METHOD FOR DETERMINING TIME AT WHICH RRC SIGNALING TAKES EFFECT, TERMINAL, BASE STATION, AND COMPUTER STORAGE MEDIUM

Embodiment of the present invention discloses a method for determining time of taking effect of radio resource control (RRC) signaling, a terminal, a base station and a computer storage medium. The method includes: sending, by a base station, a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

A base station sends a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC

FIG. 1
The present invention relates to wireless communication technology, and specifically, to a method for determining time of taking effect of Radio Resource Control (RRC) signaling, a terminal, a base station and a computer storage medium.

Background

In a Long Term Evolution (LTE) system, time of taking effect of RRC signaling is fixed. Taking the time of taking effect being 8 milliseconds as an example, a terminal receives RRC signaling sent by a base station at subframe n, then the RRC signaling takes effect at subframe n+8. However, in a New Radio (NR) system, various service scenes need to be considered. For services with different delay requirements, flexible configuration for the time of taking effect of RRC signaling is needed, so as to adapt to requirements of different services.

Summary

In order to solve existing technical problems, embodiments of the present invention provide a method for determining time of taking effect of RRC signaling, a terminal, a base station and a computer storage medium.

Technical Field

[0001] The present invention relates to wireless communication technology, and specifically, to a method for determining time of taking effect of Radio Resource Control (RRC) signaling, a terminal, a base station and a computer storage medium.

Description

[0002] In a Long Term Evolution (LTE) system, time of taking effect of RRC signaling is fixed. Taking the time of taking effect being 8 milliseconds as an example, a terminal receives RRC signaling sent by a base station at subframe n, then the RRC signaling takes effect at subframe n+8. However, in a New Radio (NR) system, various service scenes need to be considered. For services with different delay requirements, flexible configuration for the time of taking effect of RRC signaling is needed, so as to adapt to requirements of different services.

Summary

[0003] In order to solve existing technical problems, embodiments of the present invention provide a method for determining time of taking effect of RRC signaling, a terminal, a base station and a computer storage medium.

[0004] An embodiment of the present invention provides a method for determining time of taking effect of RRC signaling, the method includes: sending, by a base station, a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

[0005] In an embodiment, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, Physical Broadcast Channel (PBCH) information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0006] In an embodiment, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, Physical Broadcast Channel (PBCH) information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0007] In an embodiment, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, Other System Information (OSI) to the terminal, wherein the OSI includes the time of taking effect of the RRC signaling.

[0008] In an embodiment, sending, by the base station, the configuration information to the terminal, includes: sending, by the base station, first RRC signaling to the terminal, wherein the first RRC signaling includes the time of taking effect of second RRC signaling; the second RRC signaling is RRC signaling sent after the first RRC signaling.

[0009] In an embodiment, sending, by the base station, the control information to the terminal, includes: sending, by the base station, control signaling to the terminal, wherein the control signaling includes the time of taking effect of the RRC signaling.

[0010] An embodiment of the present invention also provides a method for determining time of taking effect of RRC signaling, the method includes: receiving, by a terminal, a broadcast message, configuration information, or control information from a base station to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information; and receiving, by the terminal, third RRC signaling, and controlling the third RRC signaling to take effect based on the time of taking effect.

[0011] In an embodiment, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, PBCH information from the base station to obtain the time of taking effect of the RRC signaling included in the PBCH information.

[0012] In an embodiment, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, RMSI from the base station to obtain the time of taking effect of the RRC signaling included in the RMSI.

[0013] In an embodiment, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, OSI from the base station to obtain the time of taking effect of the RRC signaling included in the OSI.

[0014] In an embodiment, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, fourth RRC signaling from the base station to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling.

[0015] In an embodiment, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or
the control information, includes: receiving, by the terminal, control signaling from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling.

[0016] An embodiment of the present invention also provides a base station, which includes a sending unit configured to send a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

[0017] In an embodiment, the sending unit is configured to send PBCH information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0018] In an embodiment, the sending unit is configured to send Residual Minimization System Information (RMSI) to the terminal, wherein the RMSI includes the time of taking effect of the RRC signaling.

[0019] In an embodiment, the sending unit is configured to send Other System Information (OSI) to the terminal, wherein the OSI includes the time of taking effect of the RRC signaling.

[0020] In an embodiment, the sending unit is configured to send first RRC signaling to the terminal, wherein the first RRC signaling includes the time of taking effect of second RRC signaling; the second RRC signaling is RRC signaling sent after the first RRC signaling.

[0021] In an embodiment, the sending unit is configured to send control signaling to the terminal, wherein the control signaling includes the time of taking effect of the RRC signaling.

[0022] An embodiment of the present invention also provides a terminal, which includes a receiving unit, an obtaining unit, and a controlling unit.

[0023] The receiving unit is configured to receive a broadcast message, configuration information, or control information from a base station; and further configured to receive third RRC signaling.

[0024] The obtaining unit is configured to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information received by the receiving unit.

[0025] The controlling unit is configured to control the third RRC signaling received by the receiving unit to take effect based on the time of taking effect obtained by the obtaining unit.

[0026] In an embodiment, the receiving unit is used for receiving PBCH information from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling included in the PBCH information received by the receiving unit.

[0027] In an embodiment, the receiving unit is used for receiving RMSI from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling included in the RMSI received by the receiving unit.

[0028] In an embodiment, the receiving unit is used for receiving OSI from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling included in the OSI received by the receiving unit.

[0029] In an embodiment, the receiving unit is used for receiving fourth RRC signaling from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling received by the receiving unit.

[0030] In an embodiment, the receiving unit is used for receiving fourth RRC signaling from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling included in control signaling received by the receiving unit.

[0031] An embodiment of the present invention also provides a base station, including a communication component for data transmission, a processor and a memory for storing a computer program capable of running on the processor, wherein the processor is used for, when the processor executes the computer program, performing acts of the method for determining time of taking effect of RRC signaling applied to the base station according to the embodiment of the present invention.

[0032] An embodiment of the present invention also provides a terminal, including a communication component for data transmission, a processor and a memory for storing a computer program capable of running on the processor, wherein the processor is used for, when the processor executes the computer program, performing acts of the method for determining time of taking effect of RRC signaling applied to the terminal according to the embodiment of the present invention.

[0033] The embodiment of the present invention also provides a computer storage medium, on which a computer program is stored, wherein the computer program, when executed by a processor, implements acts of the method for determining time of taking effect of RRC signaling applied to a base station according to the embodiment of the present invention, or, when executed by a processor, implements acts of the method for determining time of taking effect of RRC signaling applied to a terminal according to the embodiment of the present invention.

[0034] A method for determining time of taking effect of RRC signaling, a terminal, a base station and a computer storage medium are provided by embodiments of the present invention. On the one hand, a base station sends a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling. On the other hand, a terminal receives the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information; the terminal receives third RRC signaling and controls the third RRC signaling to take effect...
The present invention will be described in further detail below with reference to the accompanying drawings and specific embodiments.

Detailed Description

[0036] The present invention will be described in further detail below with reference to the accompanying drawings and specific embodiments.

Embodiment One

[0037] An embodiment of the present invention provides a method for determining time of taking effect of RRC signaling. FIG. 1 is a schematic flowchart of a method for determining time of taking effect of RRC signaling of Embodiment One of the present invention.

FIG. 1 is a schematic flowchart of a method for determining time of taking effect of RRC signaling of Embodiment One of the present invention; FIG. 2 is a schematic flowchart of a method for determining time of taking effect of RRC signaling of Embodiment Two of the present invention; FIG. 3 is a structural schematic diagram of a base station of an embodiment of the present invention; FIG. 4 is a structural schematic diagram of a terminal of an embodiment of the present invention; FIG. 5 is a structural schematic diagram of hardware of a terminal of an embodiment of the present invention.

Embodiment Two

[0038] In act 11, a base station sends a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

[0039] In the embodiment of the present invention, the base station configures parameters of a Control Resource Set (CORESET) through the RRC signaling, wherein the CORESET occupies 1 to 3 symbols in a time domain and a configurable bandwidth in a frequency domain. When the base station is to send a Physical Downlink Shared Channel (PDSCH) to the terminal, the Physical Downlink Control Channel (PDCCH) is used as scheduling information of the PDSCH to be sent in the corresponding CORESET. Based on this, how to flexibly configure the time of taking effect of the RRC signaling to adapt to requirements of various services seems particularly important.

[0040] In the embodiment of the present invention, as a first implementation mode, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, PBCH information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0041] As a second implementation mode, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, RMSI to the terminal, wherein the RMSI includes the time of taking effect of the RRC signaling.

[0042] As a third implementation mode, sending, by the base station, the broadcast message to the terminal, includes: sending, by the base station, OSI to the terminal, wherein the OSI includes the time of taking effect of the RRC signaling.

[0043] As a fourth implementation mode, sending, by the base station, the configuration information to the terminal, includes: sending, by the base station, first RRC signaling to the terminal, wherein the first RRC signaling includes the time of taking effect of second RRC signaling; the second RRC signaling is RRC signaling sent after the first RRC signaling. It may be understood that, the time of taking effect of the first RRC signaling may still be a preset fixed time of taking effect, for example, 8 milliseconds. However, after sending the first RRC signaling, all RRC signaling sent by the base station may be denoted as the second RRC signaling, the time of taking effect of the second RRC signaling is the time of taking effect of the second RRC signaling included in the first RRC signaling.

[0044] As a fifth implementation mode, sending, by the base station, the control information to the terminal, includes: sending, by the base station, control signaling to the terminal, wherein the control signaling includes the time of taking effect of the RRC signaling.

[0045] By adopting technical solutions of the embodiment of the present invention, the time of taking effect of the RRC signaling is flexibly configured through the broadcast message, the configuration information, or the control information, so as to adapt to time delay requirements of different services.

Embodiment Two

[0046] An embodiment of the present invention also provides a method for determining time of taking effect of RRC signaling. FIG. 2 is a schematic flowchart of a method for determining time of taking effect of RRC signaling of Embodiment Two of the present invention. As shown in FIG. 2, the method includes act 201 and act 202.

[0047] In act 201, a terminal receives a broadcast message, configuration information or control information from a base station to obtain time of taking effect of RRC signaling included in the broadcast message, the config-
In act 202, the terminal receives third RRC signaling information, or the control information. The time of taking effect of the fourth RRC signaling may still be a preset fixed time of taking effect, for example, 8 milliseconds. However, all RRC signaling received by the terminal after receiving the fourth RRC signaling may be denoted as the third RRC signaling, wherein the time of taking effect of the third RRC signaling is the time of taking effect of the RRC signaling included in the fourth RRC signaling.

As a fifth implementation mode, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, the control signaling from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling. It may be understood that, the terminal receives the control signaling used as the control message from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling. It may be understood that, the terminal receives the control signaling from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling. It may be understood that, the terminal receives the control signaling used as the control message from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling.

As a first implementation mode, receiving, by the terminal, RMSI information from the base station to obtain the time of taking effect of the RRC signaling included in the RMSI. It may be understood that, the terminal receives the RMSI from the base station to obtain the time of taking effect of the RRC signaling included in the RMSI information.

As a second implementation mode, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, OSI from the base station to obtain the time of taking effect of the RRC signaling included in the OSI. It may be understood that, the terminal receives the OSI used as the broadcast message from the base station to obtain the time of taking effect of the RRC signaling included in the OSI information.

As a third implementation mode, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, PBCH information from the base station to obtain the time of taking effect of the RRC signaling included in the PBCH. It may be understood that, the terminal receives the PBCH used as the broadcast message from the base station to obtain the time of taking effect of the RRC signaling included in the PBCH information.

As a fourth implementation mode, receiving, by the terminal, the broadcast message, the configuration information, or the control information from the base station to obtain the time of taking effect of the RRC signaling included in the broadcast message, the configuration information, or the control information, includes: receiving, by the terminal, fourth RRC signaling from the base station to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling. It may be understood that, the terminal receives the fourth RRC signaling used as the configuration information from the base station to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling.

The time of taking effect of the fourth RRC signaling may still be a preset fixed time of taking effect, for example, 8 milliseconds. However, all RRC signaling requirements of different services.

Embodiment Three

An embodiment of the present invention also provides a base station. FIG. 3 is a structural schematic diagram of a base station of an embodiment of the present invention. As shown in FIG. 3, the base station includes a sending unit 31 configured to send a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

As a first implementation mode, the sending unit 31 is configured to send PBCH information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

As a second implementation mode, the sending unit 31 is configured to send Residual Minimization System Information (RMSI) to the terminal, wherein the RMSI includes the time of taking effect of the RRC signaling.

As a third implementation mode, the sending unit 31 is configured to send Other System Information (OSI) to the terminal, wherein the OSI includes the time of taking effect of the RRC signaling.

As a fourth implementation mode, the sending unit 31 is configured to send first RRC signaling to the terminal, wherein the first RRC signaling includes the time of taking effect of second RRC signaling; the second RRC signaling is RRC signaling sent after the first RRC signaling.

As a fifth implementation mode, the sending unit 31 is configured to send control signaling to the terminal, wherein the control signaling includes the time of taking effect of the RRC signaling.
In the embodiment of the present invention, the signaling sending unit 31 in the base station may be implemented through a communication module group (including: a basic communication kit, an operating system, a communication module, a standardized interface and protocol, etc.) and a Transmitting/Receiving antenna in a practical application.

It should be noted that, when describing that the base station provided in the above embodiment determines the time of taking effect of the RRC signaling, it is only illustrated by the division of the aforementioned program modules. In a practical application, the aforementioned processing may be allocated to be accomplished by different program modules as needed, that is, the internal structure of the base station may be divided into different program modules to accomplish all or part of the aforementioned processing. In addition, the base station and the method for determining the time of taking effect of the RRC signaling received by the aforementioned embodiments belong to the same concept, wherein the specific realization process of the base station provided by the aforementioned embodiment may be referred to the method embodiment in detail and will not be repeated here.

Embodiment Four

An embodiment of the present invention also provides a terminal. FIG. 4 is a structural schematic diagram of a terminal of the embodiment of the present invention. As shown in FIG. 4, the terminal includes a receiving unit 41, an obtaining unit 42 and a controlling unit 43.

The receiving unit 41 is configured to receive a broadcast message, configuration information, or control information from a base station; and is further configured to receive third RRC signaling.

The obtaining unit 42 is configured to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information received by the receiving unit 41.

The controlling unit 43 is configured to control the third RRC signaling received by the receiving unit 41 to take effect based on the time of taking effect obtained by the obtaining unit 42.

As a first implementation mode, the receiving unit 41 is used for receiving PBCH information from the base station; the obtaining unit 42 is configured to obtain the time of taking effect of the RRC signaling included in the PBCH information received by the receiving unit 41.

As a second implementation mode, the receiving unit 41 is used for receiving RMSI from the base station; the obtaining unit 42 is configured to obtain the time of taking effect of the RRC signaling included in the RMSI received by the receiving unit 41.

As a third implementation mode, the receiving unit 41 is used for receiving OSI from the base station; the obtaining unit 42 is configured to obtain the time of taking effect of the RRC signaling included in the OSI received by the receiving unit 41.

As a fourth implementation mode, the receiving unit 41 is used for receiving fourth RRC signaling from the base station; the obtaining unit 42 is configured to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling received by the receiving unit 41.

As a fifth implementation mode, the receiving unit 41 is used for receiving fourth RRC signaling from the base station; the obtaining unit 42 is configured to obtain the time of taking effect of the RRC signaling included in the control signaling received by the receiving unit 41.

In the embodiment of the present invention, the obtaining unit 42 and the controlling unit 43 in the terminal may be implemented by a Central Processing Unit (CPU), a Digital Signal Processor (DSP), a Microcontroller Unit 43 (MCU) or a Field-Programmable Gate Array (FPGA) in the terminal in a practical application. The receiving unit 41 in the terminal may be implemented through a communication module group (including: a basic communication kit, an operating system, a communication module, a standardized interface and protocol, etc.) and a Transmitting/Receiving antenna in a practical application.

It should be noted that, when describing that the terminal provided in the above embodiment determines the time of taking effect of the RRC signaling, it is only illustrated by the division of the aforementioned program modules. In a practical application, the aforementioned processing may be allocated to be accomplished by different program modules as needed, that is, the internal structure of the terminal may be divided into different program modules to accomplish all or part of the aforementioned processing. In addition, the terminal and the method for determining the time of taking effect of the RRC signaling provided by the aforementioned embodiments belong to the same concept, wherein the specific realization process of the terminal provided by the aforementioned embodiment may be referred to the method embodiment in detail and will not be repeated here.

Embodiment Five

An embodiment of the present invention also provides a terminal. FIG. 5 is a structural schematic diagram of hardware of a terminal of an embodiment of the present invention. As shown in FIG. 5, the terminal includes a communication component 53 for data transmission, at least one processor 51, and a memory 52 for storing a computer program capable of running on the processor 51. The various components in the terminal are coupled together by a bus system 54. It may be understood that the bus system 54 is used for implementing connection communication between these components. The bus system 54 includes a power bus, a control bus,
and a status signal bus besides a data bus. However, for sake of conciseness, various buses are all denoted as the bus system 54 in FIG. 5.

[0076] It may be understood that the memory 52 may be a transitory memory or a non-transitory memory, or may include both a transitory and non-transitory memory. The non-transitory memory may be a Read Only Memory (ROM), a Programmable Read-Only Memory (PROM), an Erasable Programmable Read-Only Memory (EPROM), an Electrically Erasable Programmable Read-Only Memory (EEPROM), a ferromagnetic random access memory (FRAM), a Flash Memory, a magnetic surface memory, a compact disk, or a Compact Disc Read-Only Memory (CD-ROM); the magnetic surface memory may be a magnetic disk memory or a magnetic tape memory. The transitory memory may be a Random Access Memory (RAM) which serves as an external cache. By way of illustrative but not restrictive illustrations, many forms of RAMs are available, such as Static Random Access Memory (SRAM), Synchronous Static Random Access Memory (SSRAM), Dynamic Random Access Memory (DRAM), Synchronous Dynamic Random Access Memory (SDRAM), Double Data Rate Synchronous Dynamic Random Access Memory (DDRSDRAM), Enhanced Synchronous Dynamic Random Access Memory (ESDRAM), SyncLink Dynamic Random Access Memory (SLDRAM), Direct Rambus Random Access Memory (DRRAM). The memory 42 described in an embodiment of the present invention is intended to include, but is not limited to, these and any other suitable types of memories.

[0077] The methods disclosed in the above embodiments of the present invention may be applied to or implemented by the processor 51. The processor 51 may be an integrated circuit chip with a signal processing capability. In a realization process, acts of the methods described above may be accomplished by integrated logic circuits of hardware in the processor 51 or instructions in the form of software. The processor 51 described above may be a general purpose processor, a DSP or other programmable logic devices, discrete gate or transistor logic devices, discrete hardware components, etc. The processor 51 may implement or execute the disclosed methods, acts and logical block diagrams in the embodiments of the present invention. The general purpose processor may be a microprocessor or any conventional processor or the like. The acts of the methods disclosed in combination with the embodiments of the present invention may be directly embodied as to be executed and accomplished by a hardware decoding processor or by a combination of hardware and software modules in a decoding processor. The software module may be located in a storage medium, the storage medium is located in the memory 52. The processor 51 reads information in the memory 52 and accomplishes the acts of the aforementioned methods in combination with hardware of the processor 51.

[0078] In an exemplary embodiment, the terminal may be implemented by one or more Application Specific Integrated Circuits (ASICs), DSPs, Programmable Logic Devices (PLDs), Complex Programmable Logic Devices (CPLDs), FPGAs, general-purpose processors, controllers, MCUs, Microprocessors or other electronic components, for executing the aforementioned methods.

[0079] In this embodiment, the processor 51 is used for, when running the computer program, executing the following acts: receiving a broadcast message, configuration information, or control information from a base station to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information; receiving third RRC signaling, and controlling the third RRC signaling to take effect based on the time of taking effect.

[0080] As a first implementation mode, the processor 51 is used for, when running the computer program, executing the following act: receiving PBCH information from the base station to obtain the time of taking effect of the RRC signaling included in the PBCH information.

[0081] As a second implementation mode, the processor 51 is used for, when running the computer program, executing the following act: receiving RMSI from the base station to obtain the time of taking effect of the RRC signaling included in the RMSI.

[0082] As a third implementation mode, the processor 51 is used for, when running the computer program, executing the following act: receiving OSI from the base station to obtain the time of taking effect of the RRC signaling included in the OSI.

[0083] As a fourth implementation mode, the processor 51 is used for, when running the computer program, executing the following act: receiving fourth RRC signaling from the base station to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling.

[0084] As a fifth implementation mode, the processor 51 used for, when running the computer program, executing the following act: receiving control signaling from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling.

Embodyment Six

[0085] An embodiment of the present invention also provides a computer storage medium, including, for example, the memory 52 shown in FIG. 5, which is applied to a terminal and stores a computer program, the computer program may be executed by the processor 51 of the terminal to accomplish the acts of the aforementioned method. The computer readable storage medium may be a memory such as a FRAM, a ROM, a PROM, an EPROM, an EEPROM, a Flash Memory, a magnetic surface memory, a Compact Disc, or a CD-ROM; or may also be various devices including one or any combination of the above memories, such as a mobile phone, a computer, a tablet device, a personal digital assistant.

[0086] The computer storage medium of the embodiment of the present invention has a computer program
stored thereon, wherein when the computer program is run by the processor, the computer program executes the following acts: receiving a broadcast message, configuration information, or control information from a base station to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information; receiving third RRC signaling, and controlling the third RRC signaling to take effect based on the time of taking effect.

[0087] As a first implementation mode, when the computer program is run by the processor, the computer program executes the following act: receiving PBCH information from the base station to obtain the time of taking effect of the RRC signaling included in the PBCH information.

[0088] As a second implementation mode, when the computer program is run by the processor, the computer program executes the following act: receiving RMSI from the base station to obtain the time of taking effect of the RRC signaling included in the RMSI.

[0089] As a third implementation mode, when the computer program is run by the processor, the computer program executes the following act: receiving OSI from the base station to obtain the time of taking effect of the RRC signaling included in the OSI.

[0090] As a fourth implementation mode, when the computer program is run by the processor, the computer program executes the following act: receiving fourth RRC signaling from the base station to obtain the time of taking effect of the RRC signaling included in the fourth RRC signaling.

[0091] As a fifth implementation mode, when the computer program is run by the processor, the computer program executes the following act: receiving control signaling from the base station to obtain the time of taking effect of the RRC signaling included in the control signaling.

Embodiment Seven

[0092] An embodiment of the present invention also provides a base station, which includes: a communication component for data transmission, at least one processor and a memory for storing a computer program capable of running on the processor. In this embodiment, the processor is used for, when running the computer program, executing the following act: controlling to send a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information or the control information includes time of taking effect of RRC signaling.

[0093] As a first implementation mode, the processor is used for, when running the computer program, executing the following act: controlling to send PBCH information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0094] As a second implementation mode, the processor is used for, when running the computer program, executing the following act: controlling to send Residual Minimization System Information (RMSI) to the terminal, wherein the RMSI includes the time of taking effect of the RRC signaling.

[0095] As a third implementation mode, the processor is used for, when running the computer program, executing the following act: controlling to send Other System Information (OSI) to the terminal, wherein the OSI includes the time of taking effect of the RRC signaling.

[0096] As a fourth implementation mode, the processor is used for, when running the computer program, executing the following act: controlling to send first RRC signaling to the terminal, wherein the first RRC signaling includes the time of taking effect of second RRC signaling; the second RRC signaling is RRC signaling sent after the first RRC signaling.

[0097] As a fifth implementation mode, the processor is used for, when running the computer program, executing the following act: controlling to send control signaling to the terminal, wherein the control signaling includes the time of taking effect of the RRC signaling.

Embodiment Eight

[0098] An embodiment of the present invention also provides a computer storage medium, for example, including a memory applied to a base station and storing a computer program, the computer program may be executed by a processor of a terminal to accomplish the acts of the aforementioned methods. The computer readable storage medium may be a memory such as a FRAM, a ROM, a PROM, an EPROM, an EEPROM, a Flash Memory, a magnetic surface memory, a Compact Disc, or a CD-ROM; or may also be various devices including one or any combination of the above memories.

[0099] The computer storage medium of the embodiment of the present invention has a computer program stored thereon, wherein when the computer program is executed by the processor, the computer program executes the following act: controlling to send a broadcast message, configuration information, or control information to the terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC signaling.

[0100] As a first implementation mode, when the computer program is run by the processor, the computer program executes the following act: controlling to send PBCH information to the terminal, wherein the PBCH information includes the time of taking effect of the RRC signaling.

[0101] As a second implementation mode, when the computer program is run by the processor, the computer program executes the following act: controlling to send Residual Minimization System Information (RMSI) to the terminal, wherein the RMSI includes the time of taking effect of the RRC signaling.

[0102] As a third implementation mode, when the computer program is run by the processor, the computer pro-
A method for determining time of taking effect of Radio Resource Control (RRC) signaling, comprising: sending, by a base station, a broadcast message, comprising configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information comprises time of taking effect of the RRC signaling.

2. The method of claim 1, wherein, sending, by the base station, the broadcast message to the terminal, comprises: sending, by the base station, Physical Broadcast Channel (PBCH) information to the terminal, wherein the PBCH information comprises the time of taking effect of the RRC signaling.

3. The method of claim 1, wherein, sending, by the base station, the broadcast message to the terminal, comprises: sending, by the base station, Residual Minimization System Information (RMSI) to the terminal, wherein the RMSI comprises the time of taking effect of the RRC signaling.

4. The method of claim 1, wherein, sending, by the base station, the broadcast message to the terminal, comprises: sending, by the base station, Other System Information (OSI) to the terminal, wherein the OSI comprises the time of taking effect of the RRC signaling.

5. The method of claim 1, wherein sending, by the base
A method for determining time of taking effect of Ra-
6. The method of claim 1, wherein, sending, by the base
station, the configuration information to the terminal, comprises:
sending, by the base station, first RRC signaling to
the terminal, wherein the first RRC signaling com-
prizes the time of taking effect of second RRC signal-
ing; the second RRC signaling is RRC signaling
sent after the first RRC signaling.
7. A method for determining time of taking effect of Ra-
dio Resource Control (RRC) signaling, comprising:
 receiving, by a terminal, a broadcast message,
configuration information, or control information,
comprises:
 receiving, by the terminal, Physical Broadcast Chan-
nel (PBCH) information from the base station to ob-
tain the time of taking effect of the RRC signal-
ing comprised in the PBCH information.
8. The method of claim 7, wherein, receiving, by the
terminal, the broadcast message, the configuration
information, or the control information from the base
station to obtain the time of taking effect of the RRC
signaling comprised in the broadcast message, the
configuration information, or the control information,
comprises:
 receiving, by the terminal, Physical Broadcast Chan-
nel (PBCH) information from the base station to ob-
tain the time of taking effect of the RRC signal-
ing comprised in the PBCH information.
9. The method of claim 7, wherein, receiving, by the
terminal, the broadcast message, the configuration
information, or the control information from the base
station to obtain the time of taking effect of the RRC
signaling comprised in the broadcast message, the
configuration information, or the control information,
comprises:
 receiving, by the terminal, Residual Minimization
System Information (RMSI) from the base station to
obtain the time of taking effect of the RRC signal-
ing comprised in the RMSI.
10. The method of claim 7, wherein, receiving, by the
terminal, the broadcast message, the configuration
information, or the control information from the base
station to obtain the time of taking effect of the RRC
signaling comprised in the broadcast message, the
configuration information, or the control information,
comprises:
 receiving, by the terminal, Other System Information
(OSI) from the base station to obtain the time of tak-
ing effect of the RRC signaling comprised in the OSI.
11. The method of claim 7, wherein, receiving, by the
terminal, the broadcast message, the configuration
information, or the control information from the base
station to obtain the time of taking effect of the RRC
signaling comprised in the broadcast message, the
configuration information, or the control information,
comprises:
 receiving, by the terminal, fourth RRC signaling from
the base station to obtain the time of taking effect of
the RRC signaling comprised in the fourth RRC sig-
12. The method of claim 7, wherein, receiving, by the
terminal, the broadcast message, the configuration
information, or the control information from the base
station to obtain the time of taking effect of the RRC
signaling comprised in the broadcast message, the
configuration information, or the control information,
comprises:
 receiving, by the terminal, control signaling from the
base station to obtain the time of taking effect of the
RRC signaling comprised in the control signaling.
13. A base station, comprising a sending unit configured
to send a broadcast message, configuration infor-
mation, or control information to a terminal, wherein
the broadcast message, the configuration informa-
tion, or the control information comprises time of tak-
ing effect of Radio Resource Control (RRC) signal-
ing.
14. The base station of claim 13, wherein, the sending
unit is configured to send Physical Broadcast Chan-
nel (PBCH) information to the terminal, the PBCH
information comprises the time of taking effect of the
RRC signaling.
15. The base station of claim 13, wherein, the sending
unit is configured to send Residual Minimization Sys-
16. The base station of claim 13, wherein, the sending
unit is configured to send Other System Information
(OSI) to the terminal, the OSI comprises the time of
taking effect of the RRC signaling.
17. The base station of claim 13, wherein, the sending
unit is configured to send first RRC signaling to the
terminal, the first RRC signaling comprises the time
of taking effect of second RRC signaling; the second
RRC signaling is RRC signaling sent after the first
RRC signaling.

18. The base station of claim 13, wherein, the sending unit is configured to send control signaling to the terminal, the control signaling comprises the time of taking effect of the RRC signaling.

19. A terminal, comprising a receiving unit, an obtaining unit, and a controlling unit; wherein, the receiving unit is configured to receive a broadcast message, configuration information, or control information from a base station, and further configured to receive third Radio Resource Control (RRC) signaling; the obtaining unit is configured to obtain time of taking effect of RRC signaling comprised in the broadcast message, the configuration information, or the control information received by the receiving unit; the controlling unit is configured to control the third RRC signaling received by the receiving unit to take effect based on the time of taking effect obtained by the obtaining unit.

20. The terminal of claim 19, wherein, the receiving unit is used for receiving Physical Broadcast Channel (PBCH) information from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling comprised in the PBCH information received by the receiving unit.

21. The terminal of claim 19, wherein, the receiving unit is used for receiving Residual Minimization System Information (RMSI) from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling comprised in the RMSI received by the receiving unit.

22. The terminal of claim 19, wherein, the receiving unit is used for receiving Other System Information (OSI) from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling comprised in the OSI received by the receiving unit.

23. The terminal of claim 19, wherein, the receiving unit is used for receiving fourth RRC signaling from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling comprised in the fourth RRC signaling received by the receiving unit.

24. The terminal of claim 19, wherein, the receiving unit is used for receiving the fourth RRC signaling from the base station; the obtaining unit is configured to obtain the time of taking effect of the RRC signaling comprised in control signaling received by the receiving unit.

25. A base station, comprising a communication component for data transmission, a processor, and a memory for storing a computer program capable of running on the processor, wherein the processor is used for, when running the computer program, executing acts of the method for determining time of taking effect of RRC signaling according to claims 1 to 6.

26. A terminal, comprising a communication component for data transmission, a processor, and a memory for storing a computer program capable of running on the processor, wherein the processor is used for, when running the computer program, executing acts of the method for determining time of taking effect of RRC signaling according to claims 7 to 12.

27. A computer storage medium, on which a computer program is stored, wherein the computer program, when executed by a processor, implements acts of the method for determining time of taking effect of RRC signaling according to claims 1 to 6, or, the computer program, when executed by a processor, implements the method for determining time of taking effect of RRC signaling according to claims 7 to 12.
A base station sends a broadcast message, configuration information, or control information to a terminal, wherein the broadcast message, the configuration information, or the control information includes time of taking effect of RRC.

FIG. 1

A terminal receives a broadcast message, configuration information, or control information from a base station to obtain time of taking effect of RRC signaling included in the broadcast message, the configuration information, or the control information.

The terminal receives third RRC signaling and controls the third RRC signaling to take effect based on the effective time.

FIG. 2

Base station

Sending unit

FIG. 3
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

H04W 72/04 (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

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)

CNPAT; CNKI; EPODOC; WPI; 3GPP; 无线资源控制, 广播, 配置, 重配, 控制, 生效, 时间, 基站, 终端, 信令, RRC, 广播, configuration, reconfiguration, control, effective, time, BS, UE, signaling

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>CN 101909356 A (DATANG MOBILE COMMUNICATIONS EQUIPMENT CO., LTD.) 08 December 2010 (08.12.2010), description, paragraph [0091]</td>
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☐ Further documents are listed in the continuation of Box C. □ See patent family annex.

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“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

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Date of the actual completion of the international search 25 May 2018

Date of mailing of the international search report 13 June 2018

Name and mailing address of the ISA

State Intellectual Property Office of the P. R. China

Haidian District, Beijing 100088, China

Facsimile No. (86-10) 62019451

Authorized officer

WAN, Shasha

Telephone No. (86-10) 53961576

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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