CLAIMS

1. A method for transmitting data, comprising:

starting, by a receiving end, a timer of a first delivery mode when determining that delivered data and data to be delivered are out of order, wherein the first delivery mode is used to indicate that the receiving end directly delivers data to an upper layer upon receipt of the data; and

delivering, by the receiving end, the data to be delivered to the upper layer using the first delivery mode when the timer of the first delivery mode has not expired;

wherein the method further comprises:

stopping, by the receiving end, the timer of the first delivery mode, upon determining that the delivered data and the data to be delivered are in order under a condition that the timer of the first delivery mode is running.

2. The method of claim 1, further comprising:

determining, by the receiving end, whether the delivered data and the data to be delivered are in order according to window information of a reordering window and information of the delivered data.

3. The method of claim 2, wherein the window information of the reordering window comprises a window lower bound identification of the reordering window, and the determining, by the receiving end, whether the delivered data and the data to be delivered are in order according to the window information of the reordering window and the information of the delivered data, comprises:

determining, by the receiving end, whether the delivered data and the data to be delivered are in order according to the window lower bound identification of the reordering window and a serial number, SN, of a last delivered service data unit, SDU.

4. The method of claim 3, wherein the determining, by the receiving end, whether the delivered data and the data to be delivered are in order according to the window lower bound identification of the reordering window and the serial number, SN, of the last delivered service

data unit, SDU, comprises:

determining that the delivered data and the data to be delivered are out of order if a count value corresponding to the window lower bound identification is not equal to a count value corresponding to a next SN of the SN of the last delivered SDU; or

determining that the delivered data and the data to be delivered are in order if the count value corresponding to the window lower bound identification is equal to the count value corresponding to the next SN of the SN of the last delivered SDU.

5. The method of claim 1, further comprising:

setting a window lower bound identification of a reordering window to a count value corresponding to a SDU that is expected to be delivered next time when the timer of the first delivery mode is in an expired state.

6. The method of claim 5, wherein the starting, by the receiving end, the timer of the first delivery mode when determining that the delivered data and the data to be delivered are out of order, comprises:

starting the timer of the first delivery mode when the count value corresponding to the SDU that is expected to be delivered next time is not equal to a next count value of the count value corresponding to a last delivered SDU.

7. The method of claim 1, wherein the receiving end is a terminal device or a network device.

8. The method of claim 7, wherein the receiving end is a terminal device, and the method further comprises:

receiving, by the receiving end, indication information sent by a network device, wherein the indication information is used to indicate that the terminal device delivers data to the upper layer using the first delivery mode or a second delivery mode, wherein the second delivery mode is used to indicate that the receiving end delivers data to the upper layer in order.

9. The method of claim 8, wherein the indication information is used to indicate that a packet data convergence protocol, PDCP, layer of the terminal device delivers data to the upper layer using the first delivery mode or the second delivery mode.

10. The method of claim 8, wherein the indication information is used to indicate that a radio link control, RLC, layer of the terminal device delivers data to the upper layer using the

first delivery mode or the second delivery mode.

11. The method of claim 8, wherein the receiving, by the receiving end, the indication information sent by the network device, comprises:

receiving, by the receiving end, a radio resource control RRC signaling sent by the network device, wherein the radio resource control signaling comprises the indication information.

12. The method of claim 8, wherein the receiving, by the receiving end, the indication information sent by the network device, comprises:

receiving, by the receiving end, a media access control, MAC, control element, CE, or a packet data convergence protocol, PDCP, control protocol data unit, PDU, sent by the network device, wherein the MAC CE or PDCP control PDU comprises the indication information.

13. The method of claim 8, further comprising:

setting, by the receiving end, a duration of a timer of the second delivery mode to zero when determining that data is delivered to the upper layer using the first delivery mode.

14. The method of claim 8, wherein the indication information is used to indicate that a packet data convergence protocol, PDCP, layer and a radio link control, RLC, layer of the terminal device deliver data to the upper layer using the first delivery mode or the second delivery mode, wherein the first delivery mode is used to indicate that the terminal device directly generates service data unit, SDU, data and delivers the SDU data to the upper layer upon receipt of protocol data unit, PDU, data, and the second delivery mode is used to indicate that the terminal device delivers data to the upper layer in order; and the method further comprises:

delivering the SDU data to the upper layer according to the indication information.

15. A device for transmitting data, comprising: a memory, a processor, a transceiver and a computer program stored on the memory and operable on the processor,

wherein the processor, when running the computer program, is configured to:

start a timer of a first delivery mode when determining that delivered data and data to be delivered are out of order, wherein the first delivery mode is used to indicate that the device directly delivers data to an upper layer upon receipt of the data; and

control the transceiver to deliver the data to be delivered to the upper layer using the first delivery mode in a case wherein the timer of the first delivery mode has not expired;

wherein the processor is further configured to:

stop the timer of the first delivery mode, upon determining that the delivered data and the data to be delivered are in order under a condition that the timer of the first delivery mode is running.

16. The device according to claim 15, wherein the processor is further configured to:

determine whether the delivered data and the data to be delivered are in order according to window information of a reordering window and information of the delivered data.

17. The device according to claim 16, wherein the window information of the reordering window comprises a window lower bound identification of the reordering window, and the processor is configured to:

determine whether the delivered data and the data to be delivered are in order according to the window lower bound identification of the reordering window and a serial number, SN, of a last delivered service data unit, SDU.

18. The device of claim 17, wherein the processor is configured to:

determine that the delivered data and the data to be delivered are out of order if a count value corresponding to the window lower bound identification is not equal to a count value corresponding to a next SN of the SN of the last delivered SDU; or

determine that the delivered data and the data to be delivered are in order if the count value corresponding to the window lower bound identification is equal to the count value corresponding to the next SN of the SN of the last delivered SDU.

19. The device of claim 15, wherein the processor is configured to:

set a window lower bound identification of a reordering window to a count value corresponding to a SDU that is expected to be delivered next time when the timer of the first delivery mode is in an expired state.

20. The device of claim 19, wherein the processor is further configured to:

start the timer of the first delivery mode when the count value corresponding to the SDU that is expected to be delivered next time is not equal to a next count value of the count value corresponding to a last delivered SDU.

21. The device of claim 15, wherein the device is a terminal device or a network device.

22. The device of claim 21, wherein the device is a terminal device, and the processor is

configured to:

control the transceiver to receive indication information sent by a network device, wherein the indication information is used to indicate that the device delivers data to the upper layer using the first delivery mode or a second delivery mode, wherein the second delivery mode is used to indicate that the device delivers data to the upper layer in order.

23. The device of claim 22, wherein the indication information is used to indicate that a packet data convergence protocol, PDCP, layer of the device delivers data to the upper layer using the first delivery mode or the second delivery mode.

24. The device of claim 22, wherein the indication information is used to indicate that a radio link control, RLC, layer of the device delivers data to the upper layer using the first delivery mode or the second delivery mode.

25. The device of claim 22, wherein the processor is configured to:

control the transceiver to receive a radio resource control, RRC, signaling sent by the network device, wherein the radio resource control signaling comprises the indication information.

26. The device of claim 22, wherein the processor is configured to:

control the transceiver to receive a media access control, MAC, control element, CE, or a packet data convergence protocol, PDCP, control protocol data unit, PDU, sent by the network device, wherein the MAC CE or PDCP control PDU comprises the indication information.