

CITATION LIST

PATENT DOCUMENT

[0004]

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SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0005]

Embodiments of the present invention provide an excellent communication device and communication method which are capable of performing an operation suitably with the basic service set belonging to the extended service set.

SOLUTIONS TO PROBLEMS

[0006]

According to a first aspect of the present invention, there is provided a first communication device operating as access point and including a wireless communication unit configured to set first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device, set second information specifying another BSS included in a same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device, and notify a third communication device, operating as station, of the first information and the second information.

[0007]

In an embodiment, the communication device according to the first aspect is configured to notify of BSS Color information of

the communication device as the first information and notify of the second information capable of specifying the BSS Color information set in another access point included in the same ESS.
[0008]

In an embodiment, the communication device according to the second aspect is configured to notify the second information capable of specifying the BSS Color information set in another access point included in the same ESS on the basis of the BSS Color information of the communication device.
[0009]

In an embodiment, the communication device according to the second aspect is configured to notify of ESS Color mask information expressing the BSS Color information of another access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the communication device as the second information.
[0010]

In an embodiment, the communication device according to the first aspect is configured to store the first information and the second information in a physical header and notify of the first information and the second information.
[0011]

In an embodiment, the communication device according to the first aspect is configured to store the second information in an information element included in a predetermined frame and notify of the second information.
[0012]

According to a second aspect of the present invention, there is provided a first communication method of a first communication device operating as access point, the first communication method including the steps of: setting of first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first

communication device; setting of second information specifying another BSS included in the same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device; and notifying a third communication device, operating as station, of the first information and the second information.

[0013]

According to a third aspect of the present invention, there is provided a third communication device operating a station and including a wireless communication unit configured to receive a notification from a first communication device, operating as access point, acquire, from the notification, first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device, acquire, from the notification, second information specifying another BSS included in a same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device, and identify whether a reception signal is a signal of the same ESS or a signal from another ESS, using the second information.

[0014]

In an embodiment of the third aspect, the first information is BSS Color information, and second information is information capable of specifying the BSS Color information set in another access point included in the same ESS, and the communication device according to the eighth aspect is configured to identify the reception signal including the first information on the basis of the BSS Color

information specified using the second information.

[0015]

In an embodiment of the third aspect, the second information is information capable of specifying the BSS Color information set in another access point included in the same ESS on the basis of the BSS Color information, and the communication device according to the ninth aspect is configured to identify the reception signal including the first information on the basis of the BSS Color information specified from the first information using the second information.

[0016]

In an embodiment of the third aspect, the second information is ESS Color mask information expressing the BSS Color information of another access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the communication device.

[0017]

In an embodiment of the third aspect, the communication device is configured to receive a signal in which the first information and the second information are stored in a physical header.

[0018]

In an embodiment of the third aspect, the communication device is configured to receive a predetermined frame including an information element storing the second information.

[0019]

In an embodiment of the third aspect, the communication device is configured to deal with the reception signal identified as the same ESS, in accordance with a signal of the BSS of the communication device.

[0020]

In an embodiment of the third aspect, the communication device is configured to identify the reception signal in accordance with whether or not the first information included in the reception signal

is able to be identified from the second information to be managed.
[0021]

In an embodiment of the third aspect, the communication device is configured to identify the reception signal in accordance with whether or not the first information to be managed is able to be identified from the second information included in the reception signal.

[0022]

In an embodiment of the third aspect, the communication device is configured to deal with the frame not to be received in accordance with a received field strength of the reception signal identified as another ESS.

[0023]

According to a fourth aspect of the present invention, there is provided a third communication method of a third communication device operating a station, the third communication method including the steps of: receiving a notification from a first communication device, operating as access point; acquiring, from the notification, first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device; acquiring, from the notification, second information specifying another BSS included in a same extended service set ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device; and identifying whether a reception signal is a signal of the same ESS or a signal from another ESS, using the second information.

EFFECTS OF THE INVENTION

[0024]

According to embodiments of the present invention, it is

possible to provide an excellent communication device and communication method which are capable of performing an operation suitably with the basic service set belonging to the extended service set.

[0025]

Further, the effect described in this specification is merely an example, and the effect as per embodiments of the present invention is not limited thereto. Further, embodiments of the present invention may further have an additional effect in addition to the above effect.

[0026]

Still other aspects, features, and advantages of the invention disclosed in this specification will become apparent from detailed description based on an embodiment to be described later or the appended drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0027]

Fig. 1 is a diagram illustrating a configuration example of a wireless LAN network.

Fig. 2 is a diagram illustrating an example of a setting status of parameters of each access point in the network configuration example illustrated in Fig. 1.

Fig. 3 is a diagram illustrating a setting status of BSS Color information and ESS Color mask information.

Fig. 4 is a diagram illustrating a configuration example of a wireless communication device 400.

Fig. 5 is a diagram illustrating a specific configuration example of a wireless communication module 401.

CLAIMS

1. A first communication device operating as access point and comprising a wireless communication unit configured to

- set first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device,
- set second information specifying another BSS included in a same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device, and
- notify a third communication device, operating as station, of the first information and the second information.

2. The first communication device according to claim 1, wherein the first information and the second information are stored in a physical header and notified of.

3. The communication device according to claim 1 or 2, wherein the second information is stored in an information element included in a predetermined frame and notified of.

4. A first communication method of a first communication device operating as access point, the first communication method comprising the steps of:

- setting of first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device;
- setting of second information specifying another BSS included

in the same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device; and

- notifying a third communication device, operating as station, of the first information and the second information.

5. A third communication device operating as a station and comprising a wireless communication unit configured to

- receive a notification from a first communication device, operating as access point,
- acquire, from the notification, first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device,
- acquire, from the notification, second information specifying another BSS included in a same extended service set, ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device, and
- identify whether a reception signal is a signal of the same ESS or a signal from another ESS, using the second information.

6. The third communication device according to claim 5, wherein the wireless communication unit is configured to receive a signal in which the first information and the second information are stored in a physical header.

7. The third communication device according to claim 5 or 6, wherein the wireless communication unit is configured to receive a predetermined frame including an information element storing the second information.

8. The third communication device according to any one of claims 5 to 7, wherein the reception signal identified as the same ESS is dealt with, in accordance with a signal of the BSS of the third communication device.

9. The third communication device according to any one of claims 5 to 8, wherein the reception signal is identified in accordance with whether or not the first information included in the reception signal is able to be identified from the second information to be managed.

10. The communication device according to any one of claims 5 to 8, wherein the reception signal is identified in accordance with whether or not the first information to be managed is able to be identified from the second information included in the reception signal.

11. The communication device according to any one of claims 5 to 10, wherein the frame is dealt not to be received in accordance with a received field strength of the reception signal identified as another ESS.

12. A third communication method of a third communication device operating a station, the third communication method comprising the steps of:

- receiving a notification from a first communication device, operating as access point;

- acquiring, from the notification, first information identifying a basic service set, BSS, of the first communication device, wherein the first information is BSS Color information of the first communication device;
- acquiring, from the notification, second information specifying another BSS included in a same extended service set ESS, wherein the second information is ESS Color mask information expressing the BSS Color information of a second communication device operating as access point set in the same ESS by a format of a bit mask for a bitmap indicating the BSS Color information of the first communication device; and
- identifying whether a reception signal is a signal of the same ESS or a signal from another ESS, using the second information.