SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0008]

Embodiments of the present invention provide a communication apparatus and a communication method having high quality that are capable of suitably performing transmission processing in a state of detecting an interference signal.

SOLUTIONS TO PROBLEMS

[0009]

According to a first aspect of the present invention, there is provided a communication apparatus including: a communication unit configured to operate as an access point and to transmit or receive a signal; an information obtaining unit configured to obtain information relating to interference that each transmission destination candidate receives from an interference source, the information relating to respective terminal stations serving as each of the transmission destination candidates in a local basic service set (BSS) and interference received from an overlapping basic service set (OBSS) serving as the interference source; and a controller configured to select each of the transmission destination candidates on a basis of the information when an interference signal arrives, wherein the controller is configured to select one of the respective terminal stations in the local BSS on a basis of the information, and to cause the signal to be transmitted when a reception power of an OBSS signal serving as the interference signal is less than or equal to a prescribed threshold.

[0010]

According to a second aspect of the present invention, there is provided a communication method for operating an access point, the method including: an information obtaining step of obtaining information relating to interference that

each transmission destination candidate receives from an interference source, the information relating to respective terminal stations serving as each of the transmission destination candidates in a local basic service set (BSS) and interference received from an overlapping basic service set (OBSS)serving as the interference source; and a controlling step of selecting each of the transmission destination candidates on a basis of the information when an interference signal arrives, wherein the selecting of the respective terminal stations in the local BSS is based on the information, and of causing the signal to be transmitted when a reception power of an OBSS signal serving as the interference signal is less than or equal to a prescribed threshold.

[0011]

According to a third aspect of the present invention, there is provided a communication apparatus configured to operate under a control of an access point, the communication apparatus including: a controller configured to perform control to transmit, to the access point, information relating to an intensity of a received signal of an overlapping basic service set (OBSS) signal, wherein the controller is configured to perform control to transmit, to the access point, the information that associates the intensity of the received signal of the OBSS signal with a basic service set (BSS) identification information of an OBSS.

EFFECTS OF THE INVENTION

[0012]

According to embodiments of the present invention disclosed herein, a communication apparatus and a communication method having high quality can be provided that are capable of suitably performing transmission processing in a state of detecting an interference signal.

[0013]

Note that effects described herein are merely examples, and effects of the present invention are not limited to the

effects described herein. Furthermore, embodiments of the present invention further exhibit additional effects in addition to the effects described above in some cases.

[0014]

Yet other aspects, features, and advantages of the technology disclosed herein will be clarified by a more detailed description based on the embodiments described later and the attached drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0015]

Fig. 1 illustrates an example of an ideal configuration of a wireless LAN system to which SR transmission based on OBSS-PD is applied.

Fig. 2 illustrates an example of a signal transmission sequence in a wireless LAN system 100 illustrated in Fig. 1.

Fig. 3 illustrates an example of a configuration of a wireless LAN system 300.

Fig. 4 is a flowchart illustrating a processing procedure performed when a terminal station receives a frame.

Fig. 5 is a block diagram illustrating an example of implementation for recording reception power and a BSS Color of an OBSS signal.

Fig. 6 is a flowchart illustrating a processing procedure for reporting OBSS RSSI information to an AP.

Fig. 7 illustrates an example of a configuration of a measurement report frame.

Fig. 8 illustrates an example of a table that reflects a rough positional relationship among each STA under the control of the AP, OBSS's, and the AP.

Fig. 9 is a diagram explaining an example of a method in which the AP realizes SR transmission based on OBSS-PD.

Fig. 10 illustrates an example of a signal transmission sequence at a time when the AP realizes SR transmission based on OBSS-PD.

CLAIMS

1. A communication apparatus comprising:

a communication unit configured to operate as an access point and to transmit or receive a signal;

an information obtaining unit configured to obtain information relating to interference that each transmission destination candidate receives from an interference source, the information relating to respective terminal stations serving as each of the transmission destination candidates in a local basic service set (BSS) and interference received from an overlapping basic service set (OBSS) serving as the interference source; and

a controller configured to select each of the transmission destination candidates on a basis of the information when an interference signal arrives,

wherein the controller is configured to select one of the respective terminal stations in the local BSS on a basis of the information, and to cause the signal to be transmitted when a reception power of an OBSS signal serving as the interference signal is less than or equal to a prescribed threshold.

2. The communication apparatus according to claim 1,

wherein the controller is configured to identify whether or not the interference signal has arrived from an overlapping basic service set, OBSS, on a basis of basic service set, BSS, identification information described in a PHY header of a received frame.

3. The communication apparatus according to claim 2,

wherein the BSS identification information includes a BSS Color defined by IEEE 802.11.

4. The communication apparatus according to any one of the preceding claims,

wherein the controller is configured to select a transmission destination candidate that the information indicates that is located farthest from the interference source that corresponds to the interference signal or is not located closest to the interference source.

5. The communication apparatus according to claim 1, 2 or 3,

wherein the information obtaining unit is configured to obtain the information relating to an intensity of a received signal from the interference source of each of the transmission destination candidates, and

the controller is configured to select each of the transmission destination candidates on a basis of the intensity of the received signal from the interference source that corresponds to the interference signal.

6. The communication apparatus according to claim 5,

wherein the controller is configured to select a transmission destination candidate that the information indicates that has a lowest intensity of the received signal from the interference source that corresponds to the interference signal or does not have a highest intensity of the received signal from the interference source.

7. The communication apparatus according to claim 5,

wherein the information obtaining unit is configured to obtain the information on a basis of a report relating to the intensity of the received signal from the interference source, the report being transmitted from each of the transmission destination candidates.

8. The communication apparatus according to claim 5,

wherein the information obtaining unit is configured to obtain the information on a basis of a report relating to a measurement result of the intensity of the received signal from the interference source, the report being transmitted by each of the transmission destination candidates in response to a measurement request from a local station.

9. The communication apparatus according to claim 5,

wherein the information obtaining unit is configured to obtain the information relating to the intensity of the received signal of an OBSS signal in each terminal station serving as each of the transmission destination candidates in a local BSS, and

the controller is configured to manage the information of each of the terminal stations in association with BSS identification information of an OBSS.

10. The communication apparatus according to claim 9,

wherein the information obtaining unit is configured to obtain, from each of the terminal stations, the information including the BSS identification information that indicates at least one of an OBSS having a maximum intensity of the received signal or an OBSS having a minimum intensity of the received signal.

11. The communication apparatus according to claim any one of the preceding claims,

wherein the information obtaining unit is configured to obtain the information relating to an angle of arrival of each of the transmission destination candidates and the interference source, and

the controller is configured to select each of the

transmission destination candidates on a basis of a relationship of the angle of arrival between the interference source that corresponds to the interference signal and each of the transmission destination candidates.

12. The communication apparatus according to claim 11,

wherein the controller is configured to select a transmission destination candidate that the information indicates that is most different in the angle of arrival from the interference source that corresponds to the interference signal or is not most similar in the angle of arrival to the interference source.

13. The communication apparatus according to claim 11,

wherein the communication unit is configured to include a directional antenna, and

the information obtaining unit is configured to obtain the information relating to the angle of arrival on a basis of a result of receiving signals from each of the transmission destination candidates and the interference source by using the directional antenna.

14. The communication apparatus according to claim 11,

wherein the information obtaining unit is configured to obtain the information relating to the angle of arrival of terminal stations serving as each of the transmission destination candidates in a local BSS and OBSS's, and

the controller is configured to group terminal stations and an OBSS that are similar in the angle of arrival into a cluster, and manages respective clusters in association with BSS identification information of each of the OBSS's.

15. A communication method for operating an access point, the method comprising:

an information obtaining step of obtaining information relating to interference that each transmission destination candidate receives from an interference source, the information relating to respective terminal stations serving as each of the transmission destination candidates in a local basic service set (BSS) and interference received from an overlapping basic service set (OBSS)serving as the interference source; and

a controlling step of selecting each of the transmission destination candidates on a basis of the information when an interference signal arrives, wherein the selecting of the respective terminal stations in the local BSS is based on the information, and of causing the signal to be transmitted when a reception power of an OBSS signal serving as the interference signal is less than or equal to a prescribed threshold.

16. A communication apparatus configured to operate under a control of an access point, the communication apparatus comprising:

a controller configured to perform control to transmit, to the access point, information relating to an intensity of a received signal of an overlapping basic service set (OBSS) signal,

wherein the controller is configured to perform control to transmit, to the access point, the information that associates the intensity of the received signal of the OBSS signal with a basic service set (BSS) identification information of an OBSS.

17. The communication apparatus according to claim 16, wherein the controller is configured to perform control to transmit, to the access point, the information including BSS identification information that indicates at least one of an OBSS having a maximum intensity of the received signal or an OBSS having a minimum intensity of the received signal.

18. The communication apparatus according to claim 16, wherein the controller is configured to cause a report frame to be transmitted to the access point in response to a request frame from the access point, the report frame including the information.