

JP 2007-134905A

[Summary]

[Technical Problem]

[0006]

In the existing technology described above, since the possibility that a wireless communication apparatus in which the carrier sense level is varied may acquire the transmission right of data in comparison with a wireless communication apparatus in which the carrier sense level is not varied is high, unfairness in transmission opportunity arises. Therefore, it is important to reduce the unfairness in transmission opportunity and efficiently utilize a wireless resource.

[0007]

Embodiments of the present invention efficiently utilize a wireless resource.

[Solution to Problem]

[0008]

According to a first aspect of the present invention, there is provided an information processing apparatus including a control unit that aborts, when a packet decided to be transmitted from a second network different from a first network to which the information processing apparatus belongs is detected, reception of the packet and deals with carrier sense as an idle state based on a reception strength of the packet. Disclosed herein is an information processing method for the information processing apparatus and a program for causing a computer to execute the above method, wherein the

control unit performs control for dealing with the carrier sense as an idle state based on a result of comparison between the reception strength of the packet and a first threshold value; the control unit changes the first threshold value and performs control for transmitting data based on a wireless transmission parameter changed in response to the first threshold value after changed; and wherein the control unit changes the first threshold value based on information included in a frame transmitted from a different apparatus belonging to the first network.

According to a second aspect of the present invention, there is provided an information processing method including a first procedure for aborting, when a packet decided to be transmitted from a second network different from a first network to which an information processing apparatus belongs is detected, reception of the packet; and a second procedure for dealing with carrier sense as an idle state based on a reception strength of the packet, wherein the second procedure is performed based on a result of comparison between the reception strength of the packet and a first threshold value; the first threshold value is changed and control for transmitting data is performed based on a wireless transmission parameter changed in response to the first threshold value after changed; and the first threshold value is changed based on information included in a frame transmitted from a different apparatus belonging to the first network.

This brings about action that, when the packet decided to be transmitted from the second network, reception of the packet is aborted, and the carrier sense is dealt with as the idle state based on the reception strength of the packet.

[0009]

Further, in an embodiment of the first aspect, the control unit may perform control for dealing with the carrier sense as an idle state based on a result of comparison between the reception strength of the packet and a first threshold value. This brings about action that the carrier sense is dealt with as the idle state based on the result of the comparison between the reception strength of the packet and the first threshold value.

[0010]

Further, in an embodiment of the first aspect, the control unit may identify the second network to which an apparatus from which the packet is transmitted belongs based on a network identifier added to a header of a physical layer of the packet. This brings about action that the second network to which the apparatus from which the packet is transmitted belongs is identified based on the network identifier added to the header of the physical layer of the packet.

[0011]

Further, in an embodiment of the first aspect, the control unit may identify the second network based on a result of comparison between the network identifier added to the

header of the physical layer of the packet and a network identifier of the first network. This brings about action that the second network is identified based on the result of the comparison between the network identifier added to the header of the physical layer of the packet and the network identifier of the first network.

[0012]

Further, in an embodiment of the first aspect, the control unit may identify the second network based on a result of comparison between a network identifier added to a header of a data link layer of the packet and a network identifier of the first network. This brings about action that the second network is identified based on the result of the comparison between the network identifier added to the header of the data link layer of the packet and the network identifier of the first network.

[0013]

Further, in an embodiment of the first aspect, the control unit may perform control for transmitting information for specifying a set of first information used by a different apparatus belonging to the first network and used for determination of the first threshold value and a wireless transmission parameter that interlocks with the first information to the different apparatus. This brings about action that information for specifying the set of the first information and the wireless transmission parameter is transmitted to the different apparatus.

[0014]

Further, in an embodiment of the first aspect, the control unit may perform control for transmitting, as the first information, one of information for specifying the first threshold value and information for designating a range within which the first threshold value is to be changed by the different apparatus by which a reference frame is received based on a ratio between the information for specifying the first threshold value and a reception strength of the reference frame. This brings about action that one of information for specifying the first threshold value and information for designating the range within which the first threshold value is to be changed by the different apparatus by which the reference frame is received is transmitted based on the ratio between the information for specifying the first threshold value and the reception strength of the reference frame.

[0015]

Further, in an embodiment of the first aspect, the wireless transmission parameter may be at least one of transmission power, transmission fixed waiting time, carrier sense random waiting time, a maximum frame time length, a usable channel bandwidth and a usable channel frequency. This brings about action that at least one wireless transmission parameter from among them is transmitted.

[0016]

Further, in an embodiment of the first aspect, the

control unit may perform control for changing, when a frame transmitted from a different apparatus belonging to the first network and destined for the information processing apparatus includes information regarding transmission power of the frame, transmission power for a reception response of the frame based on the information regarding the transmission power and transmitting the reception response. This brings about action that, when the frame transmitted from the different apparatus belonging to the first network and destined for the information processing apparatus includes information regarding the transmission power of the frame, the transmission power for the reception response of the frame is changed based on the information regarding the transmission power and the reception response is transmitted.

[0017]

Further, in an embodiment of the first aspect, the reference frame may be a beacon transmitted from an apparatus belonging to the first network. This brings about action that the beacon transmitted from the apparatus belonging to the first network is used as the reference frame.

[0018]

Further, in an embodiment of the first aspect, the information processing apparatus may share information for specifying the set of the first information and the wireless transmission parameter with at least one of a different apparatus belonging to the first network and a different apparatus belonging to the second network. This brings about

action that information for specifying the set of the first information and the wireless transmission parameter is shared with at least one of the different apparatus belonging to the first network and the different apparatus belonging to the second network.

[0019]

Further, in an embodiment of the first aspect, the control unit may change the first threshold value and perform control for transmitting data based on a wireless transmission parameter changed in response to the first threshold value after changed. This brings about action that the first threshold value is changed, and data is transmitted based on the wireless transmission parameter changed in response to the first threshold value after changed.

[0020]

Further, in an embodiment of the first aspect, the control unit may change the wireless transmission parameter in an interlocking relationship with the first threshold value. This brings about action that the wireless transmission parameter is changed in the interlocking relationship with the first threshold value.

[0021]

Further, in an embodiment of the first aspect, the control unit may change the first threshold value based on information included in a frame transmitted from a different apparatus belonging to the first network. This brings about action that the first threshold value is changed based on

information included in the frame transmitted from the different apparatus belonging to the first network.

[0022]

Further, in an embodiment of the first aspect, the control unit may perform control for changing the first threshold value based on a margin value included in the frame and a reception strength of the frame. This brings about action that the first threshold value is changed based on the margin value included in the frame and the reception strength of the frame.

[0023]

Further, in an embodiment of the first aspect, the control unit may perform control for changing the first threshold value within a range determined based on the margin value and the reception strength. This brings about action that the first threshold value is changed within the range determined based on the margin value and the reception strength.

[0024]

Further, in an embodiment of the first aspect, the control unit may perform control for determining the wireless transmission parameter based on information included in a frame transmitted from a different apparatus belonging to the first network and a changing amount of the first threshold value from a reference value. This brings about action that the wireless transmission parameter is determined based on information included in the frame transmitted from the

different apparatus belonging to the first network and the changing amount of the first threshold value from the reference value.

[0025]

Further, in an embodiment of the first aspect, the wireless transmission parameter may be a parameter for setting transmission power, and the control unit may perform, when the wireless transmission parameter is to be changed, control for including information regarding transmission power to be set with the wireless transmission parameter after changed into a frame to be transmitted to an apparatus belonging to the first network. This brings about action that, when the wireless transmission parameter is to be changed, information regarding the transmission power to be set with the wireless transmission parameter after changed is included into the frame to be transmitted to the apparatus belonging to the first network.

[0026]

Further, in an embodiment of the first aspect, the frame may be a beacon transmitted from an apparatus belonging to the first network. This brings about action that the beacon transmitted from the apparatus belonging to the first network is used.

[Advantageous Effect of Invention]

[0027]

With the above embodiments of the present invention, a

superior effect that a wireless resource can be utilized efficiently can be achieved. It is to be noted that the effect described here is not necessarily limitative, but any of effects described in the present disclosure may be exhibited.

[Brief Description of Drawings]

[0028]

[FIG. 1]

FIG. 1 is a view depicting an example of a system configuration of a communication system 10 in a first embodiment of the present technology.

[FIG. 2]

FIG. 2 is a block diagram depicting an example of a functional configuration of an information processing apparatus (AP) 100 in the first embodiment of the present technology.

[FIG. 3]

FIG. 3 is a flow chart illustrating an example of a processing procedure of a packet transmission and reception process by the information processing apparatus (AP) 100 in the first embodiment of the present technology.

[FIG. 4]

FIG. 4 is a view depicting an example of a relationship (process classification table) between processes performed by the information processing apparatus (AP) 100 in the first embodiment of the present

CLAIMS

1. An information processing apparatus, comprising:
a control unit that aborts, when a packet decided to be transmitted from a second network different from a first network to which the information processing apparatus belongs is detected, reception of the packet and deals with carrier sense as an idle state based on a reception strength of the packet, wherein

the control unit performs control for dealing with the carrier sense as an idle state based on a result of comparison between the reception strength of the packet and a first threshold value;

the control unit changes the first threshold value and performs control for transmitting data based on a wireless transmission parameter changed in response to the first threshold value after changed; and

wherein the control unit changes the first threshold value based on information included in a frame transmitted from a different apparatus belonging to the first network.

2. The information processing apparatus according to claim 1, wherein the control unit identifies the second network to which an apparatus from which the packet is transmitted belongs based on a network identifier added to a header of a physical layer of the packet.

3. The information processing apparatus according to claim 2, wherein the control unit identifies the second network based on a result of comparison between the network identifier added to the header of the physical layer of the packet and a network identifier of the first network.

4. The information processing apparatus according to claim 1, wherein the control unit identifies the second network based on a result of comparison between a network identifier added to a header of a data link layer of the packet and a network identifier of the first network.

5. The information processing apparatus according to claim 1, wherein the control unit performs control for transmitting information for specifying a set of first information used by a different apparatus belonging to the first network and used for determination of the first threshold value and a wireless transmission parameter that interlocks with the first information to the different apparatus.

6. The information processing apparatus according to claim 5, wherein the control unit performs control for transmitting, as the first information, one of information for specifying the first threshold value and information for designating a range within which the first threshold value is

to be changed by the different apparatus by which a reference frame is received based on a ratio between the information for specifying the first threshold value and a reception strength of the reference frame.

7. The information processing apparatus according to claim 5, wherein the wireless transmission parameter is at least one of transmission power, transmission fixed waiting time, carrier sense random waiting time, a maximum frame time length, a usable channel bandwidth and a usable channel frequency.

8. The information processing apparatus according to claim 1, wherein the control unit performs control for changing, when a frame transmitted from a different apparatus belonging to the first network and destined for the information processing apparatus includes information regarding transmission power of the frame, transmission power for a reception response of the frame based on the information regarding the transmission power and transmitting the reception response.

9. The information processing apparatus according to claim 8, wherein the reference frame is a beacon transmitted from an apparatus belonging to the first network.

10. The information processing apparatus according to claim 5, wherein the information processing apparatus shares information for specifying the set of the first information and the wireless transmission parameter with at least one of a different apparatus belonging to the first network and a different apparatus belonging to the second network.

11. The information processing apparatus according to claim 1, wherein the control unit changes the wireless transmission parameter in an interlocking relationship with the first threshold value.

12. The information processing apparatus according to claim 1, wherein

the wireless transmission parameter is a parameter for setting transmission power, and

the control unit performs, when the wireless transmission parameter is to be changed, control for including information regarding transmission power to be set with the wireless transmission parameter after changed into a frame to be transmitted to an apparatus belonging to the first network.

13. An information processing method, comprising:

a first procedure for aborting, when a packet decided to be transmitted from a second network different from a first network to which an information processing apparatus belongs

is detected, reception of the packet; and

a second procedure for dealing with carrier sense as an idle state based on a reception strength of the packet, wherein

the second procedure is performed based on a result of comparison between the reception strength of the packet and a first threshold value;

the first threshold value is changed and control for transmitting data is performed based on a wireless transmission parameter changed in response to the first threshold value after changed; and

the first threshold value is changed based on information included in a frame transmitted from a different apparatus belonging to the first network.