wireless terminals, and each wireless terminal temporarily suspends operation for the base station within a period within which the trigger frame is not transmitted (transiting to a low-power consumption state, performing communication with some other connected base station, searching for some other base station to be connected).

[Citation List]

[Patent Literature]

[0006]

[PTL 1]

Japanese Patent No. 5437307

[PTL 2]

Japanese Patent Laid-Open No. 2017-55399

[PTL 3]

Japanese Patent Laid-Open No. 2014-207693

[Summary]

[Technical Problem]

[0007]

Embodiments of the present disclosure provide a communication apparatus and a communication method that perform wireless communication by a multi-user method.

[Solution to Problem]

[0008]

According to a first aspect of the present disclosure, there is provided a communication apparatus, including: a communication section configured to transmit and receive a wireless signal; a control section configured to control operation as a base station; and the control section controls transmission of a frame that includes schedule information relating to scheduled communication of the communication apparatus and is received by a different wireless terminal or controls reception of schedule information relating to scheduled information of a different base station, and wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink, and the frame for inducing the multi-user communication of the uplink is transmitted in accordance with a collision avoidance mechanism whereby a random waiting time is selected, and the frame for inducing the multi-user communication of the uplink is transmitted after the expiry of the random waiting time.

[0009]

Further, the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink, and particularly includes information relating to a resource or a transmission method to be used for transmission of a frame for inducing multi-user communication of an uplink.

[0010]

The communication apparatus that operates as a base

station controls scheduled communication of the own station based on the received schedule information of the different base station. In particular, the communication apparatus determines a transmission schedule of a frame for inducing multi-user communication of an uplink, and a resource, information of a transmission permission terminal, a transmission permission traffic and a communication parameter to be used in the multi-user communication of an uplink.

[0011]

Further, the communication apparatus that operates as a base station can receive the schedule information of a different base station from at least one of a wireless terminal connected to the own station, the different base station or a wireless terminal connected to the different base station. Further, the communication apparatus transmits the frame that is included in a destination address that is received by a wireless terminal connected to the own station, the different base station and a wireless terminal connected to the different base station. The communication apparatus may transmit the frame that includes schedule information of the own station simultaneously with a beacon frame or as part of the beacon frame.

[0012]

Further, the communication apparatus performs, with a wireless terminal connected to the own station, the different base station or a wireless terminal not connected to the own station, a sequence for confirming whether or not the wireless

terminal connected to the own station, the different base station or the wireless terminal not connected to the own station is ready for transmission and reception of the frame including schedule information.

[0013]

According to a second aspect of the present disclosure, there is provided a communication method in a communication apparatus that operates as a base station, the communication method including: transmitting a frame that includes schedule information relating to scheduled information of the communication apparatus and is received by a different wireless terminal; receiving schedule information relating to scheduled communication of a different base station wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink; selecting a random waiting time; and transmitting the frame for inducing the multi-user communication of the uplink in accordance with a collision avoidance mechanism after the expiry of the random waiting time.

[0014]

According to a third aspect of the present disclosure, there is provided a communication apparatus, including: a communication section configured to transmit and receive a wireless signal; and a control section configured to control operation as a wireless terminal subordinate of a first base station; wherein the control section controls reception of a

frame including schedule information relating to scheduled communication from a second base station to which the communication apparatus is not connected and transmission of the schedule information of the second base station to the first base station, wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink, and the frame for inducing the multi-user communication of the uplink is transmitted in accordance with a collision avoidance mechanism whereby a random waiting time is selected, and the frame for inducing the multi-user communication of the uplink is transmitted after the expiry of the random waiting time.

[0015]

The communication apparatus that operates as a wireless terminal subordinate of a base station transmits the schedule information of the second base station using a frame that has a configuration and contents partly or fully same as those of a different wireless terminal connected to the first base station.

[0016]

According to a fourth aspect of the present disclosure, there is provided a communication method in a communication apparatus that operates as a first base station, the communication method including: receiving a frame that includes schedule information relating to scheduled communication from a second base station to which the communication apparatus is not connected; transmitting the

schedule information of the second base station to the first base station, wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink; selecting a random waiting time; and transmitting the frame for inducing the multi-user communication of the uplink in accordance with a collision avoidance mechanism after the expiry of the random waiting time.

[Advantageous Effect of Invention]

[0017]

Embodiments of the present disclosure provide a communication apparatus and a communication method by which wireless communication is performed by a multi-user method.

[0018]

It is to be noted that the effects described in the present specification are exemplary to the last and the effects of the present disclosure are not limited to them. Further, the present disclosure sometimes demonstrates an additional effect in addition to the effect described above.

[0019]

Further different aspects, features and advantages of the technology disclosed in the present specification will become clear from more detailed description based on the embodiment hereinafter described and the accompanying drawings.

CLAIMS

1. A communication apparatus, comprising:

a communication section configured to transmit and receive a wireless signal;

a control section configured to control operation as a base station; and

the control section controls transmission of a frame that includes schedule information relating to scheduled communication of the communication apparatus and is received by a different wireless terminal or controls reception of schedule information relating to scheduled information of a different base station, and

wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink, and the frame for inducing the multi-user communication of the uplink is transmitted in accordance with a collision avoidance mechanism whereby a random waiting time is selected, and the frame for inducing the multi-user communication of the uplink is transmitted after the expiry of the random waiting time.

2. The communication apparatus according to claim 1, wherein

the scheduled communication includes multi-user communication of an uplink.

3. The communication apparatus according to claim 1, wherein

the schedule information includes information relating to a resource, information of a transmission permission terminal, a transmission permission traffic or a communication parameter to be used in multi-user communication of an uplink.

4. The communication apparatus according to claim 1, wherein

the schedule information of a different base station is received from at least one of a wireless terminal connected to the communication apparatus, the different base station or a wireless terminal connected to the different base station.

5. The communication apparatus according to claim 1, wherein

the frame that includes schedule information of the communication apparatus and is included in a destination address that is received by a wireless terminal connected to the communication apparatus, a different base station and a wireless terminal connected to the different base station is transmitted.

6. The communication apparatus according to claim 1, wherein

the frame that includes schedule information of the

communication apparatus is transmitted simultaneously with a beacon frame or as part of the beacon frame.

7. The communication apparatus according to claim 1, wherein

the control section controls so as to perform, with a wireless terminal connected to the communication apparatus, the different base station or a wireless terminal not connected to the communication apparatus, a sequence for confirming whether or not the wireless terminal connected to the communication apparatus, the different base station or the wireless terminal not connected to the communication apparatus is ready for transmission and reception of the frame including schedule information.

8. The communication apparatus according to claim 1, wherein

the control section controls scheduled communication of the communication apparatus based on received schedule information of a different base station.

9. The communication apparatus according to claim 1, wherein

the control section determines, based on received schedule information of a different base station, a transmission schedule of a frame for inducing multi-user

communication of an uplink, and a resource, information of a transmission permission terminal, a transmission permission traffic and a communication parameter to be used in the multi-user communication of an uplink.

10 The communication apparatus according to claim 1, wherein

the control section controls so as to receive schedule information of a different base station after the frame including schedule information of the communication apparatus is transmitted.

11. The communication apparatus according to claim 1, wherein

the control section controls so as to receive schedule information of a different base station after a transmission request for schedule information is transmitted.

12. The communication apparatus according to claim 1, wherein

the control section controls transmission of information indicative of a corresponding relationship of a plurality of identifiers of wireless terminals connected to the communication apparatus.

13. A communication method in a communication apparatus that operates as a base station, the communication method comprising:

transmitting a frame that includes schedule information relating to scheduled information of the communication apparatus and is received by a different wireless terminal;

receiving schedule information relating to scheduled communication of a different base station

wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink;

selecting a random waiting time; and

transmitting the frame for inducing the multi-user communication of the uplink in accordance with a collision avoidance mechanism after the expiry of the random waiting time.

14. A communication apparatus, comprising:

a communication section configured to transmit and receive a wireless signal; and

a control section configured to control operation as a wireless terminal subordinate of a first base station; wherein

the control section controls reception of a frame including schedule information relating to scheduled communication from a second base station to which the communication apparatus is not connected and transmission of

the schedule information of the second base station to the first base station,

wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink, and the frame for inducing the multi-user communication of the uplink is transmitted in accordance with a collision avoidance mechanism whereby a random waiting time is selected, and the frame for inducing the multi-user communication of the uplink is transmitted after the expiry of the random waiting time.

15. The communication apparatus according to claim 14, wherein

the control section controls so as to perform, with the first base station and the second base station, a sequence for confirming whether or not the first base station and the second base station are ready for transmission and reception of the frame including schedule information.

16. The communication apparatus according to claim 14, wherein

the control section controls so as to transmit the schedule information of the second base station using a frame that has a configuration and contents partly or fully same as those of a different wireless terminal connected to the first base station.

17. The communication apparatus according to claim 14, wherein

the control section controls so as to transmit, after information relating to holding of schedule information of the second base station is transmitted to the first base station, schedule information of the second base station held by the communication apparatus to the first base station.

18. The communication apparatus according to claim 14, wherein

the control section controls so as to transmit, after information relating to holding of schedule information of the second base station is received from the first base station, the schedule information of the second base station held by the communication apparatus to the first base station.

19. The communication apparatus according to claim 14, wherein

the control section controls so as to transmit, after information relating to a transmission request for schedule information of the second base station is received from the first base station, the schedule information of the second base station held by the communication apparatus to the first base station.

20. A communication method in a communication apparatus that operates as a first base station, the communication method comprising:

receiving a frame that includes schedule information relating to scheduled communication from a second base station to which the communication apparatus is not connected;

transmitting the schedule information of the second base station to the first base station, wherein the schedule information includes information relating to a transmission schedule of a frame for inducing multi-user communication of an uplink;

selecting a random waiting time; and

transmitting the frame for inducing the multi-user communication of the uplink in accordance with a collision avoidance mechanism after the expiry of the random waiting time.