

which the first communication apparatus is located or a decision of the second communication apparatus for the scheduling-free transmission.

[0020] Based on this implementation, a design of the indication sequence is very flexible. When determining an indication sequence corresponding to a subcell, the network side may correspondingly increase or decrease available scheduling-free resources of the subcell based on an increase or decrease in a scheduling-free transmission requirement of the subcell, or may adjust a quantity of available scheduling-free resources of the subcell based on the decision of the network side.

[0021] In some implementations of the first aspect or the second aspect, the first information includes one or more of the following:

- the first indication sequence;

- a length of the first indication sequence;

- a generation parameter of the first indication sequence, where the generation parameter includes one or more of the following: a time domain start point of at least one first scheduling-free resource, duration of the at least one first scheduling-free resource, a quantity of first scheduling-free resources, and a derivation parameter of the time domain start point of the at least one first scheduling-free resource;

- identification information of the first indication sequence;

- the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and the identification information of the first reference signal corresponding to the subcell in which the first communication apparatus is located, where the plurality of indication sequences include the first indication sequence;

- information about a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, where each of the plurality of indication sequences corresponds to one of the plurality of reference signal identifiers;

- a plurality of indication sequences, where the plurality of indication sequences respectively correspond to a plurality of reference signal identifiers;

- respective generation parameters of a plurality of indication sequences and identification information of a first reference signal corresponding to a subcell in which the terminal device is located, where the plurality of indication sequences respectively correspond to a plurality of reference signals, and the plurality of indication sequences include the first indication sequence; and

- respective generation parameters of a plurality of indication sequences, where the plurality of indication sequences include the first indication sequence.

[0022] Based on this implementation, the network side may deliver different first information

CLAIMS

1. A scheduling-free resource configuration method, applied to a first communication apparatus, and comprising:

receiving (510) first information from a second communication apparatus;

5 determining (520) a first indication sequence based on the first information;

determining (530), based on the first indication sequence, a first scheduling-free resource that is in scheduling-free resources of the first communication apparatus and that is capable of being used for scheduling-free transmission; and

performing (540) the scheduling-free transmission based on the first scheduling-free resource.

10 2. The method according to claim 1, wherein the first indication sequence is determined based on a scheduling-free transmission requirement of a subcell in which the first communication apparatus is located or a decision of the second communication apparatus for the scheduling-free transmission.

3. The method according to claim 1 or 2, wherein the first information comprises one or more
15 of the following:

the first indication sequence;

a length of the first indication sequence;

a generation parameter of the first indication sequence, wherein the generation parameter comprises one or more of the following: a time domain start point of at least one first scheduling-free resource, duration of the at least one first scheduling-free resource, a quantity of first
20 scheduling-free resources, and a derivation parameter of the time domain start point of the at least one first scheduling-free resource;

identification information of the first indication sequence;

a mapping relationship between a plurality of indication sequences and a plurality of
25 reference signal identifiers, and identification information of a first reference signal corresponding to the subcell in which the first communication apparatus is located, wherein the plurality of indication sequences comprise the first indication sequence;

information about a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, wherein each of the plurality of indication sequences
30 corresponds to one of the plurality of reference signal identifiers;

a plurality of indication sequences, wherein the plurality of indication sequences respectively correspond to a plurality of reference signal identifiers;

respective generation parameters of a plurality of indication sequences and identification information of a first reference signal corresponding to a subcell in which the first communication

apparatus is located, wherein the plurality of indication sequences respectively correspond to a plurality of reference signals, and the plurality of indication sequences comprise the first indication sequence; and

respective generation parameters of a plurality of indication sequences, wherein the plurality of indication sequences comprise the first indication sequence.

4. The method according to claim 3, wherein the first information comprises the information about the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and the information about the mapping relationship comprises the mapping relationship or an index of the mapping relationship.

5. The method according to any one of claims 1 to 4, wherein the first information further comprises validation time information of the first indication sequence, and the validation time information indicates a validation moment at which the first scheduling-free resource determined based on the first indication sequence is applied to the scheduling-free transmission.

6. The method according to any one of claims 1 to 5, wherein the first information comprises the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers; and

determining the first indication sequence based on the first information comprises:

obtaining an identifier of the first reference signal corresponding to the subcell in which the first communication apparatus is located; and

determining, from the plurality of indication sequences based on the identifier of the first reference signal and the mapping relationship, the first indication sequence corresponding to the identifier of the first reference signal.

7. The method according to any one of claims 1 to 5, wherein the first information comprises a mapping relationship between a plurality of indication sequences and a plurality of reference signals, and the identification information of the first reference signal corresponding to the subcell in which the first communication apparatus is located; and

determining the first indication sequence based on the first information comprises:

determining the first indication sequence from the plurality of indication sequences based on the identification information of the first reference signal and the mapping relationship.

8. A scheduling-free resource configuration method, applied to a second communication apparatus, and comprising:

determining a first indication sequence, wherein the first indication sequence indicates a first scheduling-free resource that is in scheduling-free resources of a first communication apparatus and that is capable of being used for scheduling-free transmission; and

sending (510) first information to the first communication apparatus, wherein the first

information is used by the first communication apparatus to determine the first indication sequence.

9. The method according to claim 8, wherein the first indication sequence is determined based on a scheduling-free transmission requirement of a subcell in which the first communication apparatus is located or a decision of the second communication apparatus for the scheduling-free transmission.

10. The method according to claim 8 or 9, wherein the first information comprises one or more of the following:

the first indication sequence;

a length of the first indication sequence;

a generation parameter of the first indication sequence, wherein the generation parameter comprises one or more of the following: a time domain start point of at least one first scheduling-free resource, duration of the at least one first scheduling-free resource, a quantity of first scheduling-free resources, and a derivation parameter of the time domain start point of the at least one first scheduling-free resource;

identification information of the first indication sequence;

a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and identification information of a first reference signal corresponding to the subcell in which the first communication apparatus is located, wherein the plurality of indication sequences comprise the first indication sequence;

information about a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, wherein each of the plurality of indication sequences corresponds to one of the plurality of reference signal identifiers;

a plurality of indication sequences, wherein the plurality of indication sequences respectively correspond to a plurality of reference signal identifiers;

respective generation parameters of a plurality of indication sequences and identification information of a first reference signal corresponding to a subcell in which the first communication apparatus is located, wherein the plurality of indication sequences respectively correspond to a plurality of reference signals, and the plurality of indication sequences comprise the first indication sequence; and

respective generation parameters of a plurality of indication sequences, wherein the plurality of indication sequences comprise the first indication sequence.

11. The method according to claim 10, wherein the first information comprises the information about the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and the information about the mapping relationship comprises the mapping relationship or an index of the mapping relationship.

12. The method according to any one of claims 8 to 11, wherein the first information further comprises validation time information of the first indication sequence, and the validation time information indicates a validation moment at which the first scheduling-free resource determined based on the first indication sequence is applied to the scheduling-free transmission.

5 13. A first communication apparatus, comprising:
a communication module, configured to receive first information from a second communication apparatus; and

a processing module, configured to:

determine a first indication sequence based on the first information;

10 determine, based on the first indication sequence, a first scheduling-free resource that is in scheduling-free resources of the first communication apparatus and that is capable of being used for scheduling-free transmission, wherein

the communication module and the processing module are further configured to perform the scheduling-free transmission based on the first scheduling-free resource.

15 14. The first communication apparatus according to claim 13, wherein the first indication sequence is determined based on a scheduling-free transmission requirement of a subcell in which the communication apparatus is located or a decision of the second communication apparatus for the scheduling-free transmission.

20 15. The first communication apparatus according to claim 13 or 14, wherein the first information comprises one or more of the following:

the first indication sequence;

a length of the first indication sequence;

25 a generation parameter of the first indication sequence, wherein the generation parameter comprises one or more of the following: a time domain start point of at least one first scheduling-free resource, duration of the at least one first scheduling-free resource, a quantity of first scheduling-free resources, and a derivation parameter of the time domain start point of the at least one first scheduling-free resource;

identification information of the first indication sequence;

30 a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and identification information of a first reference signal corresponding to a subcell in which the first communication apparatus is located, wherein the plurality of indication sequences comprise the first indication sequence;

35 information about a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, wherein each of the plurality of indication sequences corresponds to one of the plurality of reference signal identifiers;

a plurality of indication sequences, wherein the plurality of indication sequences respectively correspond to a plurality of reference signal identifiers;

respective generation parameters of a plurality of indication sequences and identification information of a first reference signal corresponding to a subcell in which the first communication apparatus is located, wherein the plurality of indication sequences respectively correspond to a plurality of reference signals, and the plurality of indication sequences comprise the first indication sequence; and

respective generation parameters of a plurality of indication sequences, wherein the plurality of indication sequences comprise the first indication sequence.

16. The first communication apparatus according to claim 15, wherein the first information comprises the information about the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and the information about the mapping relationship comprises the mapping relationship or an index of the mapping relationship.

17. The first communication apparatus according to any one of claims 13 to 16, wherein the first information further comprises validation time information of the first indication sequence, and the validation time information indicates a validation moment at which the first scheduling-free resource determined based on the first indication sequence is applied to the scheduling-free transmission.

18. The first communication apparatus according to any one of claims 13 to 17, wherein the first information comprises the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers; and

the processing module is configured to:

obtain an identifier of the first reference signal corresponding to the subcell in which the communication apparatus is located; and

determine, from the plurality of indication sequences based on the identifier of the first reference signal and the mapping relationship, the first indication sequence corresponding to the identifier of the first reference signal.

19. The first communication apparatus according to any one of claims 13 to 17, wherein the first information comprises a mapping relationship between a plurality of indication sequences and a plurality of reference signals, and the identification information of the first reference signal corresponding to the subcell in which the communication apparatus is located; and

the processing module is configured to:

determine the first indication sequence from the plurality of indication sequences based on the identification information of the first reference signal and the mapping relationship.

20. A second communication apparatus, comprising:

a processing module, configured to determine a first indication sequence, wherein the first indication sequence indicates a first scheduling-free resource that is in scheduling-free resources of a first communication apparatus and that is capable of being used for scheduling-free transmission; and

5 a communication module, configured to send first information to the first communication apparatus, wherein the first information is used by the first communication apparatus to determine the first indication sequence.

21. The second communication apparatus according to claim 20, wherein the first indication sequence is determined based on a scheduling-free transmission requirement of a subcell in which
10 the first communication apparatus is located or a decision of the communication apparatus for the scheduling-free transmission.

22. The second communication apparatus according to claim 20 or 21, wherein the first information comprises one or more of the following:

the first indication sequence;

15 a length of the first indication sequence;

a generation parameter of the first indication sequence, wherein the generation parameter comprises one or more of the following: a time domain start point of at least one first scheduling-free resource, duration of the at least one first scheduling-free resource, a quantity of first scheduling-free resources, and a derivation parameter of the time domain start point of the at least
20 one first scheduling-free resource;

identification information of the first indication sequence;

a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and identification information of a first reference signal corresponding to the subcell in which the first communication apparatus is located, wherein the plurality of
25 indication sequences comprise the first indication sequence;

information about a mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, wherein each of the plurality of indication sequences corresponds to one of the plurality of reference signal identifiers;

a plurality of indication sequences, wherein the plurality of indication sequences respectively
30 correspond to a plurality of reference signal identifiers;

respective generation parameters of a plurality of indication sequences and identification information of a first reference signal corresponding to a subcell in which the first communication apparatus is located, wherein the plurality of indication sequences respectively correspond to a plurality of reference signals, and the plurality of indication sequences comprise the first indication
35 sequence; and

respective generation parameters of a plurality of indication sequences, wherein the plurality of indication sequences comprise the first indication sequence.

23. The second communication apparatus according to claim 22, wherein the first information comprises the information about the mapping relationship between a plurality of indication sequences and a plurality of reference signal identifiers, and the information about the mapping relationship comprises the mapping relationship or an index of the mapping relationship.

24. The second communication apparatus according to any one of claims 20 to 23, wherein the first information further comprises validation time information of the first indication sequence, and the validation time information indicates a validation moment at which the first scheduling-free resource determined based on the first indication sequence is applied to the scheduling-free transmission.

25. A communication apparatus, comprising:
a processor, wherein the processor is coupled to a memory, and the processor is configured to invoke computer program instructions stored in the memory, to perform the method according to any one of claims 1 to 12.

26. A chip, comprising a processor and a communication interface, wherein the communication interface is configured to: receive data and/or information, and transmit the received data and/or information to the processor, and the processor processes the data and/or the information, to perform the method according to any one of claims 1 to 7 or the method according to any one of claims 8 to 12.

27. A computer-readable storage medium, wherein the computer-readable storage medium stores instructions, and when the instructions are run on a computer, the computer is enabled to perform the method according to any one of claims 1 to 12.

28. A computer program product, wherein the computer program product stores instructions, and when the instructions are run on a computer, the computer is enabled to perform the method according to any one of claims 1 to 12.

29. A communication system, comprising the communication apparatus according to any one of claims 13 to 19 and/or the communication apparatus according to any one of claims 20 to 24.