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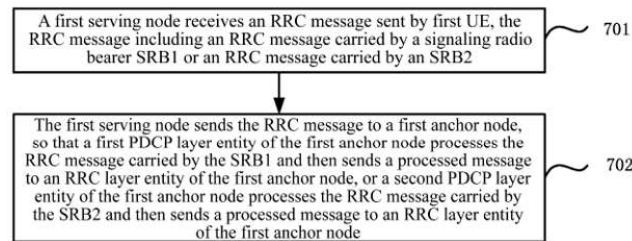


FIG. 7

(57) Abstract: Embodiments of the present invention relate to a radio resource control (RRC) message processing method, apparatus, and system. The method includes: setting up, by a first serving node, a connection to a first anchor node, and setting up, by the first anchor node, a connection to a mobility management entity (MME); receiving, by the first serving node, a radio resource control (RRC) message sent by first user equipment (UE), the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2; and sending, by the first serving node, the RRC message to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node. Thus, signaling load of a core network can be effectively reduced.

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[See continued page]



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Embodiments of the present invention relate to a radio resource control (RRC) message processing method, apparatus, and system. The method includes: setting up, by a first serving node, a connection to a first anchor node, and setting up, by the first anchor node, a connection to a mobility management entity (MME); receiving, by the first serving node, a radio resource control (RRC) message sent by first user equipment (UE), the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2; and sending, by the first serving node, the RRC message to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node. Thus, signaling load of a core network can be effectively reduced/

SPECIFICATION

RADIO RESOURCE CONTROL (RRC) MESSAGE PROCESSING METHOD, APPARATUS, AND SYSTEM

5

TECHNICAL FIELD

The present invention relates to the field of mobile communications, and in particular, to a radio resource control (RRC) message processing method, apparatus, and system.

BACKGROUND

With an increasing quantity of user equipments (UEs), existing wireless communication
10 systems cannot meet wireless communication requirements of users. Therefore, there is an urgent
need to increase the system capacity of wireless communication systems. The system capacity may
be increased by adding base stations. Typically, many small base stations are deployed densely in
a macro cell, to form more micro cells. However, most UEs are connected to a base station, and
the base station provides a wireless communication service for the UEs. For brevity of description,
15 a network device that provides a wireless communication service for UE is referred to as a serving
node of the UE, and the serving node may be specifically a base station.

In the prior art, when UE moves from a cell to another cell, or when UE moves from a
coverage area of a base station to a coverage area of another base station, or when UE finds a radio
link failure (RLF), serving node handover may be performed on the UE, that is, the serving node
20 of the UE is changed from a base station to another base station. Because the serving node and a
mobility management entity (MME) are connected to each other by means of a control plane
interface, and the serving node and a serving gateway (SGW) are connected to each other by means
of a user plane interface, after the serving node handover is performed on the UE, signaling needs
to be sent between a new serving node and the MME to update an S1 control plane connection
25 between the serving node and the MME, and signaling also needs to be sent between the MME
and the SGW to update an S1 user plane connection between the serving node and the SGW.
Therefore, each handover procedure results in at least four messages. When the quantity and
deployment density of base stations increase, a handover quantity increases sharply, and
consequently, signaling load of a core network increases sharply. In addition, each serving node

and the MME are connected to each other by means of a control plane interface. When the MME has a paging message to be sent, the MME sends the paging message to all base stations in a tracking area (TA) area corresponding to the paging message. As a result, the signaling load of the core network increases sharply.

5

SUMMARY

Embodiments of the present invention provide an RRC message processing method, apparatus, and system, so as to effectively reduce signaling load of a core network.

According to a first aspect, provided is an RRC message processing system, the system comprising: a first serving node, a first anchor node, and a mobility management entity (MME),
10 the first serving node setting up a connection to the first anchor node, the first anchor node setting up a connection to the MME,

the first serving node being configured to: receive a radio resource control (RRC) message sent by first user equipment (UE), the RRC message comprising an RRC message carried by a signaling radio bearer 1 (SRB1) or an RRC message carried by an SRB2; and send the RRC
15 message to the first anchor node, and

the first anchor node being configured to: process, via a first packet data convergence protocol (PDCP) layer entity, the RRC message carried by the SRB1 and then send a processed message to an RRC layer entity; or process, via a second PDCP layer entity, the RRC message carried by the SRB2 and then send a processed message to the RRC layer entity.

20 According to a second aspect, provided is an RRC message processing apparatus, provided on a serving node, a first serving node setting up a connection to a first anchor node, the first anchor node setting up a connection to a mobility management entity (MME),

the apparatus comprising:

a receiving unit, configured to receive an RRC message sent by first user equipment (UE),
25 the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2; and

a sending unit, configured to: send the RRC message received by the receiving unit to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message

to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

With reference to the second aspect, in a first implementation manner of the second aspect,
5 the receiving unit is further configured to receive an RRC message sent by the first anchor node, the RRC message comprising an RRC message carried by an SRB1 or an RRC message carried by an SRB2, the apparatus further comprising:

a first processing unit, configured to process, via a first radio link control (RLC) layer entity of the first serving node, the RRC message carried by the SRB1, so that the sending unit sends a
10 processed message to the first UE; and

a second processing unit, configured to process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2, so that the sending unit sends a processed message to the first UE.

With reference to the second aspect or the first implementation manner of the second
15 aspect, in a second implementation manner of the second aspect, the apparatus further comprises:

a message generation unit, configured to generate, via an RRC layer entity of the first serving node, an RRC message carried by an SRB0, so that the sending unit sends the RRC message carried by the SRB0 to the first UE and/or the first anchor node.

With reference to the second aspect or the first implementation manner of the second
20 aspect, in a third implementation manner of the second aspect, the RRC message further comprises an RRC message carried by an SRB0, the sending unit being further configured to send first indication information to the first anchor node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor
25 node, the receiving unit being further configured to receive first indication information sent by the first anchor node, and the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

With reference to the second aspect or the first implementation manner of the second aspect, in a fourth implementation manner of the second aspect, the sending unit is further configured to send second indication information to the first anchor node, the second indication information being used by the first anchor node to identify, according to the second indication information, that the RRC message is carried by the SRB1, the receiving unit being further configured to receive second indication information sent by the first anchor node, and the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

With reference to the second aspect or the first implementation manner of the second aspect, in a fifth implementation manner of the second aspect, the sending unit is further configured to send third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2, the receiving unit being further configured to receive third indication information sent by the first anchor node, and the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

With reference to the second aspect, in a sixth implementation manner of the second aspect, the apparatus further comprises: a first processing unit, configured to, before the sending unit sends the RRC message to the first anchor node, process, via a first RLC layer entity of the first serving node, the RRC message carried by the SRB1; and

a second processing unit, configured to, before the sending unit sends the RRC message to the first anchor node, process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2.

With reference to the first implementation manner of the second aspect, in a seventh implementation manner of the second aspect, the sending unit is specifically configured to send the RRC message processed by the first processing unit to the first UE via a Media Access Control (MAC) layer and a physical layer, or send the RRC message processed by the second processing unit to the first UE via a MAC layer and a physical layer.

With reference to the first implementation manner of the second aspect, in an eighth implementation manner of the second aspect, the sending unit is specifically configured to: send

the RRC message processed by the first processing unit to the first UE, so that a first PDCP layer entity of the first UE processes the RRC message carried by the SRB1 and then sends the processed message to an RRC layer entity; or send the RRC message processed by the second processing unit to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message
5 carried by the SRB2 and then sends the processed message to the RRC layer entity.

With reference to the first implementation manner of the second aspect, in a ninth implementation manner of the second aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by
10 the SRB1 being specifically an RRC connection setup complete message,

the receiving unit being specifically configured to receive the RRC connection request message sent by the first UE, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the
15 system message, and receives a random access response message sent by the first serving node,

the sending unit being specifically configured to forward the RRC connection request message received by the receiving unit to the first anchor node,

the receiving unit being further configured to receive the RRC connection setup message sent by the first anchor node, the RRC connection setup message being generated by the first
20 anchor node according to the received RRC connection request message,

the sending unit being further configured to send the RRC connection setup message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection setup complete message sent by the first UE, and

25 the sending unit being further configured to send the RRC connection setup complete message received by the receiving unit to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

With reference to the first implementation manner of the second aspect, in a tenth implementation manner of the second aspect, the RRC message carried by the SRB1 is specifically

an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit being specifically configured to send a bearer addition/modification confirmation message to the first anchor node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor node,

the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node,

the sending unit being further configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first UE, and

the sending unit being further configured to send the RRC connection reconfiguration complete message received by the receiving unit to the first anchor node, so that the first anchor node sends a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

With reference to the first implementation manner of the second aspect, in an eleventh implementation manner of the second aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after the first serving node receives a bearer addition/modification request message sent by the first anchor node and sends a bearer addition/modification confirmation message to the first anchor node,

the sending unit being specifically configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first UE,

the sending unit being further configured to send the RRC connection reconfiguration complete message received by the receiving unit to the first anchor node, and

5 the receiving unit being further configured to receive a bear addition/modification complete message sent by the first anchor node.

With reference to the first implementation manner of the second aspect, in a twelfth implementation manner of the second aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

10 the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first
15 anchor node, and

the sending unit being specifically configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE.

With reference to the first implementation manner of the second aspect, in a thirteenth implementation manner of the second aspect, the RRC message further comprises an RRC
20 message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the receiving unit being specifically configured to receive the RRC connection re-setup request message sent by the first UE, the RRC connection re-setup request message being sent by
25 the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit being specifically configured to send the RRC connection re-setup request message received by the receiving unit to the first anchor node,

the receiving unit being further configured to receive the RRC connection re-setup message sent by the first anchor node,

5 the sending unit being further configured to send the RRC connection re-setup message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection re-setup complete message sent by the first UE, and

10 the sending unit being further configured to send the RRC connection re-setup complete message received by the receiving unit to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

According to a third aspect, provided is an RRC message processing apparatus, provided on an anchor node, a first serving node setting up a connection to a first anchor node, the first anchor node setting up a connection to a mobility management entity (MME), the apparatus
15 comprising:

a sending unit, configured to send a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

20 With reference to the third aspect, in a first implementation manner of the third aspect, the apparatus further comprises:

a receiving unit, configured to receive an RRC message sent by the first serving node;

a first packet data processing unit, configured to process, via a first packet data convergence protocol (PDCP) layer entity of the first anchor node, an RRC message carried by an SRB1 and received by the receiving unit and then send a processed message to an RRC layer entity of the
25 first anchor node; and

a second packet data processing unit, configured to process, via a second PDCP layer entity of the first anchor node, an RRC message carried by an SRB2 and received by the receiving unit and then send a processed message to the RRC layer entity of the first anchor node.

With reference to the third aspect or the first implementation manner of the third aspect, in a second implementation manner of the third aspect, the apparatus further comprises:

a first message generation unit, configured to generate, via the RRC layer entity of the first anchor node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2,

5 the sending unit being specifically configured to send, to the first serving node, the RRC message carried by the SRB1 and generated by the first message generation unit or the RRC message carried by the SRB2 and generated by the first message generation unit.

With reference to the third aspect or the first implementation manner of the third aspect, in a third implementation manner of the third aspect, the RRC message further comprises an RRC
10 message carried by an SRB0, the receiving unit being further configured to receive first indication information sent by the first serving node, and

the apparatus further comprising:

an identification unit, configured to: identify, according to the first indication information received by the receiving unit, that the RRC message is carried by the SRB0, and perform
15 processing by using the RRC layer entity of the first anchor node,

the sending unit being further configured to send first indication information to the first serving node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

20 With reference to the third aspect or the first implementation manner of the third aspect, in a fourth implementation manner of the third aspect, the receiving unit is further configured to receive second indication information sent by the first serving node,

the apparatus further comprising:

an identification unit, configured to identify, according to the second indication
25 information received by the receiving unit, that the RRC message is carried by the SRB1,

the sending unit being further configured to send second indication information to the first serving node, the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

With reference to the third aspect or the first implementation manner of the third aspect, in a fifth implementation manner of the third aspect, the receiving unit is further configured to receive third indication information sent by the first serving node,

the apparatus further comprising:

5 an identification unit, configured to identify, according to the third indication information received by the receiving unit, that the RRC message is carried by the SRB2,

the sending unit being further configured to send third indication information to the first serving node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

10 With reference to the first implementation manner of the third aspect, in a sixth implementation manner of the third aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

15 the receiving unit being specifically configured to receive the RRC connection request message forwarded by the first serving node, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first
20 serving node,

the apparatus further comprising:

a second message generation unit, configured to generate the RRC connection setup message according to the RRC connection request message received by the receiving unit,

25 the sending unit being specifically configured to send, to the first serving node, the RRC connection setup message generated by the second message generation unit, so that the first serving node sends the RRC connection setup message to the first UE,

the receiving unit being further configured to receive the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and

the first UE, and the RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

With reference to the first implementation manner of the third aspect, in a seventh implementation manner of the third aspect, the RRC message carried by the SRB1 is specifically
5 an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit being specifically configured to receive a bearer addition/modification confirmation message sent by the first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification
10 request message after the first anchor node sends the bearer addition/modification request message to the first serving node,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and the first anchor node sending a bearer addition/modification complete message to the first serving node according to the RRC connection
15 reconfiguration complete message.
20

With reference to the first implementation manner of the third aspect, in an eighth implementation manner of the third aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a bearer addition/modification request message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node,
25

the receiving unit being specifically configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE, and

the sending unit being further configured to send a bear addition/modification complete message to the first serving node.

With reference to the first implementation manner of the third aspect, in a ninth implementation manner of the third aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

With reference to the first implementation manner of the third aspect, in a tenth implementation manner of the third aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the receiving unit being specifically configured to receive the RRC connection re-setup request message sent by the first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit being specifically configured to send the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE,

the receiving unit being further configured to receive the RRC connection re-setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

According to a fourth aspect, provided is a serving node, the serving node setting up a connection to a first anchor node, the first anchor node setting up a connection to a mobility management entity (MME),

the serving node comprising:

a transmitter; and

a receiver,

the receiver being configured to receive a radio resource control (RRC) message sent by first user equipment (UE), the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2,

the transmitter being configured to: send the RRC message received by the receiver to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

According to a fifth aspect, provided is an anchor node, a first serving node setting up a connection to the anchor node, the anchor node setting up a connection to a mobility management entity (MME), the anchor node comprising:

a transmitter,

the transmitter being configured to send a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

According to a sixth aspect, provided is an RRC message processing method, a first serving
5 node setting up a connection to a first anchor node, the first anchor node setting up a connection to a mobility management entity (MME),

the method comprising:

receiving, by the first serving node, a radio resource control (RRC) message sent by first
user equipment (UE), the RRC message comprising an RRC message carried by a signaling radio
10 bearer SRB1 or an RRC message carried by an SRB2;

sending, by the first serving node, the RRC message to the first anchor node, so that a first
packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC
message carried by the SRB1 and then sends a processed message to an RRC layer entity of the
first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC
15 message carried by the SRB2 and then sends a processed message to an RRC layer entity of the
first anchor node.

With reference to the sixth aspect, in a first implementation manner of the sixth aspect, the
method further comprises:

receiving, by the first serving node, an RRC message sent by the first anchor node, the
20 RRC message comprising an RRC message carried by an SRB1 or an RRC message carried by an
SRB2; and

processing, by a first radio link control (RLC) layer entity of the first serving node, the
RRC message carried by the SRB1 and then sending a processed message to the first UE, or
processing, by a second RLC layer entity of the first serving node, the RRC message carried by
25 the SRB2 and then sending a processed message to the first UE.

With reference to the sixth aspect or the first implementation manner of the sixth aspect,
in a second implementation manner of the sixth aspect, the method further comprises: generating,
by an RRC layer entity of the first serving node, an RRC message carried by an SRB0, and sending
the RRC message carried by the SRB0 to the first UE and/or the first anchor node.

With reference to the sixth aspect or the first implementation manner of the sixth aspect, in a third implementation manner of the sixth aspect, the RRC message further comprises an RRC message carried by an SRB0, and the method further comprises: sending, by the first serving node, first indication information to the first anchor node, the first indication information being used by
5 the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node; or receiving, by the first serving node, first indication information sent by the first anchor node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to
10 perform processing by using an RRC layer entity of the first serving node.

With reference to the sixth aspect or the first implementation manner of the sixth aspect, in a fourth implementation manner of the sixth aspect, the method further comprises: sending, by the first serving node, second indication information to the first anchor node, the second indication information being used by the first anchor node to identify, according to the second indication
15 information, that the RRC message is carried by the SRB1; or receiving, by the first serving node, second indication information sent by the first anchor node, the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

With reference to the sixth aspect or the first implementation manner of the sixth aspect, in a fifth implementation manner of the sixth aspect, the method further comprises: sending, by the first serving node, third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication
20 information, that the RRC message is carried by the SRB2; or receiving, by the first serving node, third indication information sent by the first anchor node, the third indication information being
25 used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

With reference to the sixth aspect, in a sixth implementation manner of the sixth aspect, before the sending, by the first serving node, the RRC message to the first anchor node, the method further comprises: processing, by a first RLC layer entity of the first serving node, the RRC

message carried by the SRB1; or processing, by the second RLC layer entity, the RRC message carried by the SRB2.

With reference to the first implementation manner of the sixth aspect, in a seventh implementation manner of the sixth aspect, the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE comprises: processing, by the first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending the processed message to the first UE via a Media Access Control (MAC) layer and a physical layer; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE via a MAC layer and a physical layer.

With reference to the first implementation manner of the sixth aspect, in an eighth implementation manner of the sixth aspect, the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE comprises: processing, by the first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending the processed message to the first UE, so that a first PDCP layer entity of the first UE processes the RRC message carried by the SRB1 and then sends the processed message to an RRC layer entity; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message carried by the SRB2 and then sends the processed message to the RRC layer entity.

With reference to the first implementation manner of the sixth aspect, in a ninth implementation manner of the sixth aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the method further comprising:

receiving, by the first serving node, the RRC connection request message sent by the first UE, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives
5 a random access response message sent by the first serving node;

forwarding, by the first serving node, the RRC connection request message to the first anchor node;

receiving, by the first serving node, the RRC connection setup message sent by the first anchor node, the RRC connection setup message being generated by the first anchor node
10 according to the received RRC connection request message;

sending, by the first serving node, the RRC connection setup message to the first UE;

receiving, by the first serving node, the RRC connection setup complete message sent by the first UE; and

sending, by the first serving node, the RRC connection setup complete message to the first
15 anchor node, to set up an RRC connection for the first anchor node and the first UE.

With reference to the first implementation manner of the sixth aspect, in a tenth implementation manner of the sixth aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

20 the method further comprising:

sending, by the first serving node, a bearer addition/modification confirmation message to the first anchor node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor
25 node;

receiving the RRC connection reconfiguration message sent by the first anchor node;

sending the RRC connection reconfiguration message to the first UE;

receiving the RRC connection reconfiguration complete message sent by the first UE; and

sending the RRC connection reconfiguration complete message to the first anchor node, so that the first anchor node sends a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

With reference to the first implementation manner of the sixth aspect, in an eleventh
5 implementation manner of the sixth aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the method further comprising:

receiving, by the first serving node, the RRC connection reconfiguration message sent by
10 the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after the first serving node receives a bearer addition/modification request message sent by the first anchor node and sends a bearer addition/modification confirmation message to the first anchor node;

sending, by the first serving node, the RRC connection reconfiguration message to the first
15 UE;

receiving, by the first serving node, the RRC connection reconfiguration complete message sent by the first UE;

sending, by the first serving node, the RRC connection reconfiguration complete message to the first anchor node; and

20 receiving, by the first serving node, a bear addition/modification complete message sent by the first anchor node.

With reference to the first implementation manner of the sixth aspect, in a twelfth implementation manner of the sixth aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

25 the method further comprising:

receiving, by the first serving node, the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message

sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first anchor node; and

sending, by the first serving node, the RRC connection reconfiguration message to the first UE.

5 With reference to the first implementation manner of the sixth aspect, in a thirteenth implementation manner of the sixth aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

10 the method further comprising:

 receiving, by the first serving node, the RRC connection re-setup request message sent by the first UE, the RRC connection re-setup request message being sent by the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node;

 sending, by the first serving node, the RRC connection re-setup request message to the first anchor node;

 receiving, by the first serving node, the RRC connection re-setup message sent by the first anchor node;

20 sending, by the first serving node, the RRC connection re-setup message to the first UE;

 receiving, by the first serving node, the RRC connection re-setup complete message sent by the first UE; and

 sending, by the first serving node, the RRC connection re-setup complete message to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

25 According to a seventh aspect, provided is an RRC message processing method, a first serving node setting up a connection to a first anchor node, the first anchor node setting up a connection to a mobility management entity (MME), the method comprising:

sending, by the first anchor node, a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

5 With reference to the seventh aspect, in a first implementation manner of the seventh aspect, the method further comprises:

receiving, by the first anchor node, an RRC message sent by the first serving node, and processing, by a first packet data convergence protocol (PDCP) layer entity of the first anchor node, an RRC message carried by the SRB1 and then sending a processed message to an RRC layer entity of the first anchor node, or processing, by a second PDCP layer entity of the first anchor node, an RRC message carried by the SRB2 and then sending a processed message to an RRC layer entity of the first anchor node.

With reference to the seventh aspect or the first implementation manner of the seventh aspect, in a second implementation manner of the seventh aspect, the method further comprises: generating, by the RRC layer entity of the first anchor node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2, and sending, to the first serving node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2.

With reference to the seventh aspect or the first implementation manner of the seventh aspect, in a third implementation manner of the seventh aspect, the RRC message further comprises an RRC message carried by an SRB0, and the method further comprises: receiving, by the first anchor node, first indication information sent by the first serving node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node; or sending, by the first anchor node, first indication information to the first serving node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

With reference to the seventh aspect or the first implementation manner of the seventh aspect, in a fourth implementation manner of the seventh aspect, the method further comprises: receiving, by the first anchor node, second indication information sent by the first serving node, the second indication information being used by the first anchor node to identify, according to the

second indication information, that the RRC message is carried by the SRB1; or sending, by the first anchor node, second indication information to the first serving node, the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

5 With reference to the seventh aspect or the first implementation manner of the seventh aspect, in a fifth implementation manner of the seventh aspect, the method further comprises: sending, by the first serving node, third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2; or receiving, by the first
10 serving node, third indication information sent by the first anchor node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

 With reference to the first implementation manner of the seventh aspect, in a sixth implementation manner of the seventh aspect, the RRC message further comprises an RRC
15 message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

 the method further comprising:

 receiving, by the first anchor node, the RRC connection request message forwarded by the
20 first serving node, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node;

 generating, by the first anchor node, the RRC connection setup message according to the
25 RRC connection request message;

 sending, by the first anchor node, the RRC connection setup message to the first serving node, so that the first serving node sends the RRC connection setup message to the first UE; and

 receiving, by the first anchor node, the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the

RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

With reference to the first implementation manner of the seventh aspect, in a seventh implementation manner of the seventh aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the method further comprising:

receiving, by the first anchor node, a bearer addition/modification confirmation message sent by the first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first anchor node sends the bearer addition/modification request message to the first serving node;

sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE; and

receiving, by the first anchor node, the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and sending, by the first anchor node, a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

With reference to the first implementation manner of the seventh aspect, in an eighth implementation manner of the seventh aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the method further comprising:

sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a bearer addition/modification request

message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node;

receiving, by the first anchor node, the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent
5 by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE; and

sending, by the first anchor node, a bear addition/modification complete message to the first serving node.

10 With reference to the first implementation manner of the seventh aspect, in a ninth implementation manner of the seventh aspect, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the method further comprising:

sending, by the first anchor node, the RRC connection reconfiguration message to the first
15 serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

20 With reference to the first implementation manner of the seventh aspect, in a tenth implementation manner of the seventh aspect, the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

25 the method further comprising:

receiving, by the first anchor node, the RRC connection re-setup request message sent by the first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first

serving node according to the system message, and receives a random access response message sent by the first serving node;

sending, by the first anchor node, the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE;

5 and

receiving, by the first anchor node, the RRC connection re-setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

10 According to the RRC message processing method, apparatus, and system provided in the embodiments of the present invention, a first serving node receives an RRC message sent by first UE or a first anchor node, and the RRC message comprises an RRC message carried by an SRB1 and an RRC message carried by an SRB2. When the first serving node sends the RRC message to the first anchor node, a first PDCP layer of the first anchor node processes the RRC message
15 carried by the SRB1 and then sends a processed message to an RRC layer entity, and a second PDCP layer processes the RRC message carried by the SRB2 and then sends a processed message to the RRC layer entity. Alternatively, a first RLC layer entity of the first serving node processes the RRC message carried by the SRB1 and then sends a processed message to the first UE, and a second RLC layer entity of the first serving node processes the RRC message carried by the SRB2
20 and then sends a processed message to the first UE. It can be seen from above that in the embodiments of the present invention, the first serving node and the first anchor node are used to jointly process the RRC message of the first UE, and different processing methods are used to process the RRC message according to different SRB types of the RRC message, so as to separate an RRC message processing function to two nodes, namely, the first serving node and the first
25 anchor node. Because an MME does not set up an S1 interface connection to the serving node, when the serving node handover is performed on the UE, an RRC connection of the UE is maintained on the first anchor node, and an S1 connection between the MME and the first anchor node does not change. Therefore, the handover process causes no corresponding handover signaling. In addition, when the MME has a paging message to be sent, the MME needs to send
30 the paging message only to all base stations in a TA area corresponding to the paging message that

have the S1 interface connection to the MME or the first anchor node that is in the TA area and has the S1 interface connection to the MME. Because the MME does not set up the S1 interface connection to the serving node, the MME does not need to send the paging message to the serving node. Correspondingly, dense deployment of serving nodes does not result in a signaling increase,
5 so as to effectively reduce signaling load of a core network.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a network architecture according to an embodiment of the present invention;

FIG. 2 is a structural diagram of an RRC message processing system according to an
10 embodiment of the present invention;

FIG. 3 is a schematic structural diagram of an RRC message processing apparatus according to an embodiment of the present invention;

FIG. 4 is a schematic structural diagram of an RRC message processing apparatus according to an embodiment of the present invention;

15 FIG. 5 is a schematic structural diagram of a serving node according to an embodiment of the present invention;

FIG. 6 is a schematic structural diagram of an anchor node according to an embodiment of the present invention;

FIG. 7 is a flowchart of an RRC message processing method on a serving node side
20 according to an embodiment of the present invention;

FIG. 8 is a structural diagram of an RRC message processing system according to an embodiment of the present invention;

FIG. 9 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention;

25 FIG. 10 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention;

FIG. 11 is a structural diagram of an RRC message processing system according to an embodiment of the present invention;

FIG. 1 is a schematic diagram of a network architecture according to an embodiment of the present invention. The network architecture includes a mobility management entity (MME) 101, a serving gateway (SGW) 102, an anchor node 103, a serving node 104, and user equipment (UE) 105. The anchor node 103 may be an existing base station, or may be a newly added network device. The serving node 104 may be a network device that provides a wireless communication service for the UE 105, and may be specifically a base station that serves the UE 105. In the prior art, the serving node 104 directly sets up a connection to the MME 101. Different from that in the prior art, in the present invention, the serving node 104 does not directly set up a connection to the MME 101, but instead, the serving node 104 sets up a connection to the anchor node 103, and the anchor node 103 sets up a connection to the MME 101. Therefore, the serving node 104 sets up a connection to the MME 101 via the anchor node 103. In the embodiment of the present invention, an S1-C control plane interface and an S1-U user plane interface are respectively established between the MME 101 in a core network and the anchor node 103 and between the SGW 102 in the core network and the anchor node 103. The anchor node 103 and the serving node 104 are connected to each other by means of a signal tunnel (backhaul) to establish an interface. The interface may be specifically an enhanced X2 interface, or may be an interface of another type. A radio link connection is set up between the UE 105 and the serving node 104.

In the embodiment of the present invention, the serving node 104 does not independently process RRC messages, but the anchor node 103 and the serving node 104 jointly process the RRC messages. That is, depending on types of the RRC messages, the anchor node 103 processes some RRC messages, and the serving node 104 processes remaining RRC messages, so that an RRC function is split onto the two nodes. Specifically, the anchor node 103 may include an RRC protocol entity used to process an RRC message carried by an SRB1 and an RRC message carried by an SRB2, a first packet data convergence protocol (PDCP) protocol entity used to process the RRC message carried by the SRB1, and a second PDCP protocol entity used to process the RRC message carried by the SRB2. Therefore, the anchor node 103 has a function of processing the RRC message carried by the SRB1 and the RRC message carried by the SRB2. That is, upon receiving the RRC message carried by the SRB1 and the RRC message carried by the SRB2 that are sent by the UE 105, the serving node 104 forwards the RRC messages to the anchor node 103, and the anchor node 103 processes the received RRC message carried by the SRB1 and the received RRC message carried by the SRB2. The serving node 104 includes an RLC protocol

entity, a Media Access Control (MAC) protocol entity, and a physical layer (PHY) protocol entity that are used to process data carried by a data radio bearer (DRB), the RRC message carried by the SRB1, and the RRC message carried by the SRB2, and an RRC protocol entity used to process an RRC message carried by an SRB0. The serving node 104 is configured to generate and send a
5 common RRC message, such as a MIB, a SIB, a paging message, or MBMS control information. Therefore, the serving node 104 has a function of processing the RRC message carried by the SRB0 and is responsible for processing a system broadcast message of a BCCH service, a cell paging message of a PCCH service, and optionally, some RRC messages such as an RRC connection request message and an RRC connection setup message of a CCCH service in an RRC
10 connection setup procedure and an RRC connection re-setup procedure of UE.

The RRC message carried by the SRB1 may be specifically an RRC message when connection setup is completed, and the RRC message carried by the SRB2 may be specifically an RRC message after connection setup is completed.

In addition, an RRC message processing procedure corresponding to the network
15 architecture may include:

A processing procedure of a first type of RRC message, i.e., a procedure for processing a dedicated downlink (DL) RRC message of UE. The DL RRC message includes the RRC message carried by the SRB1 and the RRC message carried by the SRB2. Specifically, after generating the RRC message of the UE carried by the SRB1 or the RRC message of the UE carried by the SRB2,
20 the RRC protocol entity of the anchor node 103 submits the RRC message to the PDCP protocol entity corresponding to the SRB1 or the SRB2 to process the same. The PDCP protocol entity of the anchor node forms a PDCP PDU, and sends the PDCP PDU to the serving node via an interface between the anchor node and the serving node. Upon receiving the PDCP PDU, the serving node performs analysis to acquire the PDCP PDU. Then, the RLC protocol entity of the serving node
25 corresponding to the SRB1 or the SRB2 processes the PDCP PDU. After the RLC protocol entity of the serving node processes the PDCP PDU, the MAC layer and the PHY layer of the serving node process a processed PDCP PDU and then send a processed PDCP PDU to the UE.

A processing procedure of a second type of RRC message, i.e., a procedure for processing a dedicated uplink (UL) RRC message of UE. The UL RRC message includes the RRC message
30 carried by the SRB1 and the RRC message carried by the SRB2. Specifically, upon receiving the

RRC message of the UE carried by the SRB1 or the RRC message of the UE carried by the SRB2, the serving node submits the RRC message to the RLC protocol entity corresponding to the SRB1 or the SRB2 to process the same. The RLC protocol entity of the serving node forms a PDCP PDU, and sends the PDCP PDU to the anchor node by using an interface between the serving node and the anchor node. Upon receiving the PDCP PDU, the anchor node performs analysis to acquire the PDCP PDU. Then, the PDCP protocol entity of the anchor node corresponding to the SRB1 or the SRB2 processes the PDCP PDU. The PDCP protocol entity processes the RRC message and then sends a processed message to an RRC layer entity.

A processing procedure of a third type of RRC message, i.e., a procedure for processing a common RRC message of UE. The common RRC message includes the RRC message carried by the SRB0. There are multiple types of common RRC messages, for example, a system broadcast message of a BCCH service, a cell common DL RRC message (paging or broadcast) of a PCCH service, and the RRC message carried by the SRB0 in connection setup and connection re-setup procedures of a CCCH service. The RRC message carried by the SRB0 is processed by the serving node.

The network architecture shown in FIG. 1 not only includes the serving node 104, but also includes the anchor node 103. The anchor node 103 and the serving node 104 jointly process an RRC message of the UE 105. Because the MME 101 does not set up an S1 interface connection to the serving node 104, when the serving node handover is performed on the UE 105, an RRC connection of the UE is maintained on the anchor node 103, and an S1 connection between the MME 101 and the anchor node 103 does not change. Therefore, the handover process causes no corresponding handover signaling. In addition, when the MME 101 has a paging message to be sent, the MME 101 needs to send the paging message only to all base stations in a TA area corresponding to the paging message that have the S1 interface connection to the MME 101 or the anchor node 103 that is in the TA area and has the S1 interface connection to the MME 101. Because the MME 101 does not set up the S1 interface connection to the serving node 104, the MME 101 does not need to send the paging message to the serving node 104. Correspondingly, dense deployment of serving nodes 104 does not result in a signaling increase, so as to effectively reduce signaling load of the core network.

FIG. 2 is a structural diagram of an RRC message processing system according to an embodiment of the present invention. The system includes: a first serving node 201, a first anchor node 202, and a mobility management entity (MME) 203. The first serving node 201 sets up a connection to the first anchor node 202, and the first anchor node 202 sets up a connection to the MME 203.

The first serving node 201 is configured to: receive a radio resource control (RRC) message sent by first user equipment (UE), the RRC message including an RRC message carried by a signaling radio bearer 1 (SRB1) or an RRC message carried by an SRB2; and send the RRC message to the first anchor node.

The first anchor node 202 is configured to: process, via a first packet data convergence protocol (PDCP) layer entity, the RRC message carried by the SRB1 and then send a processed message to an RRC layer entity; or process, via a second PDCP layer entity, the RRC message carried by the SRB2 and then send a processed message to the RRC layer entity.

FIG. 3 is a schematic structural diagram of an RRC message processing apparatus according to an embodiment of the present invention. The apparatus is provided on a serving node. A first serving node sets up a connection to a first anchor node. The first anchor node sets up a connection to a mobility management entity (MME).

The apparatus includes:

a receiving unit 301, configured to receive an RRC message sent by first user equipment (UE), the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2; and

a sending unit 302, configured to: send the RRC message received by the receiving unit to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

Preferably, the receiving unit 301 is further configured to receive an RRC message sent by the first anchor node, the RRC message including an RRC message carried by an SRB1 or an RRC message carried by an SRB2, the apparatus further including:

5 a first processing unit 303, configured to process, via a first radio link control (RLC) layer entity of the first serving node, the RRC message carried by the SRB1, so that the sending unit sends a processed message to the first UE; and

a second processing unit 304, configured to process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2, so that the sending unit sends a processed message to the first UE.

10 Preferably, the apparatus further includes:

a message generation unit, configured to generate, via an RRC layer entity of the first serving node, an RRC message carried by an SRB0, so that the sending unit sends the RRC message carried by the SRB0 to the first UE and/or the first anchor node.

15 Preferably, the RRC message further includes an RRC message carried by an SRB0, the sending unit 302 being further configured to send first indication information to the first anchor node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node, the receiving unit 301 being further configured to receive first indication information sent by the first anchor node, and the first
20 indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

Preferably, the sending unit 302 is further configured to send second indication information to the first anchor node, the second indication information being used by the first anchor node to
25 identify, according to the second indication information, that the RRC message is carried by the SRB1, the receiving unit 301 being further configured to receive second indication information sent by the first anchor node, and the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

Preferably, the sending unit 302 is further configured to send third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2, the receiving unit 301 being further configured to receive third indication information sent
5 by the first anchor node, and the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

Preferably, the apparatus further includes: a first processing unit 303, configured to, before the sending unit 302 sends the RRC message to the first anchor node, process, via a first RLC layer
10 entity of the first serving node, the RRC message carried by the SRB1; and

a second processing unit 304, configured to, before the sending unit 302 sends the RRC message to the first anchor node, process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2.

Preferably, the sending unit 302 is specifically configured to send the RRC message
15 processed by the first processing unit 303 to the first UE via a Media Access Control (MAC) layer and a physical layer, or send the RRC message processed by the second processing unit to the first UE via a MAC layer and a physical layer.

Preferably, the sending unit 302 is specifically configured to: send the RRC message processed by the first processing unit 303 to the first UE, so that a first PDCP layer entity of the
20 first UE processes the RRC message carried by the SRB1 and then sends the processed message to an RRC layer entity; or send the RRC message processed by the second processing unit 304 to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message carried by the SRB2 and then sends the processed message to the RRC layer entity.

Preferably, the RRC message further includes an RRC message carried by an SRB0, the
25 RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the receiving unit 301 being specifically configured to receive the RRC connection request message sent by the first UE, the RRC connection request message being sent by the first UE to

the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit 302 being specifically configured to forward the RRC connection request
5 message received by the receiving unit to the first anchor node,

the receiving unit 301 being further configured to receive the RRC connection setup message sent by the first anchor node, the RRC connection setup message being generated by the first anchor node according to the received RRC connection request message,

the sending unit 302 being further configured to send the RRC connection setup message
10 received by the receiving unit 301 to the first UE,

the receiving unit 301 being further configured to receive the RRC connection setup complete message sent by the first UE, and

the sending unit 302 being further configured to send the RRC connection setup complete message received by the receiving unit 301 to the first anchor node, to set up an RRC connection
15 for the first anchor node and the first UE.

Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit 302 being specifically configured to send a bearer addition/modification confirmation message to the first anchor node, the bearer addition/modification confirmation
20 message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor node,

the receiving unit 301 being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node,

the sending unit 302 being further configured to send the RRC connection reconfiguration
25 message received by the receiving unit 301 to the first UE,

the receiving unit 301 being further configured to receive the RRC connection reconfiguration complete message sent by the first UE,

the sending unit 302 being further configured to send the RRC connection reconfiguration complete message received by the receiving unit 301 to the first anchor node, so that the first anchor node sends a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

5 Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit 301 being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after the first serving node receives a bearer
10 addition/modification request message sent by the first anchor node and sends a bearer addition/modification confirmation message to the first anchor node,

the sending unit 302 being specifically configured to send the RRC connection reconfiguration message received by the receiving unit 301 to the first UE,

the receiving unit 301 being further configured to receive the RRC connection
15 reconfiguration complete message sent by the first UE,

the sending unit 302 being further configured to send the RRC connection reconfiguration complete message received by the receiving unit 301 to the first anchor node, and

the receiving unit 301 being further configured to receive a bear addition/modification complete message sent by the first anchor node.

20 Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the receiving unit 301 being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base
25 station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first anchor node, and

the sending unit 302 being specifically configured to send the RRC connection reconfiguration message received by the receiving unit 301 to the first UE.

Preferably, the RRC message further includes an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

5 the receiving unit 301 being specifically configured to receive the RRC connection re-setup request message sent by the first UE, the RRC connection re-setup request message being sent by the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by
10 the first serving node,

the sending unit 302 being specifically configured to send the RRC connection re-setup request message received by the receiving unit 301 to the first anchor node,

the receiving unit 301 being further configured to receive the RRC connection re-setup message sent by the first anchor node,

15 the sending unit 302 being further configured to send the RRC connection re-setup message received by the receiving unit 301 to the first UE,

the receiving unit 301 being further configured to receive the RRC connection re-setup complete message sent by the first UE, and

the sending unit 302 being further configured to send the RRC connection re-setup
20 complete message received by the receiving unit 301 to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

FIG. 4 is a schematic structural diagram of an RRC message processing apparatus according to an embodiment of the present invention. The apparatus is provided on an anchor node. A first serving node sets up a connection to a first anchor node. The first anchor node sets up a
25 connection to a mobility management entity (MME). The apparatus includes:

a sending unit 401, configured to send a radio resource control (RRC) message to the first serving node, the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

Preferably, the apparatus further includes:

a receiving unit 402, configured to receive an RRC message sent by the first serving node;

a first packet data processing unit 403, configured to process, via a first packet data convergence protocol (PDCP) layer entity of the first anchor node, an RRC message carried by an SRB1 and received by the receiving unit 402 and then send a processed message to an RRC layer entity of the first anchor node; and

a second packet data processing unit 404, configured to process, via a second PDCP layer entity of the first anchor node, an RRC message carried by an SRB2 and received by the receiving unit 402 and then send a processed message to the RRC layer entity of the first anchor node.

Preferably, the apparatus further includes:

a first message generation unit, configured to generate, via the RRC layer entity of the first anchor node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2,

the sending unit being specifically configured to send, to the first serving node, the RRC message carried by the SRB1 and generated by the first message generation unit or the RRC message carried by the SRB2 and generated by the first message generation unit.

Preferably, the RRC message further includes an RRC message carried by an SRB0, the receiving unit 402 being further configured to receive first indication information sent by the first serving node, and

the apparatus further including:

an identification unit, configured to: identify, according to the first indication information received by the receiving unit 402, that the RRC message is carried by the SRB0, and perform processing by using the RRC layer entity of the first anchor node,

the sending unit 401 being further configured to send first indication information to the first serving node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

Preferably, the receiving unit 402 is further configured to receive second indication information sent by the first serving node,

the apparatus further including:

an identification unit, configured to identify, according to the second indication information received by the receiving unit 402, that the RRC message is carried by the SRB1,

the sending unit 401 being further configured to send second indication information to the first serving node, the second indication information being used by the first serving node to
5 identify, according to the second indication information, that the RRC message is carried by the SRB1.

Preferably, the receiving unit 402 is further configured to receive third indication information sent by the first serving node,

the apparatus further including:

10 an identification unit, configured to identify, according to the third indication information received by the receiving unit, that the RRC message is carried by the SRB2,

the sending unit being further configured to send third indication information to the first serving node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

15 Preferably, the RRC message further includes an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the receiving unit 402 being specifically configured to receive the RRC connection request
20 message forwarded by the first serving node, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

25 the apparatus further including:

a second message generation unit, configured to generate the RRC connection setup message according to the RRC connection request message received by the receiving unit,

the sending unit 401 being specifically configured to send, to the first serving node, the RRC connection setup message generated by the second message generation unit, so that the first serving node sends the RRC connection setup message to the first UE,

the receiving unit 402 being further configured to receive the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, and the RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit 402 being specifically configured to receive a bearer addition/modification confirmation message sent by the first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first anchor node sends the bearer addition/modification request message to the first serving node,

the sending unit 401 being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE,

the receiving unit 402 being further configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and the first anchor node sending a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit 401 being specifically configured to send the RRC connection reconfiguration message to the first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a

bearer addition/modification request message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node,

the receiving unit 402 being specifically configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE, and

the sending unit 401 being further configured to send a bear addition/modification complete message to the first serving node.

10 Preferably, the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the sending unit 401 being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

20 Preferably, the RRC message further includes an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the receiving unit 402 being specifically configured to receive the RRC connection re-setup request message sent by the first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit 401 being specifically configured to send the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE,

the receiving unit 402 being further configured to receive the RRC connection re-setup
5 complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

FIG. 5 is a schematic structural diagram of a serving node according to an embodiment of the present invention. The serving node sets up a connection to a first anchor node. The first anchor
10 node sets up a connection to a mobility management entity (MME).

The serving node includes:

a transmitter 501; and

a receiver 502,

the receiver 502 being configured to receive a radio resource control (RRC) message sent
15 by first user equipment (UE), the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2,

the transmitter 501 being configured to: send the RRC message received by the receiver
502 to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a
20 processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

FIG. 6 is a schematic structural diagram of an anchor node according to an embodiment of the present invention. A first serving node sets up a connection to the anchor node. The anchor
25 node sets up a connection to a mobility management entity (MME). The anchor includes:

a transmitter 601,

the transmitter 601 being configured to send a radio resource control (RRC) message to the first serving node, the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

FIG. 7 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1. The method is performed by a serving node. A first serving node sets up a connection to a first anchor node. The first anchor node sets up a connection to a mobility management entity (MME). As shown in FIG. 7, the method specifically includes:

Step 701: receiving, by a first serving node, an RRC message sent by first UE, the RRC message including an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

Because there are a plurality of UEs in a network, to distinguish between the plurality of UEs, current UE is referred to as the first UE. In addition, there may also be a plurality of serving nodes and a plurality of anchor nodes. A serving node handover may be performed on UE, that is, handing over from a serving node to another serving node. An anchor node handover may also be performed on the UE, that is, handing over from an anchor node to another anchor node. Therefore, a current serving node of the first UE is referred to as the first serving node, and a current anchor node of the first UE is referred to as the first anchor node.

An RRC message sent by the first UE or the first anchor node is not a message obtained after processing by an RRC layer entity but only content that includes an RRC PDU, for example, a PDCP PDU that is sent by the first UE or the first anchor node and that includes the RRC message carried by the SRB1 or the RRC message carried by the SRB2, or an RLC PDU that is sent by the first UE or the first anchor node and that includes an RRC message carried by an SRB0. When the RRC message is transmitted between the first serving node and the first anchor node, the PDCP PDU or the RLC PDU may also be used as an information unit and be included in another protocol message, for example, included in control plane interface signaling.

In the embodiment of the present invention, the first serving node may have an RRC function corresponding to an SRB0. The method may further include: generating, by an RRC layer

entity of the first serving node, an RRC message carried by an SRB0, and sending the RRC message carried by the SRB0 to the first UE and/or the first anchor node.

The RRC function corresponding to the SRB0 may specifically include a system broadcast function, a paging function, some RRC connection setup functions, or some RRC connection re-setup functions. Said some functions specifically refer to processing an RRC connection setup request message, generating and delivering an RRC connection setup message, processing an RRC connection re-setup request message, or generating and delivering an RRC connection re-setup message.

Step 702: sending, by the first serving node, the RRC message to a first anchor node, so that a first PDCP layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

In the embodiment of the present invention, the method may further include: receiving, by the first serving node, an RRC message sent by the first anchor node, the RRC message including an RRC message carried by an SRB1 or an RRC message carried by an SRB2; and processing, by a first radio link control (RLC) layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE.

Inter-device control plane interface signaling is used between the serving node and the anchor node. Therefore, in order that the serving node and the anchor node can identify an SRB type of a received RRC message, a transmitter may send indication information to a receiver, and indicate the SRB type of the RRC message to the receiver by using the indication information, for example, indicate whether the RRC message is specifically an RRC message carried by the SRB1 or an RRC message carried by the SRB2. In the embodiment of the present invention, the indication information may be carried when the RRC message is being sent. Specifically, the indication information may be carried in the RRC message, or the indication information may be carried in a control plane signaling message that carries the RRC message, or the indication information may be sent separately after the RRC message is sent.

In the embodiment of the present invention, the first PDCP layer entity of the first anchor node processing the RRC message carried by the SRB1 and then sending the processed message to the RRC layer entity specifically includes: processing, by the first PDCP layer entity of the first anchor node, the RRC message carried by the SRB1, to obtain a PDCP PDU including the RRC message carried by the SRB1; and sending, to the RRC layer entity, the PDCP PDU including the RRC message carried by the SRB1. The PDCP PDU may be used as an information unit, and be included in another protocol message, for example, included in control plane interface signaling.

In addition, the RRC message may further include an RRC message carried by an SRB0. When the RRC message sent by the first serving node to the first anchor node is specifically the RRC message carried by the SRB0, the method may further include: sending, by the first serving node, first indication information to the first anchor node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node; or receiving, by the first serving node, first indication information sent by the first anchor node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

Similarly, the first serving node may further send second indication information to the first anchor node. The second indication information is used by the first anchor node to identify, according to the second indication information, that the RRC message is carried by the SRB1. Alternatively, the first serving node receives second indication information sent by the first anchor node. The second indication information is used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

Similarly, the first serving node may further send third indication information to the first anchor node. The third indication information is used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2. Alternatively, the first serving node receives third indication information sent by the first anchor node. The third indication information is used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

In the embodiment of the present invention, before the first serving node sends the RRC message to the first anchor node, the method may further include: processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1; or processing, by the second RLC layer entity, the RRC message carried by the SRB2. Specifically, the first RLC layer entity of the first serving node processes the RRC message carried by the SRB1 to obtain an RLC PDU including the RRC message carried by the SRB1, or the second RLC layer entity of the first serving node processes the RRC message carried by the SRB2 to obtain an RLC PDU including the RRC message carried by the SRB2. The RLC PDU may be used as an information unit and be included in another protocol message, for example, included in control plane interface signaling.

In addition, the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE; or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE may specifically include: processing, by the first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending the processed message to the first UE via a Media Access Control (MAC) layer and a physical layer; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE via a MAC layer and a physical layer.

Alternatively, the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE; or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE may specifically include: processing, by the first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending the processed message to the first UE, so that a first PDCP layer entity of the first UE processes the RRC message carried by the SRB1 and then sends the processed message to an RRC layer entity; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message carried by the SRB2 and then sends the processed message to the RRC layer entity.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, an RRC message cannot be directly sent between first UE and a first anchor node, and needs to be forwarded by a first serving node. That is, when the first UE needs to send an RRC message to the first anchor node, the first UE first needs to send the RRC message to the first serving node, and then the first serving node sends the RRC message to the first anchor node. When the first anchor node needs to send an RRC message to the first UE, the first anchor node first needs to send the RRC message to the first serving node, and then the first serving node sends the RRC message to the first UE. Because the RRC message needs to pass through two nodes, namely, the first anchor node and the first serving node, an RRC function can be split onto the two nodes via the method provided in the embodiment of the present invention.

FIG. 8 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used to set up an RRC connection. The method is performed by a serving node. An RRC message includes an RRC message carried by an SRB1, an RRC message carried by an SRB2, and an RRC message carried by an SRB0. The RRC message carried by the SRB0 is specifically an RRC connection request message or an RRC connection setup message, and the RRC message carried by the SRB1 is specifically an RRC connection setup complete message. As shown in FIG. 8, the method specifically includes:

Step 801: receiving, by a first serving node, an RRC connection request message sent by first UE, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node.

The first serving node may allocate a cell radio network temporary identifier (CRNTI) to the UE, and include the CRNTI in the random access response message, to send the random access response message to the first UE.

Step 802: forwarding, by the first serving node, the RRC connection request message to a first anchor node.

In the embodiment of the present invention, the first serving node may send first indication information when forwarding the RRC connection request message to the first anchor node. The first indication information is used to indicate that the RRC connection request message is an RRC message carried by the SRB0. The first indication information may be an explicit signaling indication or a particular message name. The latter is, for example, SRB0RRCTransfer or InitialRRCTransfer. Therefore, after identifying, according to the first indication information, that the RRC connection request message is the RRC message carried by the SRB0, the first anchor node directly submits the message to an RRC layer entity to process the same.

Optionally, when forwarding the RRC connection request message to the first anchor node, the first serving node may include a CRNTI and/or an X2AP ID of the UE in the RRC connection request message. The CRNTI is carried for subsequent potential MRO optimization. For example, if a CRNTI in an RLF indication received from a neighboring cell is the same as the CRNTI, it can be determined that an RLF has occurred in the UE, and the first anchor node may create UE context and an RRC connection for the UE according to the information.

Step 803: receiving, by the first serving node, an RRC connection setup message sent by the first anchor node, the RRC connection setup message being generated by the first anchor node according to the received RRC connection request message.

In the embodiment of the present invention, the first anchor node may include the first indication information in a message when sending the RRC connection setup message, and specifically, may include the first indication information in the RRC connection setup message or include the first indication information in a control plane signaling message that carries the RRC connection setup message. Alternatively, the first anchor node may separately send the first indication information after sending the RRC connection setup message, so that the first serving node identifies, according to the first indication information, that the RRC connection setup message is the RRC message carried by the SRB0.

Step 804: sending, by the first serving node, the RRC connection setup message to the first UE.

Step 805: receiving, by the first serving node, an RRC connection setup complete message sent by the first UE.

In the embodiment of the present invention, the first serving node has a first RLC layer entity used to process an RRC message carried by the SRB1 and a second RLC layer entity used to process an RRC message carried by the SRB2. Because the RRC connection setup complete message is the RRC message carried by the SRB1, the first RLC layer entity of the first serving node processes the RRC connection setup complete message and then sends a processed message to the first UE.

Step 806: sending, by the first serving node, the RRC connection setup complete message to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

The first serving node may include second indication information in a message when sending the RRC connection setup complete message to the first anchor node, and specifically, may include the second indication information in the RRC connection setup complete message or include the second indication information in a control plane signaling message that carries the RRC connection setup complete message. Alternatively, the first serving node may separately send the second indication information after sending the RRC connection setup complete message, so that the first anchor node identifies, according to the second indication information, that the RRC connection setup complete message is the RRC message carried by the SRB1. Then, the RRC connection setup complete message is processed at a first PDCP layer of the first anchor node, and then a processed message is sent to the RRC layer entity.

In addition, after the RRC connection is set up between the first anchor node and the first UE, in a subsequent uplink/downlink RRC message processing process of RRC, the first serving node may forward, to the first anchor node, a PDCP PDU corresponding to an RRC message that is carried by the SRB1 and received from the first UE and a PDCP PDU corresponding to an RRC message that is carried by the SRB2 and received from the first UE. After a PDCP entity of the SRB1 and a PDCP entity of the SRB2 respectively process the RRC messages, the first anchor node may submit processed messages to the RRC layer entity. In addition, the first serving node submits, respectively to an RLC entity of the SRB1 and an RLC entity of the SRB2 for processing, a PDCP PDU corresponding to an RRC message that is carried by the SRB1 and received from the first anchor node and a PDCP PDU corresponding to an RRC message that is carried by the SRB2 and received from the first anchor node, and then sends processed messages to the first UE via a MAC layer and a physical layer. Each time an RRC message is sent between the first anchor

node and the first serving node, whether the RRC message is an RRC message carried by an SRB0, an RRC message carried by an SRB1, or an RRC message carried by an SRB2 needs to be indicated, so that a receiver performs processing.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, an RRC connection may be set up for a first anchor node and first UE. In addition, in the process of setting up the RRC connection, for an RRC message between a first serving node and the first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 9 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used to set up a DRB bearer. The method is performed by a serving node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message. As shown in FIG. 9, the method specifically includes:

Step 901: sending, by a first serving node, a bearer addition/modification confirmation message to a first anchor node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor node.

In the embodiment of the present invention, upon receiving an RRC connection setup complete message sent by first UE, the first anchor node may send initial UE information to an MME, receive an initial environment setup request message or an E-RAB setup request message that is sent by the MME, and send the bearer addition/modification request message to the first serving node.

E-RAB is short for E-UTRAN radio access bearer. E-UTRAN is short for evolved UTRAN. UTRAN is short for UMTS Terrestrial Radio Access Network. RAB is short for radio access bearer.

5 Step 902: receiving, by the first serving node, the RRC connection reconfiguration message sent by the first anchor node.

The first serving node may further receive second indication information, so that the first serving node identifies, according to the second indication information, that the RRC connection reconfiguration message is an RRC message carried by an SRB1. A first RLC layer entity of the first serving node processes the RRC message carried by the SRB1.

10 Step 903: sending the RRC connection reconfiguration message to the first UE.

In the embodiment of the present invention, specifically, the first RLC layer entity of the first serving node may process the RRC message carried by the SRB1 and then send a processed message to the first UE via a MAC layer and a physical layer.

15 Step 904: receiving the RRC connection reconfiguration complete message sent by the first UE.

Step 905: sending the RRC connection reconfiguration complete message to the first anchor node, so that the first anchor node sends a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

20 The second indication information may be carried when the RRC connection reconfiguration complete message is being sent. Specifically, the second indication information may be carried in the RRC connection reconfiguration complete message, or the second indication information may be carried in a control plane signaling message that carries the RRC connection reconfiguration complete message. Alternatively, the second indication information may be separately sent after the RRC connection reconfiguration complete message is sent, so that the first
25 anchor node identifies, according to the second indication information, that the RRC connection reconfiguration message is the RRC message carried by the SRB1. A first PDCP layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity. Preferably, the second indication information is carried in the control plane signaling message.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, a DRB bearer may be set up. In addition, in the process of setting up the DRB bearer, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 10 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for intra-anchor node handover between serving nodes. The method is performed by a serving node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message. As shown in FIG. 10, the method specifically includes:

Step 1001: receiving, by a first serving node, an RRC connection reconfiguration message sent by a first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after the first serving node receives a bearer addition/modification request message sent by the first anchor node and sends a bearer addition/modification confirmation message to the first anchor node.

Second indication information may be carried when the RRC connection reconfiguration message is being sent. Specifically, the second indication information may be carried in the RRC connection reconfiguration message, or the second indication information may be carried in a control plane signaling message that carries the RRC connection reconfiguration message. Alternatively, the second indication information may be separately sent after the RRC connection reconfiguration message is sent, so that the first serving node identifies, according to the second indication information, that the RRC connection reconfiguration message is an RRC message carried by an SRB1. A first RLC layer entity of the first serving node processes the RRC message carried by the SRB1.

In the embodiment of the present invention, the first anchor node may send a bearer release request message to a second serving node before the first anchor node sends the RRC connection reconfiguration message to the first serving node. Alternatively, the first anchor node may send a bearer release request message to a second serving node after the first anchor node sends the RRC connection reconfiguration message to the first serving node. A sequence for sending the bearer release request message and sending the RRC connection reconfiguration message is not specifically limited in the present invention.

Step 1002: sending, by the first serving node, the RRC connection reconfiguration message to first UE.

Specifically, the first RLC layer entity of the first serving node may process the RRC connection reconfiguration message and then send a processed message to the first UE via a MAC layer and a physical layer.

Step 1003: receiving, by the first serving node, the RRC connection reconfiguration complete message sent by the first UE.

Step 1004: sending, by the first serving node, the RRC connection reconfiguration complete message to the first anchor node.

The second indication information may be carried when the RRC connection reconfiguration complete message is being sent. Specifically, the second indication information may be carried in the RRC connection reconfiguration complete message, or the second indication information may be carried in a control plane signaling message that carries the RRC connection reconfiguration complete message. Alternatively, the second indication information may be separately sent after the RRC connection reconfiguration complete message is sent, so that the first anchor node identifies, according to the second indication information, that the RRC connection reconfiguration message is the RRC message carried by the SRB1. A first PDCP layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity.

Step 1005: receiving, by the first serving node, a bear addition/modification complete message sent by the first anchor node.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, intra-anchor node handover between serving nodes can be implemented. In addition, in a serving node handover process, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 11 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for inter-anchor node base station handover between serving nodes. The method is performed by a serving node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message. As shown in FIG. 11, the method specifically includes:

Step 1101: receiving, by a first serving node, an RRC connection reconfiguration message sent by a first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first anchor node.

Second indication information may be carried when the RRC connection reconfiguration message is being sent. Specifically, the second indication information may be carried in the RRC connection reconfiguration message, or the second indication information may be carried in a control plane signaling message that carries the RRC connection reconfiguration message. Alternatively, the second indication information may be separately sent after the RRC connection reconfiguration message is sent, so that the first serving node identifies, according to the second indication information, that the RRC connection reconfiguration message is an RRC message carried by an SRB1. A first RLC layer entity of the first serving node processes the RRC connection reconfiguration message.

The neighboring base station is a base station that is established in a cell adjacent to a cell in which the first serving node is located. In the embodiment of the present invention, when a handover needs to be performed on the first anchor node, the handover may be performed from the first anchor node to the second anchor node or to the neighboring base station.

5 Step 1102: sending, by the first serving node, the RRC connection reconfiguration message to first UE.

Specifically, the first RLC layer entity of the first serving node may process the RRC connection reconfiguration message and then send a processed message to the first UE via a MAC layer and a physical layer.

10 In addition, after step 1102, the first anchor node may send a bearer release request message to the first serving node.

In the embodiment of the present invention, the following processing process may further be included: the second anchor node or the neighboring base station processes a random access procedure of the first UE; a second serving node or the neighboring base station receives an RRC connection reconfiguration complete message sent by the first UE; the second serving node sends
15 the RRC connection reconfiguration complete message to the second anchor node; and the first anchor node receives a UE context release request message sent by the second anchor node or the neighboring base station.

The second indication information may be carried when the RRC connection
20 reconfiguration complete message is being sent. Specifically, the second indication information may be carried in the RRC connection reconfiguration complete message, or the second indication information may be carried in a control plane signaling message that carries the RRC connection reconfiguration complete message. Alternatively, the second indication information may be separately sent after the RRC connection reconfiguration complete message is sent, so that the
25 second anchor node identifies, according to the second indication information, that the RRC connection reconfiguration complete message is the RRC message carried by the SRB1. A first PDCP layer entity of the second anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, inter-anchor node base station handover between serving nodes can be implemented. In addition, in a serving node handover process, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 12 is a flowchart of an RRC message processing method on a serving node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for RRC connection re-setup after a radio link failure. The method is performed by a serving node. The RRC message includes an RRC message carried by an SRB0 and an RRC message carried by an SRB1. The RRC message carried by the SRB0 is specifically an RRC connection re-setup request message or an RRC connection re-setup message. The RRC message carried by the SRB1 is specifically an RRC connection re-setup complete message. As shown in FIG. 12, the method specifically includes:

Step 1201: receiving, by a first serving node, an RRC connection re-setup request message sent by first UE, the RRC connection re-setup request message being sent by the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node.

Step 1202: sending, by the first serving node, the RRC connection re-setup request message to the first anchor node.

In the embodiment of the present invention, the first serving node may include first indication information in a message when sending the RRC connection re-setup request message to the first anchor node, and specifically, may include the first indication information in the RRC connection re-setup request message or include the first indication information in a control plane signaling message that carries the RRC connection re-setup request message. Alternatively, the first serving node may separately send the first indication information after sending the RRC connection re-setup request message. The first indication information is used to indicate that the

RRC connection re-setup request message is an RRC message carried by an SRB0. The first indication information may be an explicit signaling indication or a particular message name. The latter is, for example, SRB0RRCTransfer or InitialRRCTransfer. Therefore, after identifying, according to the first indication information, that the RRC connection re-setup request message is the RRC message carried by the SRB0, the first anchor node directly submits the message to an RRC layer entity to process the same.

Step 1203: receiving, by the first serving node, an RRC connection re-setup message sent by the first anchor node.

In the embodiment of the present invention, the first anchor node may include the first indication information in a message when sending the RRC connection re-setup message to the first serving node, and specifically, may include the first indication information in the RRC connection re-setup message or include the first indication information in a control plane signaling message that carries the RRC connection re-setup message. Alternatively, the first anchor node may separately send the first indication information after sending the RRC connection re-setup message, so that the first serving node identifies, according to the first indication information, that the RRC connection setup message is the RRC message carried by the SRB0.

Step 1204: sending, by the first serving node, the RRC connection re-setup message to the first UE.

Step 1205: receiving, by the first serving node, the RRC connection re-setup complete message sent by the first UE.

In the embodiment of the present invention, the first serving node has a first RLC layer entity used to process an RRC message carried by the SRB1 and a second RLC layer entity used to process an RRC message carried by the SRB2. Because the RRC connection re-setup complete message is the RRC message carried by the SRB1, the first RLC layer entity of the first serving node processes the RRC connection re-setup complete message and then sends a processed message to the first UE.

Step 1206: sending, by the first serving node, the RRC connection re-setup complete message to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

The first serving node may further send second indication information when sending the RRC connection re-setup complete message to the first anchor node, so that the first anchor node identifies, according to the second indication information, that the RRC connection re-setup complete message is the RRC message carried by the SRB1. Then, a first PDCP layer entity of the first anchor node processes the RRC connection re-setup complete message and then sends a processed message to the RRC layer entity.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, RRC connection re-setup may be implemented after a radio link failure. In addition, in an RRC connection re-setup procedure, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 13 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1. The method is performed by an anchor node. As shown in FIG. 13, the method specifically includes:

Step 1301: sending, by a first anchor node, an RRC message to a first serving node, the RRC message including an RRC message carried by an SRB1 or an RRC message carried by an SRB2.

The first anchor node has an RRC function corresponding to the SRB1 and the SRB2.

Step 1302: receiving, by the first anchor node, an RRC message sent by the first serving node, and processing, by a first PDCP layer entity of the first anchor node, an RRC message carried by the SRB1 and then sending a processed message to an RRC layer entity, or processing, by a second PDCP layer entity, an RRC message carried by the SRB2 and then sending a processed message to the RRC layer entity.

The RRC message may further include an RRC message carried by an SRB0, and the method may further include: receiving, by the first anchor node, first indication information sent

by the first serving node, identifying, by the first anchor node according to the first indication information, that the RRC message is carried by the SRB0, and performing processing by using the RRC layer entity of the first anchor node; or sending, by the first anchor node, first indication information to the first serving node, so that the first serving node identifies, according to the first indication information, that the RRC message is carried by the SRB0, and performs processing by using an RRC layer entity of the first serving node.

The method may further include: receiving, by the first anchor node, second indication information sent by the first serving node, and identifying, by the first anchor node according to the second indication information, that the RRC message is carried by the SRB1; or sending, by the first anchor node, second indication information to the first serving node, so that the first serving node identifies, according to the second indication information, that the RRC message is carried by the SRB1.

The method may further include: receiving, by the first anchor node, third indication information sent by the first serving node, and identifying, by the first anchor node according to the third indication information, that the RRC message is carried by the SRB2; or sending, by the first anchor node, third indication information to the first serving node, so that the first serving node identifies, according to the third indication information, that the RRC message is carried by the SRB2.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, an RRC message cannot be directly sent between first UE and a first anchor node, and needs to be forwarded by a first serving node. That is, when the first UE needs to send an RRC message to the first anchor node, the first UE first needs to send the RRC message to the first serving node, and then the first serving node sends the RRC message to the first anchor node. When the first anchor node needs to send an RRC message to the first UE, the first anchor node first needs to send the RRC message to the first serving node, and then the first serving node sends the RRC message to the first UE. Because the RRC message needs to pass through two nodes, namely, the first anchor node and the first serving node, an RRC function can be split onto the two nodes via the method provided in Embodiment 1 of the present invention.

FIG. 14 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used to set up an RRC connection. The method is performed by an anchor node. An RRC message includes an RRC message carried by an SRB1, an RRC message carried by an SRB2, and an RRC message carried by an SRB0. The RRC message carried by the SRB0 is specifically an RRC connection request message or an RRC connection setup message, and the RRC message carried by the SRB1 is specifically an RRC connection setup complete message. As shown in FIG. 14, the method specifically includes:

Step 1401: receiving, by a first anchor node, the RRC connection request message forwarded by a first serving node, the RRC connection request message being sent by first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node.

Step 1402: generating, by the first anchor node, the RRC connection setup message according to the RRC connection request message.

Step 1403: sending, by the first anchor node, the RRC connection setup message to the first serving node, so that the first serving node sends the RRC connection setup message to the first UE.

Step 1404: receiving, by the first anchor node, the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, an RRC connection may be set up for a first anchor node and first UE. In addition, in the process of setting up the RRC connection, for an RRC message between a first serving node and the first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor

node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 15 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used to set up a DRB bearer. The method is performed by an anchor node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message. As shown in FIG. 15, the method specifically includes:

Step 1501: receiving, by a first anchor node, a bearer addition/modification confirmation message sent by a first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first anchor node sends the bearer addition/modification request message to the first serving node.

Step 1502: sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE.

Step 1503: receiving, by the first anchor node, the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and sending, by the first anchor node, a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, a DRB bearer may be set up. In addition, in the process of setting up the DRB bearer, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing.

Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 16 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for intra-anchor node handover between serving nodes. The method is performed by an anchor node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message. As shown in FIG. 16, the method specifically includes:

Step 1601: sending, by a first anchor node, the RRC connection reconfiguration message to a first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a bearer addition/modification request message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node.

Step 1602: receiving, by the first anchor node, the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE.

Step 1603: sending, by the first anchor node, a bear addition/modification complete message to the first serving node.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, intra-anchor node handover between serving nodes can be implemented. In addition, in a serving node handover process, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 17 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for inter-anchor node base station handover between serving nodes. The method is performed by an anchor node. The RRC message includes an RRC message carried by an SRB1. The RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message. As shown in FIG. 12, the method specifically includes:

Step 1701: sending, by a first anchor node, an RRC connection reconfiguration message to a first serving node, so that the first serving node sends the RRC connection reconfiguration message to first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, inter-anchor node base station handover between serving nodes can be implemented. In addition, in a serving node handover process, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

FIG. 18 is a flowchart of an RRC message processing method on an anchor node side according to an embodiment of the present invention. The RRC message processing method is based on the network architecture shown in FIG. 1, and is specifically used for RRC connection re-setup after a radio link failure. The method is performed by an anchor node. The RRC message includes an RRC message carried by an SRB0 and an RRC message carried by an SRB1. The RRC message carried by the SRB0 is specifically an RRC connection re-setup request message or an RRC connection re-setup message. The RRC message carried by the SRB1 is specifically an RRC connection re-setup complete message. As shown in FIG. 18, the method specifically includes:

Step 1801: receiving, by a first anchor node, an RRC connection re-setup request message sent by a first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node.

Step 1802: sending, by the first anchor node, the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE.

Step 1803: receiving, by the first anchor node, the RRC connection re-setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

It can be learned from the foregoing processing process that, in the RRC message processing method provided in the embodiment of the present invention, RRC connection re-setup may be implemented after a radio link failure. In addition, in an RRC connection re-setup procedure, for an RRC message between a first serving node and a first anchor node, indication information used to indicate an SRB type may be carried when the RRC message is being sent, or the indication information may be separately sent, so that the first serving node and the first anchor node perform corresponding processing. Therefore, an RRC function is separated to two nodes, namely, the first serving node and the first anchor node.

A person skilled in the art can be further aware that, units and algorithm steps in examples described with reference to the embodiments disclosed herein may be implemented by electronic hardware, computer software, or a combination thereof. To clearly describe the interchangeability between the hardware and the software, the foregoing has generally described compositions and steps of each example according to functions. Whether the functions are performed by hardware or software depends on particular applications and design constraint conditions of the technical solutions. A person skilled in the art may use different methods to implement the described functions for each particular application, but it should not be considered that the implementation goes beyond the scope of the present invention.

Steps of methods or algorithms described in the embodiments disclosed herein may be implemented by hardware, a software module executed by a processor, or a combination thereof. The software module may reside in a random access memory (RAM), a memory, a read-only memory (ROM), an electrically programmable ROM, an electrically erasable programmable ROM, a register, a hard disk, a removable disk, a CD-ROM, or any other form of storage medium known in the art.

In the foregoing specific implementation manners, the objective, technical solutions, and benefits of the present invention are further described in detail. It should be understood that the foregoing descriptions are merely specific implementation manners of the present invention, but are not intended to limit the scope of protection of the present invention. Any modification, equivalent replacement, or improvement made without departing from the spirit and principle of the present invention should fall within the scope of protection of the present invention.

CLAIMS

1. A radio resource control (RRC) message processing system, characterized by comprising:
a first serving node, a first anchor node, and a mobility management entity (MME), the first serving
node setting up a connection to the first anchor node, the first anchor node setting up a connection
5 to the MME,
- the first serving node being configured to: receive a radio resource control (RRC) message
sent by first user equipment (UE), the RRC message comprising an RRC message carried by a
signaling radio bearer 1 (SRB1) or an RRC message carried by an SRB2; and send the RRC
message to the first anchor node, and
- 10 the first anchor node being configured to: process, via a first packet data convergence
protocol (PDCP) layer entity, the RRC message carried by the SRB1 and then send a processed
message to an RRC layer entity; or process, via a second PDCP layer entity, the RRC message
carried by the SRB2 and then send a processed message to the RRC layer entity.
2. A radio resource control (RRC) message processing apparatus, provided on a serving node,
15 characterized in that a first serving node sets up a connection to a first anchor node, and the first
anchor node sets up a connection to a mobility management entity (MME),
- the apparatus comprising:
- a receiving unit, configured to receive an RRC message sent by first user equipment (UE),
the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an
20 RRC message carried by an SRB2; and
- a sending unit, configured to: send the RRC message received by the receiving unit to the
first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first
anchor node processes the RRC message carried by the SRB1 and then sends a processed message
to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor
25 node processes the RRC message carried by the SRB2 and then sends a processed message to an
RRC layer entity of the first anchor node.

3. The apparatus according to claim 2, wherein the receiving unit is further configured to receive an RRC message sent by the first anchor node, the RRC message comprising an RRC message carried by an SRB1 or an RRC message carried by an SRB2, the apparatus further comprising:

5 a first processing unit, configured to process, via a first radio link control (RLC) layer entity of the first serving node, the RRC message carried by the SRB1, so that the sending unit sends a processed message to the first UE; and

a second processing unit, configured to process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2, so that the sending unit sends a processed
10 message to the first UE.

4. The apparatus according to claim 2 or 3, further comprising:

a message generation unit, configured to generate, via an RRC layer entity of the first serving node, an RRC message carried by an SRB0, so that the sending unit sends the RRC message carried by the SRB0 to the first UE and/or the first anchor node.

15 5. The apparatus according to claim 2 or 3, wherein the RRC message further comprises an RRC message carried by an SRB0, the sending unit being further configured to send first indication information to the first anchor node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node, the
20 receiving unit being further configured to receive first indication information sent by the first anchor node, and the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

6. The apparatus according to claim 2 or 3, wherein the sending unit is further configured to
25 send second indication information to the first anchor node, the second indication information being used by the first anchor node to identify, according to the second indication information,

that the RRC message is carried by the SRB1, the receiving unit being further configured to receive second indication information sent by the first anchor node, and the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.

5 7. The apparatus according to claim 2 or 3, wherein the sending unit is further configured to send third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2, the receiving unit being further configured to receive third indication information sent by the first anchor node, and the third indication information being
10 used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

8. The apparatus according to claim 2, further comprising: a first processing unit, configured to, before the sending unit sends the RRC message to the first anchor node, process, via a first RLC layer entity of the first serving node, the RRC message carried by the SRB1; and
15 a second processing unit, configured to, before the sending unit sends the RRC message to the first anchor node, process, via a second RLC layer entity of the first serving node, the RRC message carried by the SRB2.

9. The apparatus according to claim 3, wherein the sending unit is specifically configured to send the RRC message processed by the first processing unit to the first UE via a Media Access Control (MAC) layer and a physical layer, or send the RRC message processed by the second
20 processing unit to the first UE via a MAC layer and a physical layer.

10. The apparatus according to claim 3, wherein the sending unit is specifically configured to: send the RRC message processed by the first processing unit to the first UE, so that a first PDCP layer entity of the first UE processes the RRC message carried by the SRB1 and then sends the
25 processed message to an RRC layer entity; or send the RRC message processed by the second

processing unit to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message carried by the SRB2 and then sends the processed message to the RRC layer entity.

11. The apparatus according to claim 3, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the receiving unit being specifically configured to receive the RRC connection request message sent by the first UE, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit being specifically configured to forward the RRC connection request message received by the receiving unit to the first anchor node,

the receiving unit being further configured to receive the RRC connection setup message sent by the first anchor node, the RRC connection setup message being generated by the first anchor node according to the received RRC connection request message,

the sending unit being further configured to send the RRC connection setup message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection setup complete message sent by the first UE, and

the sending unit being further configured to send the RRC connection setup complete message received by the receiving unit to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

12. The apparatus according to claim 3, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit being specifically configured to send a bearer addition/modification confirmation message to the first anchor node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor node,

the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node,

the sending unit being further configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first UE, and

the sending unit being further configured to send the RRC connection reconfiguration complete message received by the receiving unit to the first anchor node, so that the first anchor node sends a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

13. The apparatus according to claim 3, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after the first serving node receives a bearer addition/modification request message sent by the first anchor node and sends a bearer addition/modification confirmation message to the first anchor node,

the sending unit being specifically configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first UE,

the sending unit being further configured to send the RRC connection reconfiguration complete message received by the receiving unit to the first anchor node, and

the receiving unit being further configured to receive a bear addition/modification complete message sent by the first anchor node.

- 5 14. The apparatus according to claim 3, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the receiving unit being specifically configured to receive the RRC connection reconfiguration message sent by the first anchor node, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first anchor node, and

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the sending unit being specifically configured to send the RRC connection reconfiguration message received by the receiving unit to the first UE.

- 15 15. The apparatus according to claim 3, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the receiving unit being specifically configured to receive the RRC connection re-setup request message sent by the first UE, the RRC connection re-setup request message being sent by the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

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- 25 the sending unit being specifically configured to send the RRC connection re-setup request message received by the receiving unit to the first anchor node,

the receiving unit being further configured to receive the RRC connection re-setup message sent by the first anchor node,

the sending unit being further configured to send the RRC connection re-setup message received by the receiving unit to the first UE,

5 the receiving unit being further configured to receive the RRC connection re-setup complete message sent by the first UE, and

the sending unit being further configured to send the RRC connection re-setup complete message received by the receiving unit to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

10 16. A radio resource control (RRC) message processing apparatus, provided on an anchor node, characterized in that a first serving node sets up a connection to a first anchor node, and the first anchor node sets up a connection to a mobility management entity (MME), the apparatus comprising:

15 a sending unit, configured to send a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

17. The apparatus according to claim 16, further comprising:

a receiving unit, configured to receive an RRC message sent by the first serving node;

20 a first packet data processing unit, configured to process, via a first packet data convergence protocol (PDCP) layer entity of the first anchor node, an RRC message carried by an SRB1 and received by the receiving unit and then send a processed message to an RRC layer entity of the first anchor node; and

25 a second packet data processing unit, configured to process, via a second PDCP layer entity of the first anchor node, an RRC message carried by an SRB2 and received by the receiving unit and then send a processed message to the RRC layer entity of the first anchor node.

18. The apparatus according to claim 16 or 17, further comprising:

a first message generation unit, configured to generate, via the RRC layer entity of the first anchor node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2,

the sending unit being specifically configured to send, to the first serving node, the RRC
5 message carried by the SRB1 and generated by the first message generation unit or the RRC message carried by the SRB2 and generated by the first message generation unit.

19. The apparatus according to claim 16 or 17, wherein the RRC message further comprises an RRC message carried by an SRB0, the receiving unit being further configured to receive first indication information sent by the first serving node, and

10 the apparatus further comprising:

an identification unit, configured to: identify, according to the first indication information received by the receiving unit, that the RRC message is carried by the SRB0, and perform processing by using the RRC layer entity of the first anchor node,

the sending unit being further configured to send first indication information to the first
15 serving node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

20. The apparatus according to claim 16 or 17, wherein the receiving unit is further configured to receive second indication information sent by the first serving node,

20 the apparatus further comprising:

an identification unit, configured to identify, according to the second indication information received by the receiving unit, that the RRC message is carried by the SRB1,

the sending unit being further configured to send second indication information to the first serving node, the second indication information being used by the first serving node to identify,
25 according to the second indication information, that the RRC message is carried by the SRB1.

21. The apparatus according to claim 16 or 17, wherein the receiving unit is further configured to receive third indication information sent by the first serving node,

the apparatus further comprising:

an identification unit, configured to identify, according to the third indication information
5 received by the receiving unit, that the RRC message is carried by the SRB2,

the sending unit being further configured to send third indication information to the first serving node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

22. The apparatus according to claim 17, wherein the RRC message further comprises an RRC
10 message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the receiving unit being specifically configured to receive the RRC connection request message forwarded by the first serving node, the RRC connection request message being sent by
15 the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the apparatus further comprising:

20 a second message generation unit, configured to generate the RRC connection setup message according to the RRC connection request message received by the receiving unit,

the sending unit being specifically configured to send, to the first serving node, the RRC connection setup message generated by the second message generation unit, so that the first serving node sends the RRC connection setup message to the first UE,

25 the receiving unit being further configured to receive the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and

the first UE, and the RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

23. The apparatus according to claim 17, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the receiving unit being specifically configured to receive a bearer addition/modification confirmation message sent by the first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first anchor node sends the bearer addition/modification request message to the first serving node,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE,

the receiving unit being further configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and the first anchor node sending a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

24. The apparatus according to claim 17, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a bearer addition/modification request message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node,

the receiving unit being specifically configured to receive the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE, and

the sending unit being further configured to send a bear addition/modification complete message to the first serving node.

25. The apparatus according to claim 17, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the sending unit being specifically configured to send the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

26. The apparatus according to claim 17, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the receiving unit being specifically configured to receive the RRC connection re-setup request message sent by the first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node,

the sending unit being specifically configured to send the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE,

the receiving unit being further configured to receive the RRC connection re-setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

27. A serving node, characterized in that the serving node sets up a connection to a first anchor node, and the first anchor node sets up a connection to a mobility management entity (MME),

the serving node comprising:

a transmitter; and

a receiver,

the receiver being configured to receive a radio resource control (RRC) message sent by first user equipment (UE), the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2,

the transmitter being configured to: send the RRC message received by the receiver to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

28. An anchor node, characterized in that a first serving node sets up a connection to the anchor node, and the anchor node sets up a connection to a mobility management entity (MME), the anchor node comprising:

a transmitter,

the transmitter being configured to send a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

29. A radio resource control (RRC) message processing method, characterized in that a first serving node sets up a connection to a first anchor node, and the first anchor node sets up a connection to a mobility management entity (MME),

the method comprising:

receiving, by the first serving node, a radio resource control (RRC) message sent by first user equipment (UE), the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2; and

sending, by the first serving node, the RRC message to the first anchor node, so that a first packet data convergence protocol (PDCP) layer entity of the first anchor node processes the RRC message carried by the SRB1 and then sends a processed message to an RRC layer entity of the first anchor node, or a second PDCP layer entity of the first anchor node processes the RRC message carried by the SRB2 and then sends a processed message to an RRC layer entity of the first anchor node.

30. The method according to claim 29, further comprising:

receiving, by the first serving node, an RRC message sent by the first anchor node, the RRC message comprising an RRC message carried by an SRB1 or an RRC message carried by an SRB2; and

processing, by a first radio link control (RLC) layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE.

31. The method according to claim 29 or 30, further comprising: generating, by an RRC layer entity of the first serving node, an RRC message carried by an SRB0, and sending the RRC message carried by the SRB0 to the first UE and/or the first anchor node.
32. The method according to claim 29 or 30, wherein the RRC message further comprises an RRC message carried by an SRB0, and the method further comprises: sending, by the first serving node, first indication information to the first anchor node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node; or receiving, by the first serving node, first indication information sent by the first anchor node, the first indication information being used by the first serving node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.
33. The method according to claim 29 or 30, further comprising: sending, by the first serving node, second indication information to the first anchor node, the second indication information being used by the first anchor node to identify, according to the second indication information, that the RRC message is carried by the SRB1; or receiving, by the first serving node, second indication information sent by the first anchor node, the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.
34. The method according to claim 29 or 30, further comprising: sending, by the first serving node, third indication information to the first anchor node, the third indication information being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2; or receiving, by the first serving node, third indication information sent by the first anchor node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.

35. The method according to claim 29, wherein before the sending, by the first serving node, the RRC message to the first anchor node, the method further comprises: processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1; or processing, by the second RLC layer entity, the RRC message carried by the SRB2.
- 5 36. The method according to claim 30, wherein the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE comprises: processing, by the first RLC layer entity of the first serving node, the RRC message
10 carried by the SRB1 and then sending the processed message to the first UE via a Media Access Control (MAC) layer and a physical layer; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE via a MAC layer and a physical layer.
- 15 37. The method according to claim 30, wherein the processing, by a first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending a processed message to the first UE, or processing, by a second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending a processed message to the first UE comprises: processing, by the first RLC layer entity of the first serving node, the RRC message carried by the SRB1 and then sending the processed message to the first UE, so that a first PDCP
20 layer entity of the first UE processes the RRC message carried by the SRB1 and then sends the processed message to an RRC layer entity; or processing, by the second RLC layer entity of the first serving node, the RRC message carried by the SRB2 and then sending the processed message to the first UE, so that a second PDCP layer entity of the first UE processes the RRC message carried by the SRB2 and then sends the processed message to the RRC layer entity.
- 25 38. The method according to claim 30, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,

the method further comprising:

receiving, by the first serving node, the RRC connection request message sent by the first UE, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends
5 a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node;

forwarding, by the first serving node, the RRC connection request message to the first anchor node;

receiving, by the first serving node, the RRC connection setup message sent by the first
10 anchor node, the RRC connection setup message being generated by the first anchor node according to the received RRC connection request message;

sending, by the first serving node, the RRC connection setup message to the first UE;

receiving, by the first serving node, the RRC connection setup complete message sent by the first UE; and

15 sending, by the first serving node, the RRC connection setup complete message to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

39. The method according to claim 30, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

20 the method further comprising:

sending, by the first serving node, a bearer addition/modification confirmation message to the first anchor node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first serving node receives the bearer addition/modification request message sent by the first anchor
25 node;

receiving the RRC connection reconfiguration message sent by the first anchor node;

sending the RRC connection reconfiguration message to the first UE;

receiving the RRC connection reconfiguration complete message sent by the first UE; and
sending the RRC connection reconfiguration complete message to the first anchor node, so
that the first anchor node sends a bearer addition/modification complete message to the first
serving node according to the RRC connection reconfiguration complete message.

- 5 40. The method according to claim 30, wherein the RRC message carried by the SRB1 is
specifically an RRC connection reconfiguration message or an RRC connection reconfiguration
complete message,

the method further comprising:

10 receiving, by the first serving node, the RRC connection reconfiguration message sent by
the first anchor node, the RRC connection reconfiguration message being sent by the first anchor
node after the first serving node receives a bearer addition/modification request message sent by
the first anchor node and sends a bearer addition/modification confirmation message to the first
anchor node;

15 sending, by the first serving node, the RRC connection reconfiguration message to the first
UE;

receiving, by the first serving node, the RRC connection reconfiguration complete message
sent by the first UE;

sending, by the first serving node, the RRC connection reconfiguration complete message
to the first anchor node; and

20 receiving, by the first serving node, a bear addition/modification complete message sent by
the first anchor node.

41. The method according to claim 30, wherein the RRC message carried by the SRB1 is
specifically an RRC connection reconfiguration message,

the method further comprising:

25 receiving, by the first serving node, the RRC connection reconfiguration message sent by
the first anchor node, the RRC connection reconfiguration message being sent by the first anchor

node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, the first serving node belonging to the first anchor node; and

5 sending, by the first serving node, the RRC connection reconfiguration message to the first UE.

42. The method according to claim 30, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

10 the method further comprising:

 receiving, by the first serving node, the RRC connection re-setup request message sent by the first UE, the RRC connection re-setup request message being sent by the first UE after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node;

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 sending, by the first serving node, the RRC connection re-setup request message to the first anchor node;

 receiving, by the first serving node, the RRC connection re-setup message sent by the first anchor node;

20 sending, by the first serving node, the RRC connection re-setup message to the first UE;

 receiving, by the first serving node, the RRC connection re-setup complete message sent by the first UE; and

 sending, by the first serving node, the RRC connection re-setup complete message to the first anchor node, to set up an RRC connection for the first anchor node and the first UE.

43. A radio resource control (RRC) message processing method, characterized in that a first serving node sets up a connection to a first anchor node, and the first anchor node sets up a connection to a mobility management entity (MME), the method comprising:

5 sending, by the first anchor node, a radio resource control (RRC) message to the first serving node, the RRC message comprising an RRC message carried by a signaling radio bearer SRB1 or an RRC message carried by an SRB2.

44. The method according to claim 43, further comprising:

10 receiving, by the first anchor node, an RRC message sent by the first serving node, and processing, by a first packet data convergence protocol (PDCP) layer entity of the first anchor node, an RRC message carried by the SRB1 and then sending a processed message to an RRC layer entity of the first anchor node, or processing, by a second PDCP layer entity of the first anchor node, an RRC message carried by the SRB2 and then sending a processed message to an RRC layer entity of the first anchor node.

15 45. The method according to claim 43 or 44, further comprising: generating, by the RRC layer entity of the first anchor node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2, and sending, to the first serving node, the RRC message carried by the SRB1 or the RRC message carried by the SRB2.

20 46. The method according to claim 43 or 44, wherein the RRC message further comprises an RRC message carried by an SRB0, and the method further comprises: receiving, by the first anchor node, first indication information sent by the first serving node, the first indication information being used by the first anchor node to identify, according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using the RRC layer entity of the first anchor node; or sending, by the first anchor node, first indication information to the first serving node, the first indication information being used by the first serving node to identify, 25 according to the first indication information, that the RRC message is carried by the SRB0, and to perform processing by using an RRC layer entity of the first serving node.

47. The method according to claim 43 or 44, further comprising: receiving, by the first anchor node, second indication information sent by the first serving node, the second indication information being used by the first anchor node to identify, according to the second indication information, that the RRC message is carried by the SRB1; or sending, by the first anchor node,
5 second indication information to the first serving node, the second indication information being used by the first serving node to identify, according to the second indication information, that the RRC message is carried by the SRB1.
48. The method according to claim 43 or 44, further comprising: receiving, by the first anchor node, third indication information sent by the first serving node, the third indication information
10 being used by the first anchor node to identify, according to the third indication information, that the RRC message is carried by the SRB2; or sending, by the first anchor node, third indication information to the first serving node, the third indication information being used by the first serving node to identify, according to the third indication information, that the RRC message is carried by the SRB2.
- 15 49. The method according to claim 44, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection request message or an RRC connection setup message, the RRC message carried by the SRB1 being specifically an RRC connection setup complete message,
- the method further comprising:
- 20 receiving, by the first anchor node, the RRC connection request message forwarded by the first serving node, the RRC connection request message being sent by the first UE to the first serving node after the first UE receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first serving node according to the system message, and receives a random access response message sent by the first serving node;
- 25 generating, by the first anchor node, the RRC connection setup message according to the RRC connection request message;

sending, by the first anchor node, the RRC connection setup message to the first serving node, so that the first serving node sends the RRC connection setup message to the first UE; and

receiving, by the first anchor node, the RRC connection setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the
5 RRC connection setup complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection setup message.

50. The method according to claim 44, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

10 the method further comprising:

receiving, by the first anchor node, a bearer addition/modification confirmation message sent by the first serving node, the bearer addition/modification confirmation message being generated by the first serving node according to a bearer addition/modification request message after the first anchor node sends the bearer addition/modification request message to the first
15 serving node;

sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE; and

receiving, by the first anchor node, the RRC connection reconfiguration complete message
20 sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE to the first serving node after the first UE receives the RRC connection reconfiguration message, and sending, by the first anchor node, a bearer addition/modification complete message to the first serving node according to the RRC connection reconfiguration complete message.

25 51. The method according to claim 44, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message or an RRC connection reconfiguration complete message,

the method further comprising:

sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, the RRC connection reconfiguration message being sent by the first anchor node to the first serving node after the first anchor node sends a bearer addition/modification request message to the first serving node and receives a bearer addition/modification confirmation message sent by the first serving node;

receiving, by the first anchor node, the RRC connection reconfiguration complete message sent by the first serving node, the RRC connection reconfiguration complete message being sent by the first UE and received by the first serving node after the first serving node receives the RRC connection reconfiguration message sent by the first anchor node and sends the RRC connection reconfiguration message to the first UE; and

sending, by the first anchor node, a bear addition/modification complete message to the first serving node.

52. The method according to claim 44, wherein the RRC message carried by the SRB1 is specifically an RRC connection reconfiguration message,

the method further comprising:

sending, by the first anchor node, the RRC connection reconfiguration message to the first serving node, so that the first serving node sends the RRC connection reconfiguration message to the first UE, the RRC connection reconfiguration message being sent by the first anchor node after a second anchor node or a neighboring base station receives a handover request message sent by the first anchor node and sends a handover request confirmation message to the first anchor node, and the first serving node belonging to the first anchor node.

53. The method according to claim 44, wherein the RRC message further comprises an RRC message carried by an SRB0, the RRC message carried by the SRB0 being specifically an RRC connection re-setup request message or an RRC connection re-setup message, the RRC message carried by the SRB1 being specifically an RRC connection re-setup complete message,

the method further comprising:

receiving, by the first anchor node, the RRC connection re-setup request message sent by the first serving node, the RRC connection re-setup request message being sent by the first UE to the first serving node after the first UE finds a radio link failure (RLF), receives a system message sent by means of broadcast by the first serving node, sends a random access message to the first
5 serving node according to the system message, and receives a random access response message sent by the first serving node;

sending, by the first anchor node, the RRC connection re-setup message to the first serving node, so that the first serving node sends the RRC connection re-setup message to the first UE;
and

10 receiving, by the first anchor node, the RRC connection re-setup complete message sent by the first serving node, to set up an RRC connection for the first anchor node and the first UE, the RRC connection re-setup complete message being sent by the first UE and received by the first serving node.

DRAWINGS

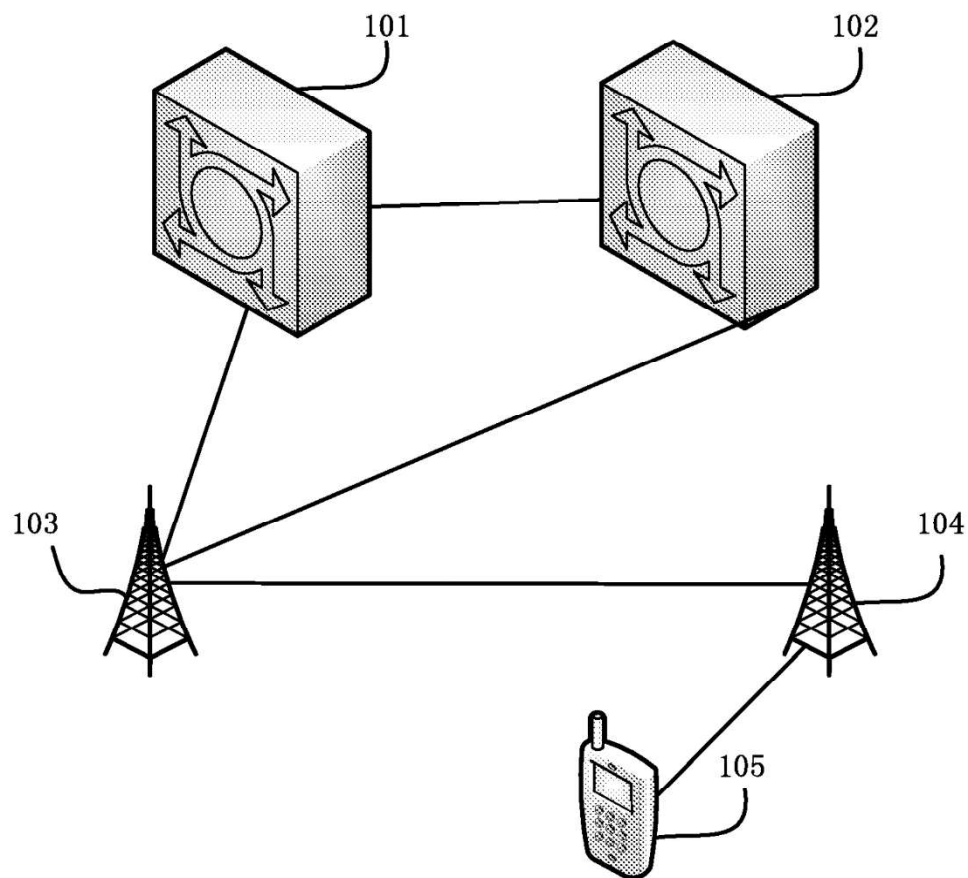


FIG. 1

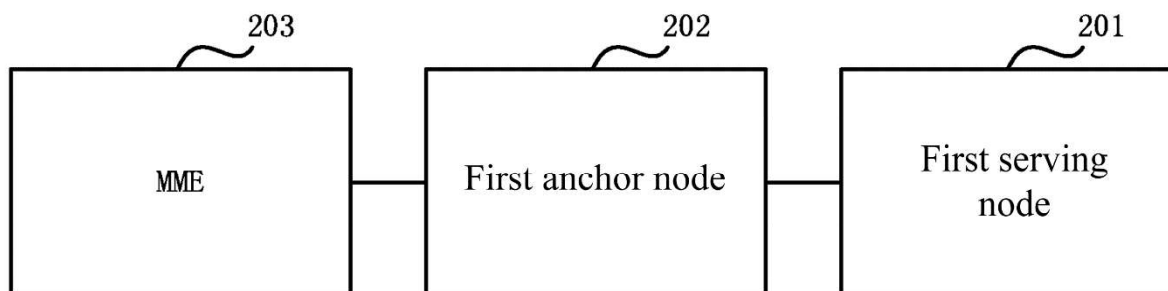


FIG. 2

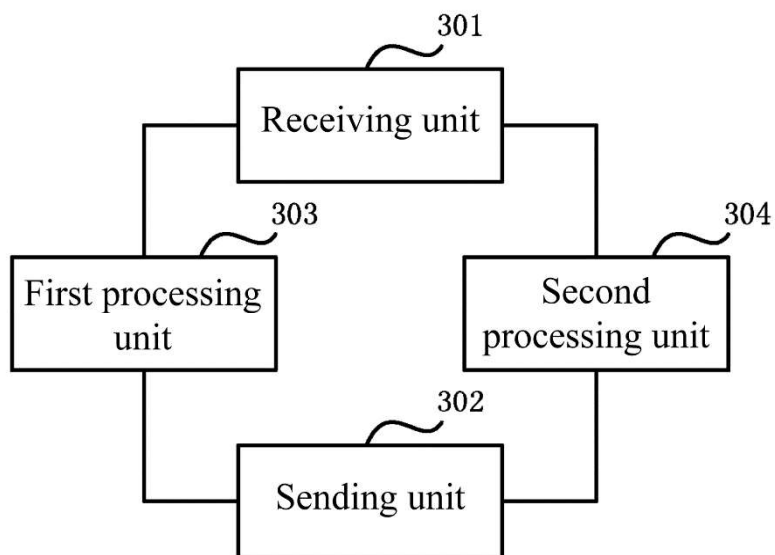


FIG. 3

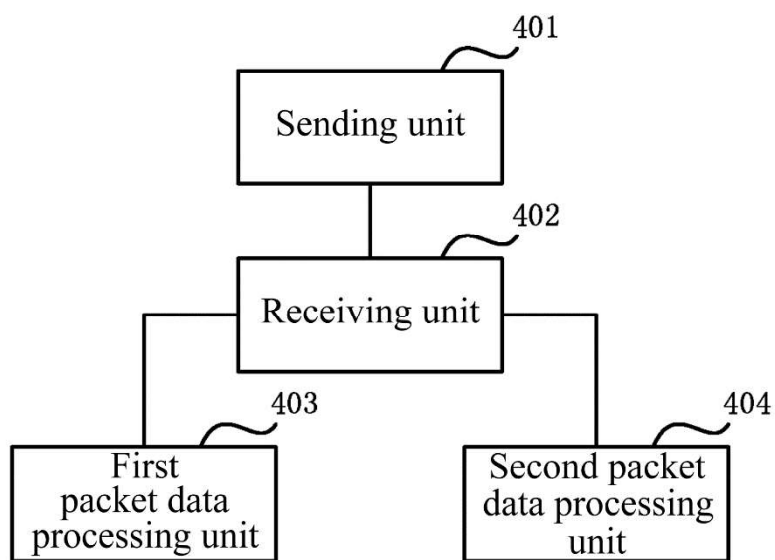


FIG. 4

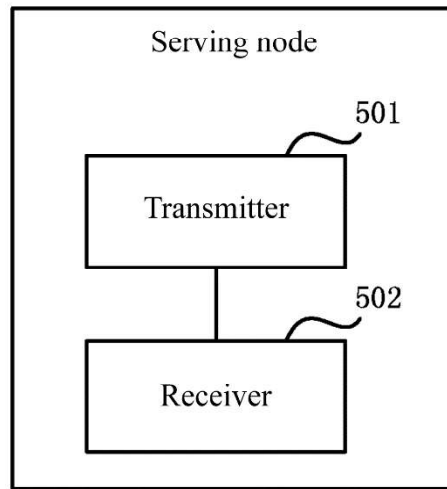


FIG. 5

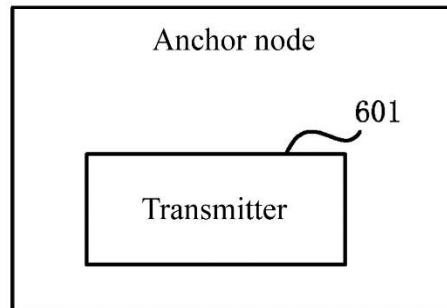


FIG. 6

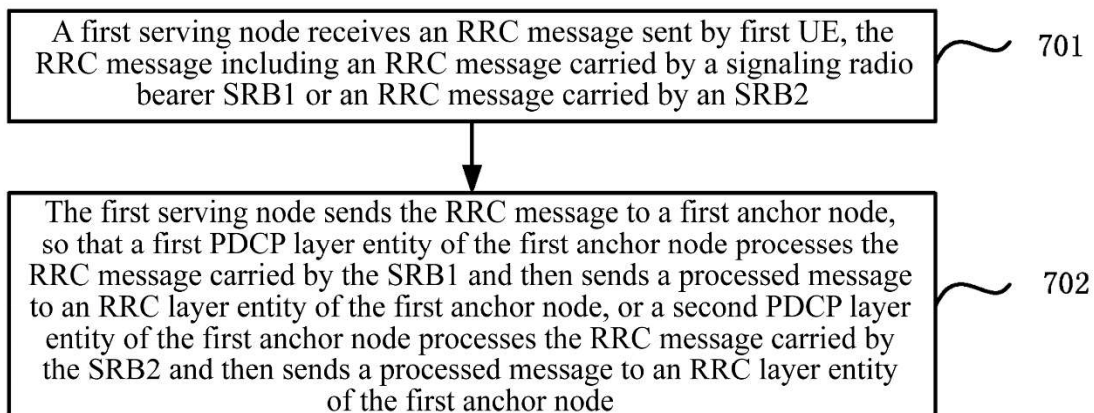


FIG. 7

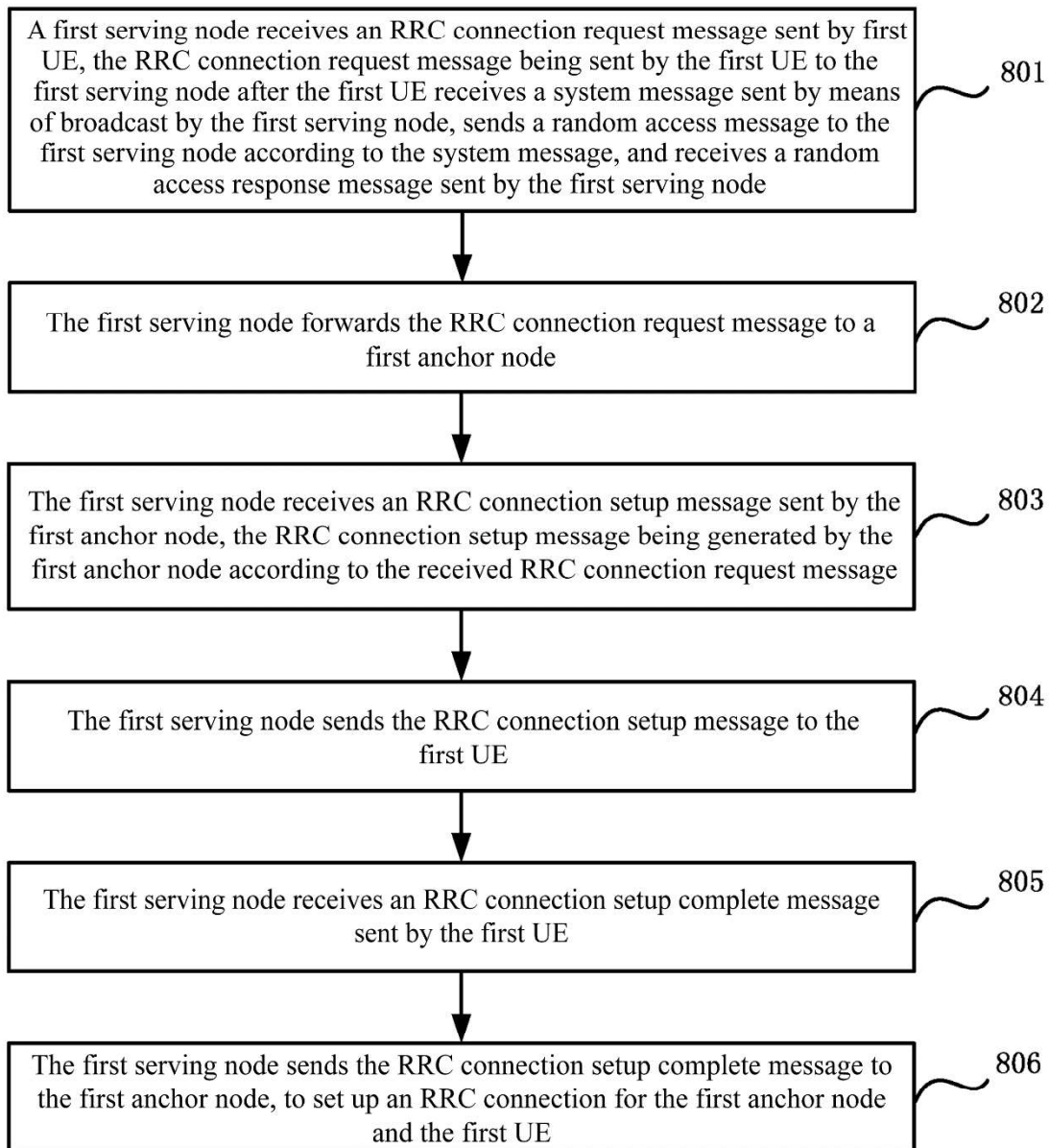


FIG. 8

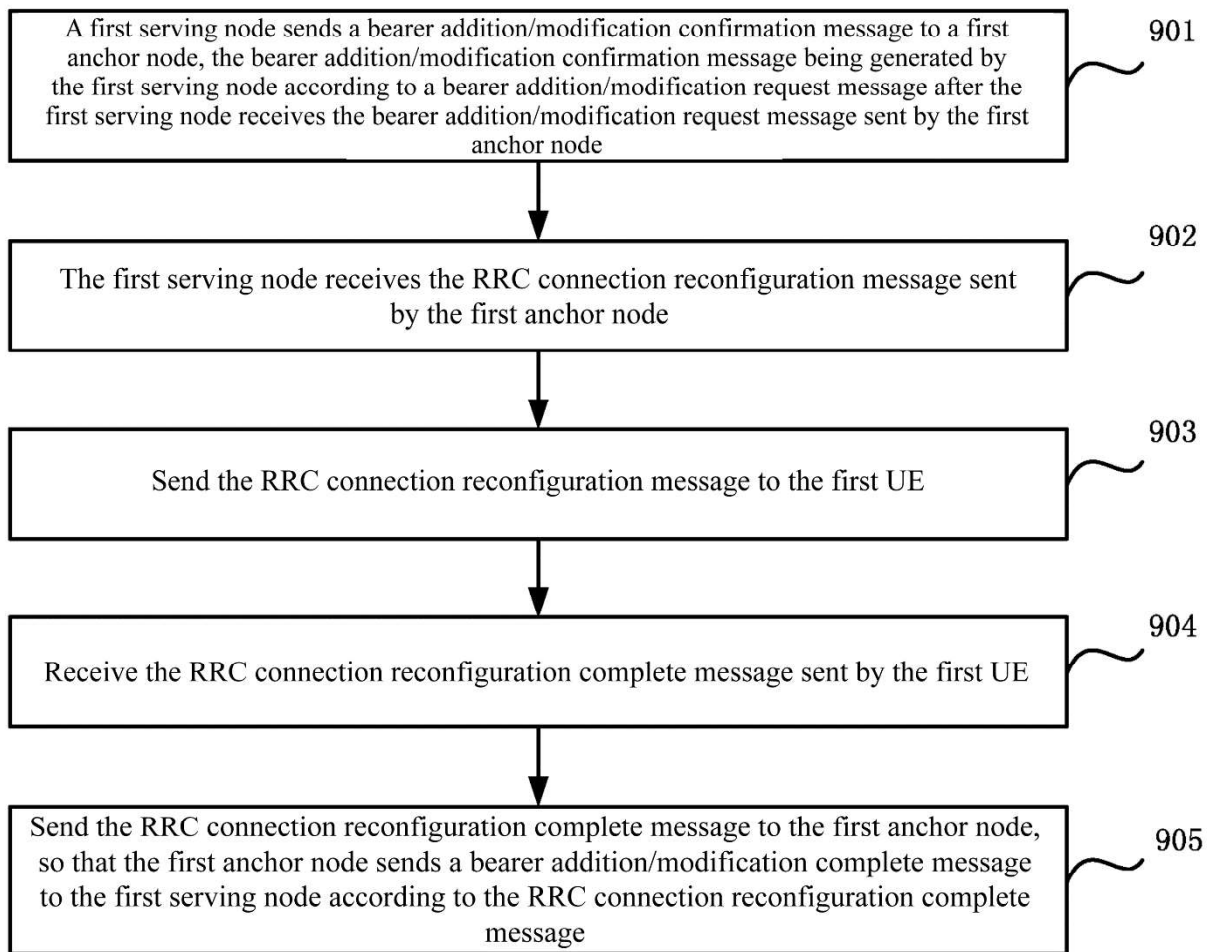


FIG. 9

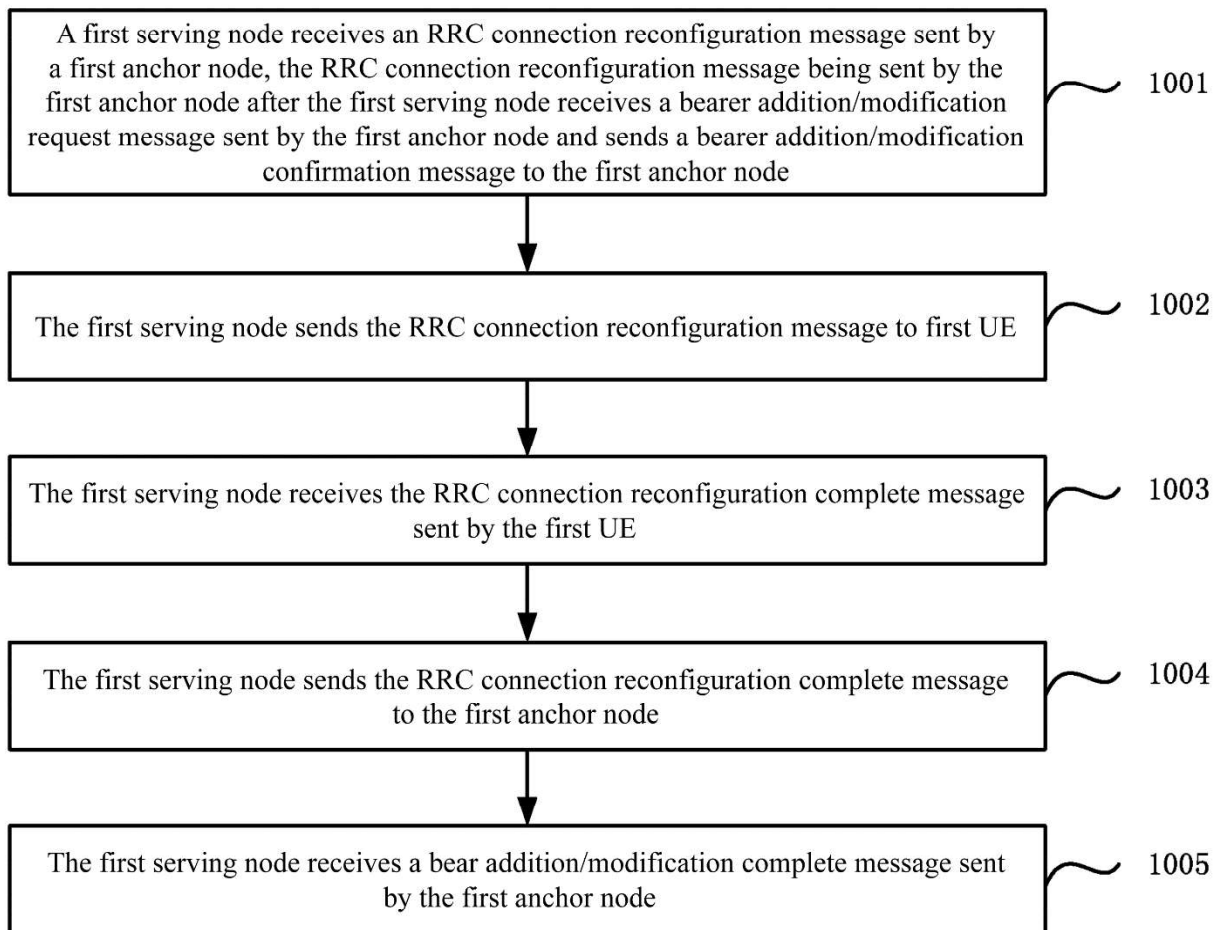


FIG. 10

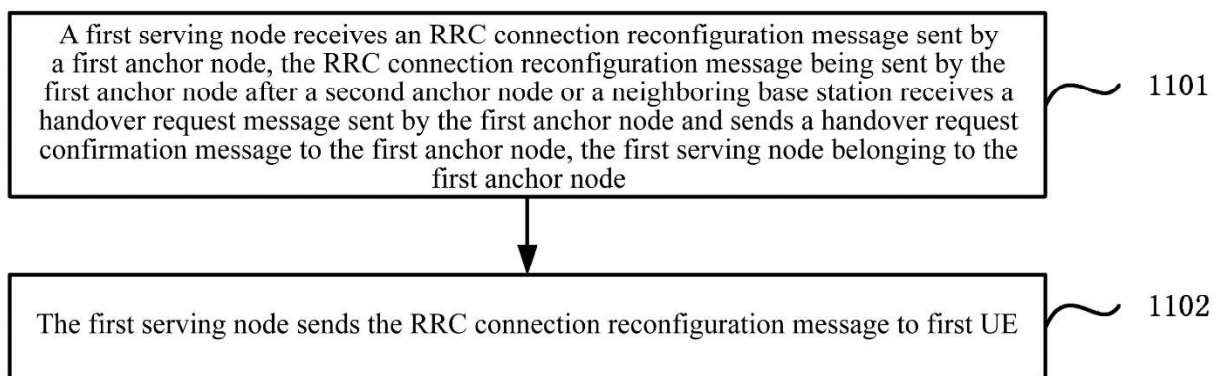


FIG. 11

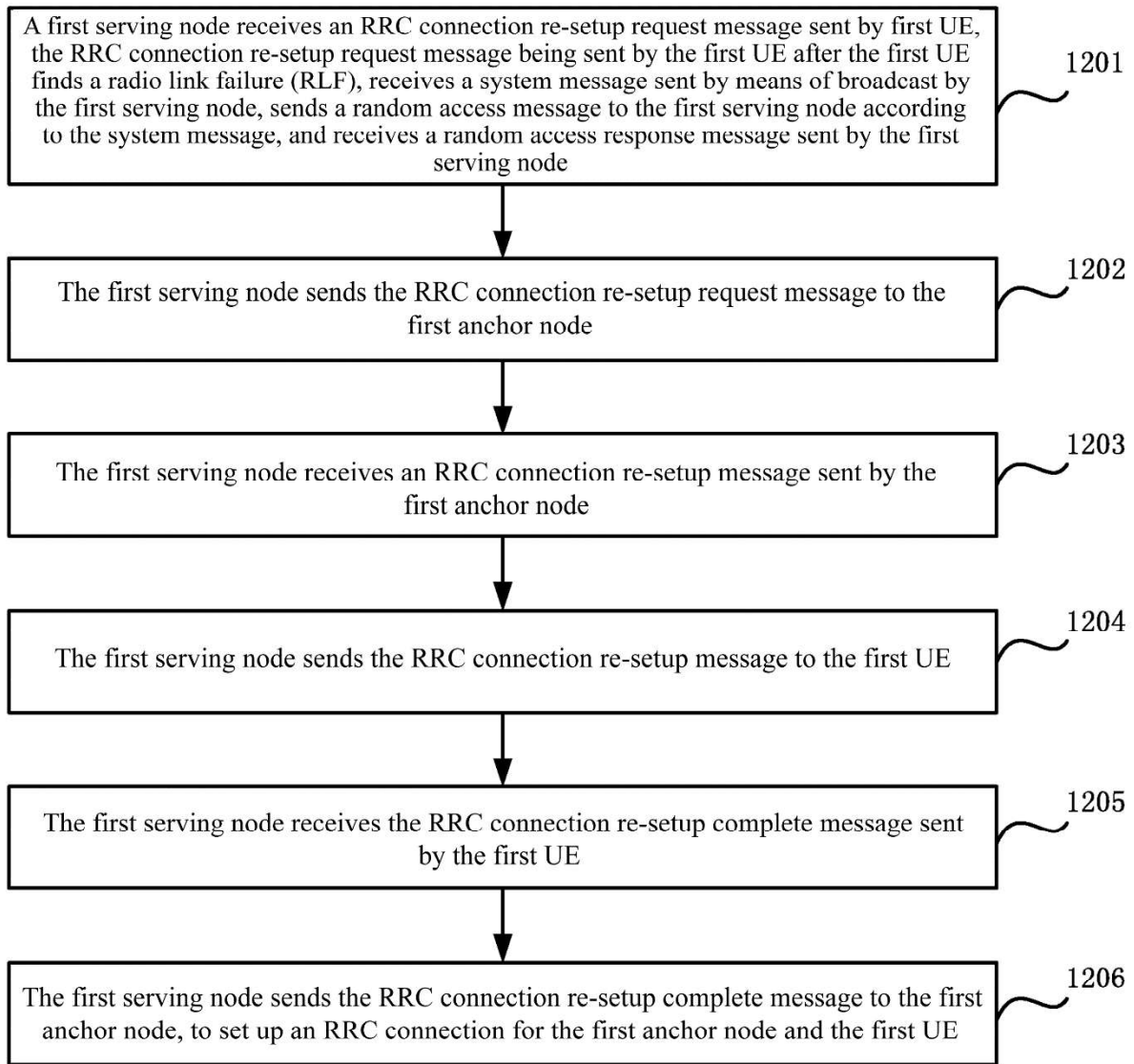


FIG. 12

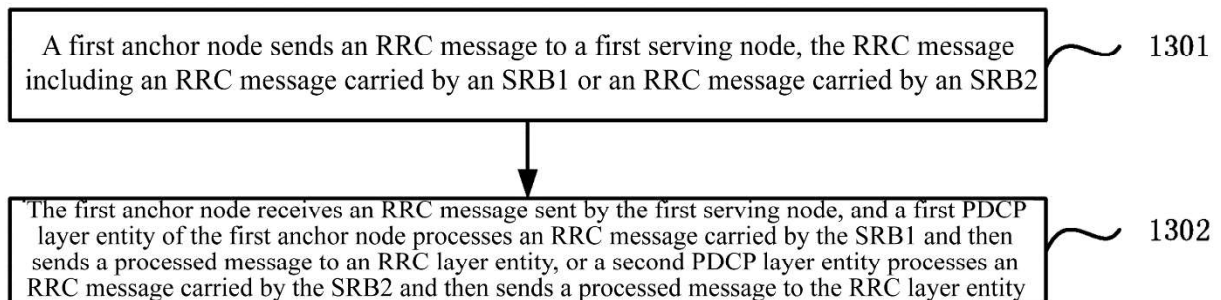


FIG. 13

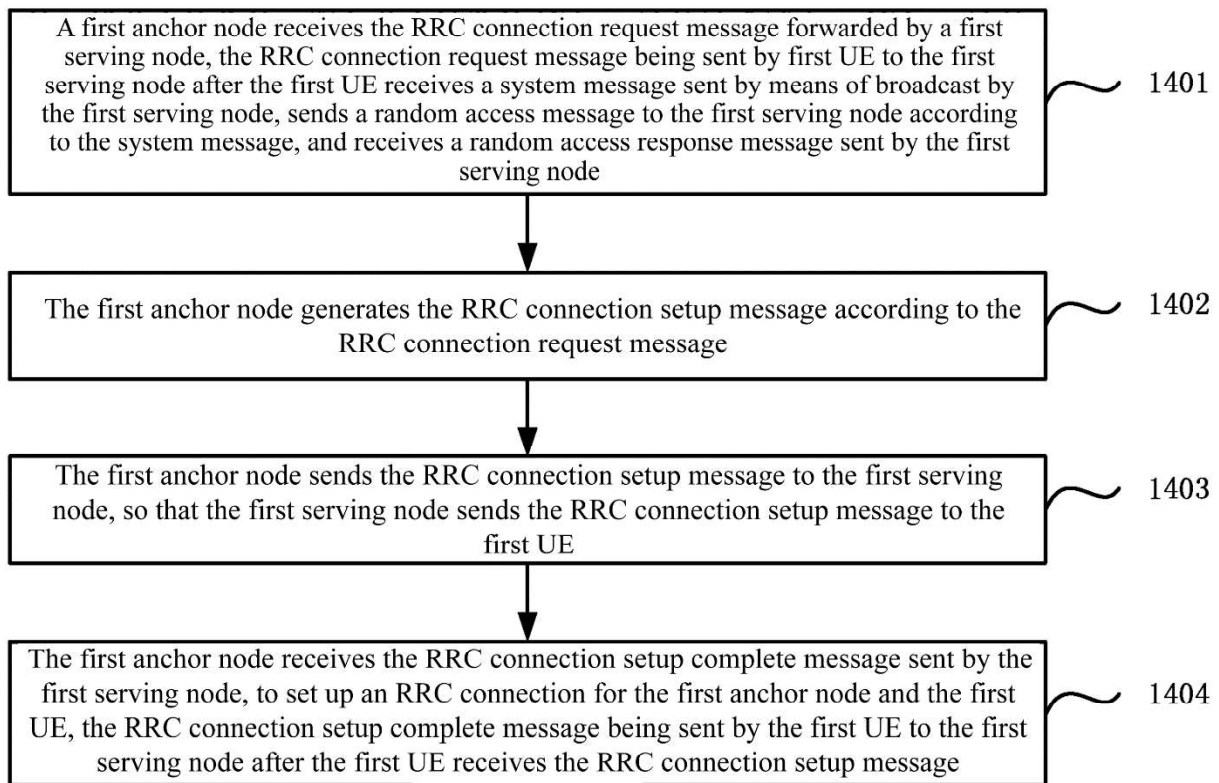


FIG. 14

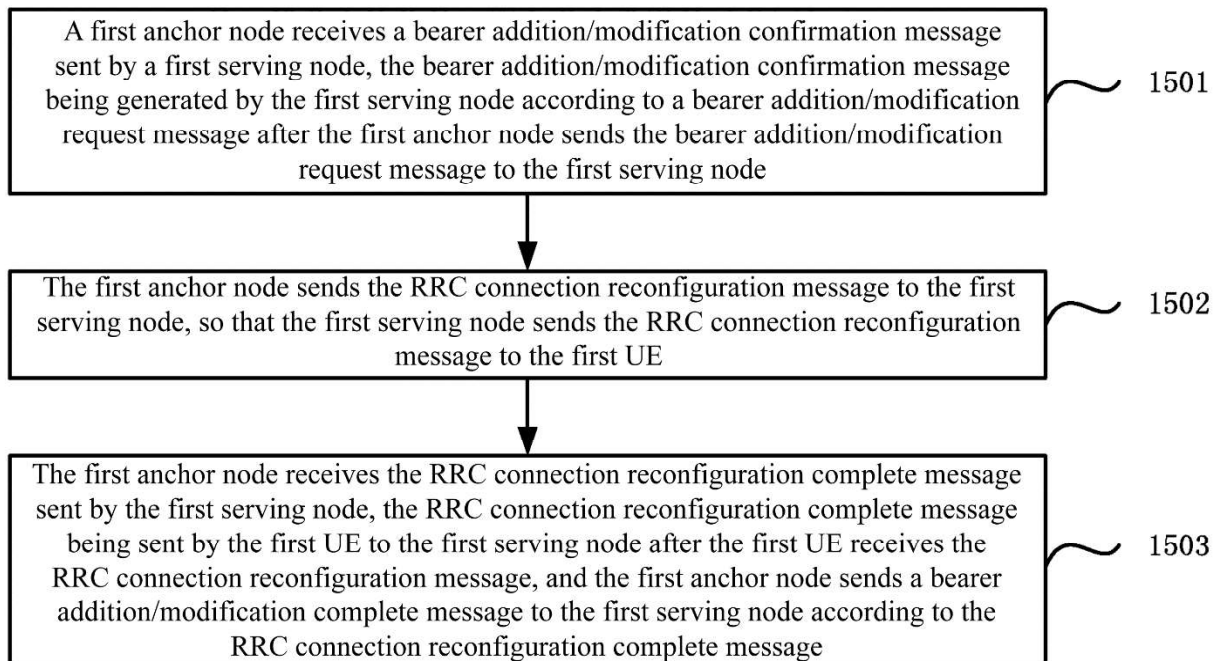


FIG. 15

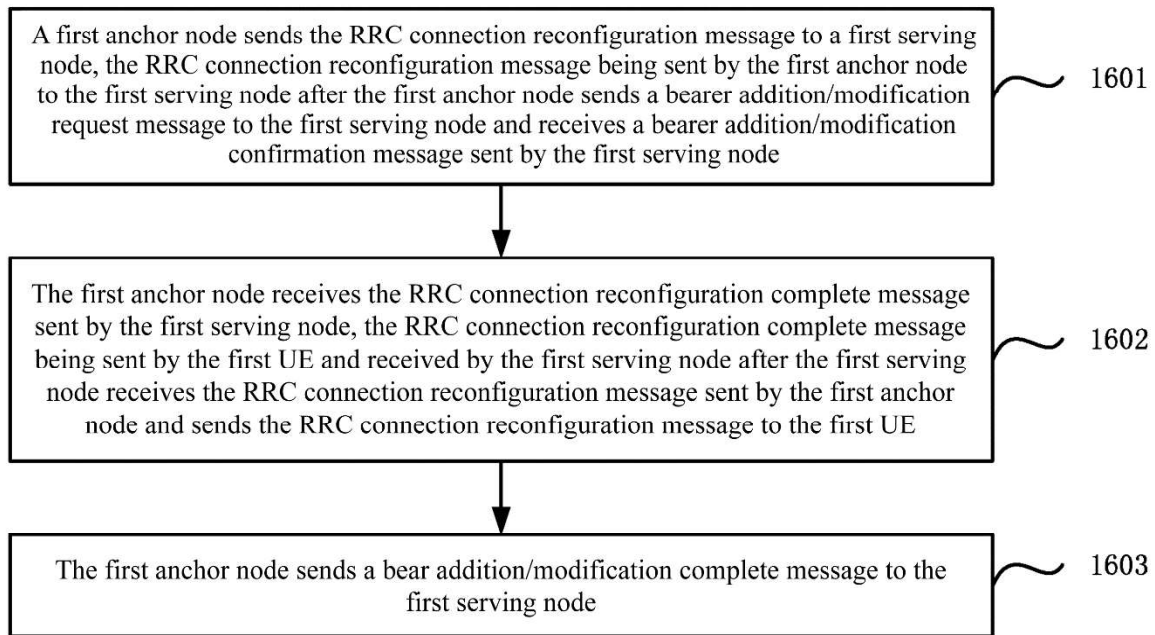


FIG. 16

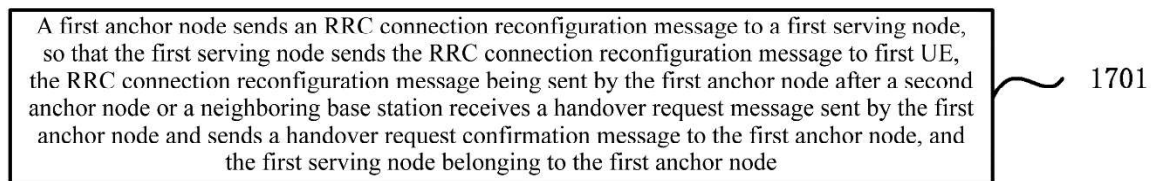


FIG. 17

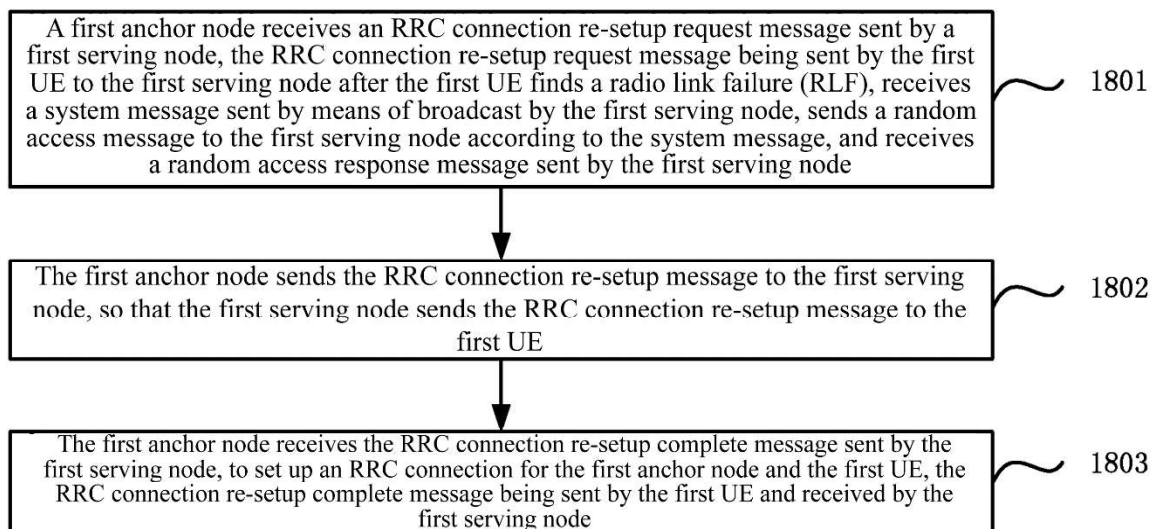


FIG. 18

INTERNATIONAL SEARCH REPORT		International application No. PCT/CN2014/089300
A. CLASSIFICATION OF SUBJECT MATTER		
H04W 92/02 (2009.01) i; H04W 88/12 (2009.01) i		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols): H04W; H04L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used): CNTXT, CNKI, VEN, 3GPP: RRC, anchor, node, cell, base station, ENB, MME, control plane, macro, micro, small, local, separat+		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Intel Corporation, Mobility Anchor to Reduce Signalling Load To CN Without Dual Connectivity, 3GPP TSG RAN WG2 Meeting #83, R2-132857, 23 August 2013 (23.08.2013) sections 2 and 7.2, figures. 2 and 7.2-1	1-3, 8-10, 16-18, 27-30, 35-37, 43-45
Y	CN 103546928 A (CHINA ACADEMY OF TELECOMM TECH) 29 January 2014 (29.01.2014), paragraphs [0008]-[0013]	1-3, 8-10, 16-18, 27-30, 35-37, 43-45
A	CN 102348244 A (HUAWEI TECHNOLOGIES CO LTD) 08 February 2012 (08.02.2012), the whole document	1-53
☐ Further documents are listed in the continuation of Box C		☒ See patent family annex.
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition, or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
Date of the actual completion of the international search: 19 July 2015		Date of mailing of the international search report 05 August 2015
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao		Authorized officer WANG, Xinyi
Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451		Telephone No. (86-10) 62089465

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT Information on patent family members		International application No. PCT/CN2014/089300	
Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 103546928 A	29 January 2014	None	
CN 102348244 A	08 February 2012	EP 2603038 A4	03 July 2013
		US 2013165130 A1	27 June 2013
		EP 2603038 A1	12 June 2013
		WO 2011137775 A1	10 November 2011
		CN 102348244 B	05 November 2014

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International Application No.:
PCT/CN2014/089300

A. CLASSIFICATION OF SUBJECT MATTER H04W 92/02 (2009.01) i; H04W 88/12 (2009.01) i According to International Patent Classification (IPC) or both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) H04W; H04L Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNTXT, CNKI, VEN, 3GPP: 锚, 节点, 基站, 移动管理实体, RRC, 控制面, 宏基站, 微基站, 本地基站, 分离, anchor, node, cell, base station, ENB, MME, control plane, macro, micro, small, local, separat+		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Intel Corporation, "Mobility Anchor to Reduce Signalling Load to CN Without Dual Connectivity", 3GPP TSG RAN WG2 Meeting #83, R2-132857, 23 August 2013 (23.08.2013), sections 2 and 7.2, figures. 2 and 7.2-1	1-3, 8-10, 16-18, 27-30, 35-37, 43-45
Y	CN 103546928 A (CHINA ACADEMY OF TELECOMM TECH), January 29, 2014 (29.01.2014), paragraphs [0008]-[0013]	1-3, 8-10, 16-18, 27-30, 35-37, 43-45
A	CN 102348244 A (HUAWEI TECHNOLOGIES CO LTD) 08 February 2012 (08.02.2012), the whole document	1-53
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition, or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 19 July 2015	Date of mailing of the international search report 05 August 2015	
Name and mailing address of the ISA/CN State Intellectual Property Office of the P. R. China (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing China, 100088 Facsimile No. (86-10) 62019451	Authorized officer WANG, Xinyi Telephone No. (86-10) 62089465	

Form PCT/ISA/210 (second sheet) (July 2009)

International application No.
PCT/CN2014/089300

Patent Documents referred in the Report		Publication Date (day/month/year)	Patent Family			Publication Date (day/month/year)
CN	103546928.	29 January 2014	None			
CN	102348244.	08 February 2012	EP	2603038	A4	03 July 2013
			US	2013165130	A1	27 June 2013
			EP	2603038	A1	12 June 2013
			WO	2011137775	A1	10 November 2011
			CN	102348244	B	05 November 2014

Petitioners' Exhibit 1003
Nokia of America Corp., et al. v. KT Corporation, et al.
Case No. IPR2025-00037; U.S. Patent No. 10,616,932
Page 101 of 102



TRANSLATOR'S CERTIFICATE OF TRANSLATION

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Questel Project Number: AAB2420020UT-L_Q

Date: 2nd, August 2024

To whom it may concern:

I, Chris Yien, a translator fluent in the Simplified Chinese and English languages, on behalf of Questel, do solemnly and sincerely declare that the following is, to the best of my knowledge and belief, a true and correct translation of the document(s) listed below in a form that best reflects the intention and meaning of the original text.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Original Document Identifier:	Pegasus_PriorArt_0007480-Pegasus_PriorArt_0007569 - 2.pdf
Translated Document Identifier:	Pegasus_PriorArt_0007480_Application_en-US.docx

Signed this 2nd day of August, 2024

Signature

Chris Yien

Name