

CLAIMS

1. A method for information processing, comprising at least one of:

sending, by a terminal, information of a data set to a network device; or

processing, by the terminal, data in the data set according to the information of the data set;

wherein the information of the data set is at least one of following cases:

the information of the data set is used for indicating that the data set is composed of 1st to kth data, k being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a first packet in the data set;

the information of the data set is used for indicating that a data is a last packet in the data set;

the information of the data set is used for indicating that a data is a middle packet in the data set;

the information of the data set is used for indicating that a data is a first packet in the data set and that there are r packets following the first packet, r being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a last packet in the data set and that another data set previous to the data set comprises n packets, n being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a uth packet in the data set, u being a natural number greater than or equal to 1;

the information of the data set is used for indicating a level of the data set;

the information of the data set is used for indicating a level of each packet in the data

set; or

the information of the data set is used for indicating characteristic information of the data set;

wherein the characteristic information comprises at least one of following:

a multi-packet based delay; a multi-packet based jitter; a multi-packet based error rate; a multi-packet based temporal correspondence relationship between uplink and downlink packets; multi-packet based far, intermediate and near visual field identifiers; a multi-packet based precision information indicating a visual field identifier; or a multi-packet based error concave or correct concave.

2. The method of claim 1, wherein in a case of sending, by the terminal, the information of the data set to the network device,

the information of the data set is carried by a packet header of data; or

the information of the data set is carried by a payload of data; or

the information of the data set is carried by control signaling of at least one of: a radio resource control (RRC) layer, a packet data convergence protocol (PDCP) layer, a control signaling radio link control (RLC) layer or a media access control (MAC) layer; or

the information of the data set is added to buffer status report (BSR) signaling; or

the information of the data set is added to scheduling request (SR) signaling.

3. The method of claim 1, wherein in a case of sending, by the terminal, the information of the data set to the network device,

a plurality of data in the data set form a same picture, to assist information scheduling of the network device by using the data set; or

a plurality of data in the data set are used to accomplish a same task, to assist information scheduling of the network device by using the data set.

4. The method of claim 1, wherein in a case of sending, by the terminal, the information of the data set to the network device, the method further comprises:

receiving, by the terminal from the network device, at least one of resource configuration or resource scheduling information for the data set.

5. The method of claim 1, wherein resource information corresponding to the data set comprises one or more of following: beam information, configured grant information, a modulation and coding scheme (MSC) value, uplink grant information, bandwidth part (BWP) information, a duration of a physical uplink control channel (PUCCH), a subcarrier spacing, resource information of a PUCCH sending an SR, information of a resource for receiving retransmission scheduling, a number of gaps of and a resource start position of slots in which data is sent continuously, hybrid automatic repeat request (HARQ) progress information, whether to start encryption, an encryption level, whether to start integrity protection, or whether to use complete integrity protection or partial integrity protection;

wherein the HARQ progress information comprises at least one of following: a number of HARQ progresses, an HARQ progress ID, an HARQ progress bitmap indicator corresponding to a data in the data set, whether HARQ feedback is supported, whether an HARQ progress supports retransmission scheduling, or HARQ codebook information shared by data in the data set.

6. The method of claim 1, wherein protocol stack configuration information of the data set comprises at least one of following:

radio bearer configuration information, service data adaptation protocol (SDAP) configuration information, packet data convergence protocol (PDCP) configuration information, RLC configuration information, MAC configuration information, physical layer configuration information, adaptation layer configuration information, logical channel configuration information, configured grant configuration information, discontinuous reception (DRX) configuration information, semi-persistent scheduling (SPS) configuration information, random access configuration information, SR configuration information, BSR configuration information, protocol stack configuration information of downlink second data corresponding to first data, or protocol stack configuration information of uplink third data corresponding to the first data.

7. The method of claim 1, wherein in a case of processing, by the terminal, the data in the data set according to the information of the data set, processing, by the terminal, the data in the data

set according to the information of the data set comprises at least one of following:

selecting, by the terminal, a radio resource according to the information of the data set;

multiplexing, by the terminal, the data in the data set in one or more MAC packet data units (PDUs) preferentially;

sending, by the terminal, the data in the data set using a plurality of parallel HARQ progresses;

sending, by the terminal, the data in the data set using a plurality of configured grant resources;

multiplexing, by the terminal, retransmission of a data in the data set and new transmission of another piece of data in the data set in one or more MAC packet data units (PDUs) preferentially;

performing, by the terminal, a data recovery operation on 1st to k1th data in the data set together;

setting and/or starting, by the terminal, a discard timer for 1st to k2th data in the data set;

sending, by the terminal, a PDCP status report, wherein a domain of a bitmap in the PDCP status report is used for indicating a receiving state of the data set;

discarding, by the terminal, 1st to k3th data in the data set in response to that a discard timer corresponding to any of the 1st to the k3th data in the data set expires; or

delivering, by the terminal, one or more RLC service data units (SDUs) corresponding 1st to k4th data in the data set in response to that an RLC layer receives all of the 1st to k4th data in the data set from a lower layer;

wherein k1, k2, k3 and k4 are natural numbers greater than or equal to 1.

8. A method for information processing, comprising:

receiving, by a network device, information of a data set from a terminal;

wherein the information of the data set is at least one of following cases:

the information of the data set is used for indicating that the data set is composed of 1st to kth data, k being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a first packet in the data set;

the information of the data set is used for indicating that a data is a last packet in the data set;

the information of the data set is used for indicating that a data is a middle packet in the data set;

the information of the data set is used for indicating that a data is a first packet in the data set and that there are r packets following the first packet, r being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a last packet in the data set and that another data set immediately previous to the data set comprises n packets, n being a natural number greater than or equal to 1;

the information of the data set is used for indicating that a data is a uth packet in the data set, u being a natural number greater than or equal to 1;

the information of the data set is used for indicating a level of the data set;

the information of the data set is used for indicating a level of each packet in the data set; or

the information of the data set is used for indicating characteristic information of the data set;

wherein the characteristic information comprises at least one of following:

a multi-packet based delay; a multi-packet based jitter; a multi-packet based error rate; a multi-packet based temporal correspondence relationship between uplink and downlink packets; multi-packet based far, intermediate and near visual field identifiers; a multi-packet based precision information indicating a visual field identifier; or a multi-packet based error concave or correct concave.

9. The method of claim 8, wherein:

the information of the data set is carried by a packet header of data; or

the information of the data set is carried by a payload of data; or

the information of the data set is carried by control signaling of at least one of: a radio resource control (RRC) layer, a packet data convergence protocol (PDCP) layer, a control signaling radio link control (RLC) layer or a media access control (MAC) layer; or

the information of the data set is added to buffer status report (BSR) signaling; or

the information of the data set is added to scheduling request (SR) signaling.

10. The method of claim 8, wherein:

a plurality of data in the data set form a same picture, to assist information scheduling of the network device by using the data set; or

a plurality of data in the data set are used to accomplish a same task, to assist information scheduling of the network device by using the data set.

11. The method of claim 8, further comprising:

sending, by the network device to the terminal, at least one of following: resource configuration or resource scheduling information for the data set.

12. The method of claim 8, wherein:

resource information corresponding to the data set comprises one or more of following: beam information, configured grant information, a modulation and coding scheme (MSC) value, uplink grant information, bandwidth part (BWP) information, a duration of a physical uplink control channel (PUCCH), a subcarrier spacing, resource information of a PUCCH sending an SR, information of a resource for receiving retransmission scheduling, a number of gaps of and a resource start position of slots in which data is sent continuously, hybrid automatic repeat request (HARQ) progress information, whether to start encryption, an encryption level, whether to start integrity protection, or whether to use complete integrity protection or partial integrity protection;

wherein the HARQ progress information comprises at least one of following: a number of HARQ progresses, an HARQ progress ID, an HARQ progress bitmap indicator corresponding to a data in the data set, whether HARQ feedback is supported, whether an HARQ progress supports retransmission scheduling, or HARQ codebook information shared by data in the data set.

13. The method of claim 8, wherein protocol stack configuration information of the data set comprises at least one of following:

radio bearer configuration information, service data adaptation protocol (SDAP) configuration information, packet data convergence protocol (PDCP) configuration information, RLC configuration information, MAC configuration information, physical layer configuration information, adaptation layer configuration information, logical channel configuration information, configured grant configuration information, discontinuous reception (DRX) configuration information, semi-persistent scheduling (SPS) configuration information, random access configuration information, SR configuration information, BSR configuration information, protocol stack configuration information of downlink second data corresponding to first data, or protocol stack configuration information of uplink third data corresponding to the first data.

14. A method for information processing, comprising:

acquiring, by a terminal, at least one of resource information or protocol stack configuration information corresponding to a level of first data; and

sending and/or receiving, by the terminal, the first data according to the at least one of the resource information or the protocol stack configuration information corresponding to the level of the first data.

15. The method of claim 14, wherein before acquiring, by the terminal, the at least one of the resource information or the protocol stack configuration information corresponding to the level of the first data, the method further comprises:

acquiring, by the terminal, first indication information;

wherein the first indication information indicates 1st to mth levels of data of at least one of following: a first service, a first quality of service (QoS) flow, a first protocol data unit (PDU)

session, a first stream, or a first logical channel; and the first indication information further indicates at least one of resource information or protocol stack configuration information for each of the 1st to mth levels; where m is a natural number greater than or equal to 1.

16. The method of claim 14, wherein:

the protocol stack configuration information comprises at least one of following:

radio bearer configuration information, service data adaptation protocol (SDAP) configuration information, packet data convergence protocol (PDCP) configuration information, radio link control (RLC) configuration information, MAC configuration information, physical layer configuration information, adaptation layer configuration information, logical channel configuration information, configured grant configuration information, discontinuous reception (DRX) configuration information, semi-persistent scheduling (SPS) configuration information, random access configuration information, SR configuration information, BSR configuration information, protocol stack configuration information of second downlink data corresponding to first data, or protocol stack configuration information of third uplink data corresponding to the first data.

17. The method of claim 14, wherein before, after or at the same time of acquiring, by the terminal, the at least one of the resource information or the protocol stack configuration information corresponding to the level of the first data, the method further comprises:

determining, by the terminal, a level of first data, wherein the first data is at least one of following cases: the first data belongs to a first service, the first data belongs to a first QoS flow, the first data corresponds to a first PDU session, the first data belongs to a first stream, the first data corresponds to a first radio bearer, or the first data corresponds to a first logical channel;

wherein 1st to mth levels are configured for the first service, the first QoS flow, the first PDU session, the first stream, or the first logical channel, m being a natural number greater than or equal to 1.

18. The method of claim 14, wherein determining, by the terminal, the level of the first data comprises:

determining, by the terminal, the level of the first data according to a frame type of the first data; or

determining, by the terminal, the level of the first data according to a frame type parsing capability of a non-access stratum (NAS), an Internet protocol (IP) layer, or a PDCP layer; or

indicating the level of the first data by a high layer above the PDCP layer of the terminal to an access stratum (AS) of the terminal.

19. The method of claim 14, wherein resource information corresponding to the level of the first data comprises one or more of following: beam information, configured grant information, a modulation and coding scheme (MSC) value, uplink grant information, bandwidth part (BWP) information, a duration of a physical uplink control channel (PUCCH), a subcarrier spacing, resource information of a PUCCH sending an SR, resource information of a PUCCH sending a channel state information reference signal (CSI-RS), information of a resource for receiving retransmission scheduling, a number of gaps of and a resource start position of slots in which data is sent continuously, hybrid automatic repeat request (HARQ) progress information, whether to start encryption, an encryption level, whether to start integrity protection, or whether to use complete integrity protection or partial integrity protection;

wherein the HARQ progress information comprises at least one of following: a number of HARQ progresses, an HARQ progress ID, whether an HARQ progress supports HARQ feedback, whether an HARQ progress supports retransmission scheduling, and an HARQ codebook type.

20. The method of claim 18, wherein the frame type comprises any one of: an I frame, a P frame, or a B frame.

21. The method of claim 20, wherein sending, by the terminal, the first data according to the resource information corresponding to the level of the first data comprises:

when the level of the first data corresponds to an I frame, sending, by the terminal, the first data through a combination of a plurality of beams; or

when the level of the first data corresponds to a P frame or a B frame, sending, by the terminal, the first data through a single beam.

22. The method of claim 14, further comprising:

sending, by the terminal to the network device, at least one of a level of the first data or

assistance information;

wherein the assistance information comprises at least one of following: a frame rate, a delay, or a priority of a packet; and/or

granularity of the assistance information is at least one of following:

assistance information corresponding to the first data;

assistance information corresponding to a first PDU session corresponding to the first data;

assistance information corresponding to a first radio bearer corresponding to the first data;

assistance information corresponding to a first logical channel corresponding to the first data;

assistance information corresponding to a quality of service (QoS) flow corresponding to the first data;

assistance information corresponding to a stream corresponding to the first data;
or

assistance information corresponding to a service corresponding to the first data.

23. The method of claim 14, further comprising:

sending, by the terminal, first information to the network device;

wherein the first information indicates that 1st to bth QoS flows belong to a service, b being a natural number greater than or equal to 1; or the first information indicates that a QoS flow has 1st to qth 5th-generation QoS identifiers (5QIs), q being a natural number greater than or equal to 1.

24. The method of claim 14, further comprising:

receiving, by the terminal, second information from the network device; wherein the second information indicates at least one of following:

1st to bth QoS flows are mapped to one radio bearer;

the 1st to bth QoS flows are mapped to 1st to cth radio bearers; or

a QoS flow having 1st to qth 5QIs is mapped to 1st to dth radio bearers;

where b, c, q and d are all natural numbers greater than or equal to 1.

25. The method of claim 24, in a case that the second information indicates that the QoS flow having the 1st to qth 5QIs is mapped to the 1st to dth radio bearers,

establishing, through the QoS flow having the 1st to qth 5QIs, 1st to qth general packet radio service (GPRS) tunnelling protocol for user plane (GTP-U) tunnels between a network side and a core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, a 1st to qth PDU sessions between a terminal and the core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, a GTP-U tunnel between the network side and the core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, a PDU session between the terminal and the core network.

26. A method for information processing, comprising:

sending, by a network device, first information;

wherein the first indication information indicates 1st to mth levels of data of at least one of following: a first service, a first quality of service (QoS) flow, a first protocol data unit (PDU) session, a first stream, or a first logical channel; and the first indication information further indicates at least one of resource information or protocol stack configuration information for each of the 1st to mth levels; where m is a natural number greater than or equal to 1.

27. The method of claim 26, further comprising:

receiving and/or sending, by the network device, first data according to at least one of resource information or protocol stack configuration information corresponding to a level of the first data.

28. The method of claim 26, wherein protocol stack configuration information comprises at least one of following:

radio bearer configuration information, service data adaptation protocol (SDAP) configuration information, packet data convergence protocol (PDCP) configuration information, radio link control (RLC) configuration information, MAC configuration information, physical layer configuration information, adaptation layer configuration information, logical channel configuration information, configured grant configuration information, discontinuous reception (DRX) configuration information, semi-persistent scheduling (SPS) configuration information, random access configuration information, SR configuration information, BSR configuration information, protocol stack configuration information of downlink second data corresponding to first data, or protocol stack configuration information of uplink third data corresponding to the first data.

29. The method of claim 27, wherein:

the first data is at least one of following cases: the first data belongs to a first service, the first data belongs to a first QoS flow, the first data corresponds to a first PDU session, the first data belongs to a first stream, the first data corresponds to a first radio bearer, or the first data corresponds to a first logical channel;

wherein 1st to mth levels are configured in the first service, the first QoS flow, the first PDU session, the first stream, or the first logical channel, m being a natural number greater than or equal to 1.

30. The method of claim 27, wherein resource information corresponding to the level of the first data comprises one or more of following: beam information, configured grant information, a modulation and coding scheme (MSC) value, uplink grant information, bandwidth part (BWP) information, a duration of a physical uplink control channel (PUCCH), a subcarrier spacing, resource information of a PUCCH sending an SR, resource information of a PUCCH sending a channel state information reference signal (CSI-RS), information of a resource for receiving retransmission scheduling, a number of gaps of and a resource start position of slots in which data is sent continuously, hybrid automatic repeat request (HARQ) progress information, whether to start encryption, an encryption level, whether to start integrity protection, or whether to use complete integrity protection or partial integrity protection;

wherein the HARQ progress information comprises at least one of following: a number of HARQ progresses, an HARQ progress ID, whether an HARQ progress supports HARQ feedback, whether an HARQ progress supports retransmission scheduling, and an HARQ codebook type.

31. The method of claim 27, wherein the level indicates a frame type of the first data, and the frame type comprises any one of: an I frame, a P frame, or a B frame.

32. The method of claim 31, wherein receiving, by the network device, the first data according to the at least one of the resource information or the protocol stack configuration information corresponding to the level of the first data comprises:

when the level of the first data corresponds to an I frame, receiving, by the network device, the first data through a combination of a plurality of beams; or

when the level of the first data corresponds to a P frame or a B frame, receiving, by the network device, the first data through a single beam.

33. The method of claim 27, before, after or at the same time of sending, by the network device, the first indication information, the method further comprises:

acquiring, by the network device, at least one of a level of the first data or assistance information from a core network or a terminal;

wherein the assistance information comprises at least one of following: a frame rate, a delay, or a priority of a packet; and/or

granularity of the assistance information is at least one of following:

assistance information corresponding to the first data;

assistance information corresponding to a first PDU session corresponding to the first data;

assistance information corresponding to a first radio bearer corresponding to the first data;

assistance information corresponding to a first logical channel corresponding to

the first data;

assistance information corresponding to a QoS flow corresponding to the first data;

assistance information corresponding to a stream corresponding to the first data;

or

assistance information corresponding to a service corresponding to the first data.

34. The method of claim 27, before, after or at the same time of sending, by the network device, the first indication information, the method further comprises:

acquiring, by the network device, 5th-generation QoS identifier (5QI) information from a core network, wherein the 5QI information comprises at least one of following: a frame rate; a delay; a jitter; an error rate; a priority of a packet; far, intermediate and near visual field identifiers; precision information indicating a visual field identifier; or an error concave or correct concave; and/or

granularity of the 5QI information is at least one of following:

5QI information corresponding to a QoS flow corresponding to the first data;

5QI information corresponding to a stream corresponding to the first data; or

5QI information corresponding to the first data.

35. The method of claim 26, further comprising:

acquiring, by the network device, first information;

wherein the first information indicates that 1st to bth QoS flows belong to a service, b being a natural number greater than or equal to 1; or

the first information indicates that a QoS flow has a 1st to a qth 5th-generation QoS identifiers (5QIs), q being a natural number greater than or equal to 1.

36. The method of claim 35, wherein acquiring, by the network device, the first information comprises:

acquiring, by the network device, the first information from at least one of a core network, a terminal, an artificial intelligence (AI) control function, or a network management.

37. The method of claim 26, further comprising:

sending, by the network device, second information to a terminal;

wherein the second information indicates at least one of following:

1st to bth QoS flows are mapped to one radio bearer;

the 1st to bth QoS flows are mapped to 1st to cth radio bearers; or

a QoS flow having 1st to qth 5QIs is mapped to 1st to dth radio bearers;

where c is a natural number greater than or equal to 1, q is a natural number greater than or equal to 1 and d is a natural number greater than or equal to 1.

38. The method of claim 37, in a case that the second information indicates that the QoS flow having the 1st to qth 5QIs is mapped to the 1st to dth radio bearers,

establishing, through the QoS flow having the 1st to qth 5QIs, 1st to qth general packet radio service (GPRS) tunnelling protocol for the user plane (GPT-U) tunnels between a network side and a core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, 1st to qth PDU sessions between a terminal and the core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, a GTP-U tunnel between the network side and the core network; or

establishing, through the QoS flow having the 1st to qth 5QIs, a PDU session between the terminal and the core network.

39. A communication device, comprising a processor, a memory, and a program that is stored in the memory and is capable of being run on the processor, wherein the program implements, when executed by the processor, the steps of the method of any one of claims 1 to 38.