## CLAIMS

What is claimed is:

1. A method for PC5 link establishment, applied to first user equipment (UE) and comprising:

sending a direct communication request message, wherein the direct communication request message carries an identifier of the first UE, and is used to request establishment of a PC5 link; and

receiving a direct communication accept message sent by second UE, wherein the direct communication accept message carries an identifier of the second UE, and is used to accept the establishment of the PC5 link with the first UE;

wherein the direct communication request message further carries an identifier of a first service, the direct communication request message is specifically used to request establishment of a PC5 link with UE that needs to transmit the first service;

wherein after the receiving a direct communication accept message sent by second UE, the method further comprises:

saving an association relationship among a first link identifier, the identifier of the first UE, the identifier of the second UE, and the identifier of the first service, wherein the first link identifier is used to indicate the PC5 link established between the first UE and the second UE.

2. The method according to claim 1, wherein the direct communication request message further carries an identifier of at least one target UE, wherein

the direct communication request message is specifically used to request establishment of a PC5 link with the at least one target UE.

3. The method according to claim 1 or 2, wherein the direct communication accept message further carries the identifier of the first service, wherein

the direct communication accept message is specifically used to accept establishment of a PC5 link with the first UE for transmitting the first service.

4. The method according to claim 1 or 2, wherein the identifier of the first UE is an application layer ID of the first UE, an international mobile subscriber identity (IMSI) of the first UE, or a permanent equipment identifier (PEI) of the first UE; and

the identifier of the second UE is an application layer ID of the second UE, an IMSI of the second UE, or a PEI of the second UE.

5. A method for PC5 link establishment, applied to second user equipment UE and comprising:

receiving a direct communication request message sent by first UE, wherein the direct communication request message carries an identifier of the first UE, and is used to request establishment of a PC5 link; and

sending a direct communication accept message to the first UE, wherein the direct communication accept message carries an identifier of the second UE, and is used to accept the establishment of the PC5 link with the first UE;

wherein the direct communication request message further carries an identifier of a first service, the sending the direct communication accept message to the first UE comprises:

in a case that the second UE needs to transmit the first service, sending the direct communication accept message to the first UE;

wherein after the receiving a direct communication request message sent by first UE, the method further comprises:

saving an association relationship among a target link identifier, the identifier of the first UE, the identifier of the second UE, and the identifier of the first service, wherein the target link identifier is used to indicate the PC5 link established between the first UE and the second UE.

6. The method according to claim 5, wherein the direct communication request message further carries an identifier of at least one target UE, wherein

the sending a direct communication accept message to the first UE comprises:

in a case that the identifier of the at least one target UE comprises the identifier of the second UE, sending the direct communication accept message to the first UE.

7. The method according to claim 5 or 6, wherein the direct communication accept message further carries the identifier of the first service, wherein

the direct communication accept message is specifically used to accept establishment of a PC5 link with the first UE for transmitting the first service.

8. The method according to claim 5 or 6, wherein the identifier of the first UE is an application layer ID of the first UE, an international mobile subscriber identity (IMSI) of the first UE, or a permanent equipment identifier (PEI) of the first UE; and

the identifier of the second UE is an application layer ID of the second UE, an IMSI of the second UE, or a PEI of the second UE.

9. First user equipment (UE), comprising a processor, a memory, and a computer program stored in the memory and capable of running on the processor, wherein the computer program is executed by the processor to implement:

sending a direct communication request message, wherein the direct communication request message carries an identifier of the first UE, and is used to request establishment of a PC5 link; and

receiving a direct communication accept message sent by second UE, wherein the direct communication accept message carries an identifier of the second UE, and is used to accept the establishment of the PC5 link with the first UE;

wherein the direct communication request message further carries an identifier of a first service, the direct communication request message is specifically used to request establishment of a PC5 link with UE that needs to transmit the first service;

wherein after the receiving a direct communication accept message sent by second UE, the computer program is executed by the processor to further implement:

saving an association relationship among a first link identifier, the identifier of the first UE, the identifier of the second UE, and the identifier of the first service, wherein the first link identifier is used to indicate the PC5 link established between the first UE and the second UE.

10. The first UE according to claim 9, wherein the direct communication request message further carries an identifier of at least one target UE, wherein

the direct communication request message is specifically used to request establishment of a PC5 link with the at least one target UE.

11. The first UE according to claim 9 or 10, wherein the identifier of the first UE is an application layer ID of the first UE, an international mobile subscriber identity (IMSI) of the first UE, or a permanent equipment identifier (PEI) of the first UE; and

the identifier of the second UE is an application layer ID of the second UE, an IMSI of the second UE, or a PEI of the second UE.

12. Second user equipment (UE), comprising a processor, a memory, and a computer program stored in the memory and capable of running on the processor, wherein the computer program is executed by the processor to implement:

receiving a direct communication request message sent by first UE, wherein the direct communication request message carries an identifier of the first UE, and is used to request establishment of a PC5 link; and

sending a direct communication accept message to the first UE, wherein the direct communication accept message carries an identifier of the second UE, and is used to accept the establishment of the PC5 link with the first UE;

wherein the direct communication request message further carries an identifier of a first service, the sending the direct communication accept message to the first UE comprises:

in a case that the second UE needs to transmit the first service, sending the direct communication accept message to the first UE;

wherein after the receiving a direct communication request message sent by first UE, the computer program is executed by the processor to further implement:

saving an association relationship among a target link identifier, the identifier of the first UE, the identifier of the second UE, and the identifier of the first service, wherein the target link identifier is used to indicate the PC5 link established between the first UE and the second UE.

13. The second UE according to claim 12, wherein the identifier of the first UE is an application layer ID of the first UE, an international mobile subscriber identity (IMSI) of the first UE, or a permanent equipment identifier (PEI) of the first UE; and

the identifier of the second UE is an application layer ID of the second UE, an IMSI of the second UE, or a PEI of the second UE.

14. A communications system, wherein

the communications system comprises the first UE according to any one of claims 9 to 11 and the second UE according to claim 12 or 13.

15. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the steps of the method for PC5 link establishment according to any one of claims 1 to 8 are implemented.