

CLAIMS

1. A positioning method, comprising:

obtaining first information and second information, wherein the first information comprises information about a first time difference, the first time difference comprises a time difference between receiving and sending at least two signals by a terminal device, the second information comprises information about a second time difference, the second time difference comprises a time difference between receiving and sending the at least two signals by a first network device, the at least two signals comprise any two signals that are transmitted between the terminal device and the first network device in opposite directions at different times, transmission resources consumed by the at least two signals are fewer than transmission resources consumed by a positioning reference signal PRS and a sounding reference signal SRS, and the first network device is a network device corresponding to a first non-terrestrial device;

determining, based on the first information and the second information, a first round trip time RTT corresponding to the terminal device; and

positioning the terminal device based on the first RTT.

2. The method according to claim 1, wherein the first time difference satisfies at least one of the following:

a time difference interval range corresponding to the first time difference is greater than a first interval range, or a time difference resolution corresponding to the first time difference is greater than a first threshold.

3. The method according to claim 1 or 2, wherein the first information further comprises at least one of the following:

slot information corresponding to the at least two signals, or orbital height information corresponding to the first non-terrestrial device.

4. The method according to any one of claims 1 to 3, wherein the at least two signals comprise two or more of a first message Msg1, a second message Msg2, a third message Msg3, and a fourth message Msg4 in a four-step random access procedure; or the at least two signals comprise a first message MsgA and a second message MsgB in a two-step random access procedure.

5. The method according to any one of claims 1 to 3, wherein the at least two signals comprise a channel state information-reference signal CSI-RS and a feedback signal corresponding to the CSI-RS.

6. A positioning method, comprising:

obtaining, by a terminal device, first information, wherein the first information comprises information about a first time difference, the first time difference comprises a time difference

between receiving and sending at least two signals by the terminal device, the at least two signals comprise any two signals that are transmitted between the terminal device and a first network device in opposite directions at different times, transmission resources consumed by the at least two signals are fewer than transmission resources consumed by a positioning reference signal PRS and a sounding reference signal SRS, and the first network device is a network device corresponding to a first non-terrestrial device; and

sending, by the terminal device, the first information, wherein the first information is for determining a first round trip time RTT corresponding to the terminal device, and the first RTT is for positioning the terminal device.

7. The method according to claim 6, wherein the first time difference satisfies at least one of the following:

a time difference interval range corresponding to the first time difference is greater than a first interval range, or a time difference resolution corresponding to the first time difference is greater than a first threshold.

8. The method according to claim 6 or 7, wherein the first information further comprises at least one of the following:

slot information corresponding to the at least two signals, or orbital height information corresponding to the first non-terrestrial device.

9. The method according to any one of claims 6 to 8, wherein the at least two signals comprise two or more of a first message Msg1, a second message Msg2, a third message Msg3, and a fourth message Msg4 in a four-step random access procedure; or the at least two signals comprise a first message MsgA and a second message MsgB in a two-step random access procedure.

10. A communication apparatus, comprising:

a processing unit, configured to obtain first information and second information by using a transceiver unit, wherein the first information comprises information about a first time difference, the first time difference comprises a time difference between receiving and sending at least two signals by a terminal device, the second information comprises information about a second time difference, the second time difference comprises a time difference between receiving and sending the at least two signals by a first network device, the at least two signals comprise any two signals that are transmitted between the terminal device and the first network device in opposite directions at different times, transmission resources consumed by the at least two signals are fewer than transmission resources consumed by a positioning reference signal PRS and a sounding reference signal SRS, and the first network device is a network device corresponding to a first non-terrestrial device, wherein

the processing unit is further configured to determine, based on the first information and the

second information, a first round trip time RTT corresponding to the terminal device; and

the processing unit is further configured to position the terminal device based on the first RTT.

11. The apparatus according to claim 10, wherein the first time difference satisfies at least one of the following:

a time difference interval range corresponding to the first time difference is greater than a first interval range, or a time difference resolution corresponding to the first time difference is greater than a first threshold.

12. The apparatus according to claim 10 or 11, wherein the first information further comprises at least one of the following:

slot information corresponding to the at least two signals, or orbital height information corresponding to the first non-terrestrial device.

13. The apparatus according to any one of claims 10 to 12, wherein the at least two signals comprise two or more of a first message Msg1, a second message Msg2, a third message Msg3, and a fourth message Msg4 in a four-step random access procedure; or the at least two signals comprise a first message MsgA and a second message MsgB in a two-step random access procedure.

14. The apparatus according to any one of claims 10 to 12, wherein the at least two signals comprise a channel state information-reference signal CSI-RS and a feedback signal corresponding to the CSI-RS.

15. A communication apparatus, comprising:

a processing unit, configured to obtain first information, wherein the first information comprises information about a first time difference, the first time difference comprises a time difference between receiving and sending at least two signals by the communication apparatus, the at least two signals comprise any two signals that are transmitted between the communication apparatus and a first network device in opposite directions at different times, transmission resources consumed by the at least two signals are fewer than transmission resources consumed by a positioning reference signal PRS and a sounding reference signal SRS, and the first network device is a network device corresponding to a first non-terrestrial device; and

a transceiver unit, configured to send the first information, wherein the first information is for determining a first round trip time RTT corresponding to the communication apparatus, and the first RTT is for positioning the communication apparatus.

16. The apparatus according to claim 15, wherein the first time difference satisfies at least one of the following:

a time difference interval range corresponding to the first time difference is greater than a first interval range, or a time difference resolution corresponding to the first time difference is

greater than a first threshold.

17. The apparatus according to claim 15 or 16, wherein the first information further comprises at least one of the following:

slot information corresponding to the at least two signals, or orbital height information corresponding to the first non-terrestrial device.

18. The apparatus according to any one of claims 15 to 17, wherein the at least two signals comprise two or more of a first message Msg1, a second message Msg2, a third message Msg3, and a fourth message Msg4 in a four-step random access procedure; or the at least two signals comprise a first message MsgA and a second message MsgB in a two-step random access procedure.

19. A communication apparatus, comprising a processor, wherein
when the processor invokes a computer program or instructions in a memory, the method according to any one of claims 1 to 9 is performed.

20. A computer-readable storage medium, wherein
the computer-readable storage medium is configured to store instructions or a computer program; and when the instructions or the computer program is executed, the method according to any one of claims 1 to 9 is implemented.