CLAIMS

What is claimed is:

1. A communication method, comprising:

obtaining (601), by a communication apparatus, first capability information, wherein the first capability information indicates a quantity of multiple-input multiple-output, MIMO, layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when a terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

sending (602), by the communication apparatus, the first capability information to a network device; and

receiving (604), by the communication apparatus, indication information from the network device, wherein the indication information indicates the terminal to perform uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

performing (606), by the communication apparatus, uplink transmission with the network device on the first carrier and the second carrier in time division multiplexing mode based on the indication formation.

2. The method according to claim 1, wherein the method further comprises:

receiving, by the communication apparatus, fourth indication information from the network device, wherein the fourth indication information indicates the terminal to report the first capability information.

3. A communication method, comprising:

receiving (602), by a communication apparatus, first capability information from a terminal, the first capability information indicates a quantity of multiple-input multiple-output, MIMO, layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode; and

determining (603), by the communication apparatus, the quantity of MIMO layers supported on the first carrier and the quantity of MIMO layers supported on the second carrier when uplink

transmission is performed on the first carrier and the second carrier in time division multiplexing mode;

sending (604), by the communication apparatus, indication formation to the terminal, wherein the indication information indicates the terminal to perform uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

performing (606), by the communication apparatus, uplink transmission with the terminal on the first carrier and the second carrier in time division multiplexing mode.

4. The method according to claim 3, wherein the method further comprises:

sending, by the communication apparatus, fourth indication information to the terminal, wherein the fourth indication information indicates the terminal to report the first capability information.

5. The method according to any one of claims 1 to 4, wherein the indication information further indicates a quantity of MIMO layers used on the first carrier and a quantity of MIMO layers used on the second carrier when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode;

when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, the quantity of MIMO layers used on the first carrier is less than or equal to the quantity of MIMO layers supported on the first carrier, and the quantity of MIMO layers used on the second carrier is less than or equal to the quantity of MIMO layers supported on the second carrier.

6. The method according to any one of claims 1 to 5, wherein the quantity of MIMO layers used on the first carrier is 2 and the quantity of MIMO layers used on the second carrier is 1 when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode.

7. The method according to claim 6, wherein the first carriers works on a first radio frequency channel and a second radio frequency channel, and the second carrier works on the second radio frequency channel.

8. The method according to any one of claims 1 to 5, wherein the quantity of MIMO layers used on the first carrier is 2 and the quantity of MIMO layers used on the second carrier is 2 when the terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode.

9. The method according to claim 8, wherein the first carriers works on a first radio frequency channel and a second radio frequency channel, and the second carrier works on the first radio frequency channel and the second radio frequency channel.

10. The method according to any one of claims 1 to 9, wherein when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, the first carrier and the second carrier share one or more radio frequency channels of the terminal.

11. The method according to any one of claims 1 to 10, wherein when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, one or more of PUSCH data and PUCCH data is transmitted on the first carrier, and one or more of PUSCH data and PUCCH data is transmitted on the second carrier.

12. The method according to any one of claims 1 to 11, wherein a message carrying the first capability information carries second capability information, wherein the second capability information indicates a quantity of MIMO layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when the terminal performs uplink transmission on the first carrier and the second carrier in simultaneous transmission mode; wherein

a quantity of MIMO layers supported on the first carrier when the terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode is greater than a quantity of MIMO layers supported on the first carrier when the terminal performs uplink transmission on the first carrier and the second carrier in simultaneous transmission mode.

13. The method according to any one of claims 1 to 12, wherein a message carrying the first capability information carries inter-carrier switching period information, and the inter-carrier

switching period information indicates carrier switching period between the first carrier and the second carrier.

14. The method according to any one of claims 1 to 12, wherein the first carrier and the second carrier are carriers between the terminal and the network device; or

the first carrier is a carrier between the terminal and the network device, and the second carrier is a carrier between the terminal and another network device different from the network device.

15. A communication apparatus, comprising a processor coupled to a memory storing instructions, the processor is configured to execute the instructions to cause the apparatus to:

obtain first capability information, wherein the first capability information indicates a quantity of multiple-input multiple-output, MIMO, layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when a terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

send the first capability information to a network device; and

receive indication information from the network device, wherein the indication information indicates the terminal to perform uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

perform uplink transmission with the network device on the first carrier and the second carrier in time division multiplexing mode based on the indication formation.

16. The apparatus according to claim 15, wherein the processor is further configured to execute the instructions to cause the apparatus to:

receive fourth indication information from the network device, wherein the fourth indication information indicates the terminal to report the first capability information.

17. A communication apparatus, comprising a processor coupled to a memory storing instructions, the processor is configured to execute the instructions to cause the apparatus to:

receive first capability information from a terminal, the first capability information indicates a quantity of multiple-input multiple-output, MIMO, layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when uplink transmission is performed on

the first carrier and the second carrier in time division multiplexing mode; and

determine the quantity of MIMO layers supported on the first carrier and the quantity of MIMO layers supported on the second carrier when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode;

send indication formation to the terminal, wherein the indication information indicates the terminal to perform uplink transmission on the first carrier and the second carrier in time division multiplexing mode;

perform uplink transmission with the terminal on the first carrier and the second carrier in time division multiplexing mode.

18. The apparatus according to claim 17, wherein the processor is further configured to execute the instructions to cause the apparatus to:

send fourth indication information to the terminal, wherein the fourth indication information indicates the terminal to report the first capability information.

19. The apparatus according to any one of claims 15 to 18, wherein the indication information further indicates a quantity of MIMO layers used on the first carrier and a quantity of MIMO layers used on the second carrier when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode;

when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, the quantity of MIMO layers used on the first carrier is less than or equal to the quantity of MIMO layers supported on the first carrier, and the quantity of MIMO layers used on the second carrier is less than or equal to the quantity of MIMO layers supported on the second carrier.

20. The apparatus according to any one of claims 15 to 19, wherein the quantity of MIMO layers used on the first carrier is 2 and the quantity of MIMO layers used on the second carrier is 1 when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode.

21. The apparatus according to claim 20, wherein the first carriers works on a first radio

frequency channel and a second radio frequency channel, and the second carrier works on the second radio frequency channel.

22. The apparatus according to any one of claims 15 to 19, wherein the quantity of MIMO layers used on the first carrier is 2 and the quantity of MIMO layers used on the second carrier is 2 when the terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode.

23. The apparatus according to claim 22, wherein the first carriers works on a first radio frequency channel and a second radio frequency channel, and the second carrier works on the first radio frequency channel and the second radio frequency channel.

24. The apparatus according to any one of claims 15 to 23, wherein when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, the first carrier and the second carrier share one or more radio frequency channels of the terminal.

25. The apparatus according to any one of claims 15 to 24, wherein when uplink transmission is performed on the first carrier and the second carrier in time division multiplexing mode, one or more of PUSCH data and PUCCH data is transmitted on the first carrier, and one or more of PUSCH data and PUCCH data is transmitted on the second carrier.

26. The apparatus according to any one of claims 15 to 25, wherein a message carrying the first capability information carries second capability information, wherein the second capability information indicates a quantity of MIMO layers supported on a first carrier and a quantity of MIMO layers supported on a second carrier when the terminal performs uplink transmission on the first carrier and the second carrier in simultaneous transmission mode; wherein

a quantity of MIMO layers supported on the first carrier when the terminal performs uplink transmission on the first carrier and the second carrier in time division multiplexing mode is greater than a quantity of MIMO layers supported on the first carrier when the terminal performs uplink transmission on the first carrier and the second carrier in simultaneous transmission mode.

27. The apparatus according to any one of claims 15 to 26, wherein a message carrying the first capability information carries inter-carrier switching period information, and the inter-carrier switching period information indicates carrier switching period between the first carrier and the second carrier.

28. The apparatus according to any one of claims 15 to 26, wherein the first carrier and the second carrier are carriers between the terminal and the network device; or

the first carrier is a carrier between the terminal and the network device, and the second carrier is a carrier between the terminal and another network device different from the network device.

29. A communication apparatus, configured to perform the method according to any one of claims 1, 2 and 5 to 12.

30. A communication apparatus, configured to perform the method according to any one of claims 3, 4 and 5 to 12.

31. A computer-readable storage medium, wherein the computer-readable storage medium stores computer instructions, and when the computer instructions are run on a computer, the computer is enabled to perform the access method according to any one of claims 1 to 14.

32. A computer program product, wherein the computer program product comprises computer instructions, and when the computer instructions are run on a computer, the computer is enabled to perform the access method according to any one of claims 1 to 14.