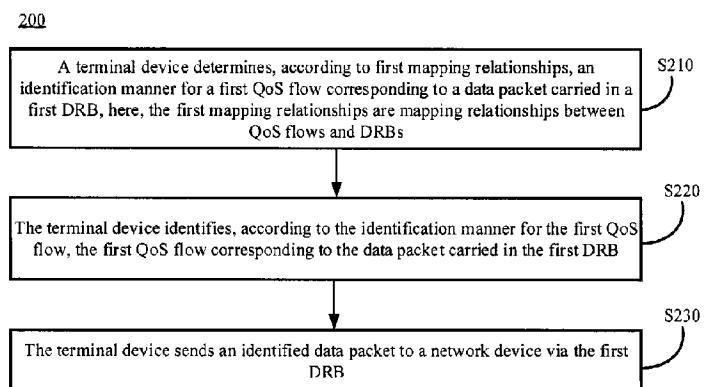




(86) Date de dépôt PCT/PCT Filing Date: 2017/03/22	(51) Cl.Int./Int.Cl. H04W 28/24 (2009.01)
(87) Date publication PCT/PCT Publication Date: 2018/09/27	(72) Inventeur/Inventor: TANG, HAI, CN
(45) Date de délivrance/Issue Date: 2021/12/14	(73) Propriétaire/Owner: GUANGDONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD., CN
(85) Entrée phase nationale/National Entry: 2019/09/19	
(86) N° demande PCT/PCT Application No.: CN 2017/077741	
(87) N° publication PCT/PCT Publication No.: 2018/170799	(74) Agent: ROBIC

(54) Titre : PROCEDE DE TRANSMISSION EN LIAISON MONTANTE, DISPOSITIF DE TERMINAL ET DISPOSITIF DE RESEAU

(54) Title: UPLINK TRANSMISSION METHOD, TERMINAL DEVICE AND NETWORK DEVICE



(57) Abrégé/Abstract:

Provided in embodiments of the present application are an uplink transmission method, terminal device and network device. The terminal device can mark a quality of service (QoS) flow mapped by data carried in a data radio bearer (DRB). The method comprises: a terminal device determining, according to a first mapping relationship, a marking form of a first quality of service (QoS) flow corresponding to a data packet carried in a first data radio bearer (DRB), the first mapping relationship being a mapping relationship between the QoS flow and the DRB; according to the marking form of the first QoS flow, marking the first QoS flow corresponding to the data packet carried in the first DRB; and transmitting the marked data packet through the first DRB to a network device.

ABSTRACT

Provided in embodiments of the present application are an uplink transmission
5 method, terminal device and network device. The terminal device can mark a quality
of service (QoS) flow mapped by data carried in a data radio bearer (DRB). The
method comprises: a terminal device determining, according to a first mapping
relationship, a marking form of a first quality of service (QoS) flow corresponding to
a data packet carried in a first data radio bearer (DRB), the first mapping relationship
10 being a mapping relationship between the QoS flow and the DRB; according to the
marking form of the first QoS flow, marking the first QoS flow corresponding to the
data packet carried in the first DRB; and transmitting the marked data packet through
the first DRB to a network device.

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UPLINK TRANSMISSION METHOD, TERMINAL DEVICE AND NETWORK DEVICE

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TECHNICAL FIELD

The disclosure relates to the field of communications, and in particular to a method for uplink transmission, a terminal device and a network device.

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BACKGROUND

In a New Radio (NR) system, a transmission parameter configuration for 15 transmission of a data packet on an air interface is defined by a Data Radio Bearer (DRB). With the transmission parameter configuration, a Quality of Service (QoS) of a service carried in the DRB can be guaranteed, that is, which method is adopted for transmission to reach the QoS required by the DRB. For downlink transmission, an access network maps each of different QoS flows to a DRB according to a QoS flow 20 Identity (ID); and for uplink transmission, how a terminal device identifies a QoS flow to which data carried in a DRB is mapped is a problem worthy of researching.

SUMMARY

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The embodiments of the disclosure provide a method for uplink transmission, a terminal device and a network device, which can identify a QoS flow to which data carried in a DRB is mapped.

In a first aspect, there is provided a method for uplink transmission, which 30 includes the following operations.

A terminal device determines, according to first mapping relationships, an identification manner for a first QoS flow corresponding to a data packet carried in a first DRB, here, the first mapping relationships are mapping relationships between QoS flows and DRBs.

35 The terminal device identifies, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first

DRB.

The terminal device sends an identified data packet to a network device via the first DRB.

In combination with the first aspect, in some implementation manner of the 5 first aspect, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs or the QoS flows are in multiple-to-one correspondences with the DRBs.

A further aspect provides a method for uplink transmission, comprising: determining, by a terminal device, according to first mapping relationships, an 10 identification manner for a first Quality of Service (QoS) flow corresponding to a data packet carried in a first Data Radio Bearer (DRB), the first mapping relationships being mapping relationships between QoS flows and DRBs. Determining, by the terminal device, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet carried in the first 15 DRB comprises: when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determining, by the terminal, that a first identification manner is adopted to identify the first QoS flow, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or when the QoS flows are in 20 multiple-to-one correspondences with the DRBs in the first mapping relationships, determining, by the terminal device, the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB. The method further comprises: identifying, by the terminal device, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in 25 the first DRB; and sending, by the terminal device, an identified data packet to a network device via the first DRB.

In combination with the first aspect, in some implementation manner of the first aspect, the method further includes the following operation.

The terminal device determines the first mapping relationships.

30 In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines the first mapping relationships includes the following operations.

The terminal device receives high layer signaling sent by the network device,

here, the high layer signaling is used by the network device to configure the first mapping relationships to the terminal device.

The terminal device determines the first mapping relationships according to the high layer signaling.

5 In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines the first mapping relationships includes the following operations.

10 The terminal device receives high layer signaling sent by the network device, here, the high layer signaling indicates that the terminal device determines the first mapping relationships according to second mapping relationships, and the second mapping relationships are mapping relationships between DRBs and QoS flows for downlink data mapping.

The terminal device determines, as the first mapping relationships, the second mapping relationships on which a mirror mapping has been performed.

15 In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet carried in the first DRB includes the following operations.

When the QoS flows are in one-to-one correspondences with the DRBs in the

first mapping relationships, the terminal device determines that a first identification manner is adopted to identify the first QoS flow, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

5 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB.

10 In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB includes the following operations.

15 When the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

20 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to a maximum number of QoS flows in the first mapping relationships.

In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB includes the following operations.

30 When the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, it is determined that a second identification manner is adopted to identify the first QoS flow, here, the second identification manner is that identification information having a specific number of bits is determined according to

the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than a first preset number threshold, it is determined that a third identification manner is adopted to identify the first QoS flow, here, the third identification manner is that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

In combination with the first aspect, in some implementation manner of the first aspect, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB includes the following operations.

When the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, it is determined that a fourth identification manner is adopted to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the second DRB is greater than a second preset number threshold, it is determined that a fifth identification manner is adopted to identify the first QoS flow, here, the fifth identification manner is that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

In combination with the first aspect, in some implementation manner of the first aspect, the method further includes the following operation.

The terminal device receives third mapping relationships sent by the network device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

In combination with the first aspect, in some implementation manner of the first aspect, when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the method further includes the following operation.

The terminal device receives indication information from the network device, here, the indication information indicates that the terminal device determines the

identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

In a second aspect, there is provided a method for uplink transmission, which includes the following operations.

A network device receives a data packet sent by a terminal device via a first DRB.

The network device determines, according to first mapping relationships, an identification manner for a first QoS flow corresponding to the data packet, here, the 10 first mapping relationships are mapping relationships between QoS flows and DRBs.

The network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow.

The network device maps the data packet carried in the first DRB to the first QoS flow.

15 A further aspect provides a method for uplink transmission, comprising: receiving, by a network device, a data packet sent by a terminal device via a first Data Radio Bearer (DRB); and determining, by the network device, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to the data packet, the first mapping relationships being mapping relationships between QoS flows and DRBs. Determining, by the network device, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet comprises: when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determining, by the network device, that the terminal device identifies the first QoS flow by adopting a first identification manner, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determining, by the network device, the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB. The method further comprises determining, by the network device, the first QoS flow corresponding to the data packet carried in the first DRB, according to the identification manner for the first QoS flow; and mapping, by the network device, the data packet carried in the first

DRB to the first QoS flow.

In combination with the second aspect, in some implementation manner of the second aspect, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs or the QoS flows are in multiple-to-one correspondences with the DRBs.

5 In combination with the second aspect, in some implementation manner of the second aspect, the method further includes the following operation.

The network device determines the first mapping relationships.

10 In combination with the second aspect, in some implementation manner of the second aspect, the operation that the network device determines the first mapping relationships includes the following operation.

The network device determines, as the first mapping relationships, second mapping relationships on which a mirror mapping has been performed, here, the second mapping relationships are mapping relationships between DRBs and QoS flows for downlink data mapping.

15 In combination with the second aspect, in some implementation manner of the second aspect, the operation that the network device determines, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet includes the following operations.

20 When the QoS flows are in one-to-one correspondences with the DRBs in the

first mapping relationships, the network device determines that the terminal device identifies the first QoS flow by adopting a first identification manner, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information.

5 The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

10 The network device determines, according to the first DRB and the first mapping relationships, a QoS flow corresponding to the first DRB as the first QoS flow.

In combination with the second aspect, in some implementation manner of the second aspect, the operation that the network device determines, according to first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet includes the following operations.

15 When a number of QoS flows corresponding to each DRB is identical in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

20 when numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 when numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to a maximum number of QoS flows in the first mapping relationships.

30 In combination with the second aspect, in some implementation manner of the second aspect, the operation that the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB includes the following operations.

When the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, it is determined that a second identification manner is

adopted by the terminal device to identify the first QoS flow, here, the second identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the 5 specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, it is determined that a third identification manner is adopted to identify the first QoS flow, here, the third identification manner is that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

10 The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

15 The network device determines the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

In combination with the second aspect, in some implementation manner of the second aspect, the operation that the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB includes the following operations.

20 When the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, it is determined that a fourth identification manner is adopted to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is 25 identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, it is determined that a fifth identification manner is adopted to identify the first QoS flow, here, the fifth identification manner is that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS 30 flow.

The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

The network device determines the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

In combination with the second aspect, in some implementation manner of the 5 second aspect, the network device sends third mapping relationships to the terminal device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

10 In combination with the second aspect, in some implementation manner of the second aspect, when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the method further includes the following operation.

15 The network device sends indication information to the terminal device, here, the indication information indicates that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

20 In a third aspect, there is provided a terminal device, which includes a unit configured to execute the method in the first aspect or various implementation manners thereof.

A further aspect provides a terminal device, comprising: a determination module, configured to determine, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to a data 25 packet carried in a first Data Radio Bearer (DRB), the first mapping relationships being mapping relationships between QoS flows and DRBs. The determination module is further configured to: when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determine that a first identification manner is adopted to identify the first QoS flow, the first identification manner being that the first QoS flow corresponding to the data packet in 30 the first DRB is identified by zero-bit identification information; or when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determine the identification manner for the first QoS flow according to

a number of QoS flows corresponding to one DRB. The terminal device also comprises an identification module, configured to identify, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB; and a communication module, configured to send 5 an identified data packet to a network device via the first DRB.

In a fourth aspect, there is provided a network device, which includes a unit configured to execute the method in the second aspect or various implementation manners thereof.

A further aspect provides a network device, comprising: a communication 10 module, configured to receive a data packet sent by a terminal device via a first Data Radio Bearer (DRB); and a determination module, configured to determine, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to the data packet, and determine the first QoS flow corresponding to the data packet carried in the first DRB according to the 15 identification manner for the first QoS flow, the first mapping relationships being mapping relationships between QoS flows and DRBs. The determination module is further configured to: when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determine that the terminal device identifies the first QoS flow by adopting a first identification manner, the first identification 20 manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determine the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB. The communication module is further 25 configured to map the data packet carried in the first DRB to the first QoS flow.

In a fifth aspect, there is provided a terminal device, which includes a memory, a processor and a transceiver. The memory is configured to store a program. The processor is configured to execute the program; and when the program is executed, the processor executes the method in the first aspect based on the 30 transceiver.

In a sixth aspect, there is provided a network device, which includes a memory, a processor and a transceiver. The memory is configured to store a program. The processor is configured to execute the program; and when the program is

executed, the processor executes the method in the second aspect based on the transceiver.

In a seventh aspect, there is provided a computer readable medium, The computer readable medium stores a program code executed by a terminal device, and

the program code includes an instruction for executing the method in the first aspect.

In an eighth aspect, there is provided a computer readable medium. The computer readable medium stores a program code executed by a terminal device, and the program code includes an instruction for executing the method in the second aspect.

5

BRIEF DESCRIPTION OF DRAWINGS

10 FIG. 1 is a diagram of a wireless communication system according to an embodiment of the disclosure.

FIG. 2 is a flowchart of a method for uplink transmission according to an embodiment of the disclosure.

15 FIG. 3 is a flowchart of a method for uplink transmission according to another embodiment of the disclosure.

FIG. 4 is a block diagram of a terminal device according to an embodiment of the disclosure.

FIG. 5 is a block diagram of a network device according to an embodiment of the disclosure.

20 FIG. 6 is a block diagram of a terminal device according to another embodiment of the disclosure.

FIG. 7 is a block diagram of a network device according to another embodiment of the disclosure.

25

DETAILED DESCRIPTION

The technical solutions in the embodiments of the disclosure will be described below in combination with the accompanying drawings.

30 It is to be understood that terms "system" and "network" in the disclosure may usually be exchanged in the disclosure. In the disclosure, the term "and/or" is only an association relationship describing associated objects and represents that three relationships may exist. For example, A and/or B may represent three conditions: i.e., independent existence of A, existence of both A and B and independent existence of

35 B. In addition, character "/" in the disclosure usually represents that previous and next

associated objects form an "or" relationship.

The technical solutions in the embodiments of the disclosure may be applied in various communications systems, such as a Global System of Mobile communication (abbreviated as "GSM") system, a Code Division Multiple Access 5 (abbreviated as "CDMA") system, a Wideband Code Division Multiple Access (abbreviated as "WCDMA") system, a General Packet Radio Service (abbreviated as "GPRS"), a Long Term Evolution (abbreviated as "LTE") system, an LTE Frequency Division Duplex (abbreviated as "FDD") system, an LTE Time Division Duplex (abbreviated as "TDD") system, a Universal Mobile Telecommunication System 10 (abbreviated as "UMTS") system, a Worldwide Interoperability for Microwave Access (abbreviated as "WiMAX") communication system or future 5G system, etc.

FIG. 1 illustrates a wireless communication system 100 to which the embodiments of the disclosure is applied. The wireless communication system 100 may include a network device 110. The network device 110 may be a device 15 communicated with a terminal device. The network device 110 may provide communication coverage for a specific geographical area, and may communicate with a terminal device (such as UE) located within the coverage area. Optionally, the network device 110 may be a Base Transceiver Station (BTS) in a GSM system or a CDMA system, may also be an Node B (NB) in a WCDMA system, and may further 20 be an Evolutional Node B (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, a vehicle-mounted device, a wearable device as well as a network side device in the future 5G system or a network side device in the future evolved Public Land Mobile Network (PLMN) network, etc.

25 The wireless communication system 100 may further include at least one terminal device 120 located within a coverage range of the network device 110. The terminal device 120 may be movable or fixed. Optionally, each terminal device 120 may be an access terminal, User Equipment (UE), a user unit, a user station, a mobile station, a mobile platform, a remote station, a remote terminal, a mobile device, a user 30 terminal, a terminal, a wireless communication device and a user proxy or user apparatus. The access terminal may be a cellular phone, a cordless telephone, 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 or other processing devices connected to a wireless modem, vehicle-mounted devices, wearable devices, a terminal device in a future 5G network or a terminal device in a future evolved Public Land Mobile Network (PLMN) network, etc.

5 Optionally, Device to Device (D2D) communication may be performed between the terminal devices 120.

 Optionally, the 5G system or network may further be referred to as an NR system or network.

10 FIG. 1 exemplarily illustrates a network device and two terminal devices. 10 Optionally, the wireless communication system 100 may include multiple network devices, and there is other number of terminal devices in a coverage range of each network device, which is not limited by the embodiment of the disclosure thereto.

15 In the related art, in downlink transmission, the network device maps different QoS flows to different DRBs for transmission. In uplink transmission, in order that the network device knows which QoS flow to which a data packet transmitted in a DRB is mapped, the terminal device carries a QoS flow ID in the data packet, and thus the air interface overhead is large. Therefore, the embodiments of the disclosure provide a method for uplink transmission. A terminal device can identify, according to first mapping relationships for uplink data mapping, a QoS flow corresponding to a 20 data packet carried in a DRB and thus the air interface overhead can be reduced.

 FIG. 2 is a flowchart of a method for uplink transmission 200 according to an embodiment of the disclosure. The method 200 may be executed by a terminal device in the wireless communication system in FIG. 1. As illustrated in FIG. 2, the method 200 includes the following operations.

25 At S210, a terminal device determines, according to first mapping relationships, an identification manner for a first QoS flow corresponding to a data packet carried in a first DRB, here, the first mapping relationships are mapping relationships between QoS flows and DRBs.

30 Specifically, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs, or the QoS flows are in multiple-to-one correspondences with the DRBs, i.e., the first mapping relationships may be one-to-one or multiple-to-one mapping relationships. The terminal device sends the data packet to the network device via the first DRB. The data packet corresponds to the

first QoS flow. The terminal device needs to notify the network device of mapping the data packet carried in the first DRB to the first QoS flow. The terminal device may determine the identification manner for the first QoS flow according to the first mapping relationships, and notify, in a specific identification manner, the network device of a QoS flow to which the data packet carried in the first DRB needs to be mapped.

5 Optionally, the operation that a terminal device determines, according to first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet carried in the first DRB includes the following operations.

10 If the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, the terminal device determines that a first identification manner is adopted to identify the first QoS flow, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by adopting zero-bit identification information; or

15 if the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB.

20 Specifically, in a case where the first mapping relationships are one-to-one mapping relationships and one QoS flow corresponds to one DRB, the terminal device does not need to include identification information of the QoS flow in the data packet, i.e., there is no the identification information of the QoS flow in the data packet. The network device may determine, according to a DRB used by the received data packet and in combination with the first mapping relationships, the QoS flow corresponding to the data packet and thus may map the data packet to the corresponding QoS flow. In this case, the terminal device does not need to include the identification information of the QoS flow in the data packet, so that the air interface overhead can be reduced. Specifically, the network device may acquire, upon the reception of the data packet, the identification information of the QoS flow in the data packet. If it is determined that there is no the identification information of the QoS flow in the data packet, the network device may determine that the terminal device identifies the first QoS flow by using the first identification manner, and thus the network device may determine that the data packet is carried via the first DRB, then

may determine the QoS flow corresponding to the first DRB in combination with the first mapping relationships and thus may map the data packet to the QoS flow corresponding to the first DRB.

5 Optionally, if the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, the terminal device may determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB. For example, the terminal device may determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB, or may also determine the identification manner for 10 the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to the maximum number of QoS flows in the first mapping relationships.

15 Optionally, in some embodiments, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB includes the following operations.

 If the number of QoS flows corresponding to each DRB is the identical in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

20 if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to the maximum number of QoS flows in the first mapping relationships.

 Specifically, if the number of QoS flows corresponding to each DRB is the identical in the first mapping relationships, the terminal device may determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB. Optionally, if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping

relationships, the terminal device may determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB, or the terminal device may also determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB, here,

5 the second DRB is a DRB corresponding to the maximum number of QoS flows in the first mapping relationships. That is, if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device may determine an identification manner for a QoS flow corresponding to each DRB according to the number of QoS flows corresponding to

10 the DRB, or may also determine an identification manner for a QoS flow corresponding to each DRB according to the number of QoS flows corresponding to the second DRB in the first mapping relationships.

For example, if each DRB corresponds to two QoS flows in the first mapping relationships, i.e., the first mapping relationships are two-to-one mapping

15 relationships, the terminal device may determine that 1-bit identification information is adopted to identify the first QoS flow. For example, the first DRB corresponds to a QoS flow 1 and a QoS flow 2, the 1-bit identification information corresponding to the first DRB is set as 0 to indicate the QoS flow 1 and is set as 1 to indicate the QoS flow 2. The network device acquires, upon the reception of the data packet,

20 identification information in the data packet and determines that the first DRB is used to send the data packet; and then determines, based on correspondences between the 1-bit identification information and the QoS flows under the condition of the first DRB, that the data packet in the first DRB is mapped to the QoS flow 2 when the identification information in the data packet is 1. Or if each DRB in the first mapping

25 relationships corresponds to three QoS flows, i.e., the first mapping relationships are three-to-one mapping relationships, the terminal device may determine that the 2-bit identification information is adopted to identify the first QoS flow. For example, the first DRB corresponds to a QoS flow 1, a QoS flow 2 and a QoS flow 3, correspondences between the 2-bit identification information and the QoS flows may

30 be set as follows: 00 indicates the QoS flow 1, 01 indicates the QoS flow 2, and 10 and 11 indicate the QoS flow 3.

Also for example, in the first mapping relationships, the first DRB corresponds to two QoS flows and the second DRB corresponds to four QoS flows.

The terminal device may determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB, e.g., the 1-bit identification information may be adopted to identify the first QoS flow; or may also determine the identification manner for the first QoS flow according to the number of 5 QoS flows corresponding to the second DRB, e.g., the 2-bit identification information may be adopted to identify the first QoS flow. That is, if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the terminal device may determine an identification manner for a QoS flow corresponding to each DRB according to the number of QoS flows 10 corresponding to the DRB, or may also determine an identification manner for a QoS flow corresponding to each DRB according to the number of QoS flows corresponding to the second DRB in the first mapping relationships.

15 Optionally, in some embodiments, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB includes the following operations.

20 If the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, it is determined that a second identification manner is adopted to identify the first QoS flow, here, the second identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

25 if the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, it is determined that a third identification manner is adopted to identify the first QoS flow, here, the third identification manner is that the first QoS flow is identified by adopting a QoS flow ID of the first QoS flow.

30 Specifically, if the first DRB corresponds to multiple QoS flows and the first QoS flow is one of the multiple QoS flows, the terminal device may determine an identification manner for the first QoS flow according to a relationship between the number of the multiple QoS flows corresponding to the first DRB and a first preset number threshold. For example, when the number of the multiple QoS flows is less than the first preset number threshold, the terminal device may determine that the second identification manner is adopted to identify the first QoS flow, i.e., identification information having a specific number of bits is adopted to identify the

first QoS flow. The number of bits of the identification information may be determined according to the number of QoS flows corresponding to the first DRB, i.e., may be determined according to the number of the multiple QoS flows. For example, if the first DRB corresponds to two QoS flows, it may be determined that 1-bit 5 identification information is adopted; or if the first DRB corresponds to three QoS flows, it may be determined that 2-bit identification information is adopted; or if the first DRB corresponds to five QoS flows, it may be determined that 3-bit identification information is adopted; or the DRB corresponds to seven QoS flows, it may be determined that the 3-bit identification information is adopted. Optionally, if 10 the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, it is determined that the third identification manner is adopted to identify the first QoS flow, i.e., the terminal device directly adopts a QoS flow ID of the first QoS flow to identify the first QoS flow. For example, the first preset number threshold may be 8, and when the number of QoS flows corresponding 15 to a DRB is greater than 8, identification information having at least 4 bits is adopted to identify the QoS flow. Compared with that the ID of the QoS flow is directly adopted to identify the QoS flow, the identification information having at least 4 bits is adopted to identify the QoS flows, which is little effect in reducing the air interface overhead. Therefore, the ID of the QoS flow may be directly adopted to identify the 20 first QoS flow.

Correspondingly, the network device may receive a data packet sent by the terminal device via the first DRB. The network device may also determine, according to the foregoing method, that what identification manner is adopted to identify a QoS flow corresponding to the data packet, and then the network device may determine the 25 first QoS flow corresponding to the data carried in the first DRB according to the identification manner for the first QoS flow. For example, if the network device determines that the terminal device identifies the first QoS flow by using the first identification manner, the network device may determine, upon the reception of the data packet, that the data packet is carried via the first DRB, then may determine the 30 QoS flow corresponding to the first DRB in combination with the first mapping relationships and thus may map the data packet carried in the first DRB to the QoS flow corresponding to the first DRB. Also for example, if the network device determines that the terminal device identifies the first QoS flow by using the second

identification manner, the network device may acquire, upon the reception of the data packet, identification information having a specific number of bits in the data packet, and determines a QoS flow corresponding to the data packet according to the identification information having the specific number of bits. Specifically, the 5 network device may determine, according to a DRB used for the terminal device to send the data packet and in combination with the correspondences between the identification information having the specific number of bits and the QoS flows, which QoS flow to which the data packet needs to be mapped. Optionally, in the second identification manner, the correspondences between the identification 10 information having the specific number of bits and the QoS flows may be configured to the terminal device by the network device, so that the terminal device may fill the identification information having the specific number of bits according to the correspondences, and the network device may parse a QoS flow corresponding to the identification information having the specific number of bits according to the 15 correspondences.

Optionally, in some embodiments, the operation that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB includes the following operations.

If the number of QoS flows corresponding to the second DRB is less than a 20 second preset number threshold, it is determined that a fourth identification manner is adopted to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified according to the identification information having the specific number of 25 bits; or

if the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, it is determined that a fifth identification manner is adopted to identify the first QoS flow, here, the fifth identification manner is that the first QoS flow is identified by a QoS flow ID of the first QoS flow.

30 Specifically, the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB may refer to relevant description on that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows

corresponding to the first DRB, and details will not be repeated for the brevity.

Optionally, in some embodiments, the method further includes the following operation.

The terminal device receives third mapping relationships sent by the network device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

That is, if the terminal device identifies the first QoS flow by adopting the second identification manner or the fourth identification manner, the terminal device identifies the first QoS flow by the identification information having the specific number of bits. In this case, the correspondences between the identification information having the specific number of bits and the QoS flows may be configured to the terminal device by the network device, i.e., which QoS flow corresponds to specific contents of the identification information having the specific number of bits, which may be configured to the terminal device by the network device. Likewise, the network device may also parse the identification information having the specific number of bits included in the data packet according to the correspondences. For example, if the terminal device identifies the first QoS flow by adopting the 2-bit identification information, the correspondences which is pre-configured to the terminal device by the network device may be as follows: 00 indicates the QoS flow 1, 01 indicates the QoS flow 2 and 10 indicates the QoS flow 3, so that the network device acquires, upon the reception of the data packet, the 2-bit identification information in the data packet. If the 2-bit identification information is 10, the network device may determine that the data packet is mapped to the QoS flow 3.

If the number of QoS flows corresponding to each DRB is the identical in the first mapping relationships, then for each DRB, the correspondences between the identification information having the specific number of bits and the QoS flows may be the identical and may also be different. For example, each DRB corresponds to two QoS flows, the correspondences between the identification information having the specific number of bits (e.g., 1-bit identification information) for identifying the QoS flows corresponding to each DRB and the QoS flows may be the identical, e.g., 0 indicates the QoS flow 1 and 1 indicates the QoS flow 2; or may also be different, e.g.,

for the DRB 1, 0 indicates the QoS flow 1 and 1 indicates the QoS flow 2, and for the DRB 2, 0 indicates the QoS flow 3 and 1 indicates the QoS flow 4. If the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the third mapping relationships may include

5 correspondences between identification information having a specific number of bits and QoS flows, for each DRB. That is, the third mapping relationships may include correspondences between identification information having a specific number of bits for describing QoS flows corresponding to each DRB and the QoS flows corresponding to each DRB. For example, the first mapping relationships includes a

10 DRB1, a DRB2 and a DRB3, the DRB1 corresponds to a QoS flow 1 and a QoS flow 2, the DRB2 corresponds to a QoS flow 3, and the DRB3 corresponds to a QoS flow 4, a QoS flow 5 and a QoS flow 6. The terminal device may identify the QoS flows corresponding to each DRB by adopting the second identification manner, or may also identify the QoS flows corresponding to each DRB by adopting the fourth

15 identification manner. If the terminal device identifies the QoS flows corresponding to each DRB by adopting the second identification manner, the QoS flow 1 and the QoS flow 2 corresponding to the DRB1 may be identified by the 1-bit identification information, the QoS flow 3 corresponding to the DRB2 may be identified by using the 1-bit identification information, and the QoS flow 4, the QoS flow 5 and the QoS

20 flow 6 corresponding to the DRB3 may be identified by the 2-bit identification information, and the third mapping relationships may include the contents illustrated in Table 1.

Table 1

DRB ID	Correspondences between identification information having the specific number of bits and QoS flows
DRB1	0: QoS flow 1, 1: QoS flow 2
DRB2	0: QoS flow 3, 1: reserved
DRB3	00: QoS flow 4, 01: QoS flow 5, 10: QoS flow 6, 11: reserved

25 Optionally, if the fourth identification manner is adopted to identify the QoS flows corresponding to each DRB, among three DRBs, a DRB corresponding to the maximum number of QoS flows is the DRB3, it is determined according to the number of QoS flows corresponding to the DRB3 that the 2-bit identification information is adopted to identify each QoS flow, and the third mapping relationships

may be illustrated in Table 2.

Table 2

DRB ID	Correspondences between identification information having the specific number of bits and QoS flows
DRB1	00: QoS flow 1, 01: QoS flow 2, 10 and 11: reserved
DRB2	00-11: QoS flow 3
DRB3	00: QoS flow 4, 01: QoS flow 5, 10: QoS flow 6, 11: reserved

Optionally, in some embodiments, if at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the method further includes
5 the following operation.

The terminal device receives indication information from the network device, here, the indication information indicates that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the
10 second DRB.

That is, the network may configure that whether the second identification manner or the fourth identification manner is adopted by the terminal device to identify the first QoS flow.

At S220, the terminal device identifies, according to the identification manner
15 for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB.

At S230, the terminal device sends an identified data packet carried in the first DRB to a network device.

Specifically, if the terminal device determines that the first QoS flow is
20 identified by using the first identification manner, the data packet carried in the first DRB includes zero-bit identification information, i.e., the data packet does not include identification information of the first QoS flow. In this way, the network device determines, upon the reception of the data packet, that the data packet does not include the identification information of the first QoS flow, and the network device
25 determines, according to a DRB used by the terminal device to send the data packet and in combination with the first mapping relationships, which QoS flow to which the data packet needs to be mapped. For the network device, if the network device configures the first mapping relationships to the terminal device, the network device

knows the mapping first relationships; and if the network device informs the terminal device of determining the first mapping relationships according to second mapping relationships, the network device may also determine the first mapping relationships according to the second mapping relationships.

5 If the terminal device determines that the second identification manner or fourth identification manner is adopted to identify the first QoS flow, the terminal device includes, in the data packet, identification information having a special number of bits, identifies the first QoS flow by the identification information, and then sends the data packet to the network device via the first DRB. The network device may 10 acquire, upon the reception of the data packet, the identification information having the specific number of bits, and determines a QoS flow corresponding to the data packet according to the identification information having the specific number of bits. Optionally, the correspondences between the identification information having the specific number of bits and the QoS flows may be configured to the terminal device 15 by the network device, so that the terminal device may fill the identification information having the specific number of bits according to the correspondences, and the network device may analyze, according to the correspondences, which QoS flow is indicated by the identification information having the specific number of bits.

 Optionally, in some embodiments, the method further includes the following 20 operation.

 The terminal device determines the first mapping relationships.

 Optionally, in some embodiments, the operation that the terminal device determines the first mapping relationships includes the following operations.

 The terminal device receives high layer signaling sent by the network device, 25 here, the high layer signaling is used by the network device to configure the first mapping relationships to the terminal device.

 The terminal device determines the first mapping relationships according to the high layer signaling.

 That is, the network device may configure the first mapping relationships to 30 the terminal device directly via the high layer signaling. Since the first mapping relationships are configured to the terminal device by the network device, the network device also knows the first mapping relationships.

 Optionally, in some embodiments, the operation that the terminal device

determines the first mapping relationships includes the following operations.

The terminal device receives high layer signaling sent by the network device, here, the high layer signaling indicates that the terminal device determines the first mapping relationships according to second mapping relationships, and the second mapping relationships are mapping relationships between DRBs and QoS flows for downlink data mapping.

5 The terminal device determines, as the first mapping relationships, the second mapping relationship on which a mirror mapping has been performed.

In such a case, the network device may notify the terminal device that how to 10 determine the first mapping relationships, e.g., the terminal device may determine the first mapping relationships according to the second mapping relationships. The second mapping relationships are the mapping relationships between the DRBs and the QoS flows for the downlink data mapping. The terminal device may perform a mirror mapping on the second mapping relationships to obtain the first mapping 15 relationships. In such a case, the network device also knows the second mapping relationships, so the network device may determine the first mapping relationships by adopting the same manner as the manner adopted by the terminal device.

That is, the first mapping relationships may be configured to the terminal 20 device by the network device via the high layer signaling, or may also be determined by the terminal device according to the second mapping relationships, here, the second mapping relationships are mapping relationships for downlink data transmission, and the second mapping relationships are mapping relationships between DRBs and QoS flows. Optionally, the network device may configure the second mapping relationships to the terminal device via the high layer signaling; and 25 then, the network device may notify the terminal device via the high layer signaling (e.g., Radio Resource Control (RRC) signaling) of determining the first mapping relationships according to the second mapping relationships, i.e., the second mapping relationship on which the mirror mapping has been performed is determined as the first mapping relationships.

30 Generally, the network device may know the first mapping relationships, so the network device may also determine an identification manner for a QoS flow corresponding to the received data packet based on the first mapping relationships according to the method described in S210. Specifically, the network device may

determine, according to a DRB through which the data packet is sent and in combination with the first mapping relationships, the number of QoS flows corresponding to the DRB, and thus may determine which identification manner is adopted by the terminal device to identify the QoS flow corresponding to the data 5 packet. Thereafter, the network device may determine, according to the foregoing method, which QoS flow to which the data packet needs to be mapped.

The method for uplink transmission according to the embodiments of the disclosure is described above in detail in combination with FIG. 2 and from the perspective of the terminal device. Hereinafter, a method for uplink transmission 10 according to the embodiments of the disclosure will be described in detail in combination with FIG. 3 and from the perspective of the network device. It should be understood that the description on the network device corresponds to the description on the terminal device. The similar description may refer to the above embodiments and will not be repeated herein to avoid the repetition.

15 FIG. 3 is a flowchart of a method for uplink transmission according to another embodiment of the disclosure. As illustrated in FIG. 3, the method 300 includes the following operations.

At S310, a network device receives a data packet sent by a terminal device via a first DRB.

20 At S320, the network device determines, according to first mapping relationships, an identification manner for a first QoS flow corresponding to the data packet, here, the first mapping relationships are mapping relationships between QoS flows and DRBs.

At S330, the network device determines the first QoS flow corresponding to 25 the data packet in the first DRB according to the identification manner for the first QoS flow.

At S340, the network device maps the data packet carried in the first DRB to the first QoS flow.

30 Optionally, in some embodiments, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs or the QoS flows are in multiple-to-one correspondences with the DRBs.

Optionally, in some embodiments, the method further includes the following operation.

The network device determines the first mapping relationships.

Optionally, in some embodiments, the operation that the network device determines the first mapping relationships includes the following operations.

The network device determines, as the first mapping relationships, second mapping relationships on which a mirror mapping has been performed, here, the second mapping relationships are mapping relationships between DRBs and QoS flows for downlink data mapping.

Optionally, in some embodiments, the operation that the network device determines, according to first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet includes the following operations.

If the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, the network device determines that the terminal device identifies the first QoS flow by adopting a first identification manner, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information.

The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

The network device determines, according to the first DRB and the first mapping relationships, a QoS flow corresponding to the first DRB as the first QoS flow.

Optionally, in some embodiments, the operation that the network device determines, according to first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet includes the following operations.

If the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

if the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

if the numbers of QoS flows corresponding to at least two DRBs are different

from each other in the first mapping relationships, the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to the maximum number of QoS flows, in the first mapping relationships.

5 Optionally, in some embodiments, the operation that the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB includes the following operations.

10 If the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, it is determined that a second identification manner is adopted by the terminal device to identify the first QoS flow, here, the second identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

15 if the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, it is determined that a third identification manner is adopted to identify the first QoS flow, here, the third identification manner is that the first QoS flow is identified by a QoS flow ID of the first QoS flow.

20 The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

 The network device determines the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

25 Optionally, in some embodiments, the operation that the network device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB includes the following operations.

30 If the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, it is determined that a fourth identification manner is adopted to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified according to the identification information having the specific number of

bits; or

if the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, it is determined that a fifth identification manner is adopted to identify the first QoS flow, here, the fifth identification manner is that

5 the first QoS flow is identified by a QoS flow ID of the first QoS flow.

The operation that the network device determines the first QoS flow corresponding to the data packet in the first DRB according to the identification manner for the first QoS flow includes the following operation.

10 The network device determines the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

Optionally, in some embodiments, the method further includes the following operation.

15 The network device sends third mapping relationships to the network device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

20 Optionally, in some embodiments, if at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the method further includes the following operation.

25 The network device sends indication information to the terminal device, here, the indication information indicates that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

30 The method embodiments of the disclosure have been described above in detail in combination with FIG. 2 to FIG. 3. Hereinafter, the apparatus embodiments of the disclosure will be described in detail in combination with FIG. 4 to FIG. 7. It should be understood that the apparatus embodiments correspond to the method embodiments, and similar descriptions may be referred to the method embodiment.

FIG. 4 is a block diagram of a terminal device according to an embodiment of the disclosure. The terminal device 400 in FIG. 4 includes a determination module

410, an identification module 420 and a communication module 430.

The determination module 410 is configured to determine, according to first mapping relationships, an identification manner for a first QoS flow corresponding to a data packet carried in a first DRB, here, the first mapping relationships are mapping 5 relationships between QoS flows and DRBs.

The identification module 420 is configured to identify, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB.

The communication module 430 is configured to send an identified data 10 packet carried in the first DRB to a network device.

Optionally, in some embodiments, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs or the QoS flows are in multiple-to-one correspondences with the DRBs.

Optionally, in some embodiments, the determination module 410 is further 15 configured to determine the first mapping relationships.

Optionally, in some embodiments, the communication module 430 is further configured to receive high layer signaling sent by the network device, here, the high layer signaling is used by the network device to configure the first mapping relationships to the terminal device.

The determination module 410 is further configured to determine the first 20 mapping relationships according to the high layer signaling.

Optionally, in some embodiments, the communication module 430 is further configured to receive high layer signaling sent by the network device, here, the high layer signaling indicates that the terminal device determines the first mapping 25 relationships according to second mapping relationships, and the second mapping relationships are mapping relationships between DRBs and QoS flows for downlink data mapping.

The determination module 410 is further configured to determine, as the first mapping relationships, the second mapping relationship on which a mirror mapping 30 has been performed.

Optionally, in some embodiments, the determination module 410 is specifically configured to:

when the QoS flows are in one-to-one correspondences with the DRBs in the

first mapping relationships, determine that the first QoS flow is identified by adopting a first identification manner, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

5 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB.

Optionally, in some embodiments, the determination module 410 is specifically configured to:

10 when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

15 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

20 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to the maximum number of QoS flows, in the first mapping relationships.

Optionally, in some embodiments, the determination module 410 is specifically configured to:

25 determine, when the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, that a second identification manner is adopted to identify the first QoS flow, here, the second identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified according to the identification information having the specific number of 30 bits; or

determine, when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, that a third identification manner is adopted to identify the first QoS flow, here, the third identification manner is that the

first QoS flow is identified by a QoS flow ID of the first QoS flow.

Optionally, in some embodiments, the determination module 410 is specifically configured to:

- 5 determine, when the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, that a fourth identification manner is adopted to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or
- 10 determine, when the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, that a fifth identification manner is adopted to identify the first QoS flow, here, the fifth identification manner is that the first QoS flow is identified by a QoS flow ID of the first QoS flow.

Optionally, in some embodiments, the communication module 430 is further configured to receive third mapping relationships sent by the network device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

Optionally, in some embodiments, when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the communication module 430 is further configured to receive indication information from the network device, here, the indication information indicates that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

FIG. 5 is a block diagram of a network device according to an embodiment of the disclosure. The network device 500 in FIG. 5 includes a communication module 510 and a determination module 520.

The communication module 510 is configured to receive a data packet sent by a terminal device via a first DRB.

The determination module 520 is configured to determine, according to first mapping relationships, an identification manner for a first QoS flow corresponding to the data packet, and determine the first QoS flow corresponding to the data packet in

the first DRB according to the identification manner for the first QoS flow, here, the first mapping relationships are mapping relationships between QoS flows and DRBs.

The communication module 510 is further configured to map the data packet carried in the first DRB to the first QoS flow.

5 Optionally, in some embodiments, in the first mapping relationships, the QoS flows are in one-to-one correspondences with the DRBs or the QoS flows are in multiple-to-one correspondences with the DRBs.

 Optionally, in some embodiments, the determination module 520 is further configured to determine the first mapping relationships.

10 Optionally, in some embodiments, the determination module 520 is further configured to determine, as the first mapping relationships, second mapping relationships on which a mirror mapping has been performed, here, the second mapping relationships are mapping relationships between DRBs and QoS flows mapped for downlink data mapping.

15 Optionally, in some embodiments, the determination module 520 is specifically configured to:

 determine, when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, that the terminal device identifies the first QoS flow by adopting a first identification manner, here, the first identification manner is that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; and

 determine, according to the first DRB and the first mapping relationships, a QoS flow corresponding to the first DRB as the first QoS flow.

20 Optionally, in some embodiments, the determination module 520 is specifically configured to:

 when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

 when the numbers of QoS flows corresponding to at least two DRBs are

different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, here, the second DRB is a DRB corresponding to the maximum number of QoS flows in the first mapping relationships.

5 Optionally, in some embodiments, the determination module 520 is specifically configured to:

 determine, when the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, that a second identification manner is adopted by the terminal device to identify the first QoS flow, here, the second 10 identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

15 determine, when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, that a third identification manner is adopted by the terminal device to identify the first QoS flow, here, the third identification manner is that the first QoS flow is identified by a QoS flow ID of the first QoS flow; and

20 determine the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

 Optionally, in some embodiments, the determination module 520 is specifically configured to:

25 determine, when the number of QoS flows corresponding to the second DRB is smaller than a second preset number threshold, that a fourth identification manner is adopted by the terminal device to identify the first QoS flow, here, the fourth identification manner is that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified according to the identification information having the specific number of bits; or

30 determine, when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, that a fifth identification manner is adopted by the terminal device to identify the first QoS flow, here, the fifth identification manner is that the first QoS flow is identified by a QoS flow ID of the

first QoS flow; and

determine the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

5 Optionally, in some embodiments, the communication module 510 is further configured to:

send third mapping relationships to the terminal device, here, the third mapping relationships include correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is adopted.

10 Optionally, in some embodiments, when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the communication module 510 is further configured to:

15 send indication information to the terminal device, here, the indication information indicates that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

20 As illustrated in FIG. 6, the embodiments of the disclosure further provide a terminal device 600. The terminal device 600 may be a terminal device 400 in FIG. 4, and can be configured to execute the contents of the terminal device corresponding to the method 200 in FIG. 2. The terminal device 600 includes: an input interface 610, an output interface 620, a processor 630 and a memory 640. The input interface 610, the output interface 620, the processor 630 and the memory 640 may be connected via a bus system. The memory 640 is configured to store a program, an instruction or a code. The processor 630 is configured to execute the program, the instruction or the 25 code in the memory 640 to control the input interface 610 to receive a signal and control the output interface 620 to send the signal and implement the operations in the foregoing method embodiments.

30 In the embodiment of the disclosure, the processor 630 may be a Central Processing Unit (abbreviated as "CPU"). The processor 630 may further be other universal processors, a Digital Signal Processor (DSP), an Application Specific Integrated Circuit (ASIC) and a Field Programmable Gate Array (FPGA) or other programmable logic devices, discrete gates or transistor logic devices, and discrete hardware component, etc. The universal processor may be a microprocessor or the

processor may also be any conventional processor, etc.

The memory 640 may include a Read Only Memory (ROM) and a Random Access Memory (RAM) and provides instructions and data for the processor 630. A part of the memory 640 may further include a nonvolatile RAM. For example, the 5 memory 640 may further store information on a type of a device.

During an implementation process, the operations of the methods may be implemented by an integrated logic circuit of hardware in the processor 630 or an instruction in a software form. Operations of the methods disclosed in combination with the embodiments of the disclosure may be directly executed and implemented by 10 means of a hardware processor or may be executed and implemented by means of a combination of hardware and software modules in the processor. The software module may be located in a mature storage medium in the art, such as a RAM, a flash memory, an ROM, a Programmable ROM (PROM), an Electrically EPROM (EEPROM) or a register. The storage medium is located in the memory 640. The 15 processor 630 reads information from the memory 640 and implements the operations of the foregoing methods in combination with the hardware of the processor. In order to avoid repetition, the above will not be described herein in detail.

In a specific implementation manner, the determination module 410 included in the terminal device in FIG. 4 may be implemented by the processor 630 in FIG. 6, 20 and the communication module 430 included in the terminal device 400 may be implemented by the input interface 610 and the output interface 620 in FIG. 6.

As illustrated in FIG. 7, the embodiments of the disclosure further provide a network device 700. The network device 700 may be a network device 500 in FIG. 5, and can be configured to execute the contents of the network device corresponding to 25 the method 300 in FIG. 3. The network device 700 includes: an input interface 710, an output interface 720, a processor 730 and a memory 740. The input interface 710, the output interface 720, the processor 730 and the memory 740 may be connected via a bus system. The memory 740 is configured to store a program, an instruction or a code. The processor 730 is configured to execute the program, the instruction or the 30 code in the memory 740 to control the input interface 710 to receive a signal and control the output interface 720 to send the signal and implement the operations in the foregoing method embodiments.

In the embodiment of the disclosure, the processor 730 may be a Central

Processing Unit (abbreviated as "CPU"). The processor 730 may further be other universal processors, a Digital Signal Processor (DSP), an Application Specific Integrated Circuit (ASIC) and a Field Programmable Gate Array (FPGA) or other programmable logic devices, discrete gates or transistor logic devices, and discrete 5 hardware component, etc. The universal processor may be a microprocessor or the processor may also be any conventional processor, etc.

The memory 740 may include a Read Only Memory (ROM) and a Random Access Memory (RAM) and provides instructions and data for the processor 730. A part of the memory 740 may further include a nonvolatile RAM. For example, the 10 memory 740 may further store information on a type of a device.

During an implementation process, the operations of the methods may be implemented by an integrated logic circuit of hardware in the processor 730 or an instruction in a software form. Operations of the methods disclosed in combination with the embodiments of the disclosure may be directly executed and implemented by 15 means of a hardware processor or may be executed and implemented by means of a combination of hardware and software modules in the processor. The software module may be located in a mature storage medium in the art, such as a RAM, a flash memory, an ROM, a Programmable ROM (PROM), an Electrically EPROM (EEPROM) or a register. The storage medium is located in the memory 740. The 20 processor 730 reads information from the memory 740 and implements the operations of the foregoing methods in combination with the hardware of the processor. In order to avoid repetition, the above will not be described herein in detail.

In a specific implementation manner, the determination module 520 included in the network device in FIG. 5 may be implemented by the processor 730 in FIG. 7, 25 and the communication module 510 included in the network device 500 may be implemented by the input interface 710 and the output interface 720 in FIG. 7.

A person of ordinary skill in the art may be aware that in combination with the examples described in the embodiments disclosed in the disclosure, units and algorithm operations may be implemented by electronic hardware, computer software 30 or a combination of computer software and electronic hardware. Whether the functions are performed by hardware or software depends on particular applications and design constraint conditions of the technical solutions. A person skilled in the art may use different methods to implement the described functions for each particular

application, but it should not be considered that the implementation goes beyond the scope of the disclosure.

It may be clearly understood by a person skilled in the art that for the purpose of convenient and brief description, for a detailed working process of the foregoing system, apparatus, and unit, reference may be made to a corresponding process in the foregoing method embodiments, and details are not described herein again.

In the several embodiments provided in the disclosure, the disclosed system, apparatus, and method may be implemented in other manners. For example, the described apparatus embodiments are merely exemplary. For example, the unit division is merely logical function division and may be other division 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 the indirect couplings or communication connections, implemented through some interfaces, of the devices or units, and may be in electronic, mechanical, or other forms.

The units described as separate parts may or may not be physically separate, and parts displayed as units may or may not be physical units, may be located in one position, or may be distributed on a plurality of network units. Some 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 the disclosure may be integrated into one processing unit, or each of the units may exist alone physically, or two or more units are integrated into one unit.

When being 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 the disclosure 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 configured to enable a computer device (which may be a personal computer, a server, or a network device) to perform all or some of the operations of the methods described in the embodiments of the disclosure. The foregoing storage medium includes any medium that can store

program code, such as a U disk, a removable hard disk, an ROM, an RAM, a magnetic disk, or an optical disc.

The foregoing descriptions are merely specific implementation manners of the disclosure but are not intended to limit the scope of protection of the disclosure. Any
5 variation or replacement apparent to a person skilled in the art within the technical scope disclosed in the disclosure shall fall within the scope of protection of the disclosure. Therefore, the scope of protection of the disclosure shall be subject to the scope of protection of the claims.

10

CLAIMS

1. A method for uplink transmission, comprising:

5 determining, by a terminal device, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to a data packet carried in a first Data Radio Bearer (DRB), the first mapping relationships being mapping relationships between QoS flows and DRBs;

10 wherein determining, by the terminal device, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet carried in the first DRB comprises:

15 when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determining, by the terminal, that a first identification manner is adopted to identify the first QoS flow, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

20 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determining, by the terminal device, the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB;

25 identifying, by the terminal device, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB; and

sending, by the terminal device, an identified data packet to a network device via the first DRB.

2. The method of claim 1, further comprising:

30 determining, by the terminal device, the first mapping relationships.

3. The method of claim 2, wherein determining, by the terminal device, the first mapping relationships comprises:

receiving, by the terminal device, high layer signaling sent by the network

device, the high layer signaling being used by the network device to configure the first mapping relationships to the terminal device; and

determining, by the terminal device, the first mapping relationships according to the high layer signaling.

5

4. The method of claim 2, wherein determining, by the terminal device, the first mapping relationships comprises:

10 receiving, by the terminal device, high layer signaling sent by the network device, the high layer signaling indicating that the terminal device determines the first mapping relationships according to second mapping relationships, and the second mapping relationships being mapping relationships between DRBs and QoS flows for downlink data mapping; and

determining, by the terminal device, as the first mapping relationships, the second mapping relationships on which a mirror mapping has been performed.

15

5. The method of any one of claims 1 to 4, wherein determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB comprises:

20 when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

30 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, the second DRB being a DRB corresponding to a maximum number of QoS flows, in the first mapping relationships.

6. The method of claim 5, wherein determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB comprises:

when the number of QoS flows corresponding to the first DRB is less than a
5 first preset number threshold, determining that a second identification manner is adopted to identify the first QoS flow, the second identification manner being that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

10 when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, determining that a third identification manner is adopted to identify the first QoS flow, the third identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

15 7. The method of claim 5, wherein determining, by the terminal device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB comprises:

when the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, determining that a fourth identification manner is adopted to identify the first QoS flow, the fourth identification manner being that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

20 when the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, determining that a fifth identification manner is adopted to identify the first QoS flow, the fifth identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

8. The method of claim 6 or 7, further comprising:

30 receiving, by the terminal device, third mapping relationships sent by the network device, the third mapping relationships comprising correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification

manner is adopted.

9. The method of any one of claims 5 to 8, wherein when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the

5 method further comprises:

receiving, by the terminal device, indication information from the network device, the indication information indicating that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the

10 second DRB.

10. A method for uplink transmission, comprising:

receiving, by a network device, a data packet sent by a terminal device via a first Data Radio Bearer (DRB);

15 determining, by the network device, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to the data packet, the first mapping relationships being mapping relationships between QoS flows and DRBs;

20 wherein determining, by the network device, according to the first mapping relationships, the identification manner for the first QoS flow corresponding to the data packet comprises:

25 when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determining, by the network device, that the terminal device identifies the first QoS flow by adopting a first identification manner, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

30 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determining, by the network device, the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB;

determining, by the network device, the first QoS flow corresponding to the data packet carried in the first DRB, according to the identification manner for the

first QoS flow; and

mapping, by the network device, the data packet carried in the first DRB to the first QoS flow.

5 11. The method of claim 10, further comprising:

determining, by the network device, the first mapping relationships.

12. The method of claim 11, wherein determining, by the network device, the first mapping relationships comprises:

10 determining, by the network device, as the first mapping relationships, second mapping relationships on which a mirror mapping has been performed, the second mapping relationships being mapping relationships between DRBs and QoS flows for downlink data mapping.

15 13. The method of any one of claims 10 to 12, wherein when the network device determines that the terminal device identifies the first QoS flow by adopting the first identification manner,

determining, by the network device, the first QoS flow corresponding to the data packet carried in the first DRB, according to the identification manner for the first QoS flow comprises:

20 determining, by the network device, according to the first DRB and the first mapping relationships, a QoS flow corresponding to the first DRB as the first QoS flow.

25 14. The method of any one of claims 10 to 12, wherein determining, by the network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to one DRB comprises:

30 when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determining, by the network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determining, by the

network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determining, by the network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, the second DRB being a DRB corresponding to a maximum number of QoS flows, in the first mapping relationships.

15. The method of claim 14, wherein determining, by the network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB comprises:

when the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, determining that a second identification manner is adopted by the terminal device to identify the first QoS flow, the second identification manner being that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified according to the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, determining that a third identification manner is adopted by the terminal device to identify the first QoS flow, the third identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow; and

determining, by the network device, the first QoS flow corresponding to the data packet carried in the first DRB, according to the identification manner for the first QoS flow comprises:

determining, by the network device, the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

30

16. The method of claim 14, wherein determining, by the network device, the identification manner for the first QoS flow according to the number of QoS flows corresponding to the second DRB comprises:

when the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, determining that a fourth identification manner is adopted by the terminal device to identify the first QoS flow, the fourth identification manner being that identification information having a specific number of bits is 5 determined according to the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, determining that a fifth identification manner is 10 adopted by the terminal device to identify the first QoS flow, the fifth identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow; and

15 determining, by the network device, the first QoS flow corresponding to the data packet carried in the first DRB, according to the identification manner for the first QoS flow comprises:

determining, by the network device, the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

20 17. The method of claim 15 or 16, further comprising:

sending, by the network device, third mapping relationships to the terminal device, the third mapping relationships comprising correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the second identification manner or the fourth identification manner is 25 adopted.

18. The method of any one of claims 14 to 17, wherein when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the method further comprises:

30 sending, by the network device, indication information to the terminal device, the indication information indicating that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the

second DRB.

19. A terminal device, comprising:

5 a determination module, configured to determine, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to a data packet carried in a first Data Radio Bearer (DRB), the first mapping relationships being mapping relationships between QoS flows and DRBs;

wherein the determination module is further configured to:

10 when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determine that a first identification manner is adopted to identify the first QoS flow, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

15 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determine the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB;

20 an identification module, configured to identify, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB; and

a communication module, configured to send an identified data packet to a network device via the first DRB.

25 20. The terminal device of claim 19, wherein the determination module is further configured to determine the first mapping relationships.

21. The terminal device of claim 20, wherein the communication module is further configured to:

30 receive high layer signaling sent by the network device, the high layer signaling being used by the network device to configure the first mapping relationships to the terminal device; and

the determination module is further configured to:

determine the first mapping relationships according to the high layer signaling.

22. The terminal device of claim 20, wherein the communication module is further configured to:

5 receive high layer signaling sent by the network device, the high layer signaling indicating that the terminal device determines the first mapping relationships according to second mapping relationships, and the second mapping relationships being mapping relationships between DRBs and QoS flows for downlink data mapping; and

10 the determination module is further configured to:

determine, as the first mapping relationships, the second mapping relationships on which a mirror mapping has been performed.

23. The terminal device of any one of claims 19 to 22, wherein the determination 15 module is configured to:

when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

20 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

25 when the numbers of QoS flows corresponding to at least two DRBs are different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, the second DRB being a DRB corresponding to a maximum number of QoS flows, in the first mapping relationships.

24. The terminal device of claim 23, wherein the determination module is configured 30 to:

when the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, determine that a second identification manner is adopted to identify the first QoS flow, the second identification manner being that

identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than

5 the first preset number threshold, determine that a third identification manner is adopted to identify the first QoS flow, the third identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

25. The terminal device of claim 23, wherein the determination module is configured
10 to:

when the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, determine that a fourth identification manner is adopted to identify the first QoS flow, the fourth identification manner being that identification information having a specific number of bits is determined according to
15 the number of QoS flows corresponding to the second DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the second DRB is greater than the second preset number threshold, determine that a fifth identification manner is adopted to identify the first QoS flow, the fifth identification manner being that the
20 first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow.

26. The terminal device of claim 24 or 25, wherein the communication module is further configured to:

receive third mapping relationships sent by the network device, the third mapping relationships comprising correspondences between the identification information having the specific number of bits and the QoS flows under a condition
25 that the second identification manner or the fourth identification manner is adopted.

27. The terminal device of any one of claims 23 to 26, wherein when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the communication module is further configured to:

receive indication information from the network device, the indication information indicating that the terminal device determines the identification manner

for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

28. A network device, comprising:

5 a communication module, configured to receive a data packet sent by a terminal device via a first Data Radio Bearer (DRB);

10 a determination module, configured to determine, according to first mapping relationships, an identification manner for a first Quality of Service (QoS) flow corresponding to the data packet, and determine the first QoS flow corresponding to the data packet carried in the first DRB according to the identification manner for the first QoS flow, the first mapping relationships being mapping relationships between QoS flows and DRBs;

the determination module is further configured to:

15 when the QoS flows are in one-to-one correspondences with the DRBs in the first mapping relationships, determine that the terminal device identifies the first QoS flow by adopting a first identification manner, the first identification manner being that the first QoS flow corresponding to the data packet in the first DRB is identified by zero-bit identification information; or

20 when the QoS flows are in multiple-to-one correspondences with the DRBs in the first mapping relationships, determine the identification manner for the first QoS flow according to a number of QoS flows corresponding to one DRB; and

the communication module is further configured to map the data packet carried in the first DRB to the first QoS flow.

25

29. The network device of claim 28, wherein the determination module is further configured to determine the first mapping relationships.

30. The network device of claim 29, wherein the determination module is further configured to:

determine, as the first mapping relationships, second mapping relationships on which a mirror mapping has been performed, the second mapping relationships being mapping relationships between DRBs and QoS flows for downlink data mapping.

31. The network device of any one of claims 28 to 30, wherein the determination module is further configured to:

when it is determined that the terminal device identifies the first QoS flow by
5 adopting the first identification manner, determine, according to the first DRB and the first mapping relationships, a QoS flow corresponding to the first DRB as the first QoS flow.

32. The network device of any one of claims 28 to 30, wherein the determination
10 module is further configured to:

when the number of QoS flows corresponding to each DRB is identical in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

when the numbers of QoS flows corresponding to at least two DRBs are
15 different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB; or

when the numbers of QoS flows corresponding to at least two DRBs are
20 different from each other in the first mapping relationships, determine the identification manner for the first QoS flow according to the number of QoS flows corresponding to a second DRB, the second DRB being a DRB corresponding to a maximum number of QoS flows in the first mapping relationships.

33. The network device of claim 32, wherein the determination module is configured
25 to:

when the number of QoS flows corresponding to the first DRB is less than a first preset number threshold, determine that a second identification manner is adopted by the terminal device to identify the first QoS flow, the second identification manner being that identification information having a specific number of bits is
30 determined according to the number of QoS flows corresponding to the first DRB, and the first QoS flow is identified by the identification information having the specific number of bits; or

when the number of QoS flows corresponding to the first DRB is greater than

the first preset number threshold, determine that a third identification manner is adopted by the terminal device to identify the first QoS flow, the third identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow; and

5 determine the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

34. The network device of claim 32, wherein the determination module is configured to:

10 when the number of QoS flows corresponding to the second DRB is less than a second preset number threshold, determine that a fourth identification manner is adopted by the terminal device to identify the first QoS flow, the fourth identification manner being that identification information having a specific number of bits is determined according to the number of QoS flows corresponding to the second DRB, 15 and the first QoS flow is identified by the identification information having the specific number of bits; or

20 when the number of QoS flows corresponding to the first DRB is greater than the first preset number threshold, determine that a fifth identification manner is adopted by the terminal device to identify the first QoS flow, the fifth identification manner being that the first QoS flow is identified by a QoS flow Identity (ID) of the first QoS flow; and

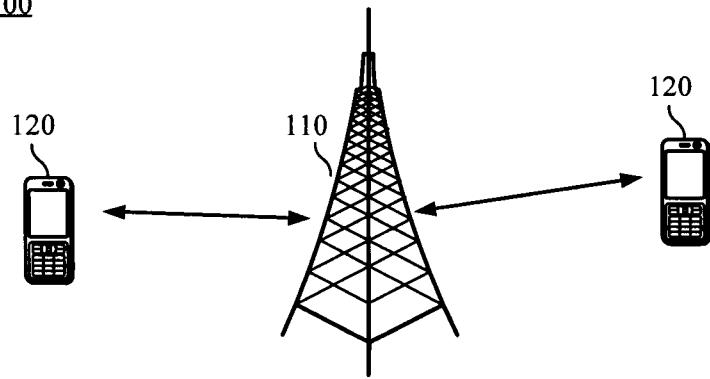
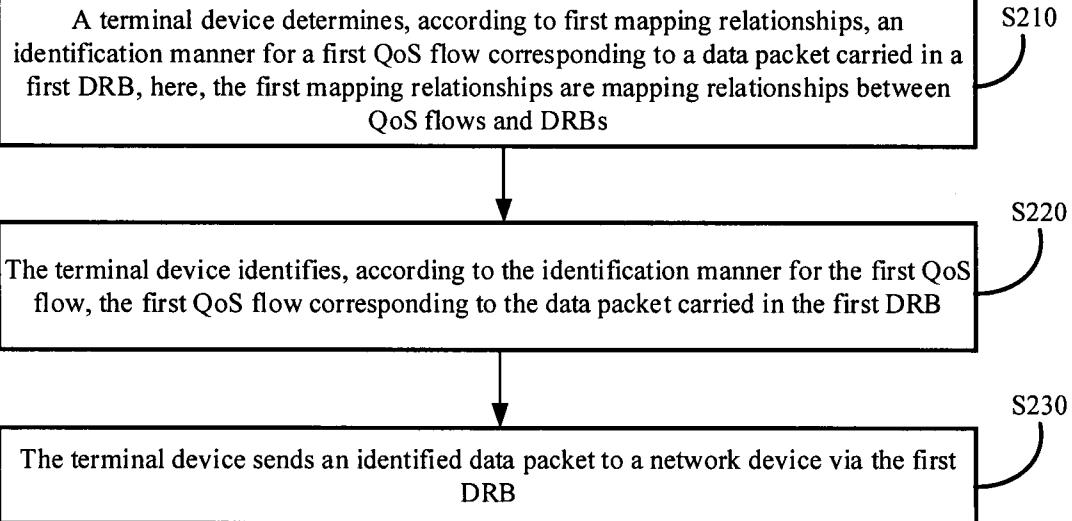
 determine the first QoS flow according to the identification information having the specific number of bits or the QoS flow ID of the first QoS flow.

25 35. The network device of claim 33 or 34, wherein the communication module is further configured to:

 send third mapping relationships to the terminal device, the third mapping relationships comprising correspondences between the identification information having the specific number of bits and the QoS flows under a condition that the 30 second identification manner or the fourth identification manner is adopted.

36. The network device of any one of claims 32 to 35, wherein when at least two DRBs correspond to different numbers of QoS flows in the first mapping relationships, the communication module is further configured to:

send indication information to the terminal device, the indication information
5 indicating that the terminal device determines the identification manner for the first QoS flow according to the number of QoS flows corresponding to the first DRB or the number of QoS flows corresponding to the second DRB.

100**FIG.1**200**FIG.2**

300

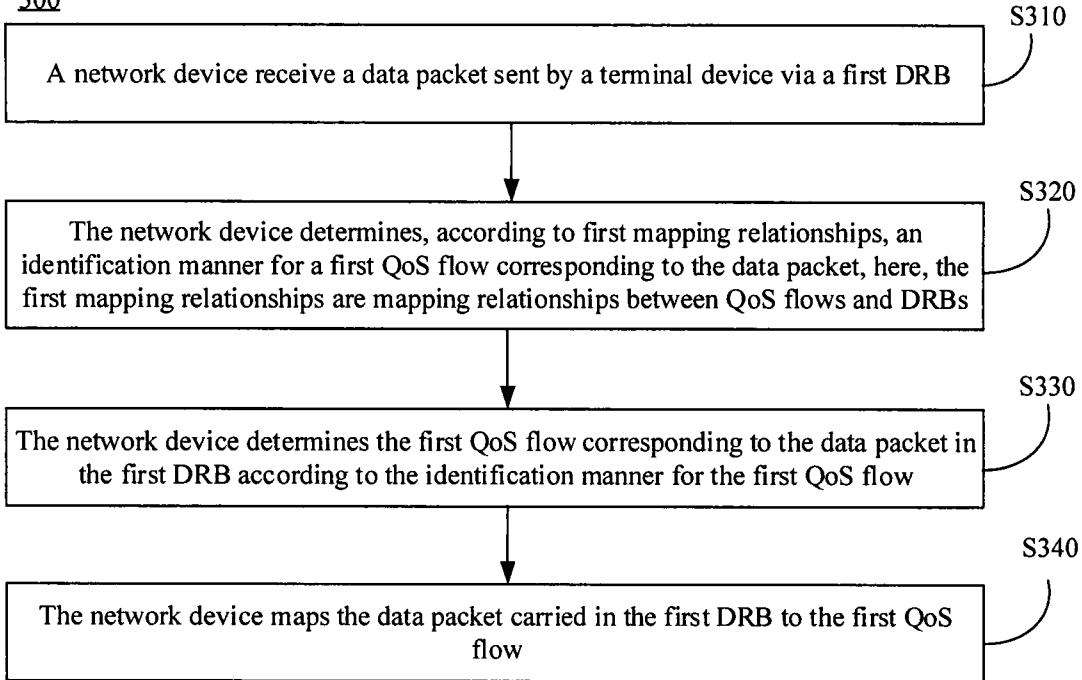


FIG.3

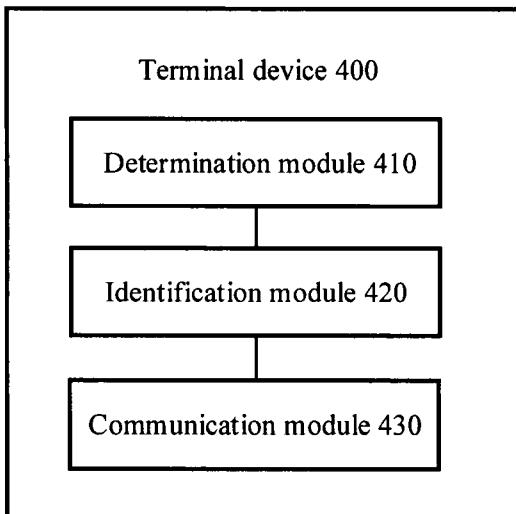


FIG.4

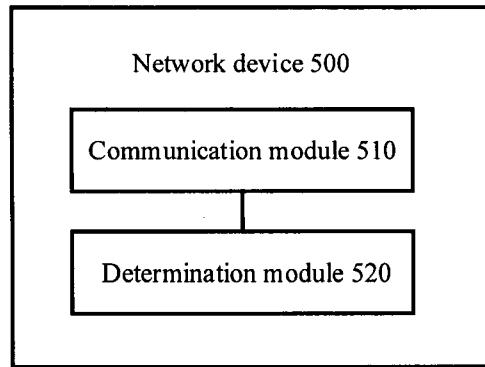


FIG.5

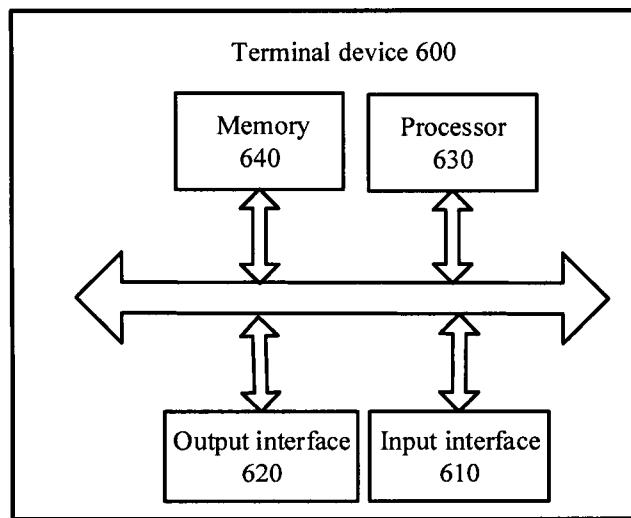


FIG.6

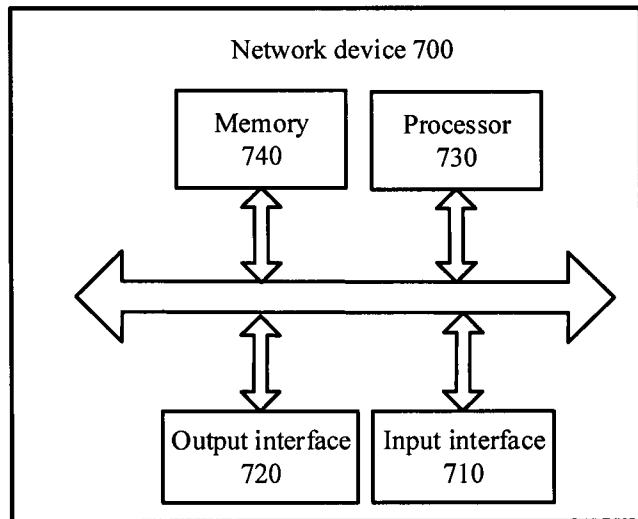


FIG.7

200

A terminal device determines, according to first mapping relationships, an identification manner for a first QoS flow corresponding to a data packet carried in a first DRB, here, the first mapping relationships are mapping relationships between QoS flows and DRBs

S210



The terminal device identifies, according to the identification manner for the first QoS flow, the first QoS flow corresponding to the data packet carried in the first DRB

S220



The terminal device sends an identified data packet to a network device via the first DRB

S230