

Description

Title of Invention

COMMUNICATION APPARATUS AND COMMUNICATION METHOD

Technical Field

[0001]

The present disclosure relates to communication apparatuses and communication methods.

Background Art

[0002]

Wireless local area networks (LANs), typified by IEEE (Institute of Electrical and Electronics Engineers) 802.11, have in recent years been widespread, leading to an increase in the number of wireless LAN-capable products.

[0003]

Here, wireless LAN-capable products are classified into, for example, access points (hereinafter, also referred to as “APs”) and stations (hereinafter, also referred to as “STAs”). Further, communication from an AP to an STA called downlink (hereinafter, also referred to as “DL”) communication and communication from an STA to an AP called uplink (hereinafter, also referred to as “UL”) are performed.

[0004]

With the increase in the number of wireless LAN-capable products, the number of STAs also increases, and thus there is a possibility that the incidence of frame (packet) collision in uplink communication will increase.

[0005]

In this regard, Patent Literature 1 discloses a communication method of multiplexing UL transmission such that an STA having received a predetermined frame such as group polling from an AP transmits frames using a channel notified of through the predetermined frame. Thus, collision of UL transmission frames can be suppressed.

Citation List

Patent Literature

[0006]

Patent Literature 1:

JP 2015-511077T

Disclosure of Invention

Technical Problem

[0007]

However, the communication method disclosed in Patent Literature 1 is a method belonging to a so-called control access scheme in which UL transmission of the STA is controlled in accordance with a notification given from the AP. For this reason, UL communication of a so-called random access scheme in which the STA arbitrarily performs UL transmission is not a subject thereof.

[0008]

In this regard, embodiments of the present invention propose a communication apparatus and a communication method, which are novel and improved and capable of suppressing a decrease in communication efficiency in the UL communication of the random access scheme.

Solution to Problem

[0009]

According to a first aspect of the present invention, there is provided a communication apparatus for wireless communication in a wireless local area network, said communication apparatus including: a communication unit configured to transmit a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame and receive the response uplink frame transmitted as a response to the trigger frame, the response uplink frame being transmitted using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

[0010]

According to a second aspect of the present invention, there is provided a communication apparatus for wireless communication in a wireless local area network, said communication apparatus including: a communication unit configured to receive a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame and transmit the response uplink frame as a response to the trigger frame using a resource randomly selected from the selectable resources

specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

[0011]

According to a third aspect of the present invention, there is provided a communication method for wireless communication in a wireless local area network, said communication method including: transmitting a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame; and receiving the response uplink frame being transmitted as a response to the trigger frame using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

[0012]

According to a fourth aspect of the present invention, there is provided a communication method for wireless communication in a wireless local area network, said communication method including: receiving a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame; and transmitting the response uplink frame as a response to the trigger frame using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

Advantageous Effects of Invention

[0013]

As described above, according to embodiments of the present invention, a communication apparatus and a communication method which are capable of suppressing a decrease in communication efficiency in the UL communication of the random access scheme are provided. Note that the above advantageous effects are not necessarily limiting. In addition to or instead of the above advantageous effects, any of the advantageous effects described in the present specification or other advantageous effects apparent from the present specification may be provided.

Brief Description of Drawings

CLAIMS

1. A communication apparatus for wireless communication in a wireless local area network, said communication apparatus comprising:
a communication unit configured to transmit a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame and receive the response uplink frame transmitted as a response to the trigger frame, the response uplink frame being transmitted using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.
2. The communication apparatus according to claim 1,
wherein the communication unit receives the response uplink frame on the basis of the wireless communication resource information included in the trigger frame.
3. The communication apparatus according to claim 1 or 2,
wherein the wireless communication resource information includes information related to a frequency resource and information related to a spatial stream.
4. The communication apparatus according to any preceding claim,
wherein the attribute information related to the transmission of the response uplink frame includes attribute information of a transmission apparatus performing the transmission of the response uplink frame.
5. The communication apparatus according to claim 4,
wherein the attribute information of the transmission apparatus includes information related to presence or absence of an uplink communication request.
6. The communication apparatus according to claim 5,
wherein the uplink communication request includes a data transmission request and/or a communication connection request.

7. The communication apparatus according to claim 5 or 6,
wherein the response uplink frame includes information related to content of the uplink communication request.
8. The communication apparatus according to any of claims 4 to 7,
wherein the attribute information of the transmission apparatus includes information related to a communication state of the transmission apparatus; in particular wherein the communication state includes information related to a communication quality and/or information related to a state of a communication channel.
9. The communication apparatus according to claim 9,
wherein the response uplink frame includes information related to content of the communication state of the transmission apparatus.
10. The communication apparatus according to any preceding claim,
wherein the attribute information related to the transmission of the response uplink frame includes information related to an attribute of the response uplink frame; in particular, wherein the attribute of the response uplink frame includes a type of frame.
11. The communication apparatus according to any preceding claim,
wherein the communication resource information includes information indicating information requested to be stored in the response uplink frame transmitted in response to the trigger frame.
12. A communication apparatus for wireless communication in a wireless local area network, said communication apparatus comprising:
a communication unit configured to receive a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame and transmit the response uplink frame as a response to the trigger frame using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

13. The communication apparatus according to claim 16,
 wherein the attribute information related to the transmission of the response uplink frame includes attribute information of a transmission apparatus performing the transmission of the response uplink frame, and

the communication unit transmits the response uplink frame in a case where the attribute information of the communication apparatus corresponds to the attribute information of the transmission apparatus and/or the communication unit transmits a frame in which an attribute of the frame corresponds to an attribute of the response uplink frame as the response uplink frame.

14. A communication method for wireless communication in a wireless local area network, said communication method comprising:

transmitting a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame; and

receiving the response uplink frame being transmitted as a response to the trigger frame using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.

15. A communication method for wireless communication in a wireless local area network, said communication method comprising:

receiving a trigger frame including wireless communication resource information in which resources selectable as uplink resources are specified from a plurality of resources and attribute information related to transmission of a response uplink frame; and

transmitting the response uplink frame as a response to the trigger frame using a resource randomly selected from the selectable resources specified in the wireless communication resource information on the basis of the attribute information related to the transmission of the response uplink frame.