CLAIMS

What is claimed is:

1. A parameter transmission method, comprising:

receiving, by a first communication apparatus, first information, wherein the first information comprises a time parameter, the time parameter comprises a second timing offset, and the second timing offset indicates a delay of taking effect of a media access control (MAC) signaling received by the first communication apparatus;

determining, by the first communication apparatus, a delaying duration of starting of a random access response RAR window based on the second timing offset;

detecting, by the first communication apparatus, in response to transmission of a msg1 or a msgA, a physical downlink control channel (PDCCH) in the RAR window based on the delaying duration of starting of the RAR window; and

receiving, by the first communication apparatus, a random access response (RAR) based on the PDCCH.

2. The method according to claim 1, wherein

the delaying duration of starting of the RAR window is determined based on the second timing offset and a timing advance value.

3. The method according to claim 2, wherein the delaying duration of starting of the RAR window satisfies the following formula:

RAR_window_delay = TA + K_mac, wherein

RAR_window_delay indicates the delaying duration of starting of the RAR window, TA indicates the timing advance value used by the first communication apparatus, K_mac indicates the second timing offset.

4. The method according to claim 2 or 3, wherein the timing advance value used by the first communication apparatus is determined based on a common timing advance value and a round-trip delay between a satellite and the first communication apparatus.

5. The method according to claim 4, wherein the timing advance value used by the first communication apparatus satisfies the following formula:

TA = TA_cal + TA_common, wherein

TA indicates the timing advance value used by the first communication apparatus, and TA_cal indicates the round-trip delay between the satellite and the first communication apparatus.

6. The method according to any one of claims 2 to 4, wherein the timing advance value used by the first communication apparatus is a sum of a common timing advance value, a round-trip delay

between a satellite and a terminal device, an offset, and a correction value, wherein the offset and the correction value are indicated by a second communication apparatus, or are specified in a communication protocol.

7. The method according to any one of claims 4 to 6, wherein the time parameter further comprises the common timing advance value.

8. The method according to any one of claims 1 to 7, wherein

the first communication apparatus receives the first information by using a broadcast message; and/or

the first communication apparatus receives the first information by using a radio resource control RRC message.

9. The method according to claim 8, wherein the first information is carried in other system information OSI.

10. The method according to any one of claims 1 to 9, further comprising:

starting, by the first communication apparatus, a random access contention resolution timer based on the delaying duration of starting of the RAR window.

11. The method according to any one of claims 1 to 10, wherein,

the RAR window starts at an additional duration after a first symbol of an earliest CORESET the first communication apparatus is configured to receive PDCCH that is after a last symbol of a physical random access channel (PRACH) occasion or physical uplink shared channel (PUSCH) occasion corresponding to a PRACH transmission; wherein the additional duration is the delaying duration of starting of the RAR window.

12. The method according to any one of claims 1 to 11, wherein the second timing offset is related to a round-trip delay between a reference point and a gateway station.

13. A parameter transmission method, comprising:

determining, by a second communication apparatus, first information; and

sending, by the second communication apparatus, the first information to a first communication apparatus, wherein the first information comprises a time parameter, the time parameter comprises a second timing offset, the second timing offset is used to determine a delay of taking effect of a media access control (MAC) signaling sent by the second communication apparatus, and the second timing offset is used to determine a delaying duration of starting of a random access response RAR window, wherein the RAR window is usable for detecting a physical downlink control channel (PDCCH) for receiving a random access response (RAR) by the first communication apparatus.

14. The method according to claim 13, wherein

the delaying duration of starting of the RAR window is determined based on the second timing

offset and a timing advance value used by the first communication apparatus.

15. The method according to claim 14, wherein the delaying duration of starting of the RAR window satisfies the following formula:

RAR_window_delay = TA + K_mac, wherein

RAR_window_delay indicates the delaying duration of starting of the RAR window, TA indicates the timing advance value used by the first communication apparatus, K_mac indicates the second timing offset.

16. The method according to claim 14 or 15, wherein the timing advance value used by the first communication apparatus is determined based on a common timing advance value and a round-trip delay between a satellite and the first communication apparatus.

17. The method according to claim 16, wherein the timing advance value used by the first communication apparatus satisfies the following formula:

TA = TA_cal + TA_common, wherein

TA indicates the timing advance value used by the first communication apparatus, and TA_cal indicates the round-trip delay between the satellite and the first communication apparatus.

18. The method according to any one of claims 14 to 16, wherein the timing advance value used by the first communication apparatus is a sum of a common timing advance value, a round-trip delay between a satellite and a terminal device, an offset, and a correction value, wherein the offset and the correction value are indicated by the second communication apparatus, or are specified in a communication protocol.

19. The method according to any one of claims 16 to 18, wherein the time parameter further comprises the common timing advance value.

20. The method according to any one of claims 13 to 19, wherein the second communication apparatus sends the first information by using a broadcast message.

21. The method according to any one of claims 13 to 20, wherein the second communication apparatus sends the first information by using a radio resource control RRC message.

22. The method according to claim 20 or 21, wherein the first information is carried in other system information OSI.

23. The method according to any one of claims 13 to 22, wherein

the delaying duration of starting of the RAR window is used to start a random access contention resolution timer.

24. The method according to any one of claims 13 to 23, wherein,

the RAR window starts at an additional duration after a first symbol of an earliest CORESET the first communication apparatus is configured to receive PDCCH that is after a last symbol of a physical random access channel (PRACH) occasion or physical uplink shared channel (PUSCH)

occasion corresponding to a PRACH transmission; wherein the additional duration is the delaying duration of starting of the RAR window.

25. The method according to any one of claims 13 to 24, wherein the second timing offset is related to a round-trip delay between a reference point and a gateway station.

26. A communication apparatus, comprising a processor and a memory, wherein

the memory is configured to store computer-executable instructions, and when the processor executes some or all of the computer-executable instructions, the method according to any one of claims 1 to 12 is performed, or the method according to any one of claims 13 to 25 is performed.

27. A first communication apparatus, comprising a transceiver module and a processing module, wherein

the transceiver module is configured to receive first information, the first information comprises a time parameter, the time parameter comprises a second timing offset, and the second timing offset indicates a delay of taking effect of a media access control (MAC) signaling received by the first communication apparatus; and

the processing module is configured to determine delaying duration of starting of a random access response RAR window based on the second timing offset;

the transceiver module is further configured to detect, in response to transmission of a msg1 or a msgA, a physical downlink control channel (PDCCH) in the RAR window based on the delaying duration of starting of the RAR window; and

the transceiver module is further configured to receive a random access response (RAR) based on the PDCCH.

28. The apparatus according to claim 27, wherein

the delaying duration of starting of the RAR window is determined based on the second timing offset and a timing advance value used by the first communication apparatus.

29. The apparatus according to claim 28, wherein the delaying duration of starting of the RAR window satisfies the following formula:

RAR_window_delay = TA + K_mac, wherein

RAR_window_delay indicates the delaying duration of starting of the RAR window, TA indicates the timing advance value used by the first communication apparatus, and K_mac indicates the second timing offset.

30. The apparatus according to claim 28 or 29, wherein the timing advance value used by the first communication apparatus is determined based on a common timing advance value and a round-trip delay between a satellite and the first communication apparatus.

31. The apparatus according to claim 30, wherein the timing advance value used by the first communication apparatus satisfies the following formula:

TA = TA_cal + TA_common, wherein

TA indicates the timing advance value used by the first communication apparatus, and TA_cal indicates the round-trip delay between the satellite and the first communication apparatus.

32. The apparatus according to any one of claims 28 to 30, wherein the timing advance value used by the first communication apparatus is a sum of a common timing advance value, a round-trip delay between a satellite and a terminal device, an offset, and a correction value, wherein the offset and the correction value are indicated by a second communication apparatus, or are specified in a communication protocol.

33. The apparatus according to any one of claims 30 to 32, wherein the time parameter further comprises the common timing advance value.

34. The apparatus according to any one of claims 27 to 33, wherein the transceiver module is configured to receive the first information by using a broadcast message.

35. The apparatus according to any one of claims 27 to 34, wherein the transceiver module is configured to receive the first information by using a radio resource control RRC message.

36. The apparatus according to claim 34 or 35, wherein the first information is carried in other system information OSI.

37. The apparatus according to any one of claims 27 to 36, wherein,

the RAR window starts at an additional duration after a first symbol of an earliest CORESET the first communication apparatus is configured to receive PDCCH that is after a last symbol of a physical random access channel (PRACH) occasion or physical uplink shared channel (PUSCH) occasion corresponding to a PRACH transmission; wherein the additional duration is the delaying duration of starting of the RAR window.

38. The apparatus according to any one of claims 27 to 37, wherein the second timing offset is related to a round-trip delay between a reference point and a gateway station.

39. A second communication apparatus, comprising a processing module and a transceiver module, wherein

the processing module is configured to determine first information; and

the transceiver module is configured to send the first information to a first communication apparatus, wherein the first information comprises a time parameter; and

the time parameter comprises a second timing offset, the second timing offset is used to determine a delay of taking effect of a media access control (MAC) signaling sent by the second communication apparatus, and the second timing offset is used to determine delaying duration of starting of a random access response RAR window, wherein the RAR window is usable for detecting a physical downlink control channel (PDCCH) for receiving a random access response (RAR) by the first communication apparatus.

40. The apparatus according to claim 39, wherein

the delaying duration of starting of the RAR window is determined based on the second timing offset and a timing advance value used by the first communication apparatus.

41. The apparatus according to claim 40, wherein the delaying duration of starting of the RAR window satisfies the following formula:

RAR_window_delay = TA + K_mac, wherein

RAR_window_delay indicates the delaying duration of starting of the RAR window, TA indicates the timing advance value used by the first communication apparatus, and K_mac indicates the second timing offset.

42. The apparatus according to claim 40 or 41, wherein the timing advance value used by the first communication apparatus is determined based on a common timing advance value and a round-trip delay between a satellite and the first communication apparatus.

43. The apparatus according to claim 42, wherein the timing advance value used by the first communication apparatus satisfies the following formula:

TA = TA_cal + TA_common, wherein

TA indicates the timing advance value used by the first communication apparatus, and TA_cal indicates the round-trip delay between the satellite and the first communication apparatus.

44. The apparatus according to any one of claims 40 to 42, wherein the timing advance value used by the first communication apparatus is a sum of a common timing advance value, a round-trip delay between a satellite and a terminal device, an offset, and a correction value, wherein the offset and the correction value are indicated by the second communication apparatus, or are specified in a communication protocol.

45. The apparatus according to any one of claims 42 to 44, wherein the time parameter further comprises the common timing advance value.

46. The apparatus according to any one of claims 39 to 45, wherein the transceiver module is configured to send the first information by using a broadcast message.

47. The apparatus according to any one of claims 39 to 46, wherein the transceiver module is configured to send the first information by using a radio resource control RRC message.

48. The apparatus according to claim 46 or 47, wherein the first information is carried in other system information OSI.

49. The apparatus according to any one of claims 39 to 48, wherein

the delaying duration of starting of the RAR window is used to start a random access contention resolution timer.

50. The apparatus according to any one of claims 39 to 49, wherein,

the RAR window starts at an additional duration after a first symbol of an earliest CORESET

the first communication apparatus is configured to receive PDCCH that is after a last symbol of a physical random access channel (PRACH) occasion or physical uplink shared channel (PUSCH) occasion corresponding to a PRACH transmission; wherein the additional duration is the delaying duration of starting of the RAR window.

51. The apparatus according to any one of claims 39 to 50, wherein the second timing offset is related to a round-trip delay between a reference point and a gateway station.

52. A computer-readable storage medium, wherein the computer-readable storage medium stores computer-executable instructions, and when the computer-executable instructions are invoked by an electronic apparatus, the electronic apparatus performs the method according to any one of claims 1 to 12, or the electronic apparatus performs the method according to any one of claims 13 to 25.

53. A chip, comprising a logic circuit and a communication interface, wherein the communication interface is configured to perform a receiving/sending operation in the method according to any one of claims 1 to 12, and the logic circuit is configured to perform an operation other than the receiving/sending operation in the method according to any one of claims 1 to 12.

54. A chip, comprising a logic circuit and a communication interface, wherein the communication interface is configured to perform a receiving/sending operation in the method according to any one of claims 13 to 25, and the logic circuit is configured to perform an operation other than the receiving/sending operation in the method according to any one of claims 13 to 25.

55. A communication system, comprising a communication apparatus configured to perform the method according to any one of claims 1 to 12 and a communication apparatus configured to perform the method according to any one of claims 13 to 25.