Description

Title of Invention

INFORMATION PROCESSING DEVICE, INFORMATION PROCESSING METHOD, AND PROGRAM

Technical Field

[0001]

The present technology relates to an information processing device. Specifically, the present technology relates to an information processing device and information processing method of interchanging various kinds of information using wireless communication, and a program causing a computer to perform the method.

Background Art

[0002]

Since the past, a wireless communication technique of exchanging various kinds of data using wireless communication has been known. For example, a wireless communication technique that enables various kinds of information to be interchanged between two information processing device has been proposed.

[0003]

For example, a wireless communication technique that enables a group to be formed by a plurality of information processing devices and interchanging various kinds of information in the group has been proposed. In this case, it is also conceivable that the information processing devices belonging to the group can be changed.

[0004]

For example, a wireless communication device that changes a topology of a group on the basis of a relation of the number of devices operating functions of supplying and using content or situations of supply and use of content by a master device has been proposed (for example, see Patent Literature 1).

Citation List

Patent Literature

[0005]

Patent Literature 1: JP 2014-78785A

Disclosure of Invention

Technical Problem

[0006]

In the above-described technique of the related art, a group which has already been formed can be changed.

[0007]

Here, for example, when a group to which a large number of information processing devices belongs is changed or a new group in which the number of information processing devices is large is formed, a processing time may become long in accordance with the number of information processing devices. Thus, it is important to perform a process related to group formation rapidly.

[0008]

Embodiments of the present invention are devised in view of these circumstances and perform a process related to group formation rapidly.

Solution to Problem

[0009]

According to a first aspect of the present invention, there is provided an information processing device including: a wireless communication unit configured to interchange a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices including the own device belong; and a control unit configured to perform control such that capability information regarding the one or more information processing devices is exchanged with a second information processing device belonging to a second group which is a new group other than the first group when the second group is formed, wherein the control unit performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.

Accordingly, it is possible to obtain an operational effect in which the capability information regarding the one or more information processing devices is exchanged with the second information processing devices belong to the second group when the second group is

formed.

[0010]

In addition, according to the first aspect, the control unit may perform control such that a process of exchanging a request and a response with the second information processing device is performed, the request and the response including information regarding a usable frequency channel or data transmission band. Accordingly, it is possible to obtain an operational effect of performing the process of exchanging the request and the response including the information regarding the usable frequency channel or the data transmission band with the second information processing device.

[0011]

In addition, according to the first aspect, the control unit may perform control such that a group changing request including predetermined band information is transmitted to the second information processing device before the process of exchanging the request and the response when the second group is formed. Accordingly, it is possible to obtain an operational effect in which the group changing request including the predetermined band information is transmitted to the second information processing device, earlier than the process of exchanging the request and the response when the second group is formed.

[0012]

In addition, according to the first aspect, the control unit may perform control such that the process of exchanging the request and the response is realized through provision discovery. Accordingly, it is possible to obtain an operational effect in which the process of exchanging the request and the response is realized through the provision discovery.

[0013]

In addition, according to the first aspect, the second information processing device may form the second group on the basis of the capability information regarding the one or more information processing devices. Accordingly, it is possible to obtain an operational effect in which the second information processing device forms the second group on the basis of the capability information regarding the one or more information processing devices.

[0014]

In addition, according to the first aspect, the control unit may perform control such that the second group is formed on the basis of a way of using the first information processing device. Accordingly, it is possible to obtain an operational effect in which the second group is formed on the basis of use of the first information processing device.

[0015]

In addition, according to the first aspect, the control unit may perform control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group. Accordingly, it is possible to obtain an operational effect in which the state information and the limit information are interchanged between the information processing devices belonging to the first group.

[0016]

In addition, according to the first aspect, the control unit may perform control such that the second information processing device is notified of information regarding a usable frequency and a transmission speed recommended to the second group on the basis of at least one of a display form of the first information processing device and a way of using the first information processing device. Accordingly, it is possible to obtain an operational effect in which the second information processing device is notified of the information regarding the usable frequency and the transmission speed recommended to the second group on the basis of at least one of the display form of the first information processing device and the use of the first information processing device.

[0017]

In addition, according to the first aspect, the first information processing device may manage device management information of each of the information processing devices belonging to the first group. Accordingly, it is possible to obtain an operational effect in which the first information processing device manages device management information of each of the information processing devices belonging to the first group.

[0018]

In addition, according to the first aspect, the first information processing device may decide a group owner of the second group and a client of the second group so that at least one client belonging to the first group serves as the second information processing device, and the first information processing device may notify each of the information processing devices belonging to the second group of content of the decision. Accordingly, it is possible to obtain an operational effect in which the first information processing device decides a group owner of the second group and a client of the second group so that at least one client belonging to

the first group serves as the second information processing device, and notifies each of the information processing devices belonging to the second group of content of the decision.

[0019]

In addition, according to the first aspect, the group owner of the second group may form the second group by performing an invitation process on each information processing device to be a client of the second group. Accordingly, it is possible to obtain an operational effect in which the group owner of the second group forms the second group by performing the invitation process on each information processing device serving as the client of the second group.

[0020]

In addition, according to the first aspect, the group owner of the second group may form the second group by performing a provision discovery process on the basis of information received from an information processing device to be a client of the second group. Accordingly, it is possible to obtain an operational effect in which the group owner of the second group forms the second group by performing a provision discovery process on the basis of information received from an information processing device serving as a client of the second group.

[0021]

In addition, according to the first aspect, the first information processing device may notify an information processing device that newly participates in the first group of device management information managed by the first information processing device and causes the information processing device to set a mode for participation in the first group. Accordingly, it is possible to obtain an operational effect in which the first information processing device notifies the information processing device newly participating in the first group of device management information managed by the first information processing device to set the mode for participation in the first group.

[0022]

In addition, according to the first aspect, the control unit may perform control such that the second group is formed by setting a group owner of the second group and a client of the second group via the first group. Accordingly, it is possible to obtain an operational effect in which the second group is formed by setting the group owner of the second group and the client of the second group via the first group.

[0023]

In addition, according to the first aspect, the control unit may perform control such that the capability information necessary to form the second group is transmitted to each of the information processing devices that are to belong to the second group. Accordingly, it is possible to obtain an operational effect in which the capability information necessary to form the second group is transmitted to each of the information processing devices belonging to the second group.

[0024]

In addition, according to the first aspect, when the first information processing device does not have a concurrent function, the first information processing device may transmit the capability information managed by the first information processing device to the second information processing device for disconnection from the first group. Accordingly, it is possible to obtain an operational effect in which the first information processing device transmits the capability information managed by the first information processing device to the second information processing device for disconnection from the first group when the first information processing device has no concurrent function.

[0025]

In addition, according to the first aspect, the capability information may include at least one of information regarding a frequency to be used, information regarding a transmission rate to be used, and information regarding whether there is a concurrent function. Accordingly, it is possible to obtain an operational effect in which at least one of the information regarding the frequency to be used, the information regarding the transmission rate to be used, and the information regarding whether there is the concurrent function is notified of as the capability information.

[0025a]

According to a second aspect of the present invention, there is provided an information processing method including: a communication procedure of interchanging a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices belong; and a control procedure of performing control such that capability information regarding the one or more information processing devices is exchanged with a second information processing device belonging to a second group which is a new group other than the first group when the second group is

formed, wherein the control procedure performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.

[0025b]

According to a third aspect of the present invention, there is provided a program causing a computer to perform: a communication procedure of interchanging a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices belong; and a control procedure of performing control such that capability information regarding the one or more information processing devices is exchanged with a second information processing device belonging to a second group which is a new group other than the first group when the second group is formed, wherein the control procedure performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.

Advantageous Effects of Invention

[0026]

According to embodiments of the present invention, it is possible to obtain an excellent advantageous effect of performing a process related to group formation rapidly. It is not necessarily limited to the effect described herein, and any effect described in the present disclosure may be included.

Brief Description of Drawings

[0027]

[FIG. 1] FIG. 1 is a block diagram illustrating a system configuration example of a communication system 100 according to a first embodiment of the present technology.

CLAIMS

1. An information processing device comprising:

a wireless communication unit configured to interchange a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices including the own device belong; and

a control unit configured to perform control such that capability information regarding the one or more information processing devices is exchanged with a second information processing device belonging to a second group which is a new group other than the first group when the second group is formed,

wherein the control unit performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.

2. The information processing device according to claim 1,

wherein the control unit performs control such that a process of exchanging a request and a response with the second information processing device is performed, the request and the response including information regarding a usable frequency channel or data transmission band.

3. The information processing device according to claim 2,

wherein the control unit performs control such that a group changing request including predetermined band information is transmitted to the second information processing device before the process of exchanging the request and the response when the second group is formed.

4. The information processing device according to claim 2,

wherein the control unit performs control such that the process of exchanging the request and the response is realized through provision discovery.

5. The information processing device according to claim 1,

wherein the second information processing device forms the second group on the basis of the capability information regarding the one or more information processing devices.

6. The information processing device according to claim 1,

wherein the control unit performs control such that the second group is formed on the basis of a way of using the first information processing device.

7. The information processing device according to claim 1,

wherein the control unit performs control such that the second information processing device is notified of information regarding a usable frequency and a transmission speed recommended to the second group on the basis of at least one of a display form of the first information processing device and a way of using the first information processing device.

8. The information processing device according to claim 1,

wherein the first information processing device manages device management information of each of the information processing devices belonging to the first group.

9. The information processing device according to claim 1,

wherein the first information processing device decides a group owner of the second group and a client of the second group so that at least one client belonging to the first group serves as the second information processing device, and the first information processing device notifies each of the information processing devices belonging to the second group of content of the decision.

10. The information processing device according to claim 9,

wherein the group owner of the second group forms the second group by performing an invitation process on each information processing device to be a client of the second group.

11. The information processing device according to claim 9,

wherein the group owner of the second group forms the second group by performing a provision discovery process on the basis of information received from an information processing device to be a client of the second group.

12. The information processing device according to claim 1,

wherein the first information processing device notifies an information processing device that newly participates in the first group of device management information managed by the first information processing device and causes the information processing device to set a mode for participation in the first group.

13. The information processing device according to claim 1,

wherein the control unit performs control such that the second group is formed by setting a group owner of the second group and a client of the second group via the first group.

14. The information processing device according to claim 1,

wherein the control unit performs control such that the capability information necessary to form the second group is transmitted to each of the information processing devices that are to belong to the second group.

15. The information processing device according to claim 1,

wherein, when the first information processing device does not have a concurrent function, the first information processing device transmits the capability information managed by the first information processing device to the second information processing device for disconnection from the first group.

16. The information processing device according to claim 1,

wherein the capability information includes at least one of information regarding a frequency to be used, information regarding a transmission rate to be used, and information regarding whether there is a concurrent function.

17. An information processing method comprising:

a communication procedure of interchanging a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices belong; and

a control procedure of performing control such that capability information regarding the one or more information processing devices is exchanged with a second information

processing device belonging to a second group which is a new group other than the first group when the second group is formed,

wherein the control procedure performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.

18. A program causing a computer to perform:

a communication procedure of interchanging a stream for outputting image information from a first information processing device by using wireless communication, the first information processing device belonging to a first group to which one or more information processing devices belong; and

a control procedure of performing control such that capability information regarding the one or more information processing devices is exchanged with a second information processing device belonging to a second group which is a new group other than the first group when the second group is formed,

wherein the control procedure performs control such that state information indicating a role of each of the information processing devices belonging to the first group and limit information regarding a limit of each of the information processing devices are interchanged between the information processing devices belonging to the first group, the information being used at time of deciding a role of the second group.