

# **METHOD FOR SWITCHING BANDWIDTH PARTS, TERMINAL DEVICE, AND COMPUTER STORAGE MEDIUM**

## **Technical Field**

5       The present invention relates to the field of information processing technologies, and in particular, to a bandwidth part switching method, a terminal device, and a computer storage medium.

## **Related Art**

10       A bandwidth part (BWP) is a concept in a frequency-domain dimension. In current discussions, it is assumed that a terminal device supports only one activated BWP at one time point. Said activated means that the terminal device is expected to receive a signal on a bandwidth stipulated by the BWP. However, no specific processing solution is provided at present for how to control a terminal device to perform BWP switching.

## **SUMMARY**

15       To resolve the foregoing technical problem, embodiments of the present invention provide a bandwidth part switching method, a terminal device, and a computer storage medium.

      An embodiment of the present invention provides a bandwidth part switching method, applied to a terminal device. The method includes:

20       obtaining a timer; and

      determining, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP, where the first BWP is different from the second BWP.

      In the foregoing solution, the obtaining a timer includes:

25       obtaining the timer configured for the terminal device by a network side.

      In the foregoing solution, the method further includes:

      determining, based on a discontinuous reception DRX state of the terminal device and a long DRX cycle, whether to start the timer.

In the foregoing solution, the determining, based on a DRX state of the terminal device and a long DRX cycle, whether to start the timer includes:

determining to start the timer when duration within which the DRX state of the terminal device is in the long DRX cycle is longer than a preset duration.

5 In the foregoing solution, the determining, based on a DRX state of the terminal device and a long DRX cycle, whether to start the timer includes:

determining to start the timer when a quantity of long DRX cycles that the DRX state of the terminal device is in is greater than a preset quantity.

10 In the foregoing solution, the determining, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP includes:

determining to switch from the currently activated first BWP to the second BWP when the timer is expired.

An embodiment of the present invention provides a terminal device, including:

an information obtaining unit, configured to obtain a timer; and

15 a processing unit, configured to determine, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP, where the first BWP is different from the second BWP.

In the foregoing solution, the information obtaining unit obtains the timer configured for the terminal device by a network side.

20 In the foregoing solution, the processing unit determines, based on a discontinuous reception DRX state of the terminal device and a long DRX cycle, whether to start the timer.

25 In the foregoing solution, the processing unit determines to start the timer when duration within which the DRX state of the terminal device is in the long DRX cycle is longer than a preset duration.

In the foregoing solution, the processing unit determines to start the timer when a quantity of long DRX cycles that the DRX state of the terminal device is in is greater than a preset quantity.

In the foregoing solution, the processing unit determines to switch from the

currently activated first BWP to the second BWP when the timer is expired.

An embodiment of the present invention provides a terminal device, including a processor and a memory configured to store a computer program that can be run by the processor.

- 5       The processor is configured to perform, when running the computer program, steps of the method.

An embodiment of the present invention provides a computer storage medium storing a computer executable instruction. When being executed, the computer executable instruction implements the steps of the foregoing method.

- 10       In the technical solution of the embodiments of the present invention, the timer is used to control whether to switch from a BWP to activation of another BWP. In this way, BWP switching is implemented, transmission of control information on a network side can be reduced as much as possible, thereby ensuring processing efficiency.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

- 15       FIG. 1 is a schematic flowchart of a bandwidth part switching method according to an embodiment of the present invention;

FIG. 2 is a schematic composition diagram of a structure of a terminal device according to an embodiment of the present invention; and

- 20       FIG. 3 is a schematic diagram of a hardware architecture according to an embodiment of the present invention.

### **DETAILED DESCRIPTION**

- To better understand the features and technical content of the embodiments of the present invention, the implementation of the embodiments of the present invention is described below in detail with reference to the accompanying drawings. The accompanying drawings are provided for reference only, and are not intended to limit the embodiments of the present invention.
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In an LTE system, a terminal device can support a maximum system bandwidth of 20 MHz. In a new radio (NR) system, some terminal devices may not necessarily support a system bandwidth within all frequency ranges. Therefore, if a terminal device

supports only one activated BWP at one time point, the terminal device needs to be controlled to perform BWP switching.

#### Embodiment 1

This embodiment of the present invention provides a bandwidth part (BWP) switching method, applied to a terminal device. The method includes the following steps:

Step 101: Obtain a timer.

Step 102: Determine, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP, where the first BWP is different from the second BWP.

The BWP herein mainly includes three parameters: numerology, used to indicate a basic parameter set and a subcarrier spacing SCS; a center frequency; and a bandwidth, which is less than or equal to a maximum system bandwidth.

It can be learned from this that the BWP is a concept in a frequency-domain dimension. In current discussions, it is assumed that a terminal device supports only one activated BWP at one time point. Said activated means that the terminal device is expected to receive a signal on a bandwidth stipulated by the BWP, including data transmission (uplink and downlink transmission) and a system message.

In step 101, the obtaining a timer may be obtaining a default timer of the terminal device or a timer configured for the terminal device by a user, and certainly may include: obtaining the timer configured for the terminal device by a network side.

The configuring, by a network side, the timer for the terminal device may be: configuring, by the network side, the timer for the terminal device when it is determined that the terminal device supports only a part of a bandwidth, or that the terminal device uses a BWP for communication. In addition, the network side may configure a same timer or different timers for different terminal devices, and may perform determining based on a type of a service to be executed by the terminal device. For example, a wide BWP may be configured when the service needing to be executed by the terminal device has a relatively high transmission rate or the service has relatively much transmission data. The type of the service can be determined based on parameters such

as QoS. It should be understood that another manner of determining the BWP may exist as well, and is not enumerated in this embodiment.

5 A function of the timer includes: determining, after the timer is started and when the timer is stopped, to perform an operation of switching from the currently activated first bandwidth part BWP to the second BWP. That is, the terminal device determines, according to the configured timer, whether to switch from a currently activated bandwidth part (BWP) to another configured bandwidth part.

In addition, before step 102 is performed, the method provided in this embodiment further includes: determining whether to start the timer.

10 A method for determining whether to start the timer may further include one of the following steps:

starting the timer when the terminal device transmits a physical uplink shared channel (PUSCH);

starting the timer when radio resource control (RRC) signaling is transmitted;

15 starting the timer when the terminal device initiates random access successfully;

starting the timer when downlink control information is received and uplink and downlink transmission is scheduled by using the downlink control information, where the downlink control information may be DCI; and

20 starting the timer when the terminal device sends or receives data on a resource configured for the terminal device by the network side.

In step 102, the determining, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP includes: determining to switch from the currently activated first BWP to the second BWP when the timer is expired. That the timer is expired may be that the timer expires. The second BWP may also be a BWP configured for the terminal device by the network side. The second BWP may be the same as or different from the first BWP. For example, the second BWP and the first BWP may have a same frequency and bandwidth, or different frequencies but a same bandwidth, or a same frequency but different bandwidths, or different frequencies and bandwidths. Alternatively, the second BWP and the first BWP may have a same frequency and bandwidth, but the two BWPs correspond to different basic parameter

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sets (numerology).

That is, when the terminal device uses a BWP to transmit a service, resources may be wasted if no service data is sent or received within a relatively long time. Therefore, according to the solution provided by this embodiment, a timer for the BWP is added, so that BWP switching is performed when the timer is expired, that is, when the timer expires. For example, when the first BWP has a relatively large bandwidth, resources may be wasted if no service data is transmitted within a long time. Through controlling the timer, the terminal device can switch to another BWP, thereby avoiding a transmission resource waste caused by the network side instructing the terminal device to switch the BWP, and preventing the terminal device from occupying a bandwidth resource for a long time.

In addition, the determining whether to start the timer may be combined with a DRX state for subsequent processing. For example, whether to start the timer is determined based on duration of the discontinuous reception (DRX) state of the terminal device and a long DRX cycle.

The DRX state of the terminal device may be configured for the terminal device by the network side, so that UE does not need to enter an idle mode when there is no data to transmit, and still remains synchronization with a base station.

Specifically, the determining, based on the DRX state, whether to start the timer may include the following two manners:

Manner 1: Determine to start the timer when the duration within which the DRX state of the terminal device is in the long DRX cycle is longer than a preset duration.

In this manner, a start condition of the timer depends on duration within which currently configured DRX is in the long DRX cycle.

For example, duration  $x$  is set, and when the duration within which the DRX of the terminal device is in the long DRX cycle is longer than or equal to  $x$ , the configured timer is started.

The duration  $x$  may be considered as the preset duration, the duration may be set according to an actual situation, and this is not limited in this embodiment.

Manner 2: Determine to start the timer when a quantity of long DRX cycles that the

DRX state of the terminal device is in is greater than a preset quantity.

The quantity of long DRX cycles that the DRX state of the terminal device is in means a quantity of long DRX cycles that the DRX of the terminal device lasts for, and the quantity may be rounded into an integer.

- 5        For example, a quantity  $n$  is set, and when the quantity of long DRX cycles that the DRX of the terminal device is in is greater than or equal to  $n$ , the configured timer is started.

In addition, the preset quantity may be set according to an actual situation, and this is not enumerated in this embodiment.

- 10        In step 102, this embodiment may include solutions for different scenarios. For example, in a scenario in which it is determined to switch from the currently activated first BWP to the second BWP when the timer is expired, descriptions are provided above, and details not described herein again. In another scenario, that is, a scenario including the DRX state, the determining, based on the timer, whether to switch from a  
15        currently activated first bandwidth part BWP to a second BWP includes: when the timer is expired, determining to switch from the currently activated first BWP to the second BWP if the terminal device is in the long DRX cycle.

That the timer is expired is that the timer expires.

- It should be noted that when determining to switch from the currently activated first  
20        BWP to the second BWP, other than performing BWP switching, the terminal device may alternatively deactivate a first DRX configuration corresponding to the first BWP, and activate a second DRX configuration corresponding to the second BWP when activating the second BWP. A DRX configuration may include a DRX cycle including a time period needed for monitoring and a possible time period for entering DRX, and  
25        this is not enumerated in this embodiment.

Specifically, after the timer starts and when the timer is expired, if the terminal device is still in the long DRX cycle, the terminal device switches from the currently activated first BWP to the second BWP.

- It should be understood that the duration of the timer may be configured by the  
30        network side.

Further, the timer is stopped if the terminal device is no longer in the long DRX cycle before the timer is expired. That is, after the timer starts and before the timer is expired, if the terminal device is no longer in the long DRX cycle, the timer is stopped till it is started again.

- 5        A case for stopping the timer includes: stopping the timer when the terminal device is no longer in the long DRX cycle, where the timer stops timing no matter how long the duration of the timer is.

Alternatively, a RACH process may be initiated in the first BWP. In this case, the timer is stopped even if the duration of the timer does not end.

- 10       Alternatively, when the network side requires that the terminal device switch from a DRX to a new DRX, the terminal device switches to a timer corresponding to the new DRX.

- It should further be noted that the second BWP is a default BWP configured by a network, or a BWP that is different from the first BWP and that is reactivated by the terminal device. That is, another configured bandwidth part (BWP) may be a default bandwidth part configured by the network, or may be another reactivated bandwidth part. The second BWP may also be a BWP configured for the terminal device by the network side. The second BWP may be the same as or different from the first BWP. For example, the second BWP and the first BWP may have a same frequency and bandwidth, or different frequencies but a same bandwidth, or a same frequency but different bandwidths, or different frequencies and bandwidths.
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- It should further be understood that the terminal device may configure two or more BWPs. Based on the solution provided in this embodiment, the currently activated BWP may be referred to as the first BWP, and a to-be-selected BWP is referred to as the second BWP. If more BWPs exist, the foregoing processing solution is also used. For example, the second BWP is activated currently. In this case, the second BWP is used as the first BWP to perform the foregoing steps. When the timer is expired and the first BWP is switched to the second BWP, the second BWP may be a third BWP that is different from the foregoing plurality of BWPs, and by analogy.
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- 30       The second BWP is configured by the network, and the network side may perform determining by invoking uplink data of the terminal device. For example, if the uplink

data of the terminal device is sensitive to a time delay, a BWP having a relatively large bandwidth may be selected as the second BWP. Otherwise, a BWP having a relatively small bandwidth may be selected as the second BWP.

5 A condition that the terminal device is in the long DRX cycle may include at least one of the following:

long DRX command MAC control element is used for control (that is, Long DRX Command MAC control element control);

a DRX short cycle timer (drxShortCycleTimer) is enabled;

a DRX-inactivity timer (drx-InactivityTimer) is enabled; and

10 a long DRX command MAC control element (DRX Command MAC control element) is received while the network does not configure a short DRX cycle for the terminal device.

A condition that the terminal device is not in the long DRX cycle may include at least one of the following:

15 a DRX-inactivity timer (drx-InactivityTimer) is enabled and a short DRX cycle is configured; and

a DRX Command MAC control element is received and the short DRX cycle is configured.

20 Through the foregoing solution, the timer can be used to control whether to switch from a BWP to another BWP. In this way, BWP switching is implemented, transmission of control information on the network side can be reduced as much as possible, thereby ensuring processing efficiency.

## Embodiment 2

25 This embodiment of the present invention provides a terminal device, as shown in FIG. 2, including:

an information obtaining unit 21, configured to obtain a timer; and

a processing unit 22, configured to determine, based on the timer, whether to switch from a currently activated first bandwidth part BWP to a second BWP, where the first BWP is different from the second BWP.

The BWP herein mainly includes three parameters: numerology, used to indicate a basic parameter set and a subcarrier spacing SCS; a center frequency; and a bandwidth, which is less than or equal to a maximum system bandwidth.

5 It can be learned from this that the BWP is a concept in a frequency-domain dimension. In current discussions, it is assumed that a terminal device supports only one activated BWP at one time point. Said activated means that the terminal device is expected to receive a signal on a bandwidth stipulated by the BWP, including data transmission (uplink and downlink transmission) and a system message.

10 The information obtaining unit may be a timer defaulted by the terminal device or a timer configured for the terminal device by a user, and certainly may further obtain the timer configured for the terminal device by a network side.

The configuring, by a network side, the timer for the terminal device may be: configuring, by the network side, the timer for the terminal device when it is determined that the terminal device supports only a part of a bandwidth, or that the terminal device  
15 uses a BWP for communication. In addition, the network side may configure a same timer or different timers for different terminal devices, and determine based on a type of a service to be executed by the terminal device. For example, a wide BWP may be configured when the service needing to be executed by the terminal device has a relatively high transmission rate or the service has relatively much transmission data.  
20 The type of the service can be determined based on parameters such as QoS. It should be understood that another manner to determine the BWP may exist as well, and is not enumerated in this embodiment.

A function of the timer includes determining, after the timer is started and when the timer is stopped, to perform an operation of switching from the currently activated first  
25 bandwidth part BWP to the second BWP. That is, the terminal device determines, according to the configured timer, whether to switch from a currently activated bandwidth part (BWP) to another configured bandwidth part.

In addition, the processing unit determines whether to start the timer. A method for determining whether to start the timer may further include one of the following steps:

30 starting the timer when the terminal device transmits a PUSCH;

starting the timer when radio resource control (RRC) signaling is transmitted;

starting the timer when the terminal device initiates random access successfully;

starting the timer when downlink control information is received and uplink and downlink transmission is scheduled by using the downlink control information, where  
5 the downlink control information may be DCI; and

starting the timer when the terminal device sends or receives data on a resource configured for the terminal device by the network side.

The terminal device determines to switch from the currently activated first BWP to the second BWP when the timer is expired. That the timer is expired may be that the  
10 timer expires. The second BWP may also be a BWP configured for the terminal device by the network side. The second BWP may be the same as or different from the first BWP. For example, the second BWP and the first BWP may have a same frequency and bandwidth, or different frequencies but a same bandwidth, or a same frequency but different bandwidths, or different frequencies and bandwidths. Alternatively, the second  
15 BWP and the first BWP may have a same frequency and bandwidth, but the two BWPs correspond to different basic parameter sets (numerology).

That is, when the terminal device uses a BWP to transmit a service, resources may be wasted if no service data is sent or received within a relatively long time. Therefore, according to the solution provided by this embodiment, a timer for the BWP is added,  
20 so that BWP switching is performed when the timer is expired, that is, when the timer expires. For example, when the first BWP has a relatively large bandwidth, resources may be wasted if no service data is transmitted within a long time. Through controlling the timer, the terminal device can switch to another BWP, thereby avoiding a transmission resource waste caused by the network side instructing the terminal device  
25 to switch the BWP, and preventing the terminal device from occupying a bandwidth resource for a long time.

In addition, the determining whether to start the timer may be combined with a DRX state for subsequent processing. For example, specifically, whether to start the timer is determined based on duration of the discontinuous reception (DRX) state of the  
30 terminal device and a long DRX cycle.

The DRX state of the terminal device may be configured for the terminal device by the network side, so that UE does not need to enter an idle mode when there is no data to transmit, and still remains a synchronization with a base station.

5 It should be further noted that the following two determination manners may be included:

Manner 1: The processing unit determines to start the timer when duration within which the DRX state of the terminal device is in the long DRX cycle is longer than a preset duration.

10 In this manner, a start condition of the timer depends on duration within which currently configured DRX is in the long DRX cycle:

For example, duration  $x$  is set, and when the duration within which the DRX of the terminal device is in the long DRX cycle is longer than  $x$ , the configured timer is started.

15 The duration  $x$  may be considered as the preset duration, the duration may be set according to an actual situation, and this is not limited in this embodiment.

Manner 2: The processing unit determines to start the timer when a quantity of long DRX cycles that the DRX state of the terminal device is in is greater than a preset quantity.

20 The quantity of long DRX cycles that the DRX state of the terminal device is in means a quantity of long DRX cycles that the DRX of the terminal device lasts for, and the quantity may be rounded into an integer.

For example, a quantity  $n$  is set, and when the quantity of long DRX cycles that the DRX of the terminal device is in is greater than or equal to  $n$ , the configured timer is started.

25 In addition, the preset quantity may be set according to an actual situation, and this is not enumerated in this embodiment.

This embodiment may include solutions for different scenarios. For example, in a scenario in which it is determined to switch from the currently activated first BWP to the second BWP when the timer is expired, descriptions are provided above, and details

are not described herein again. In another scenario, that is, a scenario including the DRX state, when the timer is expired, the processing unit determines to switch from the currently activated first BWP to the second BWP.

That the timer is expired is that the timer expires.

5        It should be noted that when determining to switch from the currently activated first BWP to the second BWP, other than performing BWP switching, the terminal device may alternatively deactivate a first DRX configuration corresponding to the first BWP, and activate a second DRX configuration corresponding to the second BWP when activating the second BWP. A DRX configuration may include a DRX cycle including a  
10      time period needed for monitoring and a possible time period for entering DRX, and this is not enumerated in this embodiment.

Specifically, after the timer starts and when the timer is expired, if the terminal device is still in the long DRX cycle, the terminal device switches from the currently activated first BWP to the second BWP.

15        It should be understood that the duration of the timer may be configured by the network side.

Further, the timer is stopped if the terminal device is no longer in the long DRX cycle before the timer is expired. That is, after the timer starts, and before the timer is expired, if the terminal device is no longer in the long DRX cycle, the timer is stopped  
20      till it is started again.

A case for stopping the timer includes: stopping the timer when the terminal device is no longer in the long DRX cycle, where the timer stops timing no matter how long the duration of the timer is.

Alternatively, a RACH process may be initiated in the first BWP. In this case, the  
25      timer is stopped even if the duration of the timer does not end.

Alternatively, when the network side requires that the terminal device switch from a DRX to a new DRX, the terminal device switches to a timer corresponding to the new DRX.

It should further be noted that the second BWP is a default BWP configured by a  
30      network, or a BWP that is different from the first BWP and that is reactivated by the

terminal device. That is, the another configured bandwidth part (BWP) may be a default bandwidth part configured by the network, or may be another reactivated bandwidth part.

5 The second BWP may also be a BWP configured for the terminal device by the network side. The second BWP may be the same as or different from the first BWP. For example, the second BWP and the first BWP may have a same frequency and bandwidth, or different frequencies but a same bandwidth, or a same frequency but different bandwidths, or different frequencies and bandwidths.

10 It should further be understood that the terminal device may configure two or more BWPs. Based on the solution provided in this embodiment, the currently activated BWP may be referred to as the first BWP, and a to-be-selected BWP is referred to as the second BWP. If more BWPs exist, the foregoing processing solution is also used. For example, the second BWP is activated currently. In this case, the second BWP is used as the first BWP to perform the foregoing steps. When the timer is expired and the first  
15 BWP is switched to the second BWP, the second BWP may be a third BWP that is different from the foregoing plurality of BWPs, and by analogy.

The second BWP is configured by the network, and the network side may perform determining by invoking uplink data of the terminal device. For example, if the uplink data of the terminal device is sensitive to a time delay, a BWP having a relatively large  
20 bandwidth may be selected as the second BWP. Otherwise, a BWP having a relatively small bandwidth may be selected as the second BWP.

A condition that the terminal device is in the long DRX cycle may include at least one of the following:

a long DRX command MAC control element is used for control (that is, Long DRX  
25 Command MAC control element control);

a DRX short cycle timer (drxShortCycleTimer) is enabled;

a DRX-inactivity timer (drx-InactivityTimer) is enabled; and

a long DRX command MAC control element (DRX Command MAC control element) is received while the network does not configure a short DRX cycle for the  
30 terminal device.

A condition that the terminal device is not in the long DRX cycle may include at least one of the following:

a DRX-inactivity timer (drx-InactivityTimer) is enabled and a short DRX cycle is configured; and

- 5 a DRX Command MAC control element is received and the short DRX cycle is configured.

Through the foregoing solution, the timer can be used to control whether to switch from a BWP to another BWP. In this way, BWP switching is implemented, transmission of control information on the network side can be reduced as much as  
10 possible, thereby ensuring processing efficiency.

An embodiment of the present invention further provides a hardware composition architecture of a terminal device, as shown in FIG. 3, including at least one processor 31, a memory 32, and at least one network interface 33. Various components are coupled  
15 with each other by using a bus system 34. It can be understood that the bus system 34 is configured to implement connection and communication between these components. In addition to a data bus, the bus system 34 further includes a power bus, a control bus, and a state signal bus. However, for clear description, various buses in FIG. 3 are denoted as the bus system 34.

20 It should be understood that the memory 32 in this embodiment of the present invention may be a volatile memory or a non-volatile memory, or may include both a volatile memory and a non-volatile memory.

In some corresponding implementations, the memory 32 stores the following elements, executable modules, or data structures, or their subsets, or their extension  
25 sets:

an operating system 321 and an application program 322.

The processor 31 is configured to: process the steps of the method in Embodiment 1, and details are not described herein again.

An embodiment of the present invention provides a computer storage medium

storing a computer executable instruction. When being executed, the computer executable instruction implements the steps of the method in Embodiment 1.

5 The foregoing apparatus in the embodiments of the present invention may also be stored in a computer readable storage medium when being implemented in a form of a software functional module and sold or used as an independent product. Based on such understanding, the technical solution of the embodiments of the present invention substantially or a part that contributes to the prior art can be embodied in a form of a software product. The computer software product is stored in a storage medium, and includes several instructions for instructing a computer device (which may be a personal  
10 computer, a server, a network device or the like) to perform all or a part of the method according to the embodiments of the present invention. The foregoing storage medium includes any medium that can store program code, such as a USB flash drive, a removable hard disk, a read-only memory (ROM), a magnetic disk, or a compact disc. Therefore, the embodiments of the present invention are not limited to any specific  
15 combination of hardware and software.

Correspondingly, an embodiment of the present invention further provides a computer storage medium storing a computer program, and the computer program is configured to execute a bandwidth part switching method of the embodiments of the present invention.

20 Although preferable embodiments of the present invention are disclosed for an exemplary objective, persons skilled in the art understand that improvement, modifications and replacement are possible. Therefore, the scope of the present invention is not limited to the foregoing embodiments.

## CLAIMS

### What is claimed is:

1. A bandwidth part BWP switching method in 3GPP New Radio performed by a terminal device, wherein the terminal device is configured with a timer and configured to receive signal on an active first BWP, the method comprising:

when the timer expires, determining to switch from the active first bandwidth part BWP to a second BWP, wherein the active first BWP is not the second BWP; and

wherein the method further comprises: determining, based on a discontinuous reception DRX state of the terminal device and a long DRX cycle, whether to start the timer, and

starting the timer when a duration when the terminal device is in the long DRX cycle is longer than a preset duration, or when a number of long DRX cycles is greater than a preset quantity, and

wherein the method further comprises:

stopping the timer when the terminal device is no longer in the long DRX cycle before the timer expires,

wherein the timer is a DRX-inactivity timer.

2. The method according to claim 1, further comprising:

obtaining the timer configured for the terminal device by network side.

3. The method according to claim 1 or 2, wherein the second BWP is a default BWP configured by a network.

4. The method according to claim 1, wherein when the timer expires, determining to switch from the active BWP to a second BWP comprises:

when the timer expires and a default BWP is configured, determining to switch from the active first BWP to the default BWP.

5. A terminal device for bandwidth part BWP switching in 3GPP New Radio configured with a timer and configured to receive signal on an active BWP, the terminal device, comprising:

a processing unit, configured to determine, when the timer expires, to switch from the active first bandwidth part BWP to a second BWP, wherein the active first BWP is not the second BWP,

wherein the processing unit is further configured to determine, based on a discontinuous reception DRX state of the terminal device and a long DRX cycle, whether to start the timer,

start the timer when a duration when the terminal device is in the long DRX cycle is longer than a preset duration, or start the timer when a number of long DRX cycles is greater than a preset quantity, and

stop the timer when the terminal device is no longer in the long DRX cycle before the timer expires,

wherein the timer is a DRX-inactivity timer.

6. The terminal device according to claim 5, further comprising:

an information obtaining unit, configured to obtain the timer configured for the terminal device by network side.

7. The terminal device according to claim 5 or 6, wherein the second BWP is a default BWP configured by a network.

8. The terminal device according to claim 5, wherein the processing unit is further configured to:

when the timer expires and a default BWP is configured, determine to switch from the active first BWP to the default BWP.