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INFORMATION CONFIGURATION METHOD AND APPARATUS, TERMINAL, AND NETWORK-SIDE DEVICE

Abstract

This application discloses an information configuration method and apparatus, a terminal, and a network-side device. An information configuration method according to an embodiment of this application includes: receiving, by a terminal, paging downlink control information DCI sent by a network-side device; and obtaining, by the terminal, system configuration information based on the paging DCI; where the system configuration information includes at least one of the following configuration parameters: a synchronization signal and physical broadcast channel block SSB period; a synchronization signal block measurement timing configuration SMTC period; SSB transmission configuration information; physical random access channel PRACH configuration index information; paging discontinuous reception DRX configuration information; and period configuration information of a common signal.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation application of PCT International Application No. PCT/CN2023/124459 filed on Oct. 13, 2023, which claims priority to Chinese Patent Application No. 202211258304.9, filed in China on Oct. 13, 2022, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD
[0002] This application pertains to the field of communication technology, and specifically relates to an information configuration method and apparatus, a terminal, and a network-side device.
BACKGROUND
[0003] New radio (NR) user equipment (UE) can be in one of three radio resource control (RRC) states: an RRC idle state (RRC_IDLE), an RRC connected state (RRC_CONNECTED), and an RRC inactive state (RRC_INACTIVE). In the RRC_IDLE and RRC_INACTIVE states, the UE cannot perform data transmission with a network-side device. In such states, if the network-side device dynamically modifies system parameters, such as modifying a synchronization signal and physical broadcast channel block (SSB) period, a synchronization signal block measurement timing configuration (SMTC) period, SSB transmission configuration, and the like, the UE cannot be notified of the modification in a timely manner, causing the UE to fail to adjust monitoring parameters in a timely manner. This may result in UE access delay and affect communication performance.
SUMMARY
[0004] Embodiments of this application provide an information configuration method and apparatus, a terminal, and a network-side device.
[0005] According to a first aspect, an information configuration method is provided, applied to a terminal. The method includes: [0006] receiving, by the terminal, paging downlink control information (DCI) sent by a network-side device; and [0007] obtaining, by the terminal, system configuration information based on the paging DCI; where [0008] the system configuration information includes at least one of the following configuration parameters: [0009] a synchronization signal and physical broadcast channel block SSB period; [0010] a synchronization signal block measurement timing configuration SMTC period; SSB transmission configuration information; [0011] physical random access channel (PRACH) configuration index information; [0012] paging discontinuous reception (DRX) configuration information; and [0013] period configuration information of a common signal.
[0014] According to a second aspect, an information configuration apparatus is provided, applied to a terminal, including: [0015] a receiving module, configured to receive paging DCI sent by a network-side device; and [0016] an obtaining module, configured to obtain system configuration information based on the paging DCI; where [0017] the system configuration information includes at least one of the following configuration parameters: [0018] an SSB period; [0019] an SMTC

period; [0020] SSB transmission configuration information; [0021] PRACH configuration index information; [0022] paging DRX configuration information; and [0023] period configuration information of a common signal.
[0024] According to a third aspect, an information configuration method is provided, applied to a network-side device. The method includes:
[0025] sending, by the network-side device, paging DCI to a terminal, where the paging DCI and/or a physical downlink shared channel (PDSCH) scheduled by the paging DCI indicates system configuration information; where [0026] the system configuration information includes at least one of the following configuration parameters: [0027] an SSB period; [0028] an SMTC period; [0029] SSB transmission configuration information; [0030] PRACH configuration index information; [0031] paging DRX configuration information; and [0032] period configuration information of a common signal.
[0033] According to a fourth aspect, an information configuration apparatus is provided, applied to a network-side device, including:
[0034] a sending module, configured to send paging DCI to a terminal, where the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information; where [0035] the system configuration information includes at least one of the following configuration parameters: [0036] an SSB period; [0037] an SMTC period; [0038] SSB transmission configuration information; [0039] PRACH configuration index information; [0040] paging DRX configuration information; and [0041] period configuration information of a common signal
[0042] According to a fifth aspect, a terminal is provided. The terminal includes a processor and a memory, where the memory stores a program or instructions capable of running on the processor, and when the program or instructions are executed by the processor, the steps of the method according to the first aspect are implemented.
[0043] According to a sixth aspect, a terminal is provided, including a processor and a communication interface. The communication interface is configured to receive paging downlink control information DCI sent by a network-side device. The processor is configured to obtain system configuration information based on the paging DCI; where the system configuration information includes at least one of the following configuration parameters: an SSB period; an SMTC period; SSB transmission configuration information; PRACH configuration index information; paging DRX configuration information; and period configuration information of a common signal.
[0044] According to a seventh aspect, a network-side device is provided. The network-side device includes a processor and a memory, where the memory stores a program or instructions capable of running on the processor, and when the program or instructions are executed by the processor, the steps of the method according to the third aspect are implemented.
[0045] According to an eighth aspect, a network-side device is provided, including a processor and a communication interface. The communication interface is configured to send paging DCI to a terminal, where the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information; where the system configuration information includes at least one of the following configuration parameters: an SSB period; an SMTC period; SSB transmission configuration information; PRACH configuration index information; paging DRX configuration information; and period configuration information of a common signal.
[0046] According to a ninth aspect, an information configuration system is provided, including a terminal and a network-side device, where the terminal can be configured to perform the steps of the information configuration method according to the first aspect, and the network-side device can be configured to perform the steps of the information configuration method according to the third aspect.
[0047] According to a tenth aspect, a readable storage medium is provided, where the readable storage medium stores a program or instructions, and when the program or instructions are

executed by a processor, the steps of the method according to the first aspect are implemented, or the steps of the method according to the third aspect are implemented.
[0048] According to an eleventh aspect, a chip is provided. The chip includes a processor and a communication interface, where the communication interface is coupled to the processor, and the processor is configured to run a program or instructions to implement the steps of the method according to the first aspect or the steps of the method according to the third aspect.
[0049] According to a twelfth aspect, a computer program/program product is provided, where the computer program/program product is stored in a storage medium, and the computer program/program product is executed by at least one processor to implement the steps of the information configuration method according to the first aspect, or to implement the steps of the information configuration method according to the third aspect.

Description

BRIEF DESCRIPTION OF DRAWINGS
[0050] FIG. **1** is a block diagram of a wireless communication system to which embodiments of this application are applicable;
[0051] FIG. **2** is a schematic diagram of state transition relationships according to an embodiment of this application;
[0052] FIG. **3** is a schematic diagram of SSB transmission according to an embodiment of this application;
[0053] FIG. **4** is a first schematic flowchart of an information configuration method according to an embodiment of this application;
[0054] FIG. **5** is a schematic diagram a first time according to an embodiment of this application;
[0055] FIG. **6** is a second schematic flowchart of an information configuration method according to an embodiment of this application;
[0056] FIG. **7** is a first schematic structural diagram of an information configuration apparatus according to an embodiment of this application;
[0057] FIG. **8** is a second schematic structural diagram of an information configuration apparatus according to an embodiment of this application;
[0058] FIG. **9** is a schematic structural diagram of a communication device according to an embodiment of this application;
[0059] FIG. **10** is a schematic structural diagram of a terminal according to an embodiment of this application; and
[0060] FIG. **11** is a schematic structural diagram of a network-side device according to an embodiment of this application.
DESCRIPTION OF EMBODIMENTS
[0061] The following clearly describes the technical solutions in the embodiments of this application with reference to the accompanying drawings in the embodiments of this application. Apparently, the described embodiments are only some rather than all of the embodiments of this application. All other embodiments obtained by persons of ordinary skill in the art based on the embodiments of this application shall fall within the protection scope of this application.
[0062] The terms “first”, “second”, and the like in this specification and claims of this application are used to distinguish between similar objects rather than to describe a specific order or sequence. It should be understood that terms used in this way are interchangeable in appropriate circumstances so that the embodiments of this application can be implemented in other orders than the order illustrated or described herein. In addition, “first” and “second” are usually used to distinguish objects of a same type, and do not restrict a quantity of objects. For example, there may be one or a plurality of first objects. In addition, “and/or” in the specification and claims represents

at least one of connected objects, and the character "/" generally indicates that the associated objects have an "or" relationship.

[0063] It should be noted that technologies described in the embodiments of this application are not limited to a long term evolution (LTE) or LTE-Advanced (LTE-A) system, and may also be applied to other wireless communication systems, for example, code division multiple access (CDMA), time division multiple access (TDMA), frequency division multiple access (FDMA), orthogonal frequency division multiple access (OFDMA), single-carrier frequency-division multiple access (SC-FDMA), and other systems. The terms "system" and "network" in the embodiments of this application are often used interchangeably, and the technology described herein may be used in the above-mentioned systems and radio technologies as well as other systems and radio technologies. In the following descriptions, a new radio (NR) system is described for an illustration purpose, and NR terms are used in most of the following descriptions, although these technologies may also be applied to other applications than an NR system application, for example, the 6th generation (6G) communication system.

[0064] FIG. **1** is a block diagram of a wireless communication system to which the embodiments of this application are applicable. The wireless communication system includes a terminal **11** and a network-side device **12**. The terminal **11** may be a terminal side device such as a mobile phone, a tablet personal computer, a laptop computer or a notebook computer, a personal digital assistant (PDA), a palmtop computer, a netbook, an ultra-mobile personal computer (UMPC), a mobile internet device (MID), an augmented reality (AR)/virtual reality (VR) device, a robot, a wearable device, vehicle user equipment (VUE), pedestrian user equipment (PUE), smart household (home devices with wireless communication functions, such as refrigerators, televisions, washing machines, or furniture), a game console, a personal computer (PC), a teller machine, or a self-service machine. The wearable device includes a smartwatch, a smart band, smart earphones, smart glasses, smart jewelry (a smart bracelet, a smart hand chain, a smart ring, a smart necklace, a smart leglet, a smart anklet, and the like), a smart wristband, smart clothing, or the like. It should be noted that a specific type of the terminal **11** is not limited in the embodiments of this application. The network-side device **12** may include an access network device or a core network device. The access network device may also be referred to as a radio access network device, a radio access network (RAN), a radio access network function, or a radio access network unit. The access network device may include a base station, a wireless local area network (WLAN) access point, a wireless fidelity (WiFi) node, or the like. The base station may be referred to as a NodeB, an evolved NodeB (eNB), an access point, a base transceiver station (BTS), a radio base station, a radio transceiver, a basic service set (BSS), an extended service set (ESS), a home NodeB, a home evolved NodeB, a transmitting receiving point (TRP), or other suitable terms in the field. Provided that the same technical effect is achieved, the base station is not limited to specific technical terms. It should be noted that in the embodiments of this application, only the base station in the NR system is used as an example, but the specific type of the base station is not limited.

[0065] The following describes in detail the information configuration method and apparatus provided in the embodiments of this application through some embodiments and their application scenarios with reference to the accompanying drawings.

[0066] For description of the embodiments of this application, some concepts used in the following description are first described.

I. RRC States

[0067] An NR UE can be in one of three RRC states: RRC_IDLE, RRC_CONNECTED, and RRC_INACTIVE.

[0068] For RRC_IDLE, no RRC connection is established between the UE and a base station.

[0069] For RRC_CONNECTED and RRC_INACTIVE, an RRC connection has been established between the UE and the base station.

[0070] The transition relationships among the three states are shown in FIG. **2**.

[0071] (1) RRC_IDLE state:
[0072] UE in the IDLE state: [0073] {circle around (1)} A network node (Node B, NB) has no context information of the UE, that is, the NB does not know the existence of the UE. [0074] {circle around (2)} No RRC connection exists between the UE and the NB. [0075] {circle around (3)} A unique identifier has been assigned within a tracking area (TA) where the UE is located. [0076] {circle around (4)} The UE registers with a mobility management entity (MME), and the MME has the context. [0077] {circle around (5)} No non-access stratum (NAS) signaling connection exists between the UE and a core network.
[0078] An upper layer may configure a specific DRX for the terminal in the idle state to periodically wake up to receive possible paging messages from a network.
[0079] The terminal controls mobility based on network configuration, that is, the terminal implements mobility management through cell reselection.
[0080] UE behaviors: [0081] {circle around (1)} Monitors short messages transmitted on a physical downlink control channel (PDCCH), such as a paging radio network temporary identifier (P-RNTI). [0082] {circle around (2)} Monitors core network (CN) paging, for example, monitors a 5G S-temporary mobile subscription identifier (5G-S-TMSI). [0083] {circle around (3)} Performs neighboring cell measurement, cell selection, or cell reselection. [0084] {circle around (4)} Obtains system messages and sends system information (SI) request messages (if the system messages are configured, performs this step). [0085] {circle around (5)} Records measurement data that contains location and time information based on measurement recording configuration.
[0086] (2) RRC_INACTIVE state
[0087] A UE in the RRC_INACTIVE state not only includes all behaviors in the RRC_IDLE state, but also needs to store the inactive access stratum (AS) context of the UE and implement synchronization with a radio access network (RAN) area.
[0088] A UE-specific DRX may be configured by upper layers or by the RRC layer (A UE specific DRX may be configured by upper layers or by RRC layer).
[0089] A RAN-based notification area is configured by the RRC layer (ARAN-based notification area is configured by RRC layer).
[0090] The UE controls mobility based on network configuration (UE controlled mobility based on network configuration).
[0091] The UE stores the inactive AS context of the UE.
[0092] UE behaviors: [0093] Monitors short messages transmitted with P-RNTI over downlink control information (DCI) (Monitors Short Messages transmitted with P-RNTI over DCI); [0094] Monitors CN paging (which may include a 5G S-temporary mobile subscription identifier (5G-S-TMSI)) or RAN paging (which may include a full inactive RNTI (full I-RNTI)); Performs neighboring cell measurement and cell selection or reselection; [0095] Performs RAN-based notification area update (RNAU) periodically, or performs RNAU when leaving the configured RAN; and [0096] Obtains system messages and sends system message request messages (if obtaining system messages is supported, performs this step).
[0097] (3) RRC_CONNECTED state [0098] {circle around (1)} The AS context is stored in the NG-RAN and UE. [0099] {circle around (2)} Data can be transmitted. [0100] {circle around (3)} At lower layers, the UE can be configured with a UE-specific DRX. [0101] {circle around (4)} For a terminal supporting carrier aggregation (CA), one or more secondary cells (SCell) are aggregated with a special cell (SpCell) to increase the bandwidth. [0102] {circle around (5)} For a terminal supporting dual connectivity (DC), one secondary cell group (SCG) is aggregated with a master cell group (MCG) to increase the bandwidth. [0103] {circle around (6)} The network side controls intra- or inter-NR system mobility.
[0104] UE behaviors: [0105] Monitors short messages transmitted on the physical downlink control channel (PDCCH) (for example, P-RNTI); [0106] Monitors control channels related to shared data channels to sense whether there is related scheduling data; [0107] Reports channel

quality information to the network side; [0108] Performs neighboring cell measurement and reports measurement reports; [0109] Obtains system messages; and Performs minimization of drive tests (MDT).

II. Paging

(1) Paging Purpose

Description **1**:

[0110] Sends core network-initiated paging messages to UEs in the RRC_IDLE or RRC_INACTIVE state;

[0111] Sends access network-initiated paging messages to UEs in the RRC_INACTIVE state; Notifies UEs in the RRC_IDLE, RRC_INACTIVE, or RRC_CONNECTED state of system message changes;

[0112] Notifies UEs in the RRC_IDLE, RRC_INACTIVE, or RRC_CONNECTED state of earthquake and tsunami warning system (ETWS) primary notifications and ETWS secondary notifications;

[0113] Notifies UEs in the RRC_IDLE, RRC_INACTIVE, or RRC_CONNECTED state of information about commercial mobile alert service (CMAS) notifications;

[0114] Notifies UEs in the RRC_IDLE state or UEs connected to the 5G core network (5GC) of embedded array block (EAB) parameter modifications; and

[0115] Notifies UEs in the RRC_IDLE or RRC_INACTIVE state to perform evolved universal mobile telecommunications system (UMTS) terrestrial radio access network (Evolved UMTS Terrestrial Radio Access Network, E-UTRAN) inter-frequency reconfiguration procedures.

Description **2**:

[0116] Sends paging messages to UEs in the RRC_IDLE or RRC_INACTIVE state.

[0117] For the above two paging purpose descriptions, the difference between 5G and 4G is that 5G uses the short message field in DCI format 1_0 to indicate system message changes and earthquake and tsunami warning system (ETWS) notifications.

(2) Paging Classification

[0118] In terms of message sources, paging can be classified into:

[0119] a: 5GC paging, from 5GC: In the RRC_IDLE state, in a case that there is downlink data arriving at a UE in the RRC_IDLE state, 5GC notifies the UE through a paging message.

[0120] b: RAN paging, from gNB: In a case that there is downlink data arriving at a UE in the RRC_INACTIVE state, the gNB notifies, through a RAN paging message, the UE to start data transmission. Final paging messages are all delivered to the UE by the gNB through the air interface.

(3) Paging Channel

[0121] The physical layer channel corresponding to paging is a physical downlink shared channel (PDSCH). The PDSCH is scheduled using DCI format 1-0 scrambled with P-RNTI (with the value being 0xFFFF).

[0122] The following information is transmitted through DCI format 1_0, with the cyclic redundancy check (CRC) scrambled by P-RNTI.

[0123] {circle around (1)} Short messages indicator: 2 bits specified in Table 1.

TABLE-US-00001 TABLE 1 Short messages indicator Bit field Short messages indicator 00 Reserved 01 Only paging scheduling information exists in the DCI. 10 Only short messages exist in the DCI. 11 The scheduling information for both paging and short messages exists in the DCI.

[0124] {circle around (2)} Short message-8 bits, as shown in Table 2. If only paging scheduling information is carried, this bit field is reserved.

TABLE-US-00002 TABLE 2 Short message Bit Short message 1 System information modification: If the value is set to 1: it indicates modification of the broadcast control channel (BCCH) except SIB6, SIB7, and SIB8. 2 ETWS and CMAS indicator: If the value is set to 1: it indicates ETWS primary notification and/or ETWS secondary notification and/or CMAS notification. 3 Paging

monitoring stop: This bit can only be used for shared spectrum channel access operations if "nRPDCCH MonitoringOccasionPerSSB InPO" exists. If the value is set to 1: it indicates that the UE may stop monitoring PDCCH events according to protocol specifications, in order to perform paging at this paging occasion. 4 System information modification - eDRX: If the value is set to 1: it indicates modification of BCCH except SIB6, SIB7, and SIB8. This indicator only applies to UEs using an eDRX period longer than the BCCH modification period. 5-8 These bits are not used in this embodiment. If these bits are received, the UE ignores them.

[0125] Bit **1** indicates that the change of system messages other than ETWS/CMAS messages (SIB6, SIB7, and SIB8) is triggered. Bit **2** indicates that the change of ETWS/CMAS messages (SIB6, SIB7, and SIB8) is triggered.

[0126] {circle around (3)} Frequency domain resource allocation-bits. If only short messages are carried, this bit field is reserved.

[0127] {circle around (4)} Size of control resource set **0** (CORESET **0**)

[0128] {circle around (5)} Time domain resource allocation-4 bits. If only short messages are carried, this bit field is reserved.

[0129] {circle around (6)} VRB-to-PRB mapping-1 bit. If only short messages are carried, this bit field is reserved.

[0130] {circle around (7)} Modulation and coding scheme-5 bits. If only short messages are transmitted, this bit field is reserved.

[0131] {circle around (8)} TB scaling-2 bits. If only short messages are carried, this bit field is reserved.

[0132] {circle around (9)} TRS availability indicator-1, 2, 3, 4, 5, or 6 bits, where the number of bits equals 1 plus the maximum value of all bit IDs provided by the TRS resource set configuration (if configured); otherwise, the number of bits is 0.

[0133] {circle around (10)} Reserved bits-(8-X) bits are used for operations in cells with shared spectrum channel access in frequency range 1, or operations in cells in frequency range 2-2; and (6-X) bits are used for operations in cells without shared spectrum channel access, where the value of X is the number of bits for the "TRS availability indicator" field.

(4) Paging Process

[0134] A UE in the RRC_IDLE or RRC_INACTIVE state can use DRX to receive paging messages to reduce power consumption. With DRX, the UE in the RRC_IDLE or RRC_INACTIVE state "wakes up" only during the predetermined time period to receive paging messages, but can remain in "sleep" mode and stop receiving paging at other times, thereby reducing power consumption and extending battery life of the UE.

[0135] For paging DRX, the UE in the RRC_IDLE or RRC_INACTIVE state attempts to receive a P-RNTI scrambled PDCCH only at a specific paging occasion within each DRX cycle. A paging occasion (PO) is a set of PDCCH monitoring occasions and includes multiple slots. The UE monitors possible P-RNTI scrambled PDCCHs at this PO. A paging frame (PF) is a radio frame that may contain one or more POs or contain a starting point of one PO.

[0136] The PF is a system frame (System frame number, SFN) that meets the following formula:

[00001] $(SFN + PF\_offset) \bmod T = (T \operatorname{div} N) * (UE\_ID \bmod N)$

[0137] One PF contains Ns POs. The UE can determine, through an index i_s, which PO within the PF is used. i_s is obtained using the following formula:

[00002] $i\_s = \operatorname{floor}(\frac{UE\_ID}{N}) \bmod N_s$

[0138] T represents the DRX cycle ultimately used by the UE. PF_offset is used to determine the PF, and its value is specified by "PCCH-Config->nAndPagingFrameOffset" in SIB1. N is used to determine how many PFs are included in each DRX cycle, and its value is specified by "PCCH-Config->nAndPagingFrameOffset" in SIB1. Ns represents how many POs correspond to each PF, and its value is specified by "PCCH-Config->ns" in SIB1. UE_ID=5G-S-TMSI mod 1024, where the actual value of UE_ID is the lowest 10 bits of 5G-S-TMSI.

[0139] Position of the first PDCCH monitoring occasion of each PO within one PF: For the paging on the initial downlink bandwidth part (BWP), its value is specified by “PCCH-Config->firstPDCCH-MonitoringOccasionOfPO” in SIB1. For the paging on other downlink BWPs except the initial downlink BWP, its value is specified by “PCCH-ConfigCommon->firstPDCCH-MonitoringOccasionOfPO” of the corresponding BWP.
[0140] The DRX cycle is configured by the network-side device in the following three ways:
[0141] 1. For CN-initiated paging, a cell broadcasts a default cycle through a default paging cycle (defaultPagingCycle) in SIB1. [0142] 2. For CN-initiated paging, the NAS layer can configure a UE-specific cycle through an information element (IE), Paging DRX. [0143] 3. For RAN-initiated paging, a cell configures a UE-specific cycle by having a RAN paging cycle (ran-PagingCycle) carried in an RRC release message when an RRC connection is suspended.
[0144] The UE in the RRC_IDLE state uses a minimum value of the first two cycle configurations as the final DRX cycle to be used (corresponding to the T value in the formula). For the UE in the RRC_IDLE state, if the NAS layer has not configured a UE-specific DRX cycle for the UE, the “defaultPagingCycle” configured in SIB1 is used.
(5) Time for UE to Receive New System Messages
[0145] The network configures a modification period. The modification period is an integer multiple of the paging cycle, and the multiple, namely the modification period coefficient (modificationPeriodCoeff), is configured in SIB1. For example, if the multiple is set to n4, the modification period is 4 paging cycles.
III. SSB
[0146] SSBs are sent using beams. Because the beams are narrow, in NR, a same SSB is sent in the form of beams to different directions in time division multiplexing (TDM) mode so that UEs in all directions can receive the SSB, as shown in FIG. **3**.
[0147] As shown in FIG. **3**, within a range of 5 ms, a base station sends multiple SSBs (corresponding to different SSB indexes) to cover different directions. The UE receives multiple SSBs with different signal strengths and selects the strongest one as its own SSB beam.
[0148] In this embodiment, within 5 ms, the base station sends a series of SSBs to various directions. This series of SSBs is an SS burst set. A repetition period of the SS burst set is an SS burst set period, which is 20 ms by default in 5G. From the ServingCellConfigurationCommon IE (ServingCellConfigCommon IE), it can be seen that the SSB period range is, for example, {ms5, ms10, ms20, ms40, ms80, ms160}. The terminal performs SSB monitoring once every 20 ms by default.
IV. PRACH
[0149] A PRACH is used to transmit a preamble. Only one preamble can be transmitted at each PRACH occasion (RO), but multiple UEs can transmit different preambles at a same RO.
[0150] The preamble transmission of one cell is in a set of PRACH slots. One PRACH slot may contain multiple ROs in time domain, and each RO is used to transmit a preamble of a specific format. A time domain resource for transmitting a random access preamble is determined by the PRACH configuration (prach-Configuration) field. The UE looks up a corresponding configuration table through prach-ConfigurationIndex to obtain a preamble format used by a corresponding cell and a PRACH time-domain resource usable to the cell. That table is shown in Table 3, for example.
[0151] For example, it is assumed that frequency range 2 (FR2) and unpaired spectrum/SUL are used and the subcarrier spacing of the preamble is 120 kHz. When the indicated PRACH Configuration Index is 74, it can be obtained from Table 3 that under this configuration, the UE can only transmit preambles of format A3 in slots {9, 19, 29, 39} (for FR2, the slots are numbered using subcarrier spacing 60 kHz as a reference) of the system frame that meets n.sub.SFN% 1=0 (that is, all system frames). One slot contains two consecutive PRACH slots (the number of PRACH slots within a 60 kHz slot is 2), one PRACH slot contains N.sub.t.sup.RA,slot=1 ROs in time domain, each RO occupies N.sub.dur.sup.RA=6 OFDM symbols, and PRACH transmission

starts from the 8th OFDM symbol (a value corresponding to the starting symbol is 7) of each PRACH slot.

TABLE-US-00003 TABLE 3 Random access configuration for FR2 and unpaired spectrum Number of Number of PRACH PRACH time-domain configuration Preamble n.sub.SFN mod x = y Subframe Starting slots within a PRACHs within PRACH index format x y number symbol 60 kHz slot a PRACH slot duration 74 A3 1 0 9, 19, 29, 39 7 2 1 6

V. Serving Cell Measurement

[0152] In a serving cell, the UE measures the synchronization signal reference signal received power (SS-RSRP) and synchronization signal reference signal received quality (SS-RSRQ) of the serving cell, and calculates whether the signal quality of the serving cell meets the criterion at least every M1*N1 DRX cycles, where

[0153] if the SMTC period (TSMTC) is >20 ms or the DRX period is ≤0.64s, M=2; otherwise, M1=1.

[0154] The UE needs to use at least two measurement values to filter the SS-RSRP and SS-RSRQ measurement values of the serving cell. An interval between the two measurement values is at least DRX cycle/2.

[0155] If the UE evaluates, based on Table 4, that the serving cell does not meet a cell selection criterion S in N_serv consecutive DRX cycles, the UE needs to start measurement on all neighboring cells indicated by the serving cell, regardless of the current measurement rules that limit UE measurement activities.

TABLE-US-00004 TABLE 4 N_serv DRX cycle length Proportion coefficient (N1) Nserv (s) FR1 FR2 Note1 (Number of DRX cycles) 0.32 1 8 M1*N1*4 0.64 5 M1*N1*4 1.28 4 N1*2 2.56 3 N1*2 Note1: The data apples to UEs supporting power levels 2, 3, and 4. For UEs supporting power level 1, N1 for all DRX cycle lengths is 8.

VI. Wake Up Signal (WUS) and DRX

[0156] To further improve power-saving performance of UEs, PDCCH-based WUS is introduced. The function of WUS is to notify a UE whether it needs to monitor PDCCH during onDuration of a specific DRX. In the case of no data, the UE does not need to monitor PDCCH during the onDuration, which means that the UE can be in a sleep state throughout the entire DRX long cycle, thereby further saving power.

[0157] The WUS signal is a type of DCI, which can be referred to as a DCI with CRC scrambled by power saving RNTI (PS-RNTI) (DCI with CRC scrambled by PS-RNTI, DCP). The PS-RNTI is an RNTI specifically assigned to the UE by the network for power saving. The DCI scrambled by this RNTI carries a wake-up/sleep indication of the network for the UE. Based on this indication, the UE determines whether to start an onDuration timer and perform PDCCH monitoring in a next DRX cycle.

[0158] The following clearly describes the technical solutions in the embodiments of this application with reference to the accompanying drawings in the embodiments of this application. Apparently, the described embodiments are only some rather than all of the embodiments of this application. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of this application without creative efforts shall fall within the protection scope of this application.

[0159] As shown in FIG. **4**, an embodiment of this application provides an information configuration method, applied to a terminal, including the following steps.

[0160] Step **401**. The terminal receives paging downlink control information DCI sent by a network-side device.

[0161] Step **402**. The terminal obtains system configuration information based on the paging DCI.

[0162] The system configuration information includes at least one of the following configuration parameters: [0163] a synchronization signal and physical broadcast channel block SSB period; [0164] a synchronization signal block measurement timing configuration SMTC period; [0165]

SSB transmission configuration information; [0166] physical random access channel PRACH configuration index information; [0167] paging discontinuous reception DRX configuration information; and [0168] period configuration information of a common signal.
[0169] In this embodiment, the system configuration information is pre-configured by the network-side device or predefined by a protocol. The network-side device sends the system configuration information to the terminal through the paging DCI. The system configuration information may indicate changes in system parameters or configurations. The system configuration information includes, for example, one or more of an SSB period, an SMTC period, SSB transmission configuration information, PRACH configuration index information, paging DRX configuration information, and period configuration information of a common signal. The terminal may be a terminal in an IDLE state. When in the IDLE state, the terminal can obtain system parameter configuration information each time it receives the paging DCI sent by the network-side device, thereby promptly obtaining changes in system parameters or configurations. This enables the terminal to promptly adjust required monitoring parameters, such as promptly adjusting an SSB to be monitored, an SSB monitoring period, and an SMTC monitoring period. The terminal can also promptly obtain the transmitted or non-transmitted SSB based on the SSB transmission configuration information, promptly obtain the latest PRACH configuration based on the PRACH configuration index, and promptly obtain the paging DRX configuration based on the paging DRX configuration information, thereby avoiding access delay and preventing impact on communication performance.
[0170] In an optional embodiment, the system configuration information is indicated by at least one of the following: [0171] an indication field or a bit carried by the paging DCI; and [0172] an indication field or a bit carried by the physical downlink shared channel PDSCH scheduled by the paging DCI.
[0173] The network-side device may indicate the system configuration information through the indication field or bit of the paging DCI (such as a short message); or may indicate the system configuration information through the indication field or bit carried by the PDSCH scheduled by the paging DCI.
[0174] Optionally, the network-side device may send the system configuration information once or multiple times within a period of time, that is, send the system configuration information once or multiple times through the paging DCI within a period of time. The terminal can monitor the system configuration information once or multiple times within this period of time. This period of time and the number of sending times may be protocol-predefined. A time interval for sending the system configuration information may be protocol-predefined.
[0175] Optionally, each configuration parameter included in the system configuration information corresponds to N values; [0176] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; [0177] or [0178] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; where
[0179] N is an integer greater than or equal to 1.
[0180] In this embodiment, the system configuration information sent by the network-side device may be present in multiple sets, that is, the system configuration information may include multiple configuration parameters, where each configuration parameter may correspond to one or more values. The number of the configuration parameter may be configured for each value separately, that is, the network-side device may define the number of the configuration parameter corresponding to each value, and when sending the system configuration information to the terminal, it may send the number of the configuration parameter to be used. Alternatively, when sending the system configuration information to the terminal, the network-side device may directly send the value of the configuration parameter to be used. For example, the number of the configuration parameter to be used is indicated through the indication field or bit in the paging DCI. The terminal can look up, based on the number of the configuration parameter, the value of

the configuration parameter corresponding to this number, so as to obtain the actual application value. Alternatively, the value of the configuration parameter to be used is directly indicated through the indication field or bit in the paging DCI.

[0181] It should be noted that after the network-side device configures one or more configuration parameters for the terminal, it can exchange information with the terminal to send all the configuration parameters to the terminal for storage, for example, synchronizing the configuration parameters to the terminal through RRC or downlink signals. During the communication process, the network-side device can send, to the terminal, the number or value of the configuration parameter that currently needs to be used. For example, for configuration parameter 1, the network-side device pre-configures three values: a, b, and c, respectively corresponding to numbers 00, 01, and 11. The network-side device sends the three values and the corresponding numbers to the terminal for storage. During the communication process, the network-side device can use paging DCI to send the number (such as 11) or value (such as a) of the currently used configuration parameter to the terminal, and the terminal uses the value a corresponding to the configuration parameter **11** to perform the subsequent communication process.

[0182] In an optional embodiment, the system configuration information includes at least one of the following configuration parameters:

[0183] (1) a synchronization signal and physical broadcast channel block SSB period.

[0184] The network-side device can pre-configure multiple SSB periods for the terminal and number the multiple SSB periods. The network-side device can send a number or value of a currently used SSB period to the terminal through the paging DCI. When the SSB period needs to be modified, the network-side device sends a number or value of the modified SSB period to the terminal through the paging DCI.

[0185] Taking the network-side device sending the number of the SSB period to the terminal through the paging DCI as an example: The network-side device pre-configures four SSB periods: 20 ms, 40 ms, 80 ms, and 160 ms, respectively corresponding to numbers 00, 01, 10, and 11. The network-side device can synchronize the four SSB periods and numbers to the UE through RRC or downlink signals. To indicate to the terminal that the currently used SSB period is 80 ms, the network-side device only needs to send the number “10” in the paging DCI (or PDSCH), and the UE can know that the current SSB period is 80 ms.

[0186] Taking the network-side device sending the value of the SSB period to the terminal through the paging DCI as an example: Only one set of SSB period is configured. When modifying the SSB period, the network-side device directly modifies the period or sends the configuration through the paging DCI.

[0187] (2) a synchronization signal block measurement timing configuration SMTC period.

[0188] The network-side device can pre-configure multiple SMTC periods for the terminal and number the multiple SMTC periods. The network-side device can send a number or value of a currently used SMTC period to the terminal through the paging DCI. When the SMTC period needs to be modified, the network-side device sends a number or value of the modified SMTC period to the terminal through the paging DCI.

[0189] Taking the network-side device sending the number of the SMTC period to the terminal through the paging DCI as an example: The network-side device pre-configures three SMTC periods: 20 ms, 40 ms, and 80 ms, respectively corresponding to numbers 00, 01, and 10. The network-side device can synchronize the three SMTC periods and numbers to the UE through RRC or downlink signals. To indicate to the terminal that the currently used SMTC period is 40 ms, the network-side device only needs to send the number “01” in the paging DCI (or PDSCH), and the UE can know that the current SMTC period is 40 ms.

[0190] Taking the network-side device sending the value of the SMTC period to the terminal through the paging DCI as an example: Only one set of SMTC period is configured. When modifying the SMTC period, the network-side device directly modifies the period or sends the

configuration through the paging DCI.
[0191] (3) SSB transmission configuration information, which can indicate which SSBs are transmitted and which SSBs are not transmitted.
[0192] The network-side device can pre-configure multiple SSB transmission configurations for the terminal and number the multiple transmission configurations. The network-side device can send a number or value of a currently used SSB transmission configuration to the terminal through the paging DCI. When the SSB transmission configuration needs to be modified, the network-side device sends a number or value of the modified SSB transmission configuration to the terminal through the paging DCI.
[0193] Taking the network-side device sending the number of the currently used SSB transmission configuration to the terminal through the paging DCI as an example: The network-side device pre-configures three SSB transmission configurations: configuration **1**, configuration **2**, and configuration **3**, respectively corresponding to numbers 00, 01, and 10. The network-side device can synchronize the three SSB transmission configurations and numbers to the UE through RRC or downlink signals. To indicate to the terminal that the currently used SSB transmission configuration is configuration **1**, the network-side device only needs to send the number “00” in the paging DCI (or PDSCH), and the UE can know that the current SSB transmission configuration is configuration **1**.
[0194] Taking the network-side device directly sending the SSB transmission configuration to the terminal through the paging DCI as an example: When modifying the SSB transmission configuration, the network-side device directly modifies the SSB transmission configuration or sends the currently used SSB transmission configuration to the terminal through the paging DCI.
[0195] (4) physical random access channel PRACH configuration index (PRACH Config. Index) information.
[0196] The network-side device can pre-configure multiple PRACH configurations, with each PRACH configuration corresponding to a different index. The network-side device can send an index of a currently used PRACH configuration to the terminal through the paging DCI, and the terminal can obtain the currently used PRACH configuration based on the index, as shown in Table 3.
[0197] Optionally, the PRACH configuration corresponding to each index may include one or more sub-configurations with different periods. When one PRACH configuration includes multiple sub-configurations, the network-side device can number the multiple sub-configurations and synchronize them to the terminal. To indicate the currently used PRACH configuration to the terminal, the network-side device can indicate the number of the currently used sub-configuration, or directly indicate the currently used sub-configuration.
[0198] (5) paging discontinuous reception DRX configuration information.
[0199] Optionally, the paging DRX configuration information includes at least one of the following parameters: [0200] a DRX cycle; [0201] a paging frame PF; [0202] a paging occasion PO; [0203] an offset; and [0204] an initial time of paging.
[0205] The network-side device can pre-configure multiple paging DRX configurations for the terminal, meaning that each parameter in the paging DRX configuration can be configured with one or more values, and then directly modify the values of the DRX cycle, PF, PO, offset, initial time, and the like through the paging DCI, or send the number of the modified configuration parameter to the terminal.
[0206] (6) period configuration information of a common signal.
[0207] Optionally, the common signal includes at least one of the following: [0208] a cell common PDCCH; [0209] a cell common physical uplink control channel (PUCCH); [0210] system information block **1** (SIB1); [0211] a channel state information reference signal (CSI-RS); and [0212] a sounding reference signal (SRS).
[0213] The network-side device can pre-configure multiple period configurations of the common

signal for the terminal, meaning that each parameter in the period configuration of the common signal can include one or more values, and then directly modify the period parameter or send the number of the modified period parameter to the terminal through the paging DCI.

[0214] In this embodiment, the system configuration information is predefined or pre-configured by the network-side device.

[0215] In an optional embodiment, the method further includes: [0216] determining a target configuration based on the system configuration information, where the target configuration includes at least one of the following: first configuration information of the terminal in an idle state; second configuration information of the terminal in an inactive state; and third configuration information of the terminal in a connected state; and performing an operation corresponding to the target configuration at a first time.

[0217] In this embodiment, after the system configuration information is detected, the terminal determines subsequent behaviors based on the system configuration information. Specifically, subsequent behaviors in the IDLE state, inactive state, or connected state can be determined based on the system configuration information. The terminal can determine the configurations in different states based on the system configuration information, and perform operations corresponding to the configurations at the first time. The first time is a time at which the target configuration takes effect. Optionally, the first time may be a time point or a time period. For example, after the target configuration is determined, the operation corresponding to the target configuration is performed at a time point corresponding to the first time. Alternatively, the operation corresponding to the target configuration is performed after the first time period following the determination of the target configuration. Alternatively, after the target configuration is determined, the operation corresponding to the target configuration is performed within the first time period.

[0218] Optionally, the first configuration information includes at least one of the following: [0219] (1) an index of an SSB that the terminal needs to monitor in the idle state. The UE can re-confirm, based on this configuration, the SSBs that need to be monitored. For example, if the terminal detects that the SSB index sent by the network-side device is 2, the operation corresponding to this configuration information is monitoring the SSB with the index **2** when the terminal is in the idle state. [0220] (2) a period for performing SSB monitoring by the terminal in the idle state. The SSB period is generally specific to the serving cell. For example, if the terminal detects that the SSB period sent by the network-side device is 20 ms, the operation corresponding to this configuration information is performing SSB monitoring with a period of 20 ms when the terminal is in the idle state. [0221] (3) a period for performing SMTC monitoring by the terminal in the idle state. For example, if the terminal detects that the SMTC period sent by the network-side device is 40 ms, the operation corresponding to this configuration information is performing SMTC monitoring with a period of 40 ms when the terminal is in the idle state. [0222] (4) a period for performing paging by the terminal in the inactive state. For example, if the terminal detects that the paging cycle sent by the network-side device is 10 ms, the operation corresponding to this configuration information is performing paging with a period of 10 ms when the terminal is in the idle state. [0223] (5) a location at which the terminal performs paging in the idle state. For example, if the terminal detects that the paging location sent by the network-side device is location b, the operation corresponding to this configuration information is performing paging monitoring at the location b when the terminal is in the idle state. [0224] (6) the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met. If a band for the SMTC period is specific to the serving cell, the UE re-confirms, based on the SMTC value, the DRX cycle, and the like, the number of DRX cycles that need to be continuously measured when the access criterion of the serving cell is met. If the band for the SMTC cycle is specific to a neighboring cell, the UE re-confirms the SMTC period for neighboring cell measurement based on the change of this SMTC.

[0225] In this embodiment, based on the system configuration information, the terminal can determine parameters such as the index of the SSB that the terminal needs to monitor in the IDLE

state, the SSB period, and the SMTC period, and can also determine parameters such as the period and location for performing paging by the terminal in the IDLE state. The terminal can also re-confirm, based on the DRX cycle and the SMTC value, the number of DRX cycles that need to be continuously measured when the access criterion of the serving cell is met.

[0226] Optionally, the second configuration information includes at least one of the following:

[0227] an index of an SSB that the terminal needs to monitor in the inactive state; [0228] a period for performing SSB monitoring by the terminal in the inactive state; [0229] a period for performing SMTC monitoring by the terminal in the inactive state; [0230] a period for performing paging by the terminal in the inactive state; [0231] a location at which the terminal performs paging in the inactive state; and [0232] the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.

[0233] In this embodiment, based on the system configuration information, the terminal can determine parameters such as the index of the SSB that the terminal needs to monitor in the inactive state, the SSB period, and the SMTC period, and can also determine parameters such as the period and location for performing paging by the terminal in the inactive state. The terminal can also re-confirm, based on the DRX cycle and the SMTC value, the number of DRX cycles that need to be continuously measured when the access criterion of the serving cell is met.

[0234] Optionally, the third configuration information includes at least one of the following: [0235] a time-domain location at which the terminal is able to send a PRACH resource after entering the connected state; [0236] a time-domain location at which the terminal needs to monitor a common signal after entering the connected state; and [0237] a time-domain location at which the terminal needs to send a common signal after entering the connected state.

[0238] In an optional embodiment, the paging DCI includes: M paging DCIs sent by the network-side device within a second time; and the method further includes: determining the first time based on a monitoring result of system configuration information corresponding to the M paging DCIs; where the second time and M are predefined, and M is an integer greater than or equal to 1.

[0239] In this embodiment, the network-side device can send the system configuration information once or multiple times through the paging DCI within the second time. The terminal determines, based on the system configuration information detected once or multiple times within the second time, the first time for performing the operation corresponding to the target configuration. The number of sending times within the second time may be predefined or may be indicated by a separate indication field, and the first time may be 0.

[0240] The first time is determined based on the monitoring result of the system configuration information corresponding to the M paging DCIs, which can prevent errors in sending the system configuration information caused by situations such as interference, thereby ensuring the accuracy of the configuration parameters. For example, the M pieces of system configuration information detected by the terminal within the second time all indicate to modify the SSB period to a (or A of the M pieces of system configuration information detected indicate to modify the SSB period to a, where A is less than M, and A may be protocol-predefined and is not limited herein). In this case, the terminal determines to perform SSB monitoring with the SSB period of a at the first time. If only B of the M pieces of configuration information indicating to modify the SSB period to a are detected within the second time, where B is less than M, and B may be protocol-predefined and is not limited herein, the operation of modifying the SSB period is not performed.

[0241] It should be noted that in this embodiment, the first time is determined based on the monitoring results of the system configuration information corresponding to the M paging DCIs. The specific determining method may be the method in the above example, or may be another method (for example, the terminal determines the first time based on specific content of system configuration information detected in one monitoring and a predetermined rule). The examples are merely example descriptions and no specific limitations are imposed herein.

[0242] The first time may be a specific time point after M times of monitoring have been

performed within the second time and modification information has been determined based on the monitoring results, as shown in FIG. **5**.

[0243] Optionally, the first time includes at least one of the following: [0244] (1) a predefined time. The predefined time may be a fixed time point, predefined by a protocol, for performing the operation corresponding to the target configuration. For example, the operation may be performed immediately upon detection of the target configuration, or performed at a time point **1** after the target configuration is performed. The predefined time may alternatively be a protocol-predefined time period, and the operation corresponding to the target configuration is performed after this time period. For example, the operation corresponding to the target configuration may be performed after the first time period following the detection of the target configuration, or the operation corresponding to the target configuration may be performed within the first time period after the target configuration is detected. [0245] (2) a paging effective time determined according to a first rule.

[0246] Optionally, the first rule includes: the paging effective time is determined based on a paging cycle and a modification period of the configuration parameter in the system configuration information; where the modification period is predefined.

[0247] In this embodiment, the paging effective time may be an effective time point or an effective time period. For example, if the paging effective time is a moment **1**, it means that the operation corresponding to the target configuration is performed at the moment **1**. Alternatively, if the paging effective time is after a time period **1**, it means that the operation corresponding to the target configuration is performed after the time period **1**. Alternatively, if the paging effective time is within a time period **2**, it means that the operation corresponding to the target configuration is performed within the time period **2**.

[0248] The terminal can determine the effective time of the target configuration according to the first rule. That is, the protocol pre-defines the modification period of a specific configuration parameter, and the terminal determines the effective time of the target configuration based on the paging cycle and this predefined modification period. For example, the protocol pre-defines the modification period for SSB/PRACH, and the like. The terminal determines the effective time jointly based on this modification period and the paging cycle.

[0249] Optionally, the determining the effective time may be: determining the effective time jointly based on the paging cycle and the value of the modification period polynomial coefficient (modificationperiodcoeff), for example, paging cycle*modificationperiodcoeff=effective time. The terminal performs the operation corresponding to the target configuration at the effective time.

[0250] The following describes the information configuration method according to this application through specific embodiments.

[0251] For example, the network-side device configures the SSB period/SMTC period/SSB transmission configuration for the terminal.

[0252] (1) The network-side device configures system configuration information for the terminal.

[0253] Multiple SSB cycles/SMTC cycles/SSB transmission configurations are pre-configured by the network-side device/protocol-predefined and numbered. The currently used number is notified to the UE through paging DCI. The paging DCI may be an existing bit (usable bit) in the short message or a reserved bit.

[0254] Optionally, when notifying the terminal of the number of the currently used configuration parameter through the paging DCI, the network-side device may notify the UE through a PDSCH scheduled by the paging DCI.

[0255] {circle around (1)} Optionally, the network-side device may send the number of the currently used configuration parameter once or multiple times through the paging DCI within the second time. The second time and the number of sending times may be protocol-predefined. The time interval for the sending may also be protocol-predefined.

[0256] For example, four SSB cycles/SMTC cycles are pre-configured by the network-side

device/protocol-predefined. The number 00 represents 20 ms, 01 represents 40 ms, 10 represents 80 ms, and 11 represents 160 ms. The network-side device notifies, through paging DCI, the UE of the SSB cycle/SMTC cycle to be used, for example, indicates the number “11”.

[0257] Four SSB transmission configurations are pre-configured by the network-side device/protocol-predefined. The number 00 represents the transmission of SSB 0, SSB 1, SSB 2, SSB 3, SSB 4, SSB 5, SSB 6, and SSB 7; 01 represents the transmission of SSB 0, SSB 1, SSB 2, and SSB 3; 10 represents the transmission of SSB 4, SSB 5, SSB 6, and SSB 7; and 11 represents the transmission of SSB 0, SSB 2, SSB 4, and SSB 6. The network-side device notifies, through paging DCI, the UE of the SSB transmission configuration to be used, for example, indicates the number “01”.

[0258] {circle around (2)} Optionally, the network-side device may directly send the currently used SSB period/SMTC period/SSB configuration to the UE through the paging DCI or the PDSCH scheduled by the paging DCI. The paging DCI may be an existing bit in the short message or a reserved bit.

[0259] For example, the network-side device notifies, through paging DCI, the UE of the currently used SSB cycle/SMTC cycle. 00010 represents 20 ms; 00100 represents 40 ms; 01000 represents 80 ms; and 10000 represents 160 ms.

[0260] The network-side device notifies the UE of the currently used SSB transmission configuration through the paging DCI. For example, 01011100 represents transmission of SSBs 1, 3, 4, and 5.

[0261] (2) The terminal performs subsequent operations based on the system configuration information.

[0262] The determining, by the UE upon detection of the paging DCI, a behavior for the first time based on information carried in the paging DCI or the PDSCH may include:

[0263] {circle around (1)} determining the behavior of the terminal in the IDLE state, such as the index of the SSB that the terminal needs to monitor in the IDLE state, the SSB period, and the SMTC period.

[0264] The SSB index and the SSB period are generally specific to a serving cell, and the UE re-confirms, based on the configuration, which SSBs need to be monitored.

[0265] If a band for the SMTC period is specific to the serving cell, the UE re-confirms, based on the SMTC value, the DRX cycle, and the like, the number of DRX cycles that need to be continuously measured when the access criterion of the serving cell is met.

[0266] If the band for the SMTC cycle is specific to a neighboring cell, the UE re-confirms the SMTC period for neighboring cell measurement based on the change of this SMTC.

[0267] {circle around (2)} The first time may be: [0268] a: a protocol-predefined time.

[0269] This time parameter may be indicated by a separate indication field, and the time may be 0.

[0270] Optionally, the first time may be a specific time point after the UE performs one or multiple times of monitoring at the second time and determines modification information based on results of the one or multiple times of monitoring (as shown in FIG. **5**). Th second time and the number of monitoring times may be protocol-predefined. A time interval for monitoring may be protocol-predefined. The second time, the number of monitoring times, and the time interval for monitoring may be indicated by separate indication fields.

[0271] b: determined according to a first rule.

[0272] For example, the SSB modification period is protocol-predefined. The effective time is determined jointly based on the SSB modification period and the paging cycle. Optionally, the determining the effective time jointly based on the paging cycle and the value of modificationperiodcoeff may be: Paging cycle*modificationperiodcoeff.

[0273] It should be noted that the SSB cycle/SMTC cycle/SSB transmission configuration may be for a serving cell or a neighboring cell. A periodic change configuration of a periodic common signal is similar to the configuration of the SSB period, and details are not described herein.

[0274] In this embodiment, in a case that the network-side device in the energy-saving state can dynamically modify the SSB cycle/SMTC cycle/SSB transmission configuration, the network-side device can notify the UE in the idle state as quickly as possible, so that the UE can promptly adjust the SSB (or SMTC) to be monitored and the monitoring period, thereby avoiding access delay of the terminal and preventing impact on communication performance.
[0275] In an optional embodiment, the network-side device configuring PRACH configuration for the terminal is used as an example.
[0276] (1) The network-side device configures system configuration information for the terminal.
[0277] The network-side device pre-configures multiple PRACH Config. Index parameters. The currently used index is notified to the UE through paging DCI. The paging DCI may be an existing bit (usable bit) in the short message or a reserved bit. Alternatively, the currently used index is notified to the UE through the PDSCH scheduled by the paging DCI. [0278] {circle around (1)} Optionally, the network-side device may send the currently used index once or multiple times through the paging DCI within the second time. The second time and the number of sending times may be protocol-predefined. The time interval for the sending may also be protocol-predefined.
[0279] {circle around (2)} Optionally, the network-side device may re-number the multiple PRACH Config. Index parameters and then notify the UE through the paging DCI. For example, the multiple PRACH Config. Index parameters configured by the network-side device are 15, 32, 74, and 81, which are re-numbered by the network-side device to 00, 01, 10, and 11. [0280] {circle around (3)} The network-side device can modify the configuration of PRACH Config. Index, that is, one or more indexes contain multiple sub-configurations with different periods, as shown in Table 5. The base station numbers the sub-configurations, and notifies the UE of the index of the currently used sub-configuration through the paging DCI.
TABLE-US-00005 TABLE 5 Number of Number of PRACH PRACH time-domain Config. Preamble n.sub.SFN mod x = y Subframe Starting slots within a PRACHs within PRACH Index format x y number symbol 60 kHz slot a PRACH slot duration 74 A3 1 0 9, 19, 29, 39 7 2 1 6 10 0 9, 19, 29, 39 7 2 1 6
[0281] (2) The terminal performs subsequent operations based on the system configuration information.
[0282] Upon detection of the paging DCI, the UE determines, based on information carried in the paging DCI or the PDSCH, a time-domain resource that can be used for transmitting the PRACH at the first time.
The First Time May be:
[0283] a: a protocol-predefined time.
[0284] This time parameter may be indicated by a separate indication field, and the time may be 0.
[0285] Optionally, the first time may be a specific time point after the UE performs one or multiple times of monitoring at the second time and determines modification information based on results of the one or multiple times of monitoring. Th second time and the number of monitoring times may be protocol-predefined. A time interval for monitoring may be protocol-predefined. The second time, the number of monitoring times, and the time interval for monitoring may be indicated by separate indication fields.
[0286] b: determined according to a first rule.
[0287] For example, the SSB modification period is protocol-predefined. The effective time is determined jointly based on the SSB modification period and the paging cycle. Optionally, the determining the effective time jointly based on the paging cycle and the value of modificationperiodcoeff may be: Paging cycle*modificationperiodcoeff.
[0288] In this embodiment, if the network-side device dynamically adjusts the system configuration, it can promptly notify the UE in the IDLE state through the paging DCI. This enables the UE to promptly adjust parameters, thereby reducing delay.
[0289] In an optional embodiment, the network-side device configuring paging DRX configuration

for the terminal is used as an example.
[0290] (1) The network-side device configures system configuration information for the terminal.
[0291] The network-side device can pre-configure multiple paging DRX configurations. The paging DRX configuration includes at least one of the following: the DRX cycle, PF, PO, offset, initial time, and the like. The network-side device notifies the UE of the number of the currently used configuration through paging DCI. The paging DCI may be an existing bit (usable bit) in the short message or a reserved bit. Alternatively, the number of the currently used configuration is notified to the UE through the PDSCH scheduled by the paging DCI.
[0292] Optionally, the network-side device may also configure one paging DRX configuration and directly modify values such as the DRX cycle, PF, PO, offset, and initial time through the paging DCI.
[0293] (2) The terminal performs subsequent operations based on the system configuration information.
[0294] Upon detection of the paging DCI, the UE determines a behavior for the first time based on information carried in the paging DCI or the PDSCH. The behavior may be, for example, determining parameters such as the paging cycle and position for the UE in the RRC_IDLE state. Optionally, the UE may also re-confirm, based on the DRX cycle and the SMTC value, the number of DRX cycles that need to be continuously measured when the access criterion of the serving cell is met.
The First Time May be:
[0295] a: a protocol-predefined time.
[0296] This time parameter may be indicated by a separate indication field, and the time may be 0.
[0297] Optionally, the first time may be a specific time point after one or multiple times of monitoring have been performed at the second time and modification information has been determined based on results of the one or multiple times of monitoring. Th second time and the number of monitoring times may be protocol-predefined. A time interval for monitoring may be protocol-predefined. The second time, the number of monitoring times, and the time interval for monitoring may be indicated by separate indication fields.
[0298] b: determined according to a first rule.
[0299] For example, the SSB modification period is protocol-predefined. The effective time is determined jointly based on the SSB modification period and the paging cycle. Optionally, the determining the effective time jointly based on the paging cycle and the value of modificationperiodcoeff may be: Paging cycle*modificationperiodcoeff.
[0300] In this embodiment, the UE in the RRC_IDLE or RRC_INACTIVE state can use DRX to receive paging messages to reduce power consumption. When dynamically modifying parameters such as the paging DRX cycle, the network-side device can promptly notify the UE in the IDLE state through the paging DCI. This enables the UE to promptly adjust parameters, thereby reducing delay.
[0301] In the embodiments of this application, the terminal can obtain system parameter configuration information each time it receives the paging DCI sent by the network-side device, thereby promptly obtaining changes in system parameters or configurations. This enables the terminal to promptly adjust the required monitoring parameters and promptly adjust its own behavior, thereby avoiding access delay and preventing impact on communication performance.
[0302] As shown in FIG. **6**, an embodiment of this application further provides an information configuration method, applied to a network-side device, including the following steps.
[0303] Step **601**. The network-side device sends paging DCI to a terminal, where the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information.
[0304] The system configuration information includes at least one of the following configuration parameters: [0305] an SSB period; [0306] an SMTC period; [0307] SSB transmission configuration information; [0308] PRACH configuration index information; [0309] paging DRX

configuration information; and [0310] period configuration information of a common signal.
[0311] In this embodiment, the system configuration information is pre-configured by the network-side device or predefined by a protocol. The network-side device sends the system configuration information to the terminal through the paging DCI and/or the PDSCH scheduled by the paging DCI. The system configuration information may indicate changes in system parameters or configurations. The terminal may be a terminal in the IDLE state. When in the IDLE state, the terminal can obtain system parameter configuration information each time it receives the paging DCI sent by the network-side device, thereby promptly obtaining changes in system parameters or configurations. This enables the terminal to promptly adjust the required monitoring parameters, thereby avoiding access delay and preventing impact on communication performance.
[0312] In an optional embodiment, the system configuration information is indicated by at least one of the following: [0313] an indication field or a bit carried by the paging DCI; and [0314] an indication field or a bit carried by the physical downlink shared channel PDSCH scheduled by the paging DCI.
[0315] The network-side device may indicate the system configuration information through the indication field or bit of the paging DCI (such as a short message); or may indicate the system configuration information through the indication field or bit carried by the PDSCH scheduled by the paging DCI.
[0316] Optionally, each configuration parameter included in the system configuration information corresponds to N values; [0317] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; [0318] or [0319] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; where
[0320] N is an integer greater than or equal to 1.
[0321] In this embodiment, the network-side device can pre-configure multiple sets of system configuration information for the terminal, that is, the system configuration information can include multiple configuration parameters, and each configuration parameter can correspond to one or more values. The network-side device may define numbers for the configuration parameters corresponding to the values. When sending the system configuration information to the terminal, the network-side device may send the number of the configuration parameter to be used. Alternatively, when sending the system configuration information to the terminal, the network-side device may directly send the value of the configuration parameter to be used. For example, the number of the configuration parameter to be used is indicated through the indication field or bit in the paging DCI. The terminal can look up, based on the number of the configuration parameter, the value of the configuration parameter corresponding to this number, so as to obtain the actual application value. Alternatively, the value of the configuration parameter to be used is directly indicated through the indication field or bit in the paging DCI.
[0322] It should be noted that after the network-side device configures one or more configuration parameters for the terminal, it can exchange information with the terminal to send all the configuration parameters to the terminal for storage. During the communication process, the network-side device can send, to the terminal, the number or value of the configuration parameter that currently needs to be used.
[0323] Optionally, the sending paging DCI to a terminal includes: sending M paging DCIs to the terminal within a second time; where the second time and M are predefined, and M is an integer greater than or equal to 1.
[0324] In this embodiment, the network-side device can send the system configuration information once or multiple times within a period of time (that is, the second time), that is, send the system configuration information once or multiple times through the paging DCI within a period of time. The terminal can monitor the system configuration information once or multiple times within this period of time. This period of time may be protocol-predefined. A time interval for sending the system configuration information may be protocol-predefined.

[0325] In an optional embodiment, the system configuration information includes at least one of the following configuration parameters:
[0326] (1) an SSB period
[0327] The network-side device can pre-configure multiple SSB periods for the terminal and number the multiple SSB periods. The network-side device can send a number or value of a currently used SSB period to the terminal through the paging DCI. When the SSB period needs to be modified, the network-side device sends a number or value of the modified SSB period to the terminal through the paging DCI.
[0328] (2) an SMTC period
[0329] The network-side device can pre-configure multiple SMTC periods for the terminal and number the multiple SMTC periods. The network-side device can send a number or value of a currently used SMTC period to the terminal through the paging DCI. When the SMTC period needs to be modified, the network-side device sends a number or value of the modified SMTC period to the terminal through the paging DCI.
[0330] (3) SSB transmission configuration information, which can indicate which SSBs are transmitted and which SSBs are not transmitted.
[0331] The network-side device can pre-configure multiple SSB transmission configurations for the terminal and number the multiple transmission configurations. The network-side device can send a number or value of a currently used SSB transmission configuration to the terminal through the paging DCI. When the SSB transmission configuration needs to be modified, the network-side device sends a number or value of the modified SSB transmission configuration to the terminal through the paging DCI.
[0332] (4) PRACH configuration index (PRACH Config. Index) information
[0333] The network-side device can pre-configure multiple PRACH configurations, with each PRACH configuration corresponding to a different index. The network-side device can send an index of a currently used PRACH configuration to the terminal through the paging DCI, and the terminal can obtain the currently used PRACH configuration based on the index.
[0334] Optionally, the PRACH configuration corresponding to each index may include one or more sub-configurations with different periods. When one PRACH configuration includes multiple sub-configurations, the network-side device can number the multiple sub-configurations and synchronize them to the terminal. To indicate the currently used PRACH configuration to the terminal, the network-side device can indicate the number of the currently used sub-configuration, or directly indicate the currently used sub-configuration.
[0335] (5) paging DRX configuration information
[0336] Optionally, the paging DRX configuration information includes at least one of the following parameters: [0337] a DRX cycle; [0338] a PF; [0339] a PO; [0340] an offset; and [0341] an initial time of paging.
[0342] The network-side device can pre-configure multiple paging DRX configurations for the terminal, meaning that each parameter in the paging DRX configuration can be configured with one or more values, and then directly modify the values of the DRX cycle, PF, PO, offset, initial time, and the like through the paging DCI, or send the number of the modified configuration parameter to the terminal.
[0343] (6) period configuration information of a common signal
[0344] Optionally, the common signal includes at least one of the following: [0345] a cell common PDCCH; [0346] a cell common PUCCH; [0347] a SIB1; [0348] a CSI-RS; and [0349] an SRS.
[0350] The network-side device can pre-configure multiple period configurations of the common signal for the terminal, meaning that each parameter in the period configuration of the common signal can include one or more values, and then directly modify the period parameter or send the number of the modified period parameter to the terminal through the paging DCI.
[0351] In this embodiment, the system configuration information is predefined or pre-configured

by the network-side device.
[0352] In the embodiments of this application, the network-side device sends the system configuration information to the terminal through the paging DCI and/or the PDSCH scheduled by the paging DCI, so that the terminal can promptly obtain the system parameters configured or modified by the network-side device. This enables the terminal to promptly adjust the required monitoring parameters and promptly adjust its own behavior, thereby avoiding access delay and preventing impact on communication performance.
[0353] The information configuration method provided in the embodiments of this application can be executed by an information configuration apparatus. In the embodiments of this application, the information configuration apparatus performing the information configuration method is used as an example to describe an information configuration apparatus provided in an embodiment of this application.
[0354] As shown in FIG. **7**, an embodiment of this application provides an information configuration apparatus **700**, applied to a terminal, including: [0355] a receiving module **710**, configured to receive paging DCI sent by a network-side device; and [0356] an obtaining module **720**, configured to obtain system configuration information based on the paging DCI.
[0357] The system configuration information includes at least one of the following configuration parameters: [0358] an SSB period; [0359] an SMTC period; [0360] SSB transmission configuration information; [0361] PRACH configuration index information; [0362] paging DRX configuration information; and [0363] period configuration information of a common signal.
[0364] Optionally, the system configuration information is indicated by at least one of the following: [0365] an indication field or a bit carried by the paging DCI; and [0366] an indication field or a bit carried by the PDSCH scheduled by the paging DCI.
[0367] Optionally, each configuration parameter included in the system configuration information corresponds to N values;
[0368] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; [0369] or [0370] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; where [0371] N is an integer greater than or equal to 1.
[0372] Optionally, the paging DRX configuration information includes at least one of the following parameters: [0373] a DRX cycle; [0374] a PF; [0375] a PO; [0376] an offset; and [0377] an initial time of paging.
[0378] Optionally, the common signal includes at least one of the following: [0379] a cell common PDCCH; [0380] a cell common PUCCH; [0381] a SIB1; [0382] a CSI-RS; and [0383] an SRS.
[0384] Optionally, the system configuration information is predefined or pre-configured by the network-side device.
[0385] Optionally, the apparatus further includes: [0386] a first determining module, configured to determine a target configuration based on the system configuration information, where the target configuration includes at least one of the following: first configuration information of the terminal in an idle state; second configuration information of the terminal in an inactive state; and third configuration information of the terminal in a connected state; and [0387] a processing module, configured to perform an operation corresponding to the target configuration at a first time.
[0388] Optionally, the first configuration information includes at least one of the following: [0389] an index of an SSB that the terminal needs to monitor in the idle state; [0390] a period for performing SSB monitoring by the terminal in the idle state; [0391] a period for performing SMTC monitoring by the terminal in the idle state; [0392] a period for performing paging by the terminal in the idle state; [0393] a location at which the terminal performs paging in the idle state; and [0394] the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.
[0395] Optionally, the second configuration information includes at least one of the following:

[0396] an index of an SSB that the terminal needs to monitor in the inactive state; [0397] a period for performing SSB monitoring by the terminal in the inactive state; [0398] a period for performing SMTC monitoring by the terminal in the inactive state; [0399] a period for performing paging by the terminal in the inactive state; [0400] a location at which the terminal performs paging in the inactive state; and [0401] the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.

[0402] Optionally, the third configuration information includes at least one of the following: [0403] a time-domain location at which the terminal is able to send a PRACH resource after entering the connected state; [0404] a time-domain location at which the terminal needs to monitor a common signal after entering the connected state; and [0405] a time-domain location at which the terminal needs to send a common signal after entering the connected state.

[0406] Optionally, the paging DCI includes: M paging DCIs sent by the network-side device within a second time; and the apparatus further includes: [0407] a second determining module, configured to determine the first time based on a monitoring result of system configuration information corresponding to the M paging DCIs; where [0408] the second time and M are predefined, and M is an integer greater than or equal to 1.

[0409] Optionally, the first time includes at least one of the following: [0410] a predefined time; and [0411] a paging effective time determined according to a first rule.

[0412] Optionally, the first rule includes: [0413] the paging effective time is determined based on a paging cycle and a modification period of a configuration parameter in the system configuration information; where the modification period is predefined.

[0414] In the embodiments of this application, the terminal can obtain system parameter configuration information each time it receives the paging DCI sent by the network-side device, thereby promptly obtaining changes in system parameters or configurations. This enables the terminal to promptly adjust the required monitoring parameters and promptly adjust its own behavior, thereby avoiding access delay and preventing impact on communication performance.

[0415] As shown in FIG. **8**, an embodiment of this application further provides an information configuration apparatus **800**, applied to a network-side device, including:

[0416] a sending module **810**, configured to send paging DCI to a terminal, where the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information.

[0417] The system configuration information includes at least one of the following configuration parameters: [0418] an SSB period; [0419] an SMTC period; [0420] SSB transmission configuration information; [0421] PRACH configuration index information; [0422] paging DRX configuration information; and [0423] period configuration information of a common signal.

[0424] Optionally, the system configuration information is indicated by at least one of the following: [0425] an indication field or a bit carried by the paging DCI; and [0426] an indication field or a bit carried by the PDSCH scheduled by the paging DCI.

[0427] Optionally, each configuration parameter included in the system configuration information corresponds to N values; [0428] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; [0429] or [0430] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; where [0431] N is an integer greater than or equal to 1.

[0432] Optionally, the sending module is specifically configured to: [0433] send M paging DCIs to the terminal within a second time; where [0434] the second time and M are predefined, and M is an integer greater than or equal to 1.

[0435] Optionally, the paging DRX configuration information includes at least one of the following parameters: [0436] a DRX cycle; [0437] a PF; [0438] a PO; [0439] an offset; and [0440] an initial time of paging.

[0441] Optionally, the common signal includes at least one of the following: [0442] a cell common PDCCH; [0443] a cell common PUCCH; [0444] a SIB1; [0445] a CSI-RS; and [0446] an SRS.

[0447] In the embodiments of this application, the network-side device sends the system configuration information to the terminal through the paging DCI and/or the PDSCH scheduled by the paging DCI, so that the terminal can promptly obtain the system parameters configured or modified by the network-side device. This enables the terminal to promptly adjust the required monitoring parameters and promptly adjust its own behavior, thereby avoiding access delay and preventing impact on communication performance.

[0448] The information configuration apparatus in the embodiments of this application may be an electronic device, such as an electronic device having an operating system, or a component in an electronic device, such as an integrated circuit or a chip. The electronic device may be a terminal or another device different from the terminal. For example, the terminal may include but is not limited to the types of the terminal **11** listed above, and the another device may be a server, a network attached storage (NAS), or the like, which are not specifically limited in the embodiments of this application.

[0449] The information configuration apparatus provided in this embodiment of this application is capable of implementing the processes implemented in the method embodiments of FIG. **4** to FIG. **6**, with the same technical effects achieved. To avoid repetition, details are not described herein again.

[0450] Optionally, as shown in FIG. **9**, an embodiment of this application further provides a communication device **900** including a processor **901** and a memory **902**. The memory **902** stores a program or instructions capable of running on the processor **901**. For example, when the communication device **900** is a terminal, the program or instructions are executed by the processor **901** to implement the steps of the information configuration method embodiment applied to the terminal, with the same technical effects achieved. When the communication device **900** is a network-side device, the program or instructions are executed by the processor **901** to implement the steps of the information configuration method embodiment applied to the network-side device, with the same technical effects achieved. To avoid repetition, details are not described herein again.

[0451] An embodiment of this application further provides a terminal including a processor and a communication interface. The communication interface is configured to receive paging downlink control information DCI sent by a network-side device; and the processor is configured to obtain system configuration information based on the paging DCI. Optionally, the system configuration information includes at least one of the following configuration parameters: an SSB period; an SMTC period; SSB transmission configuration information; PRACH configuration index information; paging DRX configuration information; and period configuration information of a common signal. This terminal embodiment corresponds to the above method embodiments on the terminal side. The processes and implementations of the above method embodiments can be applied to this terminal embodiment, with the same technical effects achieved. Specifically, FIG. **10** is a schematic diagram of a hardware structure of a terminal implementing an embodiment of this application.

[0452] The terminal **1000** includes but is not limited to at least some of components such as a radio frequency unit **1001**, a network module **1002**, an audio output unit **1003**, an input unit **1004**, a sensor **1005**, a display unit **1006**, a user input unit **1007**, an interface unit **1008**, a memory **1009**, and a processor **1010**.

[0453] Persons skilled in the art can understand that the terminal **1000** may further include a power supply (for example, a battery) supplying power to the components, and the power supply may be logically connected to the processor **1010** through a power management system, so as to implement functions such as charging management, discharging management, and power consumption management through the power management system. The structure of the terminal shown in FIG. **10** does not constitute any limitation on the terminal. The terminal may include more or fewer components than shown in the figure, or a combination of some components, or the components disposed differently. Details are not described herein.

[0454] It can be understood that in this embodiment of this application, the input unit **1004** may include a graphics processing unit (GPU) **10041** and a microphone **10042**. The graphics processing unit **10041** processes image data of a still picture or video obtained by an image capture apparatus (such as a camera) in a video capture mode or an image capture mode. The display unit **1006** may include a display panel **10061**, and the display panel **10061** may be configured in a form of a liquid crystal display, an organic light-emitting diode, and the like. The user input unit **1007** includes at least one of a touch panel **10071** and other input devices **10072**. The touch panel **10071** is also referred to as a touchscreen. The touch panel **10071** may include two parts: a touch detection apparatus and a touch controller. The other input devices **10072** may include but are not limited to a physical keyboard, a function key (such as a volume control key or a power on/off key), a trackball, a mouse, a joystick, and the like. Details are not described herein.
[0455] In the embodiment of this application, after receiving downlink data from the network-side device, the radio frequency unit **1001** can transmit the downlink data to the processor **1010** for processing. In addition, the radio frequency unit **1001** can send uplink data to the network-side device. Typically, the radio frequency unit **1001** includes but is not limited to an antenna, an amplifier, a transceiver, a coupler, a low noise amplifier, and a duplexer.
[0456] The memory **1009** may be configured to store software programs or instructions and various data. The memory **1009** may mainly include a first storage area for storing programs or instructions and a second storage area for storing data. The first storage area may store an operating system, an application program or instructions required by at least one function (for example, a sound play function or an image play function), and the like. Additionally, the memory **1009** may include a volatile memory or a non-volatile memory, or the memory **1009** may include both a volatile memory and a non-volatile memory. The non-volatile memory may be a read-only memory (ROM), a programmable read-only memory (Programmable ROM, PROM), an erasable programmable read-only memory (Erasable PROM, EPROM), an electrically erasable programmable read-only memory (Electrically EPROM, EEPROM), or a flash memory. The volatile memory may be a random access memory (RAM), a static random access memory (Static RAM, SRAM), a dynamic random access memory (Dynamic RAM, DRAM), a synchronous dynamic random access memory (Synchronous DRAM, SDRAM), a double data rate synchronous dynamic random access memory (Double Data Rate SDRAM, DDRSDRAM), an enhanced synchronous dynamic random access memory (Enhanced SDRAM, ESDRAM), a synchronous link dynamic random access memory (Synch link DRAM, SLDRAM), or a direct Rambus dynamic random access memory (Direct Rambus RAM, DRRAM). The memory **1009** in the embodiment of this application includes but is not limited to these and any other suitable types of memory.
[0457] The processor **1010** may include one or more processing units; optionally, the processor **1010** integrates an application processor and a modem processor, where the application processor mainly handles operations involving the operating system, user interface, and application programs, and the modem processor mainly handles wireless communication signals, such as a baseband processor. It can be understood that the modem processor may alternatively be not integrated in the processor **1010**.
[0458] The radio frequency unit **1001** is configured to receive paging DCI sent by a network-side device.
[0459] The processor **1010** is configured to obtain system configuration information based on the paging DCI.
[0460] Optionally, the system configuration information includes at least one of the following configuration parameters: [0461] an SSB period; [0462] an SMTC period; [0463] SSB transmission configuration information; [0464] PRACH configuration index information; [0465] paging DRX configuration information; and [0466] period configuration information of a common signal.
[0467] Optionally, the system configuration information is indicated by at least one of the

following: [0468] an indication field or a bit carried by the paging DCI; and [0469] an indication field or a bit carried by the physical downlink shared channel PDSCH scheduled by the paging DCI.
[0470] Optionally, each configuration parameter included in the system configuration information corresponds to N values;
[0471] the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter;
[0472] or the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; where
[0473] N is an integer greater than or equal to 1.
[0474] Optionally, the paging DRX configuration information includes at least one of the following parameters: [0475] a DRX cycle; [0476] a PF; [0477] a PO; [0478] an offset; and [0479] an initial time of paging.
[0480] Optionally, the common signal includes at least one of the following: [0481] a cell common PDCCH; [0482] a cell common PUCCH; [0483] a SIB1; [0484] a CSI-RS; and [0485] an SRS.
[0486] Optionally, the system configuration information is predefined or pre-configured by the network-side device.
[0487] Optionally, the processor **1010** is further configured to: determine a target configuration based on the system configuration information, where the target configuration includes at least one of the following: first configuration information of the terminal in an idle state; second configuration information of the terminal in an inactive state; and third configuration information of the terminal in a connected state; and perform an operation corresponding to the target configuration at a first time.
[0488] Optionally, the first configuration information includes at least one of the following: [0489] an index of an SSB that the terminal needs to monitor in the idle state; [0490] a period for performing SSB monitoring by the terminal in the idle state; [0491] a period for performing SMTC monitoring by the terminal in the idle state; [0492] a period for performing paging by the terminal in the idle state; [0493] a location at which the terminal performs paging in the idle state; and [0494] the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.
[0495] Optionally, the second configuration information includes at least one of the following: [0496] an index of an SSB that the terminal needs to monitor in the inactive state; [0497] a period for performing SSB monitoring by the terminal in the inactive state; [0498] a period for performing SMTC monitoring by the terminal in the inactive state; [0499] a period for performing paging by the terminal in the inactive state; [0500] a location at which the terminal performs paging in the inactive state; and [0501] the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.
[0502] Optionally, the third configuration information includes at least one of the following: [0503] a time-domain location at which the terminal is able to send a PRACH resource after entering the connected state; [0504] a time-domain location at which the terminal needs to monitor a common signal after entering the connected state; and [0505] a time-domain location at which the terminal needs to send a common signal after entering the connected state.
[0506] Optionally, the paging DCI includes: M paging DCIs sent by the network-side device within a second time; and and the processor **1010** is further configured to: determine the first time based on a monitoring result of system configuration information corresponding to the M paging DCIs; where the second time and M are predefined, and M is an integer greater than or equal to 1.
[0507] Optionally, the first time includes at least one of the following: [0508] a predefined time; and [0509] a paging effective time determined according to a first rule.
[0510] Optionally, the first rule includes: [0511] the paging effective time is determined based on a paging cycle and a modification period of a configuration parameter in the system configuration

information; where the modification period is predefined.
[0512] In the embodiments of this application, the terminal can obtain system parameter configuration information each time it receives the paging DCI sent by the network-side device, thereby promptly obtaining changes in system parameters or configurations. This enables the terminal to promptly adjust the required monitoring parameters and promptly adjust its own behavior, thereby avoiding access delay and preventing impact on communication performance.
[0513] An embodiment of this application further provides a network-side device, including a processor and a communication interface. The communication interface is configured to send paging DCI to a terminal, where the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information; where the system configuration information includes at least one of the following configuration parameters: an SSB period; an SMTC period; SSB transmission configuration information; PRACH configuration index information; paging DRX configuration information; and period configuration information of a common signal. This network-side device embodiment corresponds to the above method embodiment on the network-side device. The processes and implementations of the above method embodiment can be applied to this network-side device embodiment, with the same technical effects achieved.
[0514] Specifically, an embodiment of this application further provides a network-side device. As shown in FIG. **11**, the network-side device **1100** includes: an antenna **111**, a radio frequency apparatus **112**, a baseband apparatus **113**, a processor **114**, and a memory **115**. The antenna **111** is connected to the radio frequency apparatus **112**. In an uplink direction, the radio frequency apparatus **112** receives information via the antenna **111**, and sends the received information to the baseband apparatus **113** for processing. In a downlink direction, the baseband apparatus **113** processes to-be-sent information, and sends the information to the radio frequency apparatus **112**; and the radio frequency apparatus **112** processes the received information and then sends the information via the antenna **111**.
[0515] The method performed by the network-side device in the above embodiments may be implemented in the baseband apparatus **113**, and the baseband apparatus **113** includes a baseband processor.
[0516] The baseband apparatus **113** may include, for example, at least one baseband processing unit, where a plurality of chips are disposed on the baseband processing unit. As shown in FIG. **11**, one of the chips is, for example, the baseband processor, and connected to the memory **115** via a bus interface, to invoke the program in the memory **115** to perform the operations of the network-side device shown in the foregoing method embodiments.
[0517] The network-side device may further include a network interface **116**. The interface is, for example, a common public radio interface (CPRI).
[0518] Specifically, the network-side device **1100** in this embodiment of this application further includes: instructions or a program stored in the memory **115** and capable of running on the processor **114**. The processor **114** invokes the instructions or program in the memory **115** to execute the method executed by the modules shown in FIG. **8**, with the same technical effects achieved. To avoid repetition, details are not described herein again.
[0519] An embodiment of this application further provides a readable storage medium. The readable storage medium stores a program or instructions. When the program or instructions are executed by a processor, the processes of the foregoing information configuration method embodiment are implemented, with the same technical effects achieved. To avoid repetition, details are not described herein again.
[0520] The processor is a processor in the terminal described in the foregoing embodiments. The readable storage medium includes a computer-readable storage medium, such as a computer read-only memory ROM, a random access memory RAM, a magnetic disk, or an optical disc.
[0521] An embodiment of this application further provides a chip. The chip includes a processor and a communication interface. The communication interface is coupled to the processor, and the

processor is configured to run a program or instructions to implement the foregoing information configuration method embodiments, with the same technical effects achieved. To avoid repetition, details are not described herein again.

[0522] It should be understood that the chip mentioned in this embodiment of this application may also be referred to as a system-on-chip, a system chip, a system-on-a-chip, or a system on a chip, or the like.

[0523] An embodiment of this application further provides a computer program/program product, where the computer program/program product is stored in a storage medium, and the computer program/program product is executed by at least one processor to implement the processes of the foregoing information configuration method embodiments, with the same technical effects achieved. To avoid repetition, details are not described herein again.

[0524] An embodiment of this application further provides an information configuration system including: a terminal and a network-side device. The terminal may be configured to perform the steps of the foregoing information configuration method applied to the terminal, and the network-side device may be configured to perform the steps of the foregoing information configuration method applied to the network-side device.

[0525] It should be noted that in this specification, the terms “include”, “comprise”, or any of their variants are intended to cover a non-exclusive inclusion, so that a process, a method, an article, or an apparatus that includes a list of elements not only includes those elements but also includes other elements that are not expressly listed, or further includes elements inherent to such process, method, article, or apparatus. In absence of more constraints, an element preceded by “includes a . . . ” does not preclude the existence of other identical elements in the process, method, article, or apparatus that includes the element. In addition, it should be noted that the scope of the method and the apparatus in the embodiments of this application is not limited to executing the functions in an order shown or discussed, but may also include executing the functions in a substantially simultaneous manner or in a reverse order, depending on the functions involved. For example, the described methods may be performed in an order different from that described, and steps may alternatively be added, omitted, or combined. In addition, features described with reference to some examples may be combined in other examples.

[0526] By means of the foregoing description of the implementations, persons skilled in the art may clearly understand that the method in the foregoing embodiment may be implemented by software with a necessary general hardware platform. Certainly, the method in the foregoing embodiment may also be implemented by hardware. However, in many cases, the former is a preferred implementation. Based on such an understanding, the technical solutions of this application essentially or the part contributing to the prior art may be implemented in a form of a software product. The software product is stored in a storage medium (such as a ROM/RAM, a magnetic disk, or an optical disc), and includes several instructions for instructing a terminal (which may be a mobile phone, a computer, a server, an air conditioner, a network device, or the like) to perform the methods described in the embodiments of this application.

[0527] The foregoing describes the embodiments of this application with reference to the accompanying drawings. However, this application is not limited to the foregoing specific embodiments. The foregoing specific embodiments are merely illustrative rather than restrictive. As instructed by this application, persons of ordinary skill in the art may develop many other manners without departing from principles of this application and the protection scope of the claims, and all such manners fall within the protection scope of this application.

Claims

1. An information configuration method, comprising: receiving, by a terminal, paging downlink control information (DCI) sent by a network-side device; and obtaining, by the terminal, system

configuration information based on the paging DCI; wherein the system configuration information comprises at least one of the following configuration parameters: a synchronization signal and physical broadcast channel block (SSB) period; a synchronization signal block measurement timing configuration (SMTC) period; SSB transmission configuration information; physical random access channel (PRACH) configuration index information; paging discontinuous reception (DRX) configuration information; and period configuration information of a common signal.

2. The method according to claim 1, wherein the system configuration information is indicated by at least one of the following: an indication field or a bit carried by the paging DCI; or an indication field or a bit carried by a physical downlink shared channel (PDSCH) scheduled by the paging DCI.

3. The method according to claim 2, wherein each configuration parameter comprised in the system configuration information corresponds to N values; and the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; or the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; wherein N is an integer greater than or equal to 1.

4. The method according to claim 1, wherein the paging DRX configuration information comprises at least one of the following parameters: a DRX cycle; a paging frame (PF); a paging occasion (PO); an offset; or an initial time of paging.

5. The method according to claim 1, wherein the common signal comprises at least one of the following: a cell common physical downlink control channel (PDCCH); a cell common physical uplink control channel (PUCCH); a system information block **1** (SIB1); a channel state information reference signal (CSI-RS); or a sounding reference signal (SRS).

6. The method according to claim 1, wherein the system configuration information is predefined or pre-configured by the network-side device.

7. The method according to claim 1, wherein the method further comprises: determining a target configuration based on the system configuration information, wherein the target configuration comprises at least one of the following: first configuration information of the terminal in an idle state; second configuration information of the terminal in an inactive state; or third configuration information of the terminal in a connected state; and performing an operation corresponding to the target configuration at a first time.

8. The method according to claim 7, wherein the first configuration information comprises at least one of the following: an index of an SSB that the terminal needs to monitor in the idle state; a period for performing SSB monitoring by the terminal in the idle state; a period for performing SMTC monitoring by the terminal in the idle state; a period for performing paging by the terminal in the idle state; a location at which the terminal performs paging in the idle state; or the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.

9. The method according to claim 7, wherein the second configuration information comprises at least one of the following: an index of an SSB that the terminal needs to monitor in the inactive state; a period for performing SSB monitoring by the terminal in the inactive state; a period for performing SMTC monitoring by the terminal in the inactive state; a period for performing paging by the terminal in the inactive state; a location at which the terminal performs paging in the inactive state; or the number of DRX cycles that need to be continuously measured when an access criterion of a serving cell is met.

10. The method according to claim 7, wherein the third configuration information comprises at least one of the following: a time-domain location at which the terminal is able to send a PRACH resource after entering the connected state; a time-domain location at which the terminal needs to monitor a common signal after entering the connected state; or a time-domain location at which the terminal needs to send a common signal after entering the connected state.

11. The method according to claim 7, wherein the paging DCI comprises: M paging DCIs sent by

the network-side device within a second time; and the method further comprises: determining the first time based on a monitoring result of system configuration information corresponding to the M paging DCIs; wherein the second time and M are predefined, and M is an integer greater than or equal to 1.

12. The method according to claim 7, wherein the first time comprises at least one of the following: a predefined time; or a paging effective time determined according to a first rule.

13. The method according to claim 12, wherein the first rule comprises: the paging effective time is determined based on a paging cycle and a modification period of a configuration parameter in the system configuration information; wherein the modification period is predefined.

14. An information configuration method, comprising: sending, by a network-side device, paging DCI to a terminal, wherein the paging DCI and/or a PDSCH scheduled by the paging DCI indicates system configuration information; wherein the system configuration information comprises at least one of the following configuration parameters: an SSB period; an SMTC period; SSB transmission configuration information; PRACH configuration index information; paging DRX configuration information; or period configuration information of a common signal.

15. The method according to claim 14, wherein the system configuration information is indicated by at least one of the following: an indication field or a bit carried by the paging DCI; or an indication field or a bit carried by the PDSCH scheduled by the paging DCI.

16. The method according to claim 15, wherein each configuration parameter comprised in the system configuration information corresponds to N values; and the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a number of the configuration parameter; or the paging DCI and/or the PDSCH scheduled by the paging DCI indicates a value of the configuration parameter; wherein N is an integer greater than or equal to 1.

17. The method according to claim 14, wherein the sending paging DCI to a terminal comprises: sending M paging DCIs to the terminal within a second time; wherein the second time and M are predefined, and M is an integer greater than or equal to 1.

18. The method according to claim 14, wherein the paging DRX configuration information comprises at least one of the following parameters: a DRX cycle; a PF; a PO; an offset; or an initial time of paging; or, wherein the common signal comprises at least one of the following: a cell common PDCCH; a cell common PUCCH; a SIB1; a CSI-RS; or an SRS.

19. A terminal, comprising a processor and a memory, wherein the memory stores a program or instructions capable of running on the processor, wherein the program or the instructions, when executed by the processor, cause the terminal to perform: receiving paging downlink control information (DCI) sent by a network-side device; and obtaining system configuration information based on the paging DCI; wherein the system configuration information comprises at least one of the following configuration parameters: a synchronization signal and physical broadcast channel block (SSB) period; a synchronization signal block measurement timing configuration (SMTC) period; SSB transmission configuration information; physical random access channel (PRACH) configuration index information; paging discontinuous reception (DRX) configuration information; or period configuration information of a common signal.

20. A network-side device, comprising a processor and a memory, wherein the memory stores a program or instructions capable of running on the processor, and when the program or instructions are executed by the processor, the steps of the information configuration method according to claim 14 are implemented.