[0020] The one or the plurality of components is acquired from one of an RTP (Real-time Transport Protocol) session and a FLUTE (File Delivery over Unidirectional Transport) session of the digital broadcast signal based on whether the specific service is provided in a synchronous or an asynchronous format.

[0021] The circuitry is further configured to store the packaged one or the plurality of components and the first control information in a memory.

[0022] The circuitry is further configured to read the one or the plurality of components and the first control information which are stored in the memory to perform reproduction.

[0023] The circuitry is further configured to transmit the packaged one or the plurality of components and the first control information to another electronic device.

Solution to Problem

[0023a] According to a first aspect of the present invention, there is provided a reception device comprising: circuitry configured to receive a digital broadcast signal including an IP (Internet Protocol) transport stream; package, for a specific service among a plurality of services included in the digital broadcast signal, first control information corresponding to the specific service and packets of one or more components having the same IP address, wherein the one or more components includes at least one of audio/video of the specific service and network time protocol information, and wherein the first control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer; and perform a predetermined process by using the packaged one or more components and the first control information.

[0023b] According to a second aspect of the present invention, there is provided a reception method of a reception device, comprising: receiving, by circuitry of the reception device, a digital broadcast signal including an IP (Internet Protocol) transport stream;
packaging, by the circuitry and for a specific service among a plurality of services included in the digital broadcast signal, control information corresponding to the specific service and packets of one or more components having the same IP address, wherein the one or more components includes at least one of audio/video of the specific service and network time protocol information, and wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer; and performing

a predetermined process by using the packaged one or more components and the control information.

[0023c] According to a third aspect of the present invention, there is provided a transmission device comprising: circuitry configured to acquire one or more components including at least one of audio/video of a specific service and network time protocol information of the specific service; acquire control information corresponding to the specific service; and transmit a digital broadcast signal including an IP (Internet Protocol) transport stream in which packets of the one or more components and a packet of the control information corresponding to the specific service are packaged as a function of having the same IP address, wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer in the transmitted digital broadcast signal.

[0023d] According to a fourth aspect of the present invention, there is provided a transmission method of a transmission device, comprising: acquiring, by circuitry of the transmission device, one or more components including at least one of audio/video of a specific service and network time protocol information of the specific service; acquiring, by the circuitry, control information corresponding to the specific service; and transmitting, by the circuitry, a digital broadcast signal including an IP (Internet Protocol) transport stream in which packets of the one or more components and a packet of the control information corresponding to the a specific service are packaged as a function of having the same IP address, wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer in the transmitted digital broadcast signal.

[0024] A reception device may be an independent device or an internal block constituting one device.

[0025] A reception method according to an embodiment of the present invention is a reception method which is adapted to a reception device according to the above aspect of the present invention.

[0026] In a reception device and a reception method according to embodiments of the present invention, a digital broadcast signal including an IP transport stream is received by circuitry of the reception device, one or a plurality of components and control information constituting a specific service among a plurality of services included in the digital broadcast signal are packaged for a specific service by the circuitry by using an IP address included in each of the

packets, and a predetermined process is performed by using the packaged components and control information.

[0027] A transmission device according to another embodiment of the present invention is configured to include circuitry configured to acquire one or a plurality of components, a acquire control information, and transmit a digital broadcast signal including an IP transport stream in which packets of the one or the plurality of components and a packet of the control information constituting a specific service have the same IP address.

[0028] The transmission device may be an independent device and may be an internal block constituting one device.

[0029] A transmission method according to another embodiment of the present invention is a transmission method corresponding to the transmission device according to above aspect of the present invention.

[0030] In the transmission device and the transmission method according to embodiments of the present disclosure, one or a plurality of components are acquired by circuitry of the transmission device, control information is acquired by the circuitry, and a digital broadcast signal including an IP transport stream is transmitted, by the circuitry, in which packets of the one or the plurality of components and a packet of the control information constituting a specific service have the same IP address.

Advantageous Effects of Invention

[0031] According to embodiments of the present invention, it is possible to flexibly adapt to various operation forms.

[0032] In addition, the effects described herein are not necessarily limited, and they may also be any effect described in the present invention.

Brief Description of Drawings

[0033] [fig. 1] Fig. 1 is a diagram illustrating a protocol stack of digital broadcast in an IP transmission mode.

[fig. 2] Fig. 2 is a diagram illustrating a relation between a signal of a broadcasting wave and an ID system in the IP transmission mode.

[fig. 3] Fig. 3 is a diagram illustrating a configuration of the broadcasting wave of the

digital broadcast in the IP transmission mode.

[fig. 4] Fig. 4 is a diagram illustrating a configuration of an LLS.

[fig. 5] Fig. 5 is a diagram illustrating a configuration of an MLS.

[fig. 6] Fig. 6 is a diagram illustrating a concept of service channels.

[fig. 7] Fig. 7 is a diagram illustrating a configuration of an embodiment of a broadcasting system employing the present disclosure.

[fig. 8] Fig. 8 is a diagram illustrating a configuration of an embodiment of a transmission device employing the present disclosure.

[fig. 9] Fig. 9 is a diagram illustrating a configuration of an embodiment of a reception device employing the present disclosure.

[fig. 10] Fig. 10 is a diagram illustrating details of a filtering process of each packet in a Demux.

[fig. 11] Fig. 11 is a diagram describing a basic signaling system.

[fig. 12] Fig. 12 is a diagram describing a signaling system in an NRT service.

[fig. 13] Fig. 13 is a diagram describing a signaling system in a hybrid service.

[fig. 14] Fig. 14 is a diagram illustrating a data structure of an NIT.

[fig. 15] Fig. 15 is a diagram illustrating an example of descriptors arranged in a loop of the NIT.

[fig. 16] Fig. 16 is a diagram illustrating a data structure of Name_descriptor.

[fig. 17] Fig. 17 is a diagram illustrating a data structure of Service_list_decriptor.

[fig. 18] Fig. 18 is a diagram illustrating a data structure of ATSC3_delivery_system_descriptor.

[fig. 19] Fig. 19 is a diagram illustrating a data structure of

CLAIMS

1. A reception device comprising:

circuitry configured to

receive a digital broadcast signal including an IP (Internet Protocol) transport stream;

package, for a specific service among a plurality of services included in the digital broadcast signal, first control information corresponding to the specific service and packets of one or more components having the same IP address, wherein the one or more components includes at least one of audio/video of the specific service and network time protocol information, and wherein the first control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer; and

perform a predetermined process by using the packaged one or more components and the first control information.

2. The reception device according to claim 1, wherein the MLS of the first control information is at a protocol stack layer above an IP layer among layers of a protocol used to transmit the digital broadcast signal.

3. The reception device according to claim 2, wherein second control information transmitted in a packet having a structure which is different from a structure of an IP packet includes:

an ID identifying a network;

an ID identifying the IP transport stream; and

an ID identifying a service.

4. The reception device according to claim 3, wherein the second control information includes a different ID for

identifying each of a plurality of IP transport streams included in the digital broadcast signal.

5. The reception device according to claim 3, wherein

the ID identifying the network identifies a network associated with the received digital broadcast signal, and

the ID identifying the service identifies the specific service.

6. The reception device according to claim 5, wherein the circuitry is further configured to

extract, based on the second control information, service information indicating one or more port numbers associated with the one or more components corresponding to the ID identifying the specific service, and

package the specific service based on the IP address and the one or more port numbers.

7. The reception device according to claim 1, wherein

each of the packets of the one or more components includes a first header, a second header, and a third header,

the first header indicates a type of information included in the respective packet,

the second header indicates the IP address associated with the specific service, and

the third header indicates a port number of a UDP (User Datagram Protocol).

8. The reception device according to claim 2, wherein the first control information used for the first layer includes information on the one or more components constituting the specific service.

9. The reception device according to claim 8, wherein

the information on the one or more components includes a port number of a UDP (User Datagram Protocol), and

the circuitry is further configured to extract the one or more components constituting the specific service by performing filtering using the IP address and the port number.

10. The reception device according to claim 8, wherein the first control information used for the first layer includes control information of an application.

11. The reception device according to claim 3, wherein the second control information includes information associated with the IP address for each of the services.

12. The reception device according to claim 1, wherein the digital broadcast signal is transmitted using an IP transmission mode in which the packets are designated with port numbers of a UDP (User Datagram Protocol).

13. The reception device according to claim 1, wherein the one or more components is acquired from one of an RTP (Real-time Transport Protocol) session and a FLUTE (File Delivery over Unidirectional Transport) session of the digital broadcast signal based on whether the specific service is provided in a synchronous or an asynchronous format.

14. The reception device according to claim 1, wherein the circuitry is further configured to store the packaged one or more of components and the first control information in a memory.

15. The reception device according to claim 14, wherein the

circuitry is further configured to read the one or more components and the first control information which are stored in the memory to perform reproduction.

16. The reception device according to claim 1, wherein the circuitry is further configured to transmit the packaged one or more components and the first control information to another electronic device.

17. A reception method of a reception device, comprising:

receiving, by circuitry of the reception device, a digital broadcast signal including an IP (Internet Protocol) transport stream;

packaging, by the circuitry and for a specific service among a plurality of services included in the digital broadcast signal, control information corresponding to the specific service and packets of one or more components having the same IP address, wherein the one or more components includes at least one of audio/video of the specific service and network time protocol information, and wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer; and

performing a predetermined process by using the packaged one or more components and the control information.

18. A transmission device comprising:

circuitry configured to

acquire one or more components including at least one of audio/video of a specific service and network time protocol information of the specific service;

acquire control information corresponding to the specific service; and

transmit a digital broadcast signal including an IP (Internet Protocol) transport stream in which packets of the one or more components and a packet of the control information corresponding to the specific service are packaged as a function of having the same IP address, wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer in the transmitted digital broadcast signal.

19. A transmission method of a transmission device, comprising:

acquiring, by circuitry of the transmission device, one or more components including at least one of audio/video of a specific service and network time protocol information of the specific service;

acquiring, by the circuitry, control information corresponding to the specific service; and

transmitting, by the circuitry, a digital broadcast signal including an IP (Internet Protocol) transport stream in which packets of the one or more components and a packet of the control information corresponding to the a specific service are packaged as a function of having the same IP address, wherein the control information comprises Middle Layer Signaling (MLS) and a protocol stack layer above a User Datagram Protocol (UDP) Layer in the transmitted digital broadcast signal.

20. The reception device according to claim 1, wherein the IP address is obtained based on received channel selection information.