COMMUNICATION METHOD AND TERMINAL DEVICE

BACKGROUND

Technical Field

Embodiments of this application relate to the field of communications, and more specifically, to a communication method and a terminal device.

Related Art

In the 5G new radio (NR) system, when a logical channel has to-be-transmitted data, a terminal device may send a scheduling request (SR) to a network device, and obtain an uplink resource used for data transmission. However, when the terminal device has an available uplink resource (for example, a semi-static resource), how to trigger the SR is an urgent problem to be resolved.

SUMMARY

A communication method and a terminal device are provided, which can trigger a scheduling request (SR).

According to a first aspect, a communication method is provided, including: determining, by a terminal device according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR).

Therefore, according to the communication method of the embodiment of this application, a terminal device can determine, according to an available uplink resource of the terminal device and information of a logical channel with to-be-transmitted data, whether to trigger an SR, so that the SR can be timely triggered when necessary, to implement timely data transmission, and the SR is not triggered when unnecessary, thereby reducing signaling overheads.

In some possible implementations, the uplink resource includes a dynamically scheduled uplink resource and/or a semi-statically configured uplink resource.

Optionally, the dynamically scheduled uplink resource may be an uplink resource scheduled through a physical downlink control channel (PDCCH). The PDCCH may be scrambled by using a cell radio network temporary identifier (C-RNTI), or may be

scrambled by using a configured scheduling radio network temporary identifier (CS-RNTI), or may be scrambled by using another RNTI, which is not limited in the embodiment of this application.

Optionally, the semi-statically configured uplink resource includes a first configured uplink grant (type1 configured uplink grant) and a second configured uplink grant (type2 configured uplink grant). The type1 configured uplink grant may be an uplink resource configured by using radio resource control (RRC) signaling or other higher layer signaling. The type2 configured uplink grant may be an uplink resource configured by using higher layer signaling (for example, RRC signaling), and the uplink resource is activated or deactivated by using downlink control information (DCI).

In some possible implementations, when the terminal device determines whether to trigger the SR, a regular buffer status report (BSR) has been triggered by the first logical channel, and there is at least one regular BSR in a triggered and unsent state.

In some possible implementations, the determining, by a terminal device according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR) includes:

determining, by the terminal device according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR.

In some possible implementations, the first logical channel includes one logical channel, and the determining, by the terminal device according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR includes:

determining not to trigger the SR if the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource.

In some possible implementations, the first logical channel includes a plurality of logical channels, and the determining, by the terminal device according to whether a

logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR includes:

determining not to trigger the SR if the logical channel parameter configured for each logical channel in the first logical channel meets the LCP restriction of the available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for at least one logical channel in the first logical channel does not meet the LCP restriction of the available uplink resource.

In some possible implementations, the logical channel parameter is at least one parameter configured for the first logical channel by a network device, and the at least one parameter is used for determining whether the to-be-transmitted data on the first logical channel can be transmitted on the available uplink resource.

In some possible implementations, the logical channel parameter configured for the first logical channel includes at least one of the following:

a first parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a first configured uplink grant, a second parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a second configured uplink grant, maximum physical uplink shared channel (PUSCH) transmission duration supported, an available subcarrier spacing, and an available carrier.

In some possible implementations, the LCP restriction of the uplink resource is used for indicating at least one of the following:

whether the to-be-transmitted data is allowed to be transmitted on the first configured uplink grant, whether the to-be-transmitted data is allowed to be transmitted on the second configured uplink grant, and whether the to-be-transmitted data is allowed to be transmitted on the dynamically scheduled uplink resource.

In some possible implementations, the first configured uplink grant is a granted resource configured by means of semi-static configuration, and the second configured uplink grant is a granted resource configured by means of semi-static configuration and dynamic triggering.

According to a second aspect, a terminal device is provided. The terminal device is configured to perform the method in the first aspect or any possible implementation of the first aspect. Specifically, the terminal device includes function modules configured to perform the method in the first aspect or any possible implementation of the first aspect.

According to a third aspect, a terminal device is provided, and the device includes a processor and a memory. The memory is configured to store a computer program. The processor is configured to invoke and run the computer program stored in the memory, to perform the method in the first aspect or the implementations of the first aspect.

According to a fourth aspect, a chip is provided, and is configured to implement the method in the first aspect or the implementations of the first aspect.

Specifically, the chip includes a processor, configured to invoke a computer program from a memory and run the computer program, to cause a device having the chip installed therein to perform the method in the first aspect or the implementations of the first aspect.

According to a fifth aspect, a computer-readable storage medium is provided, and is configured to store a computer program, where the computer program causes a computer to perform the method in the first aspect or the implementations of the first aspect.

According to a sixth aspect, a computer program product is provided, and includes a computer program instruction, where the computer program instruction causes a computer to perform the method in the first aspect or the implementations of the first aspect.

According to a seventh aspect, a computer program is provided. When run on a computer, the computer program causes the computer to perform the method in the first aspect or the implementations of the first aspect.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of an application scenario according to an embodiment of this application;

FIG. 2 is a schematic flowchart of a communication method according to an

embodiment of this application;

FIG. 3 is a schematic block diagram of a terminal device according to an embodiment of this application;

FIG. 4 is a schematic block diagram of a communications device according to an embodiment of this application; and

FIG. 5 is a schematic block diagram of a chip according to an embodiment of this application.

DETAILED DESCRIPTION

The technical solutions in the embodiments of this application are described below with reference to the accompanying drawings in the embodiments of this application.

It should be understood that, the terms "system" and "network" in this specification are usually interchangeably used in this specification. The term "and/or" in this specification is merely an association relationship for describing associated objects and represents that three relationships may exist. For example, A and/or B may represent the following three cases: Only A exists, both A and B exist, and only B exists. In addition, the character "/" in this specification generally indicates an "or" relationship between the associated objects.

The technical solutions according to the embodiments of this application may be applied to a variety of communications systems, such as a Global System for Mobile communications ("GSM" for short) system, a Code Division Multiple Access ("CDMA" for short) system, a Wideband Code Division Multiple Access ("WCDMA" for short) system, a General Packet Radio Service ("GPRS" for short), a Long Term Evolution ("LTE" for short) system, an LTE Frequency Division Duplex ("FDD" for short) system, an LTE Time Division Duplex ("TDD" for short), a Universal Mobile Telecommunication System ("UMTS" for short), a Worldwide Interoperability for Microwave Access ("WiMAX" for short) communications system, a future 5G system, or the like.

FIG. 1 shows a wireless communications system 100 to which an embodiment of this application is applied. The wireless communications system 100 may include a network device 110. The network device 100 may be a device communicating with a

terminal device. The network device 100 may provide communications coverage for a particular geographic area, and may communicate with a terminal device (for example, UE) located within the coverage area. Optionally, the network device 100 may be a base transceiver station (BTS) in a GSM system or CDMA system, or may be a NodeB (NB) in a WCDMA system, or may be an evolved NodeB (eNB or eNodeB) in an LTE system, or a wireless controller in a cloud radio access network (CRAN), or the network device may be a relay station, an access point, an in-vehicle device, a wearable device, a network side device in a future 5G network, a network device in a future evolved public land mobile network (PLMN), or the like.

The wireless communications system 100 further includes at least one terminal device 120 located within the coverage range of the network device 110. The terminal device 120 may be mobile or fixed. Optionally, the terminal device 120 may be an access terminal, user equipment (UE), a subscriber unit, a subscriber station, a mobile station, a mobile console, a remote station, a remote terminal, a mobile device, a user terminal, a terminal, a wireless communications device, a user agent, or a user apparatus. The access terminal may be a cellular phone, a cordless phone, a Session Initiation Protocol (SIP) phone, a wireless local loop (WLL) station, a personal digital assistant (PDA), a handheld device having a wireless communication function, a computing device, another processing device connected to a wireless modem, an in-vehicle device, a wearable device, a terminal device in a future 5G network, a terminal device in a future evolved PLMN, or the like.

A communication method in this embodiment of this application is described below with reference to FIG. 2. It should be understood that, FIG. 2 is a schematic flowchart of a communication method according to an embodiment of this application, and shows detailed communication steps or operations of the method. However, the steps or operations are only examples, and other operations or variations of the operations in FIG. 2 may also be performed in this embodiment of this application.

FIG. 2 is a schematic flowchart of a communication method 200 according to an embodiment of this application. The method 200 may be performed by a terminal device in a communications system. As shown in FIG. 2, the communication method 200 includes:

S210. A terminal device determines, according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR).

Specifically, when the first logical channel has to-be-transmitted data, the terminal device may send an SR to a network device, and requests to obtain an uplink resource used for data transmission. If an available uplink resource, such as a semi-statically configured uplink resource, has been allocated to the terminal device, it is determined, according to attribute information or parameter information of the available uplink resource, whether the terminal device triggers the SR. For example, if the available uplink resource can meet a transmission requirement of the to-be-transmitted data on the first logical channel, the terminal device may determine not to trigger the SR, that is, not to send the SR to the network device. Further, the available uplink resource may be used for data transmission, thereby reducing signaling overheads. Alternatively, if the available uplink resource cannot meet the transmission requirement of the to-be-transmitted data on the first logical channel, the terminal device may determine to trigger the SR, and further, may send the SR to the network device, to obtain an uplink resource meeting the transmission requirement, thereby implementing timely transmission of the to-be-transmitted data on the first logical channel.

Therefore, according to the communication method of the embodiment of this application, a terminal device can determine, according to an available uplink resource of the terminal device and information of a logical channel with to-be-transmitted data, whether to trigger an SR, so that the SR can be timely triggered when necessary, to implement timely data transmission, and the SR is not triggered when unnecessary, thereby reducing signaling overheads.

Optionally, in this embodiment of this application, the first logical channel may include one logical channel or a group of logical channels, which is not limited in this embodiment of this application.

It should be noted that, when the terminal device determines whether to trigger the SR, a buffer status report (BSR) has been triggered by the first logical channel, and at least one regular BSR in a pending state (that is, a triggered and unsent state) exists in the terminal device. The at least one regular BSR may be triggered by one logical

channel, or may be triggered by a plurality of logical channels. The at least one regular BSR may include the regular BSR triggered by the first logical channel.

Optionally, in this embodiment of this application, the uplink resource available to the terminal device may include a dynamically scheduled uplink resource and/or a semi-statically configured uplink resource.

Optionally, in this embodiment of this application, the dynamically scheduled uplink resource may be an uplink resource scheduled through a physical downlink control channel (PDCCH). The PDCCH may be scrambled by using a cell radio network temporary identifier (C-RNTI), or may be scrambled by using a configured scheduling radio network temporary identifier (CS-RNTI), or may be scrambled by using another RNTI, which is not limited in the embodiment of this application.

Optionally, in this embodiment of this application, the semi-statically configured uplink resource includes a first configured uplink grant (type1 configured uplink grant) and a second configured uplink grant (type2 configured uplink grant). The type1 configured uplink grant may be an uplink resource configured by radio resource control (RRC) signaling or other higher layer signaling. The type2 configured uplink grant may be an uplink resource configured by higher layer signaling (for example, RRC signaling), and the uplink resource is activated or deactivated by using downlink control information (DCI). That is, the first configured uplink grant is an uplink granted resource configured by means of semi-static configuration, and the second configured uplink grant is an uplink granted resource configured by means of semi-static configuration and dynamic triggering.

Optionally, in some embodiments, S210 may specifically include:

The terminal device determines, according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR.

It should be understood that, herein, the logical channel parameter configured for the first logical channel may include at least one parameter configured for the first logical channel by the network device, and the at least one parameter is used for determining whether the to-be-transmitted data on the first logical channel can be

transmitted on the available uplink resource.

Optionally, in some embodiments, the logical channel parameter configured for the first logical channel includes at least one of the following:

a first parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on the first configured uplink grant, a second parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on the second configured uplink grant, maximum physical uplink shared channel (PUSCH) transmission duration supported, an available subcarrier spacing, and an available carrier.

The maximum PUSCH transmission duration supported may alternatively be understood as a maximum PUSCH length supported, that is, longest duration in which data transmission can be performed. The available subcarrier spacing (SCS) may alternatively be understood as an available basic parameter set. The available carrier may be referred to as an available physical carrier (allowed serving cells).

Optionally, in this embodiment of this application, the LCP restriction of the uplink resource may be understood as a manner of selecting a logical channel and putting to-be-transmitted data on the logical channel onto the uplink resource for transmission in a case that the terminal device obtains the available uplink resource. Therefore, it may be determined, according to the LCP restriction of the uplink resource, whether the to-be-transmitted data on the logical channel can be transmitted through the uplink resource. For example, the following steps may be specifically included:

First, logical channels are selected.

Specifically, the logical channel parameter configured for each logical channel is compared with a parameter of the uplink resource. For example, if the maximum PUSCH length supported by the logical channel is greater than a PUSCH length of the uplink resource, it may be determined that the data on the logical channel can be transmitted on the uplink resource, and if not, it is determined that the data on the logical channel cannot be transmitted on the uplink resource.

Further, the selected logical channels may be ranked, for example, according to the logical channel parameters configured for the logical channels, or the logical channel

prioritization.

Next, data that is on each ranked logical channel and that can be transmitted on the uplink resource may be determined. For example, data that is on each logical channel and that can be transmitted on the uplink resource may be determined according to the logical channel parameter configured for each logical channel.

Therefore, the LCP restriction of the uplink resource may be understood as the attribute information or the parameter information of the uplink resource, for example, the maximum PUSCH length supported by the uplink resource, the available physical carrier, the available subcarrier spacing, and whether the to-be-transmitted data on the logical channel is allowed to be transmitted on the uplink resource. In this case, the terminal device may determine, according to the logical channel parameter configured for the logical channel and the LCP restriction of the uplink resource, whether the to-be-transmitted data on the logical channel can be transmitted on the uplink resource, that is, whether the uplink resource can meet the transmission condition of the to-be-transmitted data.

Further, if it is determined that the to-be-transmitted data on the logical channel can be transmitted on the uplink resource, the terminal device may not trigger the SR, thereby reducing signaling overheads. Alternatively, if the to-be-transmitted data on the logical channel cannot be transmitted on the uplink resource, the terminal device may timely trigger the SR, so that the network device can timely schedule the to-be-transmitted data.

Optionally, in this embodiment of this application, the first logical channel may include one logical channel, or may include a plurality of logical channels. The trigger condition of the SR is specifically described below with reference to two scenarios.

Optionally, as an embodiment, the first logical channel includes one logical channel, and the determining, by the terminal device according to whether the logical channel parameter configured for the first logical channel meets the logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR includes:

determining not to trigger the SR if the logical channel parameter configured for the

first logical channel meets the LCP restriction of the available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource.

Specifically, when the first logical channel includes one logical channel, the terminal device may only determine whether the logical channel parameter configured for the one logical channel meets the LCP restriction of the available uplink resource of the terminal device. For example, if the available carrier configured for the first logical channel is a physical carrier 2, and the available uplink resource is a resource on a serving cell 1, the terminal device may determine that the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource. Alternatively, if the maximum supported PUSCH transmission duration configured for the first logical channel is greater than the PUSCH transmission duration of the available uplink resource, the terminal device may determine that the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource. Further, the terminal device may determine, according to the result of the determining, whether to trigger the SR. If the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource of the terminal device, the terminal device may determine not to trigger the SR, thereby reducing signaling overheads. Alternatively, if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource of the terminal device, the terminal device may determine to trigger the SR, thereby timely sending the SR to the network device, to implement timely transmission of the data on the first logical channel.

Optionally, as another embodiment, the first logical channel includes a plurality of logical channels, and the terminal device determining, according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR includes:

determining not to trigger the SR if the logical channel parameter configured for each logical channel in the first logical channel meets the LCP restriction of the

available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for at least one logical channel in the first logical channel does not meet the LCP restriction of the available uplink resource.

Specifically, when the first logical channel includes a plurality of logical channels, the terminal device may determine whether the logical channel parameter configured for each logical channel of the plurality of logical channels meets the LCP restriction of the available uplink resource of the terminal device, and further determine, according to the result of the determining, whether to trigger the SR. For example, if the logical channel parameter configured for one logical channel (for example, a logical channel 1) in the plurality of logical channels does not meet the LCP restriction of the available uplink resource, that is, the data on the logical channel 1 cannot be transmitted through the available uplink resource, in order to implement timely transmission of the data on the logical channel 1, the terminal device may determine to trigger the SR, thereby timely requesting the uplink resource from the network device, so as to timely transmit the data on the logical channel 1. Alternatively, if the logical channel parameter configured for each logical channel of the plurality of logical channels meets the LCP restriction of the available uplink resource, that is, the to-be-transmitted data on each logical channel of the plurality of logical channels can be transmitted through the available uplink resource, the terminal device may determine not to trigger the SR, and use the available uplink resource for data transmission, thereby reducing signaling overheads.

That is, in this embodiment of this application, it is first determined whether the logical channel parameter configured for the logical channel having a to-be-transmitted service meets the LCP restriction of the allocated uplink resource of the terminal device, so that the terminal device determines whether to trigger the SR. For example, for a delay-sensitive logical channel, when the to-be-transmitted service is an ultra-reliable and low latency communication (URLLC) service, if the logical channel parameter configured for the logical channel does not meet the LCP restriction of the allocated uplink resource, the SR may be timely triggered, so that the network device can quickly schedule the to-be-transmitted service on the logical channel.

The triggering manner of the SR is described below with reference to specific

embodiments.

Embodiment 1

The type1 configured uplink grant is configured on the terminal device. The network device may configure the LCP restriction of the type1 configured uplink grant. For the logical channel triggering the regular BSR, the terminal device may determine whether the logical channel parameter configured for the logical channel meets the LCP restriction of the type1 configured uplink grant. If the LCP restriction is met, the SR is not triggered, and if not, the SR is triggered.

Embodiment 2

The type2 configured uplink grant is configured on the terminal device, and the type2 configured uplink grant is in an activated state. The network device may configure the LCP restriction of the type2 configured uplink grant. For the logical channel triggering the regular BSR, the terminal device may determine whether the logical channel parameter configured for the logical channel meets the LCP restriction of the type2 configured uplink grant. If the LCP restriction is met, the SR is not triggered, and if not, the SR is triggered.

Embodiment 3

The dynamically scheduled uplink resource is allocated to the terminal device. The network device may configure the LCP restriction of the dynamically scheduled uplink resource. For the logical channel triggering the regular BSR, the terminal device may determine whether the logical channel parameter configured for the logical channel meets the LCP restriction of the dynamically scheduled uplink resource. If the LCP restriction is met, the SR is not triggered, and if not, the SR is triggered.

In this embodiment of this application, the available uplink resource of the terminal device may include a dynamically scheduled and/or semi-statically configured uplink resource. Therefore, the network device may configure a corresponding LCP restriction for the semi-statically configured uplink resource. In this case, the logical channel having the to-be-transmitted data may determine, according to the LCP restriction of the semi-statically configured uplink resource, whether to trigger the SR, instead of directly using the semi-statically configured uplink resource to perform data transmission. This

helps to avoid a transmission exception resulting from using the semi-statically configured uplink resource to perform data transmission when the LCP restriction of the semi-statically configured uplink resource is not met. Moreover, the SR can be timely triggered, helping the network device to timely schedule the to-be-transmitted data on the logical channel.

Optionally, in some embodiments, after S210, the method 200 may further include:

the terminal device sends the SR to the network device, if determining to trigger the SR; or

the terminal device does not send the SR to the network device, if determining not to trigger the SR.

Therefore, according to the communication method of the embodiment of this application, a terminal device can determine, according to an available uplink resource of the terminal device and information of a logical channel with to-be-transmitted data, whether to trigger an SR, so that the SR can be timely triggered when necessary, to implement timely data transmission, and the SR is not triggered when unnecessary, thereby reducing signaling overheads.

Method embodiments of this application are described above in detail with reference to FIG. 2, and apparatus embodiments of this application are described below in detail with reference to FIG. 3 to FIG. 5. It should be understood that, the apparatus embodiments and the method embodiments correspond to each other. For similar descriptions, refer to the method embodiments.

FIG. 3 is a schematic block diagram of a terminal device according to an embodiment of this application. As shown in FIG. 3, the terminal device 300 includes:

a determining module 310, configured to determine, according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR).

Optionally, in some embodiments, the uplink resource includes a dynamically scheduled uplink resource and/or a semi-statically configured uplink resource.

Optionally, in some embodiments, when the terminal device determines whether to trigger the SR, a regular buffer status report (BSR) has been triggered by the first

logical channel, and there is at least one regular BSR in a triggered and unsent state.

In some embodiments, the determining module 310 is further configured to:

determine whether to trigger the SR according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource.

Optionally, in some embodiments, the first logical channel includes one logical channel, and the determining module 310 is specifically configured to:

determine not to trigger the SR if the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource; or

determine to trigger the SR if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource.

Optionally, in some embodiments, the first logical channel includes a plurality of logical channels, and the determining module 310 is specifically configured to:

determine not to trigger the SR if the logical channel parameter configured for each logical channel in the first logical channel meets the LCP restriction of the available uplink resource; or

determine to trigger the SR if the logical channel parameter configured for at least one logical channel in the first logical channel does not meet the LCP restriction of the available uplink resource.

Optionally, in some embodiments, the logical channel parameter is at least one parameter configured for the first logical channel by a network device, and the at least one parameter is used for determining whether the to-be-transmitted data on the first logical channel can be transmitted on the available uplink resource.

Optionally, in some embodiments, the logical channel parameter configured for the first logical channel includes at least one of the following:

a first parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a first configured uplink grant, a second parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a second configured uplink grant, maximum physical uplink shared channel (PUSCH) transmission duration

supported, an available subcarrier spacing, and an available carrier.

Optionally, in some embodiments, the LCP restriction of the uplink resource is used for indicating at least one of the following:

whether the to-be-transmitted data is allowed to be transmitted on the first configured uplink grant, whether the to-be-transmitted data is allowed to be transmitted on the second configured uplink grant, and whether the to-be-transmitted data is allowed to be transmitted on the dynamically scheduled uplink resource.

Optionally, in some embodiments, the first configured uplink grant is a granted resource configured by means of semi-static configuration, and the second configured uplink grant is a granted resource configured by means of semi-static configuration and dynamic triggering.

Optionally, in some embodiments, the terminal device 300 may further include:

a communication module, configured to send the SR to the network device when it is determined to trigger the SR; or

not to send the SR to the network device when it is determined not to trigger the SR.

It should be understood that, the terminal device 300 in this embodiment of this application may correspond to the terminal device in the method embodiments of this application, and the foregoing and other operations and/or functions of the units in the terminal device 300 are respectively configured to implement corresponding procedures of the terminal device in the method 200 shown in FIG. 2. For brevity, details are not described herein again.

FIG. 4 is a schematic block diagram of a communications device 400 according to an embodiment of this application. The communications device 400 shown in FIG. 4 includes a processor 410. The processor 410 may invoke a computer program from a memory and run the computer program, to implement the method in the embodiments of this application.

Optionally, as shown in FIG. 4, the communications device 400 may further include a memory 420. The processor 410 may invoke the computer program from the memory 420 and run the computer program, to implement the method in the

embodiments of this application.

The memory 420 may be a component independent of the processor 410, or may be integrated into the processor 410.

Optionally, as shown in FIG. 4, the communications device 400 may further include a transceiver 430. The processor 410 may control the transceiver 430 to communicate with another device, and specifically, the transceiver 430 may send information or data to another device, or receive information or data sent by another device.

The transceiver 430 may include a transmitter and a receiver. The transceiver 430 may further include an antenna. There may be one or more antennas.

Optionally, the communications device 400 may be the terminal device in the embodiments of this application, and the communications device 400 can implement corresponding procedures implemented by the terminal device in various methods in the embodiments of this application. For brevity, details are not described herein again.

FIG. 5 is a schematic block diagram of a chip 500 according to an embodiment of this application. The chip 500 shown in FIG. 5 includes a processor 510. The processor 510 may invoke a computer program from a memory and run the computer program, to implement the method in the embodiments of this application.

Optionally, as shown in FIG. 5, the chip 500 may further include a memory 520. The processor 510 may invoke the computer program from the memory 520 and run the computer program, to implement the method in the embodiments of this application.

The memory 520 may be a component independent of the processor 510, or may be integrated into the processor 510.

Optionally, the chip 500 may further include an input interface 530. The processor 510 may control the input interface 530 to communicate with another device or chip, and specifically, the input interface 530 may obtain information or data sent by another device or chip.

Optionally, the chip 500 may further include an output interface 540. The processor 510 may control the output interface 540 to communicate with another device or chip, and specifically, the output interface 540 may output information or data to another

device or chip.

Optionally, the chip may be applied to the terminal device in the embodiments of this application, and the chip can implement corresponding procedures implemented by the terminal device in various methods in the embodiments of this application. For brevity, details are not described herein again.

It should be noted that, the chip mentioned in the embodiments of this application may also be referred to as a system-level chip, a system chip, a chip system, a system on chip, or the like.

The foregoing processor may be a general purpose processor, a digital signal processor (DSP), a field programmable gate array (FPGA), an application specific integrated circuit (ASIC) or another programmable logic device, a transistor logic device, or a discrete hardware component. The foregoing general purpose processor may be a microprocessor, or may be any conventional processor, or the like.

The foregoing memory may be a volatile memory or a non-volatile memory, or may include both a volatile memory and a non-volatile memory. The non-volatile memory may be a read-only memory (ROM), a programmable ROM (PROM), an erasable PROM (EPROM), an electrically EPROM (EEPROM), or a flash memory. The volatile memory may be a random access memory (RAM).

It should be understood that, the memory is an example but is not intended for limitation. For example, the memory in the embodiments of this application may alternatively be a static RAM (SRAM), a dynamic RAM (DRAM), a synchronous DRAM (SDRAM), a double data rate SDRAM (DDR SDRAM), an enhanced SDRAM (ESDRAM), a synch link DRAM (SLDRAM), a direct rambus RAM (DR RAM), and the like. That is, the memory described in this embodiment of this application is intended to include but is not limited to these memories and any other suitable type of memory.

An embodiment of this application further provides a computer readable storage medium. The computer readable storage medium stores one or more programs, the one or more programs include an instruction, and when executed by a portable electronic device including a plurality of applications, the instruction can cause the portable

electronic device to perform the method in the embodiment shown in FIG. 2.

An embodiment of this application further provides a computer program. The computer program includes an instruction, and when executed by a computer, the computer program causes the computer to perform a corresponding procedure of the method in the embodiment shown in FIG. 2.

A person of ordinary skill in the art may be aware that, in combination with the examples described in the embodiments disclosed in this specification, units and algorithm steps may be implemented by using electronic hardware or a combination of computer software and electronic hardware. Whether these functions are executed by means of hardware or software depends on specific applications and design constraints of the technical solutions. A person skilled in the art may use different methods to implement the described functions for each particular application, but it should not be considered that the implementation goes beyond the scope of this application.

A person skilled in the art may clearly understand that, for simple and clear description, for specific work processes of the foregoing described system, apparatus, and unit, reference may be made to corresponding process in the foregoing method embodiments, and details are not described herein again.

In the several embodiments provided in this application, it should be understood that the disclosed system, apparatus, and method may be implemented in other manners. For example, the apparatus embodiments described above are merely examples. For example, the unit division is merely logical function division, and there may be other division manners in actual implementation. For example, a plurality of units or components may be combined or integrated into another system, or some features may be ignored or not performed. In addition, the displayed or discussed mutual couplings or direct couplings or communication connections may be implemented by using some interfaces. The indirect couplings or communication connections between the apparatuses or units may be implemented in electrical, mechanical, or other forms.

The units described as separate parts may or may not be physically separate, and the parts displayed as units may or may not be physical units, may be located in one position, or may be distributed on multiple network units. Some of or all of the units may be selected according to actual needs to achieve the objectives of the solutions of

the embodiments.

In addition, functional units in the embodiments of this application may be integrated into one processing unit, or each of the units may exist alone physically, or two or more units may be integrated into one unit.

When the functions are implemented in the form of a software functional unit and sold or used as an independent product, the functions may be stored in a computer-readable storage medium. Based on such an understanding, the technical solutions of this application essentially, or the part contributing to the prior art, or some of the technical solutions may be implemented in a form of a software product. The software product is stored in a storage medium, and includes several instructions for instructing a computer device (which may be a personal computer, a server, or a network device) to perform all or some of the steps of the methods described in the embodiments of this application. 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 random access memory (RAM), a magnetic disk, or an optical disc.

Described above are merely specific implementations of this application, but the protection scope of this application is not limited thereto. Changes or replacements readily figured out by any person skilled in the art within the technical scope disclosed in this application shall be covered by the protection scope of this application. Therefore, the protection scope of this application shall be subject to the protection scope of the claims.

CLAIMS

What is claimed is:

1. A communication method, comprising:

determining, by a terminal device according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR).

2. The communication method according to claim 1, wherein the uplink resource comprises a dynamically scheduled uplink resource and/or a semi-statically configured uplink resource.

3. The communication method according to claim 1 or 2, wherein when the terminal device determines whether to trigger the SR, a regular buffer status report (BSR) has been triggered by the first logical channel, and there is at least one regular BSR in a triggered and unsent state.

4. The communication method according to any one of claims 1 to 3, wherein the determining, by a terminal device according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR) comprises:

determining, by the terminal device according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR.

5. The communication method according to claim 4, wherein the first logical channel comprises one logical channel, and the determining, by the terminal device according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR comprises:

determining not to trigger the SR if the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource.

6. The communication method according to claim 4, wherein the first logical channel comprises a plurality of logical channels, and the determining, by the terminal device according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR comprises:

determining not to trigger the SR if the logical channel parameter configured for each logical channel in the first logical channel meets the LCP restriction of the available uplink resource; or

determining to trigger the SR if the logical channel parameter configured for at least one logical channel in the first logical channel does not meet the LCP restriction of the available uplink resource.

7. The communication method according to claim 5 or 6, wherein the logical channel parameter is at least one parameter configured for the first logical channel by a network device, and the at least one parameter is used for determining whether the to-be-transmitted data on the first logical channel can be transmitted on the available uplink resource.

8. The communication method according to claim 7, wherein the logical channel parameter configured for the first logical channel comprises at least one of the following:

a first parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a first configured uplink grant, a second parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a second configured uplink grant, maximum physical uplink shared channel (PUSCH) transmission duration supported, an available subcarrier spacing, and an available carrier.

9. The communication method according to any one of claims 4 to 8, wherein the LCP restriction of the uplink resource is used for indicating at least one of the following:

whether the to-be-transmitted data is allowed to be transmitted on the first configured uplink grant, whether the to-be-transmitted data is allowed to be transmitted

on the second configured uplink grant, and whether the to-be-transmitted data is allowed to be transmitted on the dynamically scheduled uplink resource.

10. The communication method according to claim 8 or 9, wherein the first configured uplink grant is a granted resource configured by means of semi-static configuration, and the second configured uplink grant is a granted resource configured by means of semi-static configuration and dynamic triggering.

11. A terminal device, comprising:

a determining module, configured to determine, according to a first logical channel with to-be-transmitted data and an available uplink resource of the terminal device, whether to trigger a scheduling request (SR).

12. The terminal device according to claim 11, wherein the uplink resource comprises a dynamically scheduled uplink resource and/or a semi-statically configured uplink resource.

13. The terminal device according to claim 11 or 12, wherein when the terminal device determines whether to trigger the SR, a regular buffer status report (BSR) has been triggered by the first logical channel, and there is at least one regular BSR in a triggered and unsent state.

14. The terminal device according to any one of claims 11 to 13, wherein the determining module is further configured to:

determine, according to whether a logical channel parameter configured for the first logical channel meets a logical channel prioritization (LCP) restriction of the available uplink resource, whether to trigger the SR.

15. The terminal device according to claim 14, wherein the first logical channel comprises one logical channel, and the determining module is specifically configured to:

determine not to trigger the SR if the logical channel parameter configured for the first logical channel meets the LCP restriction of the available uplink resource; or

determine to trigger the SR if the logical channel parameter configured for the first logical channel does not meet the LCP restriction of the available uplink resource.

16. The terminal device according to claim 14, wherein the first logical channel comprises a plurality of logical channels, and the determining module is specifically configured to:

determine not to trigger the SR if the logical channel parameter configured for each logical channel in the first logical channel meets the LCP restriction of the available uplink resource; or

determine to trigger the SR if the logical channel parameter configured for at least one logical channel in the first logical channel does not meet the LCP restriction of the available uplink resource.

17. The terminal device according to claim 15 or 16, wherein the logical channel parameter is at least one parameter configured for the first logical channel by a network device, and the at least one parameter is used for determining whether the to-be-transmitted data on the first logical channel can be transmitted on the available uplink resource.

18. The terminal device according to claim 17, wherein the logical channel parameter configured for the first logical channel comprises at least one of the following:

a first parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a first configured uplink grant, a second parameter used for indicating whether the to-be-transmitted data is allowed to be transmitted on a second configured uplink grant, maximum physical uplink shared channel (PUSCH) transmission duration supported, an available subcarrier spacing, and an available carrier.

19. The terminal device according to any one of claims 14 to 18, wherein the LCP restriction of the uplink resource is used for indicating at least one of the following:

whether the to-be-transmitted data is allowed to be transmitted on the first configured uplink grant, whether the to-be-transmitted data is allowed to be transmitted on the second configured uplink grant, and whether the to-be-transmitted data is allowed to be transmitted on the dynamically scheduled uplink resource.

20. The terminal device according to claim 18 or 19, wherein the first configured

uplink grant is a granted resource configured by means of semi-static configuration, and the second configured uplink grant is a granted resource configured by means of semi-static configuration and dynamic triggering.

21. A storage medium, configured to store a computer program, wherein the computer program causes a computer to perform the communication method according to any one of claims 1 to 10.

22. A terminal device, comprising a processor and a memory, wherein the memory is configured to store a computer program, and the processor is configured to invoke and run the computer program stored in the memory, to perform the communication method according to any one of claims 1 to 10.

23. A chip, comprising a processor, wherein the processor is configured to invoke and run a computer program stored in a memory, to cause a device having the chip installed therein to perform the communication method according to any one of claims 1 to 10.