diagram illustrating a sequence according to an eighth example of the present invention.

Fig. 13 is a diagram illustrating a sequence according to the eighth example of the present invention.

Fig. 14 is a diagram illustrating a sequence according to a ninth example of the present invention.

Fig. 15 is a diagram illustrating a sequence according to a tenth example of the present invention.

Fig. 16 is a diagram illustrating a sequence according to the tenth example of the present invention.

PREFERRED MODES ~~FOR CARRYING OUT THE INVENTION~~

[0022]

First, an outline of the present invention will be described with reference to Figs. 1 and 2. According to the present invention, a core network includes a plurality of nodes (21/22 in Fig. 1 or 121/122 in Fig. 2) that are different to each other with respect to service functions provided for a terminal. Based on subscriber information and terminal information, a node to be connected to the terminal is selected from the plurality of nodes, in accordance with a service characteristic utilized by the terminal or on a type of the terminal. The terminal (1 in Fig. 1 or 101 in Fig. 2) is connected to the selected node. Namely, in the core network, a node with a predetermined specific service providing function (22 in Fig. 1 or 122 in Fig. 2) and a node without the specific service providing function (21 in Fig. 1 or 121 in Fig. 2) are installed in combination.

[0023]

Thus, according to the present invention, by installing both types,

transmits, to the UE, an Attach Reject, to which is added an identifier of the Customized MME, in order to connect the UE to a Customized MME. The UE, by re-transmitting an Attach Request, to which is added the identifier of the Customized MME to an Attach Request by the UE, is connected to the Customized MME.

[0029]

<Mode 4>

A UE transmits, to an eNodeB, an RRC (Radio Resource Control) Connection Request (radio resource connection request), to which is added connection request information requesting connection to a Customized MME (specific MME). The eNodeB, which has received the RRC connection request, when transmitting, to an MME, an Attach Request from the UE with RRC Connection established, selects the Customized MME to make the UE connected to the Customized MME.

[0030]

<Mode 5>

When a General MME with a session with a UE being established, performs release (S1 Release) of S1 connection established between an eNodeB and the General MME, the General MME instructs the eNodeB to select a Customized MME, in next selection of an MME. Then after, when the UE transmits a location management area update request (a TA (Tracking Area) Update Request), the eNodeB selects the Customized MME to make the UE connected to the Customized MME.

[0031]

<Mode 6>

A General SGSN (Serving GPRS (General Radio Packet Service) Support Node: which is described as "serving GPRS support node" in the claims), upon reception of an Attach Request from a UE, determines whether the UE is of a type that uses a specific service based on subscriber information and terminal information. If the UE is this type, in order to connect the UE to a Customized SGSN, the General SGSN transmits an SGSN re-selection request signal to an RNC (a Radio Network controller). By transmitting an Attach Request to the Customized SGSN, the RNC make the UE connected to the Customized

- transmission of a Create Session Request (12) from the Customized MME 22 to the S-GW 41,
- transmission of a Create Session Request (~~12~~13) from the S-GW 41 to the P-GW 51,
- PCEF Initiated IP-CAN Session Establishment/Modification (14) by the P-GW ~~4~~51,
- transmission of a Create Session Response (15) from the P-GW 51 to the S-GW 41,
- transmission of First Down Link Data from the P-GW 51 to the S-GW 41 (if not handover (HO)),
- transmission of a Create Session Response (16) from the S-GW 41 to the customized MME22 ~~S-GW 41~~,
- transmission of an Initial Context Setup Request/Attach Accept) (17) from the ~~General~~customized MME 22 to the eNodeB 11,
- transmission of an RRC Connection Reconfiguration (18) from the eNodeB 11 to the UE 1,
- transmission of an RRC Connection Reconfiguration Complete (19) from the UE 1 to the eNodeB 11,
- transmission of an Initial Context Setup Response (20) from the eNodeB 11 to the Customized MME 22,
- Direct Transfer (21) from the UE 1 to the eNodeB,
- transmission of an Attach Complete (22) from the eNodeB 11 to the Customized MME 22,
- transmission of First Uplink Data from the UE 1 to the S-GW 41 and the P-GW 51,
- transmission of a Modify Bearer Request (23) from the Customized MME 22 to the S-GW 41,
- transmission of a Modify Bearer Request (23a) from the S-GW 41 to the PDN~~PCEF~~,
- transmission of a Modify Bearer Response (23b) from the PDN~~PCEF~~ to the S-GW 41,
- transmission of a Modify Bearer Response (24) from the S-GW 41 to the Customized MME 22, and
- transmission of First Downlink data from the P-GW 51 and the S-GW

The Customized MME 22, in the case wherein security context information received from the General MME 21 is valid, can omit performing re-authentication.

[0076]

Subsequently, the Customized MME 22 continues the Attach Procedure and the eNodeB 11 receives an Initial Context Setup Request/Attach Accept) (17) from the Customized MME 22.

[0077]

The Initial Context Setup Request/Attach Accept (17) is a response to the Attach Request (2) received by the General MME 21. The eNodeB 11 needs to include a function of receiving a Response from another MME different from the General MME 21.

[0078]

Subsequently, the Customized MME 22 continues a normal Attach Procedure.

[0079]

The General MME 21 and the Customized MME 22 are equipped with a function of determining which MME needs to be connected to the UE 1, as is the case with example 1.

[0080]

In addition, in the present example, even when an Attach Request signal is forwarded from the UE 1 that needs to be connected to the General MME 21 to the Customized MME 22, the Customized MME 22 can request the General MME 21 for change of an MME in a like manner. For example, in the case wherein the UE 1 is a normal mobile station (for example, a normal mobile station that is not compatible with a special service such as MTC or MBMS), when the UE 1 is once connected to the Customized MME 22, the Customized MME~~2~~ 22 transmits an MME change request signal (MME Change Request) to the General MME 21. In this way, the General MME 21 is selected and a service is provided from the General MME 21.

[0081]

As described above, in the present example, the General MME instructs the Customized MME about change of an MME. In response

Attach Request (1), the eNodeB 11 receives the Attach Request (1). In this sequence, the eNodeB 11, from the information stored upon reception of the RRC Connection Request (1), forwards an Attach Request (2) to the Customized MME 22.

[0102]

After receiving the Attach Request (2), the Customized MME 22 continues a normal Attach Procedure.

[0103]

In addition, the UE 1 is equipped with a function of instructing the eNodeB 11 about which one of the General MME 21 and the Customized MME 22 needs to be connected to the UE 1. Since the UE 1 cannot store information about all the MMEs in the core network, information indicating an MME type, a service type, or the like is used for the instruction given to the eNodeB 11, instead of an identifier by which a unique MME can be selected.

[0104]

In addition, the eNodeB 11 is equipped with a function of determining which MME needs to be connected to the UE 1.

[0105]

As described above, one of or a combination of a User Identity, a new Value or a new parameter of Establishment Cause, and an identifier of a part of such parameters in the RRC Connection Request message is used for selection of an MME~~M~~ by the eNodeB 11.

[0106]

As described above, in the present example, the UE instructs the eNodeB to select an MME. In response to the instruction, the eNodeB specifies the Customized MME and an Attach Procedure is continued. In this way, the UE can be attached to an appropriate MME.

[0107]

<Example 5>

As example 5, another example with EPC will be described. In this example, the UE and the Customized MME are connected when Tracking Area Update is performed. In example 5, the same system configuration as that in example 1 will be used.

for changing the S-GW to the General MME. When the Customized MME 22 selects a new S-GW 41 (new Serving GW), the Customized MME 22 transmits a Create Session Request (8) to the new S-GW 41.

[0119]

The new S-GW 41 (new Serving GW), responsive to this Create Session Request (8), transmits a Modify Bearer Request (9) to the P-GW 51. After receiving a response to the Modify Bearer Request (9) from the P-GW 51, the new S-GW returns a Create Session Response (11) to the Customized MME 22.

[0120]

The Customized MME 22 transmits an Update Location (12) to the HSS 31.

[0121]

The General MME 21, upon reception of a Cancel Location (13) from the HSS 31, deletes MM contexts and transmits a~~n~~ Cancel~~Update~~ Location Ack (14) to the HSS 31. The HSS 31 transmits an Update Location Ack (17) in response to the Update Location (12) to the Customized MME 22.

[0122]

The General MME 21 transmits a Delete Session Request (18) to the old S-GW 41 (old Serving GW), and the old S-GW 41 (old Serving GW) transmits a response (19) to the Delete Session Request (18) to the General MME 21.

[0123]

The Customized MME 22 transmits a TAU Accept (20) to the UE0 1.

[0124]

If a GUTI is included in the TAU Accept (20), the UE 1 returns a TAU Complete (21) to the Customized MME 22. The UE 1 uses this TAU Complete (21) as an acknowledge response to the received signal TAU Accept (20).

[0125]

The General MME 21 and the Customized MME 22 are equipped with a function of determining which MME needs to be connected to the

<Example 6>

Fig. 10 is a sequence diagram illustrating an operation according to example 6 and is based on 3GPP TS 23.060 6.5 Fig. 22.

[0138]

In Fig. 10,

"MS (Mobile Station)" corresponds to the UE 101 in Fig. 2,

"RAN (Radio Access Network)" corresponds to the NodeB 111 and the RNC 171 in Fig. 2,

"General SGSN" corresponds to the General SGSN 121 in Fig. 2,

"Customized SGSN" corresponds to Customized SGSN 122 in Fig. 2,

"GGSN" corresponds to the GGSN 141 in Fig. 2, and

"HLR" corresponds to the HLR 131 in Fig. 2.

[0139]

A VLR of an MSC (Mobile Switching Center)/VLR (Visitor Location Register) is a location register for CS services other than the HLR. An EIR (Equipment Identifier Register) stores identifiers of valid mobile devices.

[0140]

An operation will be described with reference to Figs. 2 and 10. Hereinafter, the UE 101 in Fig. 2 will be used as the MS in Fig. 10.

[0141]

When the UE 101 (MS) transmits an Attach Request (1), first, the NodeB 111 receives the Attach Request (1) and forwards the Attach Request (1) to the RNC 171. The RNC 171 forwards the Attach Request (1) to an SGSN. However, the RNC 171 cannot uniquely determine whether to forward the Attach Request to the General SGSN 121 or to the Customized SGSN 122. Thus, there are cases where the RNC 171 forwards the Attach Request to the General SGSN 121.

[0142]

After receiving the Attach Request, the General SGSN 121 acquires terminal information via an Identity Request/Response (3, 4). In addition, the General SGSN 121 performs authentication and acquires a subscriber profile, in coordination with the HLR 131. Namely, in this case, the General SGSN 121 performs authentication and acquires a

CLAIMS:

1. A mobile communication system, comprising:

a terminal (UE(User Equipment) or MS (Mobile Station)) supporting a function associated with MTC (Machine Type Communication);

a base station; and

a specific MME (Mobility Management Entity) or SGSN (a Serving GPRS (General Packet Radio Service) Support Node),

wherein the terminal supporting the function associated with MTC is configured to provide the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function, and

wherein the base station is configured to use the indication information provided by the terminal supporting the function to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

2. A base station in a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication) and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the base station comprises:

a unit configured to receive information indicating that an RRC (Radio Resource Control) connection request includes the function from the terminal supporting the function; and

a unit configured to use the indication information provided by the terminal supporting the function to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

3. A terminal in a mobile communication system comprising at least a base station and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), and that is a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication), characterized in that the terminal comprises:

a unit configured to provide the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

a unit configured to cause the base station to use the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

4. A communication method for a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication), a base station, and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the method comprises:

the terminal supporting the function providing the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

the base station using the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

5. A communication method for a base station used in a mobile communication system comprising at least a terminal (UE (User Equipment) or an MS (Mobile Station)) supporting a function relating to MTC (Machine Type Communication) and a specific MME (Mobility

Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node), characterized in that the method comprises:

receiving information indicating that an RRC (Radio Resource Control) connection request includes the function from the terminal supporting the function; and

using the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

6. A communication method for a terminal (UE (User Equipment) or an MS (Mobile Station)) in a mobile communication system comprising at least a base station and a specific MME (Mobility Management Entity) or SGSN (Serving GPRS (General Packet Radio Service) Support Node) and that supports a function relating to MTC (Machine Type Communication), characterized in that the method comprises:

providing the base station with information indicating that an RRC (Radio Resource Control) connection request includes the function; and

causing the base station to use the indication information provided by the terminal to steer the terminal supporting the function to the specific MME or SGSN, or to select the specific MME or SGSN.

~~1. A communication system including a core network for a mobile communication system, wherein the core network comprises a plurality of nodes, each node serving as a node to manage mobility of a terminal, the plurality of nodes being different to each other with regard to service functions that the nodes provide to a terminal, and~~

~~wherein based on subscriber information and terminal information, a node to be connected to the terminal is selected from among the plurality of nodes, depending on a service characteristic utilized by the terminal or on a type of the terminal, and the terminal is connected to the selected node.~~

~~2. The communication system according to claim 1, wherein a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmits a mobility management entity re-selection request signal to the base station apparatus, in order to connect the terminal to a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node, and~~

~~wherein the base station apparatus transmits an Attach Request to the second mobility management entity node to connect the terminal to the second mobility management entity node.~~

~~3. The communication system according to claim 1, wherein a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmits a mobility management entity change request signal to a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node, in order to connect the terminal to the second mobility management entity node, and~~

~~wherein the second mobility management entity node continues an Attach procedure for the Attach Request to connect the terminal to the second mobility management entity node.~~

~~4. The communication system according to claim 1, wherein a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmits an Attach Reject, to which an identifier of a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node is added, to the terminal, in order to connect the terminal to the second mobility management entity node, and~~

~~wherein the terminal adds the identifier of the second mobility~~

management entity node to an Attach Request and re-transmit the Attach Request to connect to the second mobility management entity node.

5. The communication system according to claim 1, wherein the terminal transmits an RRC Connection Request, to which is added connection request information requesting connection to a second mobility management entity node that provides a service different from a service provided by a first mobility management entity node, to a base station apparatus, and

wherein at a time when the base station apparatus, upon reception of the RRC Connection Request, transmits an Attach Request received from the terminal with RRC connection to a mobility management entity being established, the base station apparatus selects the second mobility management entity node to connect the terminal to the second mobility management entity node.

6. The communication system according to claim 1, wherein, when a first mobility management entity node with a session with the terminal being established releases connection established between the base station apparatus and the first mobility management entity node, the first mobility management entity node instructs the base station apparatus to select a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node in next selection of a mobility management entity by the base station apparatus, and

wherein upon transmission of a location management area update request by the terminal to the base station apparatus, the base station apparatus selects the second mobility management entity node to connect the terminal to the second mobility management entity node.

7. The communication system according to claim 1, wherein a first serving GPRS (General Packet Radio Service) support node, upon reception of an Attach Request from the terminal via a radio network controller, transmits a serving GPRS support node re-selection request signal to the radio network controller, in order to connect the terminal to a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node, and

wherein the radio network controller re-transmits an Attach Request to the second serving GPRS support node to connect the terminal to the second serving GPRS support node.

8. The communication system according to claim 1, wherein a first serving GPRS (General Packet Radio Service) support node (SGSN), upon reception of an Attach Request from the terminal via a radio network controller, transmits a serving GPRS support node change request signal to a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node, in order to connect the terminal to the second serving GPRS support node, and

wherein the second serving GPRS support node continues an Attach procedure for the Attach Request to connect the terminal to the second serving GPRS support node.

9. The communication system according to claim 1, wherein a first serving GPRS (General Packet Radio Service) support node (SGSN), upon reception of an Attach Request from the terminal via a radio network controller, transmits an Attach Reject, to which is added an identifier of a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node is added, to the terminal to connect the terminal to the second serving GPRS support node, and

wherein the terminal adds the identifier of the second serving

GPRS support node to an Attach Request and re-transmits the Attach Request to connect to the second serving GPRS support node.

10. The communication system according to claim 1, wherein the terminal transmits an RRC (Radio Resource Control) Connection Request, to which is added connection request information requesting connection to a second serving GPRS support node that provides a service different from a service provided by a first serving GPRS (General Packet Radio Service) support node, to a radio network controller, and

wherein at a time when the radio network controller, upon reception of the RRC connection Request, transmits an Attach Request from the terminal with RRC connection to a serving GPRS support node being established, the radio network controller selects the second serving GPRS support node to connect the terminal to the second serving GPRS support node.

11. The communication system according to claim 1, wherein, when a first serving GPRS (General Packet Radio Service) support node with a session with the terminal being established releases connection established between the first serving GPRS (General Packet Radio Service) support node and the radio network controller, the first serving GPRS support node instructs the radio network controller to select a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node in next selection of a serving GPRS support node by the radio network controller, and

wherein upon transmission of a location management area update request by the terminal to the radio network controller, the radio network controller selects the second serving GPRS support node to connect the terminal to the second serving GPRS support node.

12. A communication method, comprising:

arranging a plurality of nodes for the terminal in a mobile communication system core network, the nodes serving as nodes for managing mobility of a terminal, and being different to each other with regard to service functions that the nodes provide to a terminal;

selecting, based on subscriber information and terminal information, a node to be connected to the terminal from among the plurality of nodes, depending on characteristics of a service used by the terminal or on a type of the terminal; and

connecting the terminal to the selected node.

13. The communication method according to claim 12, comprising:

a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmitting a mobility management entity re-selection request signal to the base station apparatus, in order to connect the terminal to a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node; and

the base station apparatus transmitting an Attach Request to the second mobility management entity node to connect the terminal to the second mobility management entity node.

14. The communication method according to claim 12, comprising:

a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmitting a mobility management entity change request signal to a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node, in order to connect the terminal to the second mobility management entity node; and

the second mobility management entity node continuing a procedure for the Attach Request to connect the terminal to the second

mobility management entity node.

15. The communication method according to claim 12, comprising:

a first mobility management entity node, upon reception of an Attach Request from the terminal via a base station apparatus, transmitting an Attach Reject, to which is added an identifier of a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node, to the terminal, in order to connect the terminal to the second mobility management entity node; and

the terminal adding the identifier of the second mobility management entity node to an Attach Request and re-transmitting the Attach Request to connect to the second mobility management entity node.

16. The communication method according to claim 12, comprising:

the terminal transmitting an RRC (Radio Resource Control) Connection Request, to which is added connection request information requesting connection to a second mobility management entity node that provides a service different from a service provided by a first mobility management entity node, to a base station apparatus; and

the base station apparatus selecting the second mobility management entity node, at a time when the base station apparatus, upon reception of the RRC Connection Request, transmits an Attach Request from the terminal with RRC connection to a mobility management entity being established, to connect the terminal to the second mobility management entity node.

17. The communication method according to claim 12, comprising:

when a first mobility management entity node with a session with the terminal being established releases connection established between the base station apparatus and the first mobility management entity

node, the first mobility management entity node instructing the base station apparatus to select a second mobility management entity node that provides a service different from a service provided by the first mobility management entity node in next selection of a mobility management entity by the base station apparatus; and

upon transmission of a location management area update request by the terminal to the base station apparatus, the base station apparatus selecting the second mobility management entity node to connect the terminal to the second mobility management entity node.

18. The communication method according to claim 12, comprising:

a first serving GPRS (General Packet Radio Service) support node (SGSN), upon reception of an Attach Request from the terminal via a radio network controller, transmitting a serving GPRS support node re-selection request signal to the radio network controller, in order to connect the terminal to a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node; and

the radio network controller transmitting an Attach Request to the second serving GPRS support node to connect the terminal to the second serving GPRS support node.

19. The communication method according to claim 12, comprising:

a first serving GPRS (General Packet Radio Service) support node (SGSN), upon reception of an Attach Request from the terminal via a radio network controller, transmitting a serving GPRS support node change request signal to a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node, in order to connect the terminal to the second serving GPRS support node; and

the second serving GPRS support node continuing an Attach procedure to connect the terminal to the second serving GPRS support node.

~~20. The communication method according to claim 12, comprising:~~

~~a first serving GPRS (General Packet Radio Service) support node (SGSN), upon reception of an Attach Request from the terminal via a radio network controller, transmitting an Attach Reject, to which is added an identifier of a second serving GPRS support node that provides a service different from a service provided by the first serving GPRS support node, to the terminal, in order to connect the terminal to the second serving GPRS support node; and~~

~~the terminal adding the identifier of the second serving GPRS support node to an Attach Request and re-transmitting the Attach Request to connect to the second serving GPRS support node.~~

~~21. The communication method according to claim 12, comprising:~~

~~the terminal transmitting an RRC (Radio Resource Control) Connection Request, to which is added connection request information requesting connection to a second serving GPRS support node that provides a service different from a service provided by a first serving GPRS support node, to a radio network controller; and~~

~~at a time when the radio network controller, upon reception of the RRC Connection Request, transmits an Attach Request from the terminal with RRC connection to a serving GPRS support node (SGSN) being established, the radio network controller selecting the second serving GPRS support node to connect the terminal to the second serving GPRS support node.~~

~~22. The communication method according to claim 12, , comprising:~~

~~when a first serving GPRS (General Packet Radio Service) support node with a session with the terminal being established releases connection established between the first serving GPRS (General Packet Radio Service) support node and the radio network controller, the first serving GPRS support node instructing the radio network controller to select a second serving GPRS support node that provides a service~~

different from a service provided by the first serving GPRS support node, in next selection of a serving GPRS support node by the radio network controller; and

upon transmission of a Routing Area Update Request by the terminal to the radio network controller, the radio network controller selecting the second serving GPRS support node to connect the terminal to the second serving GPRS support node.

23. A node apparatus that performs control to select, as a mobility management node apparatus to manage mobility of a terminal, another mobility management node apparatus compatible with a service characteristic utilized by the terminal or a type of the terminal, based on subscriber information and terminal information to connect the terminal to the selected another mobility management node apparatus.

24. The node apparatus according to claim 23, wherein the node apparatus is a node apparatus on a radio access network or a core network in a mobile communication system.

25. A communication system, comprising:

a general MME (Mobility Management Entity) or a general SGSN (Serving GPRS Support Node) for a general terminal other than a predetermined specific terminal, as a core network node managing mobility of a terminal; and

a customized MME or a customized SGSN that includes a function to provide a predetermined specific service to the specific terminal or that is customized to be compatible with the specific terminal of a predetermined type,

wherein the general MME, the general SGSN, or the specific terminal selects the customized MME or the customized SGSN as a node to which the specific terminal is connected.