CLAIMS

What is claimed is:

1. A disaster roaming method performed in a terminal device, comprising:

sending a first message to a second public land mobile network PLMN , wherein the first message comprises capability information of supporting disaster roaming by the terminal device;

receiving a second message sent by the second PLMN, wherein the second message comprises the information about the disaster roaming PLMN, and the information about the disaster roaming PLMN includes identification information of at least one PLMN that allows the terminal device to perform disaster roaming;

storing the information about the disaster roaming PLMN based on the second message;

learning that a PLMN that currently provides a service stops providing the service due to a disaster;

determining a first PLMN based on stored information about the disaster roaming PLMN, wherein the information about the disaster roaming PLMN comprises identification information of at least one PLMN that allows the terminal device to perform disaster roaming, and the first PLMN is a PLMN in the at least one PLMN;

sending a registration request message to the first PLMN, wherein the registration request message comprises disaster roaming indication information, and the disaster roaming indication information indicates that the terminal device requests to perform disaster roaming registration; and

receiving a registration accept message sent by the first PLMN.

2. The method according to claim 1, wherein the information about the disaster roaming PLMN further comprises disaster roaming service time.

3. The method according to claim 2, wherein after the receiving registration accept message sent by the first PLMN, the method further comprises:

performing disaster roaming in the first PLMN in the disaster roaming service time.

4. The method according to any one of claims 1 to 3, wherein the method further comprises:

notifying a user that the terminal device is performing disaster roaming.

5. The method according to any one of claims 1 to 4, wherein the determining a first PLMN comprises:

obtaining information about available PLMNs in a current location area, and selecting, from the available PLMNs, the PLMN in the at least one PLMN as the first PLMN.

6. The method according to claim 1, wherein the first message is a registration request message.

7. The method according to claim 1, wherein the second message is any one of the following:

a registration accept message, a registration reject message, a downlink non-access stratum NAS transport message, or a configuration update command message.

8. The method according to claim 1, wherein the second message further comprises indication information indicating that the terminal device is allowed to perform disaster roaming.

9. The method according to claim 1, wherein when the second message is the registration reject message, the method further comprises:

storing identification information of the second PLMN in the information about the disaster roaming PLMN.

10. A disaster roaming method performed in a first network element, comprising:

receiving a first message sent by a terminal device, wherein the first message comprises capability information of supporting disaster roaming by the terminal device;

obtaining, based on the capability information of supporting disaster roaming, information about a disaster roaming PLMN that provides a disaster roaming service for the terminal device; and

sending a second message to the terminal device, wherein the second message comprises the information about the disaster roaming PLMN.

11. The method according to claim 10, wherein the first message is a registration request message.

12. The method according to claim 10, wherein the second message is any one of the following:

a registration accept message, a registration reject message, a downlink non-access stratum NAS transport message, or a configuration update command message.

13. The method according to any one of claims 10 to 12, wherein the second message further comprises indication information indicating that the terminal device is allowed to perform disaster roaming.

14. The method according to claim 10, wherein the obtaining information about a disaster roaming PLMN that provides a disaster roaming service for the terminal device comprises:

determining the information about the disaster roaming PLMN based on a local configuration.

15. The method according to claim 14, wherein before the determining the information about the disaster roaming PLMN based on a local configuration, the method further comprises:

determining, based on the local configuration, to provide the disaster roaming service for the terminal device.

16. The method according to claim 14, wherein before the determining the information about the disaster roaming PLMN based on a local configuration, the method further comprises:

receiving indication information that indicates that disaster roaming needs to be performed and

that is sent by a second network element, wherein the indication information indicating that disaster roaming needs to be performed indicates the first network element to perform the disaster roaming service.

17. The method according to claim 10, wherein the obtaining information about a disaster roaming PLMN that provides a disaster roaming service for the terminal device comprises:

receiving the information about the disaster roaming PLMN sent by a second network element.

18. The method according to claim 17, wherein the receiving the information about the disaster roaming PLMN sent by a second network element further comprises:

receiving indication information that indicates that disaster roaming needs to be performed and that is sent by the second network element, wherein the indication information indicating that disaster roaming needs to be performed indicates the first network element to perform the disaster roaming service.

19. The method according to claim 16 or 17, wherein before the receiving indication information that indicates that disaster roaming needs to be performed and that is sent by a second network element or the receiving the information about the disaster roaming PLMN sent by a second network element, the method further comprises:

sending, to the second network element, the capability information of supporting disaster roaming by the terminal device.

20. The method according to any one of claims 10 to 19, wherein the information about the disaster roaming PLMN comprises:

identification information of at least one PLMN that allows the terminal device to perform disaster roaming; or

disaster roaming service time; or

identification information of at least one PLMN that allows the terminal device to perform disaster roaming and disaster roaming service time.

21. A disaster roaming method performed in a second network element, comprising:

receiving capability information that is of supporting disaster roaming by a terminal device and that is sent by a first network element;

determining, based on the capability information of supporting disaster roaming by the terminal device, that the terminal device is allowed to obtain a disaster roaming service; and

sending information about a disaster roaming PLMN of the terminal device to the first network element.

22. The method according to claim 21, wherein the method further comprises: sending, to the

first network element, indication information indicating that disaster roaming needs to be performed, wherein the indication information indicating that disaster roaming needs to be performed indicates the first network element to perform the disaster roaming service.

23. The method according to claim 21 or 22, wherein the determining that the terminal device is allowed to obtain a disaster roaming service comprises:

determining, based on the capability information of supporting disaster roaming by the terminal device and a local configuration, that the terminal device is allowed to obtain the disaster roaming service.

24. The method according to any one of claims 21 to 23, wherein before the sending information about a disaster roaming PLMN of the terminal device to the first network element, the method further comprises:

determining the information about the disaster roaming PLMN of the terminal device based on the local configuration.

25. The method according to any one of claims 21 to 24, wherein the information about the disaster roaming PLMN comprises:

identification information of at least one PLMN that allows the terminal device to perform disaster roaming; or

disaster roaming service time; or

identification information of at least one PLMN that allows the terminal device to perform disaster roaming and disaster roaming service time.

26. A disaster roaming method performed in a terminal device, comprising:

receiving system information sent by a third PLMN, wherein the system information comprises indication information indicating that disaster roaming is allowed;

sending a registration request message to the third PLMN based on the system information, wherein the registration request message comprises capability information of supporting disaster roaming by the terminal device and disaster roaming indication information; and

receiving a registration accept message sent by the third PLMN, wherein the registration accept message comprises disaster roaming service time provided by the third PLMN.

27. The method according to claim 26, wherein the method further comprises:

performing disaster roaming in the third PLMN in the disaster roaming service time.

28. The method according to claim 26 or 27, wherein the method further comprises:

notifying a user that the terminal device is performing disaster roaming.

29. The method according to any one of claims 26 to 28, wherein before the receiving system

information sent by a third PLMN, the method further comprises:

learning that a fourth PLMN stops providing a service due to a disaster, wherein the fourth PLMN is a PLMN that provides the service for the terminal device before the disaster.

30. The method according to claim 29, wherein after the learning that a fourth PLMN stops providing a service due to a disaster, the method further comprises:

obtaining information about available PLMNs in a current location area, and selecting, from the available PLMNs, a PLMN in at least one PLMN as the third PLMN.

31. The method according to any one of claims 26 to 30, wherein the system information further comprises identification information of the fourth PLMN.

32. A disaster roaming apparatus, wherein the apparatus is configured to: perform the method according to any one of claims 1 to 9; or

perform the method according to any one of claims 10 to 20; or

perform the method according to any one of claims 21 to 25; or

perform the method according to any one of claims 26 to 31.

33. A disaster roaming system, wherein the system comprises a first network element and a second network element, wherein

the first network element is configured to send capability information of supporting disaster roaming by a terminal device;

the second network element is configured to receive the capability information of supporting disaster roaming by the terminal device;

the second network element is further configured to determine, based on the capability information of supporting disaster roaming by the terminal device, that the terminal device is allowed to obtain a disaster roaming service;

the second network element is further configured to send information about a disaster roaming PLMN of the terminal device; and

the first network element is further configured to receive the information about the disaster roaming PLMN of the terminal device.

34. The system according to claim 33, wherein the second network element is further configured to send indication information indicating that disaster roaming needs to be performed; and

the first network element is further configured to receive the indication information indicating that disaster roaming needs to be performed, wherein

the indication information indicating that disaster roaming needs to be performed indicates the first network element to perform the disaster roaming service.

35. The system according to claim 33 or 34, wherein the second network element is configured to determine that the terminal device is allowed to obtain the disaster roaming service, and the second network element is specifically configured to:

determine, based on the capability information of supporting disaster roaming by the terminal device and a local configuration, that the terminal device is allowed to obtain the disaster roaming service.

36. The system according to any one of claims 33 to 35, wherein before the second network element is configured to send the information about the disaster roaming PLMN of the terminal device, the second network element is further configured to:

determine the information about the disaster roaming PLMN of the terminal device based on the local configuration.

37. The system according to any one of claims 33 to 36, wherein the information about the disaster roaming PLMN comprises:

identification information of at least one PLMN that allows the terminal device to perform disaster roaming; or

disaster roaming service time; or

identification information of at least one PLMN that allows the terminal device to perform disaster roaming and disaster roaming service time.

38. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is run, the method according to any one of claims 1 to 9 is implemented; or

the method according to any one of claims 10 to 20 is implemented; or

the method according to any one of claims 21 to 25 is implemented; or

the method according to any one of claims 26 to 31 is implemented.

41. A chip, comprising: a processor, configured to read instructions stored in a memory, wherein when the processor executes the instructions, the chip is enabled to implement the method according to any one of claims 1 to 31.