

CLAIMS

- 5 1. A Device to Device (D2D) communication method, comprising:
determining, by a first D2D device, a target resource from a resource pool, wherein the
resource pool is used for D2D communication and the target resource is an occupied resource in
the resource pool or a collision resource in the resource pool, wherein the collision resource is a
resource, that is simultaneously occupied by multiple D2D signals, in the resource pool; and
10 determining, by the first D2D device, a resource usage parameter of the resource pool
according to the target resource, wherein the resource usage parameter indicates a proportion of
the occupied resource to total resources of the resource pool, or a proportion of the collision
resource to the total resources of the resource pool,
wherein content transmitted by each D2D device in the resource pool has a priority, and
15 when the resource usage parameter is larger than a second threshold value, the first D2D
device performs D2D communication in a collision avoiding manner or stops D2D communication.
2. The method according to claim 1, further comprising:
when the resource usage parameter is smaller than a first threshold value, reporting, by the
20 first D2D device, an event that the resource usage parameter is smaller than the first threshold
value to a network device.
3. The method according to claim 2, further comprising:
when the resource usage parameter is smaller than the first threshold value over a preset
25 time period, reporting, by the first D2D device, the event that the resource usage parameter is
smaller than the first threshold value to a network device.
4. The method according to claim 2 or 3, wherein the event that the resource usage parameter is
smaller than the first threshold value is used to trigger the network device to shrink the resource
30 pool or combine the resource pool with one or more other resource pools.
5. The method according to any one of claims 2-4, wherein after reporting, by the first D2D device,
the event that the resource usage parameter is smaller than the first threshold value to the network
device, the method further comprises:
35 temporally stopping, by the first D2D device, using the resource pool.
6. The method according to claim 5, wherein temporally stopping, by the D2D device, using the
resource pool comprises:
receiving, by the first D2D device, first indication information sent by the network device,
40 wherein the first indication information indicates the D2D device to temporally stop using the
resource pool; and
temporally stopping, by the first D2D device, using the resource pool according to the first
indication information.
- 45 7. The method according to any one of claims 1-6, further comprising: when the resource usage
parameter is larger than the second threshold value,
reporting, by the first D2D device, an event that the resource usage parameter is larger than
the second threshold value to a network device, so as for the network device to reconfigure the
resources in the resource pool.
- 50 8. The method according to any one of claims 1-7, further comprising:

when the resource usage parameter is larger than the second threshold value, reselecting, by the first D2D device, a resource pool.

9. The method according to any one of claims 1-8, further comprising: when the resource usage parameter is smaller than the second threshold value and larger than a third threshold value, performing, by the first D2D device, at least one of the following:

reporting, by the first D2D device, an event that the resource usage parameter is smaller than the second threshold value and larger than the third threshold value to a network device, so as for the network device to indicate D2D devices in the resource pool to use the resources in the resource pool in a collision avoiding manner;

sending second indication information to one or more other D2D devices in the resource pool, wherein the second indication information indicates the other D2D devices to use the resources in the resource pool in a collision avoiding manner; and

reporting the event that the resource usage parameter is smaller than the second threshold value and larger than the third threshold value to a network device, so as for the network device to reconfigure the resources in the resource pool.

10. The method according to any one of claims 1-9, wherein determining, by the first D2D device, the resource usage parameter of the resource pool comprises:

receiving, by the first D2D device, scheduling information sent by another D2D device in the resource pool on a preset resource of the resource pool, wherein the scheduling information indicate a location of a resource for carrying data of the another D2D device in the resource pool; and

determining, by the D2D device, the resource usage parameter according to the scheduling information.

11. The method according to any one of claims 1-9, wherein determining, by the first D2D device, the resource usage parameter of the resource pool comprises:

detecting, by the first D2D device, power of a D2D signal using a resource in the resource pool; and

determining, by the first D2D device, the resource usage parameter according to the power of the D2D signal.

12. The method according to claim 1, wherein information about the priority of the content transmitted by each D2D device in the resource pool is contained in scheduling information sent by the each D2D device on a preset resource.

13. The method according to claim 1 or 12, further comprising:

receiving, by the first D2D device, third indication information sent by the network device, wherein the third indication information indicates the D2D device, of which the priority of the transmitted content is lower than or equal to a priority threshold value, in the resource pool, to perform D2D communication in the collision avoiding manner or stop D2D communication; and

performing, by the first D2D device, D2D communication in the collision avoiding manner or stopping, by the first D2D device, the D2D communication, according to the third indication information.

14. The method according to any of claims 1-13, further comprising:

obtaining, by the first D2D device, a mapping relationship for indicating a Quality of Service (QoS) requirement of at least one service of the first D2D device and a fourth threshold value of the resource usage parameter.

15. The method according to claim 14, further comprising:
determining, by the first D2D device, the fourth threshold value according to a QoS requirement of a present service of the first D2D device and the mapping relationship;
when the resource usage parameter is larger than the fourth threshold value, transmitting
5 at least one of the following to the network device:
the present service;
a QoS requirement of at least a first part of the present service;
the resource usage parameter; or
a request for switching a working mode in which the first D2D device processes at
10 least a second part of the present service to a mode of performing D2D communication on the basis of a cellular network interface.
16. The method according to claim 14 or 15, wherein the mapping relationship is pre-configured by the network device, and
15 wherein obtaining, by the first D2D device, the mapping relationship comprises:
receiving the mapping relationship transmitted by the network device in a broadcast, multicast or unicast manner or through dedicated signaling.
17. The method according to any of claims 1-16, wherein the resource usage parameter indicates
20 a proportion of the occupied resource to total resources of the resource pool in a specific time period, or a proportion of the collision resource to the total resources of the resource pool in the specific time period.
18. A Device to Device (D2D) device, comprising:
25 a memory, configured to store a computer program; and
a processor, configured to execute the computer program stored in the memory, wherein the program, when being executed, causes the processor to execute the method according to any of claims 1-17.
- 30 19. A chip, comprising a processor configured to call a computer program from a memory and run the computer program, to cause a device provided with the chip to execute the method according to any of claims 1-17.