free random access procedure, the terminal device may determine the target channel access type according to first indication information, where the first indication information is sent to the terminal device by a network device by using physical layer signaling.

The first indication information may directly indicate the target channel access type, or may indicate a service priority or the like, so that the terminal device determines the target channel access type according to the service priority or the like, or may indicate a channel access priority or the like, so that the terminal device determines, according to the channel access priority or the like, a channel access parameter corresponding to the target channel access type.

In addition, the target channel access type indicated by the first indication information may be determined by the network device according to a priority of a service triggering the PRACH to be sent, or according to whether the target time domain resource belongs to a shared COT.

The first indication information may be further used for determining at least one of the following information: a start location of the PRACH, an end location of the PRACH, a transmit beam identifier corresponding to the PRACH, and a receive beam identifier corresponding to the PRACH, in addition to indicating the target channel access type and the like.

Optionally, the transmit beam identifier corresponding to the PRACH and/or the receive beam identifier corresponding to the PRACH are/is determined according to a beam direction of a synchronization signal block (SSB) associated with a PRACH resource (for example, the target time domain resource). The SSB includes A primary synchronization signal (PSS), a secondary synchronization signal (SSS), and a physical broadcast channel (PBCH) ~~jointly form the SSB~~. When the random access procedure corresponding to the PRACH is the contention-based random access procedure, the terminal device may determine the target channel access type in the following manner: determining the target channel access type according to a standard specification, or determining the target channel access type according to the a configuration by a network device, or determining the target channel access type according to the target time domain resource.

The determining, by the terminal device, the target channel access type according to

CLAIMS

What is claimed is:

1. A ~~channel access~~ method for performing physical random access ~~channel (PRACH) transmission~~procedure, applied in shared spectrum, comprising:

~~determining~~obtaining, by a terminal device from a network device, a target channel access type, wherein the target channel access type ~~is a~~comprises a Type 1 channel access or a Type 2 channel access ~~type used by the terminal device to transmit a PRACH on an unlicensed carrier~~; and

determining, by the terminal device according to the target channel access type, ~~whether~~an availability of a target time domain resource ~~is available~~, wherein the target time domain resource is a time domain resource used by the terminal device to ~~send the PRACH.~~perform transmission of a physical random access channel (PRACH),

~~2. The method according to claim 1, wherein the determining, by a terminal device, a target channel access type comprises:~~

~~determining~~wherein the obtaining, by the terminal device, the target channel access type ~~according~~comprises: if the target time domain resource belongs to a ~~standard specification; or~~

~~determining~~shared channel occupancy time, obtaining, by the terminal device~~,~~ the target channel access type ~~according to a configuration by a network device~~comprising the Type 2 channel access; or if the target time domain resource does not belong to a shared channel occupancy time, obtaining, by the terminal device the target channel access type comprising the Type 1 channel access, and

wherein the shared channel occupancy time is shared by the network device.

~~determining, by the terminal device, the target channel access type according to the target time domain resource.~~

~~3~~2. The method according to claim ~~2~~1, wherein ~~the determining, by the terminal device,~~ the target channel access type obtained by the terminal device according to a specification or the target time domain resource comprises the Type 1 channel access.~~:~~

~~determining, by the terminal device, the target channel access type according to whether the target time domain resource belongs to a shared channel occupancy time (shared COT).~~

4. The method according to claim 2 or 3, wherein the target channel access type comprises at least one of a type1 channel access type with the highest priority, a type2 channel access type, a type1 channel access type with the highest priority with directional channel access, a type2 directional channel access type, and bypassing channel detection.

5. The method according to claim 1, wherein the determining, by a terminal device, a target channel access type comprises:

determining, by the terminal device, the target channel access type according to a priority of a service triggering the PRACH to be sent, wherein the target channel access type is one of at least two candidate channel access types, and the at least two candidate channel access types correspond to the priority of the service triggering the PRACH to be sent.

6. The method according to claim 5, wherein a correspondence between the at least two candidate channel access types and the priority of the service triggering the PRACH to be sent is stipulated in a standard specification, or is configured by a network device.

7. The method according to claim 5 or 6, wherein the at least two candidate channel access types comprise at least one of a type1 channel access type with the highest priority, a type2 channel access type, a type1 channel access type with the highest priority with directional channel access, a type2 directional channel access type, and bypassing channel detection.

8. The method according to any one of claims 1 to 7, wherein a random access procedure corresponding to the PRACH is a contention-based random access procedure or a contention-free random access procedure.

9. The method according to claim 1, wherein the determining, by a terminal device, a target channel access type comprises:

determining, by the terminal device, the target channel access type according to a random access procedure corresponding to the PRACH, wherein the random access procedure comprises a contention-based random access procedure and a contention-free random access procedure.

10. The method according to claim 9, wherein when the random access procedure corresponding to the PRACH is the contention-free random access procedure, the method comprises:

determining, by the terminal device, the target channel access type according to first

~~indication information, wherein the first indication information is sent to the terminal device by a network device by using physical layer signaling.~~

~~11. The method according to claim 10, wherein the target channel access type indicated by the first indication information is determined by the network device according to a priority of a service triggering the PRACH to be sent, or according to whether the target time domain resource belongs to a shared COT.~~

~~12. The method according to claim 10 or 11, wherein the first indication information is further used for determining at least one of the following information:~~

~~a start location of the PRACH, an end location of the PRACH, a transmit beam identifier corresponding to the PRACH, and a receive beam identifier corresponding to the PRACH.~~

~~13. A channel access method for physical random access channel (PRACH) transmission, comprising:~~

~~sending, by a network device, configuration information to a terminal device, so that the terminal device determines a target channel access type according to the configuration information, wherein the target channel access type is a channel access type used by the terminal device to transmit a PRACH on an unlicensed carrier.~~

~~14. The method according to claim 13, wherein~~

~~the configuration information is the target channel access type; or~~

~~the configuration information is a correspondence between at least two candidate channel access types and a priority of a service triggering the PRACH to be sent, so that the terminal device determines the target channel access type according to the priority of the service triggering the PRACH to be sent, wherein the target channel access type is one of the at least two candidate channel access types.~~

~~15. A channel access method for physical random access channel (PRACH) transmission, comprising:~~

~~sending, by a network device, first indication information to a terminal device by using physical layer signaling when a random access procedure corresponding to a PRACH is a contention-free random access procedure, so that the terminal device determines a target channel access type according to the first indication information, wherein the target channel access type is a channel access type used by the terminal device to transmit the PRACH on an~~

unlicensed carrier.

16. The method according to claim 15, wherein

the target channel access type indicated by the first indication information is determined by the network device according to a priority of a service triggering the PRACH to be sent, or

the target channel access type indicated by the first indication information is determined by the network device according to whether a target time domain resource belongs to a shared channel occupancy time (shared COT).

17. The method according to claim 15 or 16, wherein the first indication information is further used for determining at least one of the following information:

a start location of the PRACH, an end location of the PRACH, a transmit beam identifier corresponding to the PRACH, and a receive beam identifier corresponding to the PRACH.

18. A channel access apparatus for physical random access channel (PRACH) transmission, comprising: a first determining unit and a second determining unit, wherein

the first determining unit is configured to determine a target channel access type, wherein the target channel access type is a channel access type used by a terminal device to transmit a PRACH on an unlicensed carrier; and

the second determining unit is configured to determine, according to the target channel access type, whether a target time domain resource is available, wherein the target time domain resource is a time domain resource used by the terminal device to send the PRACH.

19. The apparatus according to claim 18, wherein

the first determining unit determines the target channel access type according to a standard specification; or

the first determining unit determines the target channel access type according to a configuration by a network device; or

the first determining unit determines the target channel access type according to the target time domain resource.

20. The apparatus according to claim 19, wherein

the first determining unit determines the target channel access type according to whether the target time domain resource belongs to a shared channel occupancy time (shared COT).

21. The apparatus according to claim 19 or 20, wherein the target channel access type comprises at least one of a type1 channel access type with the highest priority, a type2 channel access type, a type1 channel access type with the highest priority with directional channel access, a type2 directional channel access type, and bypassing channel detection.

22. The apparatus according to claim 18, wherein

the first determining unit determines the target channel access type according to a priority of a service triggering the PRACH to be sent, wherein the target channel access type is one of at least two candidate channel access types, and the at least two candidate channel access types correspond to the priority of the service triggering the PRACH to be sent.

23. The apparatus according to claim 22, wherein a correspondence between the at least two candidate channel access types and the priority of the service triggering the PRACH to be sent is stipulated in a standard specification, or is configured by a network device.

24. The apparatus according to claim 22 or 23, wherein the at least two candidate channel access types comprise at least one of a type1 channel access type with the highest priority, a type2 channel access type, a type1 channel access type with the highest priority with directional channel access, a type2 directional channel access type, and bypassing channel detection.

25. The apparatus according to any one of claims 18 to 24, wherein a random access procedure corresponding to the PRACH is a contention-based random access procedure or a contention-free random access procedure.

26. The apparatus according to claim 18, wherein

the first determining unit determines the target channel access type according to a random access procedure corresponding to the PRACH, wherein the random access procedure comprises the contention-based random access procedure and the contention-free random access procedure.

27. The apparatus according to claim 26, wherein when the random access procedure corresponding to the PRACH is the contention-free random access procedure, the first determining unit determines the target channel access type according to first indication information, wherein the first indication information is sent to the terminal device by a network device by using physical layer signaling.

28. The apparatus according to claim 27, wherein the target channel access type indicated

by the first indication information is determined by the network device according to a priority of a service triggering the PRACH to be sent, or according to whether the target time domain resource belongs to a shared COT.

29. The apparatus according to claim 27 or 28, wherein the first indication information is further used for determining at least one of the following information:

a start location of the PRACH, an end location of the PRACH, a transmit beam identifier corresponding to the PRACH, and a receive beam identifier corresponding to the PRACH.

30. A channel access apparatus for physical random access channel (PRACH) transmission, comprising: a first sending unit, wherein

the first sending unit is configured to send configuration information to a terminal device, so that the terminal device determines a target channel access type according to the configuration information, wherein the target channel access type is a channel access type used by the terminal device to transmit a PRACH on an unlicensed carrier.

31. The apparatus according to claim 30, wherein

the configuration information is the target channel access type; or

the configuration information is a correspondence between at least two candidate channel access types and a priority of a service triggering the PRACH to be sent, so that the terminal device determines the target channel access type according to the priority of the service triggering the PRACH to be sent, wherein the target channel access type is one of the at least two candidate channel access types.

32. A channel access apparatus for physical random access channel (PRACH) transmission, comprising: a second sending unit, wherein

the second sending unit is configured to send first indication information to a terminal device by using physical layer signaling when a random access procedure corresponding to a PRACH is a contention-free random access procedure, so that the terminal device determines a target channel access type according to the first indication information, wherein the target channel access type is a channel access type used by the terminal device to transmit the PRACH on an unlicensed carrier.

33. The apparatus according to claim 32, wherein

the target channel access type indicated by the first indication information is determined

~~according to a priority of a service triggering the PRACH to be sent, or~~

~~the target channel access type indicated by the first indication information is determined according to whether a target time-domain resource belongs to a shared channel occupancy time (shared COT).~~

~~34. The apparatus according to claim 32 or 33, wherein the first indication information is further used for determining at least one of the following information:~~

~~a start location of the PRACH, an end location of the PRACH, a transmit beam identifier corresponding to the PRACH, and a receive beam identifier corresponding to the PRACH.~~

~~35. A communications device, comprising a processor and a memory, wherein the memory is configured to store a computer program, and the processor is configured to invoke and run the computer program stored in the memory, to perform the method according to any one of claims 1 to 17.~~

~~36. A chip, comprising a processor, configured to invoke a computer program from a memory and run the computer program, to enable a device having the chip installed to perform the method according to any one of claims 1 to 17.~~

~~37. A computer-readable storage medium, configured to store a computer program, wherein the computer program enables a computer to perform the method according to any one of claims 1 to 17.~~

~~38. A computer program product, comprising a computer program instruction, wherein the computer program instruction enables a computer to perform the method according to any one of claims 1 to 17.~~

~~39. A computer program, wherein the computer program enables a computer to perform the method according to any one of claims 1 to 17.~~

3. The method according to claim 2, wherein the Type 1 channel access has a smallest value of channel access priority class.

4. The method according to claim 3, wherein if the target channel access type obtained by the terminal device according to a specification is the Type 1 channel access that has the smallest value of channel access priority class, the method further comprises:

if the target time domain resource belongs to a shared channel occupancy time, switching the target channel access type from the Type 1 channel access that has the smallest value of channel access priority class to the Type 2 channel access.

5. The method according to claim 4, wherein if the target time domain resource does not belong to a shared channel occupancy time, determining, by the terminal device, the target channel access type is the Type 1 channel access that has the smallest value of channel access priority class.

6. The method according to claim 1, wherein the terminal device determining the availability of a target time domain resource according to the target channel access type comprises:

if the target channel access type is the Type 1 channel access, the terminal device performs channel sensing based on a contention window with parameters corresponding to Type 1 channel access that has the smallest value of channel access priority class; or

if the target channel access type is the Type 2 channel access, the terminal device performs channel sensing with a deterministic sensing duration of 25 microseconds.

7. The method according to claim 1, wherein the random access procedure corresponding to the PRACH comprises a contention-based random access procedure and a contention-free random access procedure.

8. The method according to claim 1, wherein the random access procedure is a contention-free random access procedure, and the method further comprises determining, by the terminal device, the target channel access type according to first indication information, wherein the first indication information is sent by a network device via signaling of a physical layer.

9. A method for random access, applied in shared spectrum, comprising:

sending, by a network device, first indication information to a terminal device via signaling of a physical layer when a random access procedure corresponding to a physical random access channel (PRACH) is a contention-free random access procedure, to indicate the terminal device to determine, according to the first indication information, a target channel access type for the terminal device to transmit the PRACH on a carrier of a shared spectrum,

wherein indicating the terminal device to determine, according to the first indication information, a target channel access type comprises: if the target time domain resource belongs

to a shared channel occupancy time, indicating the terminal device to obtain the target channel access type comprising the Type 2 channel access; or if the target time domain resource does not belong to a shared channel occupancy time, indicating the terminal device to obtain the target channel access type comprising the Type 1 channel access, and

wherein the shared channel occupancy time is shared by the network device.

10. The method according to claim 9, wherein

the target channel access type indicated by the first indication information is determined by the network device according to a priority of a service triggering the PRACH to be sent; or

the target channel access type indicated by the first indication information is determined by the network device according to whether a target time domain resource belongs to a shared channel occupancy time (COT).

11. An apparatus for random access, applied in shared spectrum, comprising a processor and a memory, wherein the memory is configured to store a computer program, and the processor is configured to invoke and run the computer program stored in the memory, to perform:

obtaining, by a terminal device, a target channel access type, wherein the target channel access type comprises a Type 1 channel access or a Type 2 channel access; and

determining, by the terminal device according to the target channel access type, an availability of a target time domain resource, wherein the target time domain resource is a time domain resource used by the terminal device to perform transmission of a physical random access channel (PRACH),

wherein obtaining, by the terminal device, the target channel access type comprises: if the target time domain resource belongs to a shared channel occupancy time, obtaining, by the terminal device the target channel access type comprising the Type 2 channel access; or if the target time domain resource does not belong to a shared channel occupancy time, obtaining, by the terminal device the target channel access type comprising the Type 1 channel access, and

wherein the shared channel occupancy time is shared by a network device.

12. The apparatus according to claim 11, wherein the target channel access type obtained by the terminal device according to a specification or the target time domain resource comprises the Type 1 channel access.

13. The apparatus according to claim 12, wherein the Type 1 channel access has a smallest value of channel access priority class.

14. The apparatus according to claim 12, wherein the processor is configured to invoke and run the computer program stored in the memory to further perform:

if the target time domain resource belongs to a shared channel occupancy time, obtaining, by the terminal device the target channel access type, which comprises the Type 2 channel access; or

if the target time domain resource does not belong to a shared channel occupancy time, obtaining, by the terminal device, the target channel access type, which comprises the Type 1 channel access.

15. The apparatus according to claim 14, wherein the shared channel occupancy time is shared by a network device or the terminal device.

16. The apparatus according to claim 13, wherein, in a case where the target channel access type obtained by the terminal device according to a specification is the Type 1 channel access that has the smallest value of channel access priority class, the processor is configured to invoke and run the computer program stored in the memory, to further perform, if the target time domain resource belongs to a shared channel occupancy time, switching the target channel access type from the Type 1 channel access that has the smallest value of channel access priority class to the Type 2 channel access.

17. The apparatus according to claim 16, wherein if the target time domain resource does not belong to a shared channel occupancy time, determining, by the terminal device, the target channel access type is the Type 1 channel access that has the smallest value of channel access priority class.

18. An apparatus for random access, applied in shared spectrum, comprising a processor and a memory, wherein the memory is configured to store a computer program, and the processor is configured to invoke and run the computer program stored in the memory to perform:

sending, by a network device, first indication information to a terminal device via signaling of a physical layer when a random access procedure corresponding to a physical random access channel (PRACH) is a contention-free random access procedure, to indicate the terminal device to determine, according to the first indication information, a target channel

access type for the terminal device to transmit the PRACH on a carrier of a shared spectrum,

wherein indicating the terminal device to determine, according to the first indication information, a target channel access type comprises: if the target time domain resource belongs to a shared channel occupancy time, indicating the terminal device to obtain the target channel access type comprising the Type 2 channel access; or if the target time domain resource does not belong to a shared channel occupancy time, indicating the terminal device to obtain the target channel access type comprising the Type 1 channel access, and

wherein the shared channel occupancy time is shared by a network device.