

[Name of Document] SCOPE OF PATENT CLAIMS

[Claim 1] A content delivery system, comprising an application server system and connection control servers, wherein:

The aforementioned connection control servers are configured to receive equipment specification information transmitted by user equipment and establish a connection between the aforementioned application server system and said user equipment based on said received equipment specification information,

The aforementioned application server system comprises:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content;

A transmission-request reception means for receiving a content transmission request transmitted by the aforementioned user equipment and containing main-content identification information for identifying the aforementioned main content, doing so via the aforementioned connection control system;

An advertisement-content selection means for selecting the aforementioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the aforementioned advertisement content; and

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the aforementioned main content data identified by the aforementioned received content transmission request; and

A viewing-content transmission means for transmitting the aforementioned generated viewing content data to the aforementioned user terminal that has transmitted the aforementioned content transmission request when the aforementioned connection control system has established connection with said user terminal.

[Claim 2] The content delivery system according to Claim 1, wherein:

The aforementioned content storage means is configured to store the aforementioned advertisement content data and advertisement attribute information representing an attribute of advertisement content represented by said advertisement content data in such a way that said advertisement content data and said advertisement attribute information are associated with respect to each other;

The aforementioned advertisement selection information contains user basic information that is information for specifying the aforementioned advertisement attribute information and is information associated with user identification information for identifying the user of the aforementioned user equipment; and

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The aforementioned advertisement-content selection means is configured to select advertisement content data stored in association with the advertisement attribute information specified by the user basic

information associated with the user identification information for identifying the user of the user equipment which has transmitted the aforementioned content transmission request.

[Claim 3] The content delivery system according to Claim 1 or Claim 2, wherein:

The aforementioned content storage means is configured to store the aforementioned advertisement content data and advertisement attribute information representing an attribute of advertisement content represented by said advertisement content data in such a way that said advertisement content data and said advertisement attribute information are associated with respect to each other;

The aforementioned advertisement selection information contains content basic information that is information for specifying the aforementioned advertisement attribute information and is information associated with main-content identification information for identifying the aforementioned main content; and

The aforementioned advertisement-content selection means is configured to select advertisement content data stored in association with the advertisement attribute information specified by the content basic information associated with the main-content identification information contained in the aforementioned content transmission request received.

[Claim 4] The content delivery system according to any of claims 1 to 3, wherein:

The aforementioned application server system comprises a service control server and a media server;

The aforementioned service control server is provided with the aforementioned transmission-request reception means;

The aforementioned media server is provided with the aforementioned content storage means, the aforementioned viewing-content generation means, and the aforementioned viewing-content transmission means;

The aforementioned service control server is further provided with a selected-advertisement-content specification-information transmission means for transmitting selected-advertisement-content specification information that specifies advertisement content data selected by the aforementioned content selection means, doing so via the aforementioned connection control system to the aforementioned media server;

The aforementioned media server is further provided with a selected-advertisement-content specification-information reception means for receiving the aforementioned selected-advertisement-content specification information transmitted by the aforementioned service control server; and

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on advertisement content data specified by the aforementioned selected-advertisement specification information thus received.

[Claim 5] The content delivery system according to Claim 4, wherein:

The aforementioned selected-advertisement-content specification-information transmission means is configured to transmit, via the aforementioned connection control system to the aforementioned media server, playlist information that is information containing the aforementioned main-content identification

information contained in the aforementioned content transmission request and the aforementioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the aforementioned viewing content;

The aforementioned selected-advertisement-content specification-information reception means is configured to receive the aforementioned playlist information transmitted by the aforementioned service control server; and

The aforementioned viewing-content generation means is configured to generate the aforementioned viewing content data based on the aforementioned playlist information received.

[Claim 6] The content delivery system according to Claim 4 or Claim 5, wherein the aforementioned selected-advertisement-content specification-information transmission means is configured to transmit the aforementioned selected-advertisement-content specification information to said media server via said connection control system when the aforementioned connection control system executes a process for establishing the aforementioned connection.

[Claim 7] The content delivery system according to Claim 6, wherein:

The aforementioned connection control system is configured to establish the aforementioned connection by exchanging a predetermined connection establishment message with each of the aforementioned service control server and the aforementioned media server; and

The aforementioned selected-advertisement-content specification-information transmission means is configured to transmit the aforementioned selected-advertisement-content specification information to said media server via said connection control system by including the aforementioned selected-advertisement-content specification information in the aforementioned connection establishment message.

[Claim 8] The content delivery system according to any of claims 1 to 3, wherein:

The aforementioned application server system comprises a service control server and a media server;

The aforementioned service control server is provided with the aforementioned transmission-request reception means;

The aforementioned media server is provided with the aforementioned content storage means, the aforementioned advertisement-content selection means, the aforementioned viewing content and generation means, and the aforementioned viewing-content transmission means;

The aforementioned service control server is provided with an advertisement-selection-information transmission means for transmitting the aforementioned advertisement selection information to the aforementioned media server via the aforementioned connection control system;

The aforementioned media server is provided with an advertisement-selection-information reception means for receiving the aforementioned advertisement selection information transmitted by the aforementioned service control server; and

The aforementioned advertisement-content selection means is configured to select the aforementioned advertisement content data based on the aforementioned advertisement selection information received.

[Claim 9] The content delivery system according to Claim 8, wherein the aforementioned advertisement-selection-information transmission means is configured to transmit the aforementioned advertisement selection information to said media server via said connection control system when the aforementioned connection control system executes a process for establishing the aforementioned connection.

[Claim 10] The content delivery system according to Claim 9, wherein:

The aforementioned connection control system is configured to establish the aforementioned connection by exchanging a predetermined connection establishment message with each of the aforementioned service control server and the aforementioned media server; and

The aforementioned advertisement-selection-information transmission means is configured to transmit the aforementioned advertisement selection information to said media server via said connection control system by including said advertisement selection information in the aforementioned connection establishment message.

[Claim 11] A content delivery system, comprising an application server system and a connection control system, wherein:

The aforementioned connection control system is provided with a core IMS part (Internet Protocol Multimedia Subsystem) for receiving equipment specification information transmitted by user equipment and establishing a connection between the aforementioned application server system and said user equipment based on said received equipment specification information,

The aforementioned application server system is provided with:

A media functions part for transmitting content data representing content to the aforementioned user equipment with which the connection is established by the aforementioned connection control system;

A service-control functions part for controlling a service provided by the aforementioned media functions part; and

A user-profile-server functions part for storing profile information of the user of the aforementioned user equipment,

The aforementioned application server system is further provided with:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content;

An advertisement-content selection means for selecting the aforementioned stored advertisement content data based on advertisement selection information which contains advertisement attribute information representing an attribute of the aforementioned content and has been prestored by the aforementioned service-control functions part or the aforementioned connection control system,

The aforementioned service-control functions part is provided with a transmission-request reception means for receiving, via the aforementioned core IMS part, a content transmission request containing main-content identification information for identifying the aforementioned main content and transmitted by the aforementioned user equipment; and

The aforementioned media functions part is provided with:

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the aforementioned main content data identified by the aforementioned received content transmission request; and

A viewing-content transmission means for transmitting the aforementioned generated viewing content data to the aforementioned user terminal that has transmitted the aforementioned content transmission request when the aforementioned core IMS part has established a connection with said user terminal.

[Claim 12] The content delivery system according to Claim 11, wherein:

The aforementioned service control server is provided with the aforementioned advertisement-content selection means;

The aforementioned service control server is further provided with a selected-advertisement-content specification-information transmission means for specifying advertisement content data selected by the aforementioned advertisement-content selection means when the core IMS executes a process for establishing the aforementioned connection;

The aforementioned media functions part is provided with a selected-advertisement-content specification-information reception means for receiving the aforementioned selected-advertisement-content specification information transmitted by the aforementioned service-control functions part; and

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on advertisement content data specified by the aforementioned selected-advertisement specification information thus received.

[Claim 13] The content delivery system according to Claim 12, wherein:

The aforementioned selected-advertisement-content specification-information transmission means is configured to transmit, via the aforementioned core IMS part to the aforementioned media functions part, playlist information that is information containing the aforementioned main-content identification information contained in the aforementioned content transmission request and the aforementioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the aforementioned viewing content;

The aforementioned selected-advertisement-content specification-information reception means is configured to receive the aforementioned playlist information transmitted by the aforementioned service-control functions part; and

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on the aforementioned playlist information thus received.

[Claim 14] The content delivery system according to Claim 11, wherein:

The aforementioned media functions part is provided with the aforementioned advertisement-content selection means;

The aforementioned service control server is further provided with an advertisement-selection-information transmission means for transmitting the aforementioned advertisement selection information to the aforementioned media functions part via the aforementioned core IMS part when said core IMS part executes a process for establishing the aforementioned connection;

The aforementioned media functions part is further provided with an advertisement-selection-information reception means for receiving the aforementioned advertisement selection information transmitted by the aforementioned service-control functions part; and

The aforementioned advertisement content selection information is configured to select the aforementioned advertisement content data based on the aforementioned advertisement selection information thus received.

[Claim 15] A content delivery method, comprising:

A connection establishment step, in which connection control servers receive equipment specification information transmitted by user equipment and establish a connection between an application server system and said user equipment based on said received equipment specification information,

A content-storage processing step for storing advertisement content data representing advertisement content and main content data representing main content in a storage device;

A transmission-request reception step, in which the aforementioned application server system receives a content transmission request transmitted by the aforementioned user equipment and containing main-content identification information for identifying the aforementioned main content, doing so via the aforementioned connection control system;

An advertisement-content selection step for selecting the aforementioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the aforementioned advertisement content;

A viewing-content generation step for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the aforementioned main content data identified by the aforementioned received content transmission request; and

A viewing-content transmission step for transmitting the aforementioned generated viewing content data to the aforementioned user terminal that has transmitted the aforementioned content transmission request,

doing so when the aforementioned connection control system has established a connection with said user terminal.

[Claim 16] The content delivery method according to Claim 15, comprising:

A selected-advertisement-content specification-information transmission step, in which the service control server included in the aforementioned application server system transmits selected-advertisement-content specification information that specifies advertisement content data selected in the aforementioned advertisement-content selection step, doing so via the connection control system concerned to the media server included in said application server system;

A selected-advertisement-content specification-information reception step, in which the aforementioned media server receives the aforementioned selected-advertisement-content specification information transmitted by the aforementioned service control server, and

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on advertisement content data specified by the aforementioned selected-advertisement specification information thus received.

[Claim 17] The content delivery method according to Claim 16, wherein:

The aforementioned selected-advertisement-content specification-information transmission step is configured to transmit, via the aforementioned connection control system to the aforementioned media server, playlist information that is information containing the aforementioned main-content identification information contained in the aforementioned content transmission request and the aforementioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the aforementioned viewing content;

The aforementioned selected-advertisement-content specification-information reception step is configured to receive the aforementioned playlist information transmitted by the aforementioned service control server;

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on the aforementioned playlist information thus received.

[Claim 18] The content delivery method according to Claim 15, comprising:

An advertisement-selection-information transmission step, in which the service control server included in the aforementioned application server system transmits the aforementioned advertisement selection information to the media server included in said application server system via the connection control system concerned when the aforementioned connection control system executes a process for establishing the aforementioned connection; and

An advertisement-selection-information reception step, in which the aforementioned media server receives the aforementioned advertisement selection information transmitted by the aforementioned service control server, and

The aforementioned advertisement-content selection step is configured to select the aforementioned advertisement content data based on the aforementioned advertisement selection information thus received.

[Claim 19] A program for causing a service control server to realize:

A transmission-request reception means for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, doing so via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-content selection means for selecting advertisement content data prestored in a storage device based on advertisement selection information containing advertisement attribute information representing an attribute of advertisement content; and

A selected-advertisement-content specification-information transmission means for transmitting selected-advertisement-content specification information specifying advertisement content data selected by the aforementioned advertisement-content selection means, doing so when the aforementioned connection control system executes a process for establishing the aforementioned connection.

[Claim 20] The program according to Claim 19, wherein the aforementioned selected-advertisement-content specification-information transmission means is configured to transmit, via the aforementioned connection control system to the aforementioned media server, playlist information that is information containing the aforementioned main-content identification information contained in the aforementioned content transmission request and the aforementioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the aforementioned viewing content.

[Claim 21] A program for causing a service control server to realize:

A transmission-request reception means for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-selection-information transmission means for transmitting advertisement selection information containing advertisement attribute information representing an attribute of advertisement content, doing so when the aforementioned connection control system executes a process for establishing the aforementioned connection.

[Name of Document] **SPECIFICATION**

[Title of the Invention] **CONTENT DELIVERY SYSTEM**

TECHNOLOGICAL FIELD

[0001] The present invention relates to a content delivery system that transmits content data representing content to user equipment.

BACKGROUND ART

[0002] A known content delivery system comprises a content transmitter, a content receiver and a connection controller (SIP (Session Initiation Protocol) server).

[0003] In this content delivery system, the content transmitter transmits a content transmission request to a connection controller. In response to the content transmission request, the connection controller transmits a content delivery instruction to the content transmitter, while establishing a connection between the content transmitter and the content receiver. Further, the content delivery system executes a process to reserve a communication bandwidth of a communication channel between the content transmitter and the content receiver. And once the connection is established by the connection controller, the content transmitter transmits prestored content data to the content receiver.

[0004] According to this content delivery system, the communication bandwidth of the communication path between the content transmitter and the content receiving device is guaranteed, making it possible to prevent deterioration of the communication quality when the content data is transmitted from the content transmitter to the content receiver.

[Patent Document 1]JP, 2008-153896, A

DISCLOSURE OF THE INVENTION

OBJECTIVE TO BE ACHIEVED BY THE INVENTION

[0005] In the content delivery system described above, the content transmitter transmits prestored content data in response to a request from the content receiver.

[0006] Therefore, it is considered preferable that, in order to cause the user of the content receiver to view viewing content in which advertisement content is inserted into main content which the user desires to view (user's desired content), the content delivery system should be configured such that viewing content data representing the viewing content is prestored in the content transmitter.

[0007] However, even if the content delivery system is configured in this manner, the content delivery system cannot change the advertisement content inserted into the main content according to the user's desired content and/or the user who views the content. This means that the aforementioned content delivery system is not able to cause a user to view advertisement content selected according to the user's desired content and/or the user.

[0008] It is, therefore, an objective of the present invention to provide a content delivery system capable of solving the above-described problem, i.e., it is impossible to cause a user to view advertisement content selected according to the user's desired content and/or the user.

MEANS FOR ACHIEVING THE OBJECTIVE

[0009] In order to achieve such an objective, the content delivery system according to an aspect of the present invention includes an application server system and a connection control system.

[0010] Furthermore, the above-mentioned connection control system is configured to receive equipment specification information transmitted by user equipment and establish connection between the above-mentioned application server system and said user equipment based on said equipment specification information thus received.

[0011] In addition, the above-mentioned application server system comprises:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content;

A transmission-request reception means for receiving a content transmission request transmitted by the aforementioned user equipment and containing main-content identification information for identifying the aforementioned main content, doing so via the aforementioned connection control system;

An advertisement-content selection means for selecting the aforementioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the aforementioned advertisement content; and

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the aforementioned main content data identified by the aforementioned received content transmission request.

[0012] In order to achieve such an objective, the content delivery system according to an aspect of the present invention includes an application server system and a connection control system.

[0013] Furthermore, the above-mentioned connection control system is provided with a core IMS part (Core IMS (Internet Protocol Multimedia Subsystem)) which receives equipment specification information transmitted by user equipment and establishes connection between the above-mentioned application server system and said user equipment based on said equipment specification information thus received.

[0014] In addition, the above-mentioned application server system is provided with:

A media functions part for transmitting content data representing content to the above-mentioned user equipment with which the connection has been established by the above-mentioned connection control system;

A service-control functions part for controlling services provided by the above-mentioned media functions part; and

A user-profile-server functions part for storing profile information of the user of the above-mentioned user equipment.

The application server system is further provided with:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content; and

An advertisement-content selection means for selecting the above-mentioned stored advertisement content data, doing so based on advertisement selection information which contains advertisement attribute information representing an attribute of the above-mentioned advertisement content and is prestored by the above-mentioned user-profile-server functions part, the above-mentioned service-control functions part, or the above-mentioned connection control system.

[0015] Furthermore, the above-mentioned service-control functions part is provided with a transmission-request reception means for receiving, via the above-mentioned core IMS, a content transmission request containing main-content identification information for identifying main content and transmitted by the above-mentioned user equipment.

[0016] In addition, the above-mentioned media functions part is provided with:

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected

advertisement content data and the main content data identified by the aforementioned received content transmission request; and

A viewing-content transmission means for transmitting the above-mentioned viewing content data thus generated, doing so when the above-mentioned core IMS part establishes connection with the above-mentioned user terminal that has transmitted the above-mentioned content transmission request.

[0017] Additionally, the content delivery system according to another aspect of the present invention comprises:

A connection establishment step, in which connection control servers receive equipment specification information transmitted by user equipment and establish connection between an application server system and said user equipment based on said received equipment specification information,

A content-storage processing step for storing advertisement content data representing advertisement content and main content data representing main content in a storage device;

A transmission-request reception step, in which the above-mentioned application server system receives a content transmission request transmitted by the above-mentioned user equipment and containing main-content identification information for identifying the above-mentioned main content, doing so via the above-mentioned connection control system;

An advertisement-content selection step for selecting the above-mentioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the above-mentioned advertisement content;

A viewing-content generation step for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the above-mentioned selected advertisement content data and the above-mentioned main content data identified by the above-mentioned received content transmission request; and

A viewing-content transmission step for transmitting the above-mentioned generated viewing content data to the above-mentioned user terminal that has transmitted the above-mentioned content transmission request, doing so when the above-mentioned connection control system has established a connection with said user terminal.

[0018] Additionally, the program according to another aspect of the present invention causes a service control server to realize:

A transmission-request reception means for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, doing so via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-content selection means for selecting advertisement content data prestored in a storage device based on advertisement selection information containing advertisement attribute information representing an attribute of advertisement content; and

A selected-advertisement-content specification-information transmission means for transmitting selected-advertisement-content specification information specifying advertisement content data selected by the

above-mentioned advertisement-content selection means, doing so when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

[0019] Additionally, the program according to another aspect of the present invention causes a service control server to realize:

A transmission-request reception means for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-selection-information transmission means for transmitting advertisement selection information containing advertisement attribute information representing an attribute of advertisement content,, doing so when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

EFFECTS OF THE INVENTION

[0020] The present invention configured as described above is capable of allowing a user to view advertisement content selected according to the user's desired content and/or the user.

BEST EMBODIMENTS OF THE INVENTION

[0021] The content delivery system according to an aspect of the present invention includes an application server system and a connection control system.

[0022] Furthermore, the above-mentioned connection control system is configured to receive equipment specification information transmitted by user equipment and establish connection between the above-mentioned application server system and said user equipment based on said equipment specification information thus received.

[0023] In addition, the above-mentioned application server system comprises:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content;

A transmission-request reception means for receiving a content transmission request transmitted by the aforementioned user equipment and containing main-content identification information for identifying the aforementioned main content, doing so via the aforementioned connection control system;

An advertisement-content selection means for selecting the aforementioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the aforementioned advertisement content; and

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the aforementioned main content data identified by the aforementioned received content transmission request.

[0024] Accordingly, the content delivery system transmits, to user equipment, viewing content data representing viewing content in which advertisement content selected based on the advertisement selection information has been inserted into the main content. Therefore, for example, the content delivery system may be configured to select advertisement content according to the main content (content that the user wants to view) and/or the user,

thereby allowing users to view viewing content with advertisement content inserted therein according to the main content and/or the user.

[0025] In this case, it will be preferable if:

The above-mentioned content storage means is configured to store the above-mentioned advertisement content data and advertisement attribute information representing an attribute of advertisement content represented by said advertisement content data in such a way that the advertisement content data and the advertisement attribute information are associated with respect to each other;

The above-mentioned advertisement selection information contains user basic information that is information for specifying the above-mentioned advertisement attribute information and is information associated with user identification information for identifying the user of the above-mentioned user equipment; and

The above-mentioned advertisement-content selection means is configured to select advertisement content data stored in association with the advertisement attribute information specified by the user basic information associated with the user identification information for identifying the user of the user equipment which has transmitted the above-mentioned content transmission request.

[0026] This enables the content delivery system to have users view viewing content with advertisement content inserted therein according to the user of the user equipment which has transmitted a content transmission request.

[0027] In this case, it will be preferable if:

The above-mentioned content storage means is configured to store the above-mentioned advertisement content data and advertisement attribute information representing an attribute of advertisement content represented by said advertisement content data in such a way that the advertisement content data and the advertisement attribute information are associated with respect to each other;

The above-mentioned advertisement selection information contains content basic information that is information for specifying the above-mentioned advertisement attribute information and is information associated with main-content identification information for identifying the above-mentioned main content; and

The above-mentioned advertisement-content selection means is configured to select advertisement content data stored in association with the advertisement attribute information specified by the content basic information associated with the main-content identification information contained in the above-mentioned content transmission request received.

[0028] This enables the content delivery system to have users view viewing content with advertisement content inserted therein according to the main content identified by the main-content identification information contained in the received content transmission request.

[0029] In this case, it will be preferable if:

The above-mentioned application server system comprises a service control server and a media server;

The above-mentioned service control server is provided with the above-mentioned transmission-request reception means and the above-mentioned advertisement-content selection means;

The above-mentioned media server is provided with the above-mentioned content storage means, the above-mentioned viewing-content generation means, and the above-mentioned viewing-content transmission means;

The aforementioned service control server is further provided with a selected-advertisement-content specification-information transmission means for transmitting selected-advertisement-content specification information that specifies advertisement content data selected by the aforementioned content selection means, doing so via the aforementioned connection control system to the aforementioned media server;

The aforementioned media server is further provided with a selected-advertisement-content specification-information reception means for receiving the aforementioned selected-advertisement-content specification information transmitted by the aforementioned service control server; and

The aforementioned viewing-content generation step is configured to generate the aforementioned viewing content data based on advertisement content data specified by the aforementioned selected-advertisement specification information thus received.

[0030] In this case, it will be preferable if:

The above-mentioned selected-advertisement-content specification-information transmission means is configured to transmit, via the above-mentioned connection control system to the above-mentioned media server, playlist information that is information containing the above-mentioned main-content identification information contained in the above-mentioned content transmission request and the above-mentioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the above-mentioned viewing content;

The above-mentioned selected-advertisement-content specification-information reception means is configured to receive the above-mentioned playlist information transmitted by the above-mentioned service control server; and

The above-mentioned viewing-content generation means is configured to generate the above-mentioned viewing content data based on the above-mentioned playlist information thus received.

[0031] In this case, it will be preferable if the above-mentioned selected-advertisement-content specification-information transmission means is configured to transmit the above-mentioned selected-advertisement-content specification information to the said media server via said connection control system when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

[0032] Now, when the service control server is configured to transmit selected-advertisement-content specification information to a media server before the connection control system executes a process for establishing a connection, and if the selected-advertisement-content specification information is changed after the transmission of the selected-advertisement-content specification information, the advertisement selection information after said change cannot be reflected in the selected-advertisement-content specification information received by the media server.

[0033] In contrast, with the above-mentioned configuration, the service control server can transmit, to the media server, selected-advertisement-content specification information reflecting the latest advertisement selection information as of the point in time when the connection control system executes a process for establishing the connection.

[0034] In this case, it will be preferable if:

The above-mentioned connection control system is configured to establish the above-mentioned connection by exchanging a predetermined connection establishment message with each of the above-mentioned service control server and the above-mentioned media server; and

The above-mentioned selected-advertisement-content specification-information transmission means is configured to transmit the above-mentioned selected-advertisement-content specification information to said media server via said connection control system by including the above-mentioned selected-advertisement-content specification information in the above-mentioned connection establishment message.

[0035] This eliminates the need for the service control server to transmit other messages besides a connection establishment message in order to transmit selected-advertisement-content specification information to a media server. This means that the number of communications carried out among the connection control system, the service control server, and the media server can be reduced. In other words, it becomes possible to reduce the processing load and/or communication load applied to the connection control system, service control server, and media server during the transmission/reception of messages.

[0036] Additionally, in another aspect of the above-mentioned content delivery system, it will be preferable if:

The above-mentioned application server system comprises a service control server and a media server;

The above-mentioned service control server is provided with the above-mentioned transmission request reception means;

The above-mentioned media server is provided with the above-mentioned content storage means, the above-mentioned advertisement-content selection means, the above-mentioned viewing-content generation means, and the above-mentioned viewing-content transmission means;

The above-mentioned service control server is further provided with an advertisement-selection-information transmission means for transmitting the above-mentioned advertisement selection information to the above-mentioned media server via the above-mentioned connection control system; and

The above-mentioned media server is further provided with an advertisement-selection-information reception means for receiving the above-mentioned advertisement selection information transmitted by the above-mentioned service control server; and

The above-mentioned advertisement-content selection means is configured to select the above-mentioned advertisement content data based on the above-mentioned advertisement selection information received.

[0037] In this case, it will be preferable if the above-mentioned advertisement-selection-information transmission means is configured to transmit the above-mentioned advertisement selection information to the said media server via said connection control system when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

[0038] Now, when the service control server is configured to transmit advertisement selection information to a media server before the connection control system executes a process for establishing a connection, and if the advertisement selection information is changed after the transmission of the advertisement selection information, the media server cannot select advertisement content based on the advertisement selection information after said change.

[0039] In contrast, with the above-mentioned configuration, the service control server can transmit, to the media server, the latest advertisement selection information as of the point in time when the connection control system executes a process for establishing the connection. As a result, the media server is able to select advertisement content data based on said updated advertisement selection information.

[0040] In this case, it will be preferable if:

The above-mentioned connection control system is configured to establish the above-mentioned connection by exchanging a predetermined connection establishment message with each of the above-mentioned service control server and the above-mentioned media server; and

The above-mentioned advertisement-selection-information transmission means is configured to transmit the above-mentioned advertisement selection information to said media server via said connection control system by including the above-mentioned advertisement selection information in the above-mentioned connection establishment message.

[0041] This releases the service control server from the need to transmit other messages besides the connection establishment message in order to transmit the advertisement selection information to the media server. This means that the number of communications carried out among the connection control system, the service control server, and the media server can be reduced. In other words, it becomes possible to reduce the processing load and/or communication load applied to the connection control system, service control server, and media server during the transmission/reception of messages.

[0042] In order to achieve such an objective, the content delivery system according to an aspect of the present invention includes an application server system and a connection control system.

[0043] Furthermore, the above-mentioned connection control system is provided with a core IMS part (Core IMS (Internet Protocol Multimedia Subsystem)) which receives equipment specification information transmitted by user equipment and establishes connection between the above-mentioned application server system and said user equipment based on said equipment specification information thus received.

[0044] In addition, the application server system is provided with:

A media functions part for transmitting content data representing content to the above-mentioned user equipment with which the connection has been established by the above-mentioned connection control system;

A service-control functions part for controlling services provided by the above-mentioned media functions part; and

A user-profile-server functions part for storing profile information of the user of the above-mentioned user equipment.

The application server system is further provided with:

A content storage means for storing advertisement content data representing advertisement content and main content data representing main content; and

An advertisement-content selection means for selecting the above-mentioned stored advertisement content data, doing so based on advertisement selection information which contains advertisement attribute information representing an attribute of the above-mentioned advertisement content and is prestored by the above-mentioned user-profile-server functions part, the above-mentioned service-control functions part, or the above-mentioned connection control system.

[0045] Furthermore, the above-mentioned service-control functions part is provided with a transmission-request reception means for receiving, via the above-mentioned core IMS, a content transmission request containing main-content identification information for identifying main content and transmitted by the above-mentioned user equipment.

[0046] In addition, the above-mentioned media functions part is provided with:

A viewing-content generation means for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the aforementioned selected advertisement content data and the main content data identified by the aforementioned received content transmission request; and

A viewing-content transmission means for transmitting the above-mentioned viewing content data thus generated, doing so when a connection with the above-mentioned user terminal that has transmitted the above-mentioned content transmission request is established by the above-mentioned core IMS part.

[0047] In this case, it will be preferable if:

The above-mentioned service control server is provided with the above-mentioned advertisement-content selection means;

The above-mentioned service control server is further provided with a selected-advertisement-content specification-information transmission means for specifying advertisement content data selected by the above-mentioned advertisement-content selection means when the core IMS part executes a process for establishing the above-mentioned connection;

The above-mentioned media functions part is provided with a selected-advertisement-content specification-information reception means for receiving the above-mentioned selected-advertisement-content specification information transmitted by the above-mentioned service-control functions part; and

The above-mentioned viewing-content generation step is configured to generate the above-mentioned viewing content data based on advertisement content data specified by the above-mentioned selected-advertisement specification information thus received.

[0048] In this case, it will be preferable if:

The above-mentioned selected-advertisement-content specification-information transmission means is configured to transmit, via the above-mentioned core IMS part to the above-mentioned media functions part, playlist information that is information containing the above-mentioned main-content identification information contained in the above-mentioned content transmission request and the above-mentioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the above-mentioned viewing content;

The above-mentioned selected-advertisement-content specification-information reception means is configured to receive the above-mentioned playlist information transmitted by the above-mentioned service-control functions part; and

The above-mentioned viewing-content generation means is configured to generate the above-mentioned viewing content data based on the above-mentioned playlist information thus received.

[0049] Additionally, in another aspect of the above-mentioned content delivery system, it will be preferable if:

The above-mentioned media functions part is provided with the above-mentioned advertisement-content selection means;

The above-mentioned service-control functions part is further provided with an advertisement-selection-information transmission means for transmitting the above-mentioned advertisement selection information to the above-mentioned media functions part via the core IMS part concerned;

The above-mentioned media functions part is further provided with an advertisement-selection-information reception means for receiving the above-mentioned advertisement selection information transmitted by the above-mentioned service-control functions part; and

The above-mentioned advertisement-content selection means is configured to select the above-mentioned advertisement content data based on the above-mentioned advertisement selection information received.

[0050] Additionally, the content delivery system according to another aspect of the present invention comprises:

A connection establishment step, in which connection control servers receive equipment specification information transmitted by user equipment and establish connection between an application server system and said user equipment based on said received equipment specification information,

A content-storage processing step for storing advertisement content data representing advertisement content and main content data representing main content in a storage device;

A transmission-request reception step, in which the above-mentioned application server system receives a content transmission request transmitted by the above-mentioned user equipment and containing main-content identification information for identifying the above-mentioned main content, doing so via the above-mentioned connection control system;

An advertisement-content selection step for selecting the above-mentioned stored advertisement content data based on advertisement selection information containing advertisement attribute information representing an attribute of the above-mentioned advertisement content;

A viewing-content generation step for generating viewing content data representing viewing content in which advertisement content represented by the advertisement content data concerned is inserted into the main content represented by the main content data concerned, doing so based on the above-mentioned selected advertisement content data and the above-mentioned main content data identified by the above-mentioned received content transmission request; and

A viewing-content transmission step for transmitting the above-mentioned generated viewing content data to the above-mentioned user terminal that has transmitted the above-mentioned content transmission request, doing so when the above-mentioned connection control system has established a connection with said user terminal.

[0051] In this case, it will be preferable if:

The above-mentioned content delivery method comprises:

A selected-advertisement-content specification-information transmission step, in which the service control server included in the above-mentioned application server system transmits, via the connection control system concerned to the media server included in said application server system, selected-advertisement-content specification information that specifies advertisement content data selected in the above-mentioned advertisement-content selection step;

A selected-advertisement-content specification-information reception step, in which the above-mentioned media server receives the above-mentioned selected-advertisement-content specification information transmitted by the above-mentioned service control server, and

The above-mentioned viewing-content generation step is configured to generate the above-mentioned viewing content data based on advertisement content data specified by the above-mentioned selected-advertisement specification information thus received.

[0052] In this case, it will be preferable if:

The above-mentioned selected-advertisement-content specification-information transmission step is configured to transmit, via the above-mentioned connection control system to the above-mentioned media server, playlist information that is information containing the above-mentioned main-content identification information contained in the above-mentioned content transmission request and the above-mentioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the above-mentioned viewing content;

The above-mentioned selected-advertisement-content specification-information reception step is configured to receive the above-mentioned playlist information transmitted by the above-mentioned service control server;

The above-mentioned viewing-content generation step is configured to generate the above-mentioned viewing content data based on the above-mentioned playlist information thus received.

[0053] It will be preferable if:

The content delivery method according to another aspect of the present invention comprises:

An advertisement-selection-information transmission step, in which the service control server included in the above-mentioned application server system transmits the above-mentioned advertisement selection information to the media server included in said application server system via the connection control system concerned when the above-mentioned connection control system executes a process for establishing the above-mentioned connection; and

An advertisement-selection-information reception step, in which the above-mentioned media server receives the above-mentioned advertisement selection information transmitted by the above-mentioned service control server, and

The above-mentioned advertisement-content selection step is configured to select the above-mentioned advertisement content data based on the above-mentioned advertisement selection information thus received.

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[0054] Additionally, the program according to another aspect of the present invention causes a service control server to realize:

A transmission-request reception means for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, doing so via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-content selection means for selecting advertisement content data prestored in a storage device based on advertisement selection information containing advertisement attribute information representing an attribute of advertisement content; and

A selected-advertisement-content specification-information transmission means for transmitting selected-advertisement-content specification information specifying advertisement content data selected by the above-mentioned advertisement-content selection means, doing so when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

[0055] In this case, it will be preferable if the above-mentioned selected-advertisement-content specification-information transmission means is configured to transmit, via the above-mentioned connection control system to the above-mentioned media server, playlist information that is information containing the above-mentioned main-content identification information contained in the above-mentioned content transmission request and the above-mentioned selected-advertisement-content specification information and is information containing information indicating the sequence in which the main content identified by said main-content identification information and the advertisement content specified by said selected-advertisement-content specification information are arranged in the above-mentioned viewing content.

[0056] Additionally, the program according to another aspect of the present invention causes a service control server to realize:

A transmission-request reception step for receiving a content transmission request containing main-content identification information for identifying main content and transmitted by user equipment, via a connection control system establishing a connection between a media server and said user equipment;

An advertisement-selection-information transmission means for transmitting advertisement selection information containing advertisement attribute information representing an attribute of advertisement content, doing so when the above-mentioned connection control system executes a process for establishing the above-mentioned connection.

[0057] An invention of a content delivery method or program having the above-described configuration has the same advantages as the above-mentioned content delivery system and therefore can achieve the purpose of the invention described above.

[0058] The following is an explanation of each embodiment of the content delivery system, content delivery method, and program according to the present invention with reference to FIGS. 1 to 19.

[0059] <First Embodiment>
(Configuration)

As illustrated in FIG. 1, the content delivery system 1 according to the first embodiment is a Video-on-Demand system. Alternatively, the content delivery system 1 may be an IPTV (Internet Protocol Television) system for broadcasting content.

[0060] The content delivery system 1 includes a connection control system 3 and an application server system 4. The connection control system 3 includes a plurality of servers including a connection control server 3a and a connection control server 3b. The application server system 4 includes a plurality of servers including a service control server 4a, a media server 4b, and a user-information management server 4c.

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[0061] The connection control server 3a is communicably connected to user equipment (UE) 2 through user-side communication lines NW1 constituting an IP (Internet Protocol) network. The connection control server 3b and the application server system 4 are communicably connected to each other through service-provider-side communication lines NW2 constituting the IP network.

[0062] The user equipment 2 has a set-top box and a remote controller (both not shown). The set-top box is connected to a television receiver (not shown). The set-top box receives content data representing content transmitted from the media server 4b (here, the content is a video consisting of sound and images), and outputs the content concerned through the television receiver by converting the received content data.

[0063] The remote controller has a plurality of buttons (button switches). When a button is pressed by a user, the remote controller transmits an infrared signal corresponding to the pressed button to the set-top box. The set-top box accepts information input by the user by receiving the infrared signal from the remote controller.

[0064] The user equipment 2 stores equipment specification information for specifying the equipment (local terminal) in a memory serving as a storage device.

[0065] The connection control server 3a, the connection control server 3b, the service control server 4a, the media server 4b, and the user-information management server 4c (servers 3 a to 4 c) each have a central processing unit (CPU) (not shown), and a storage device (memory and hard disk drive (HDD)) (not shown). Each of the servers 3 a to 4 c is configured to realize functions described below by the CPU executing a program stored in the storage device.

[0066] The connection control server 3a and the connection control server 3b are configured to control connection between a plurality of devices by exchanging (receiving and transmitting) a SIP message (message according to Session Initiation Protocol). In other words, each of the connection control server 3a and the connection control server 3b is a SIP server.

[0067] The connection control system 3 is configured to establish, upon receiving a SIP message containing equipment specification information transmitted by the user equipment 2, connection (a session) between the application server system 4 and the user equipment 2 based on the equipment specification information contained in the received SIP message.

[0068] The service control server 4a controls a service provided by the media server 4b (service to transmit content data). The media server 4b transmits content data representing content to the user equipment 2 with which the connection is established by the connection control system 3. The user-information management server 4c prestores profile information of the user of the user equipment 2 and transmits the stored profile information to the service control server 4a.

[0069] (Functions)

FIG. 2 is a block diagram illustrating functions of the content delivery system 1 configured as described above.

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[0070] (Functions: User Equipment)

Functions of user equipment 2 include request transmitter 11. The request transmitter 11 transmits, to the connection control server 3a, a SIP message as an equipment authentication request containing the stored equipment specification information, doing so when the state of a power switch of the user equipment 2 is set to the ON state (when power is supplied).

[0071] The request transmitter 11 receives a SIP message containing equipment-authentication success information from the connection control system 3. The equipment-authentication success information is information containing equipment address information representing a position of the equipment in the IP network. It indicates that the user equipment 2 located at the position represented by the equipment address information is authenticated to be valid equipment.

[0072] Further, the request transmitter 11 transmits, to the connection control system 3, a SIP message containing user authentication information received from the user of the user equipment 2 via the remote controller, as a user authentication request. In this example, the user authentication information consists of user identification information representing a character string for identifying the user of the user equipment 2, and password information representing a character string as a password.

[0073] The request transmitter 11 also receives a SIP message containing user-authentication success information from the connection control system 3. The user-authentication success information is information containing user identification information. It indicates that the user identified by the user identification information (i.e., the user who has input the user authentication information) is a valid user.

[0074] Upon receiving the user-authentication success information from the connection control system 3, the request transmitter 11 transmits a SIP message, which contains a process request for requesting the application server system to execute the process, to the connection control system 3 in response to a request transmission instruction input by the user of the user equipment 2. The process request contains user-authentication success information (i.e., user identification information).

[0075] (Functions: Connection Control System)

Functions of the connection control system 3 include a core IMS (Internet Protocol Multimedia Subsystem) part 30 and a transport functions part 80.

The core IMS part 30 includes a call connection controller 31 and an IMS authentication part (user authentication means) 32. The call connection controller 31 controls connection between a plurality of devices by exchanging (receiving and transmitting) a SIP message.

[0076] When the connection control server 3a receives an equipment authentication request from the user equipment 2, the IMS authentication part 32 authenticates whether or not the user equipment 2 is a valid equipment (executes an equipment authentication process) by determining whether or not equipment specification information contained in the received equipment authentication request corresponds to (coincides with, in this example) equipment-authentication reference information. The equipment-authentication reference information as used herein is information that is prestored in the storage device (user-profile-server functions part 50 to be described later) provided in the user-information management server 4c.

[0077] When the user equipment 2 is authenticated to be a valid equipment by the equipment authentication part 32, the call connection controller 31 subsequently executes a process based on the message (process request or the like) transmitted from the user equipment 2 (for example, a process to transfer the message to the application server system 4). In this case, the request transmitter 31 further transmits a SIP message containing equipment-authentication success information to user equipment 2.

[0078] On the other hand, if the user equipment 2 is not authenticated to be valid equipment by the IMS authentication part 32, the call connection controller 31 does not execute the process based on the message (process request or the like) transmitted from the user equipment 2 from then onward.

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[0079] Further, when the connection control server 3a receives a user authentication request from the user equipment 2, the IMS authentication part 32 authenticates whether or not the user who has input the user authentication information (the user identified by the user identification information contained in the user authentication information) is a valid user (whether or not the user identified by the user identification information coincides with the user of the user equipment 2) by determining whether or not the user authentication information contained in the user authentication request corresponds to user-authentication reference information (executes user authentication). The user-authentication reference information as used herein is information that is prestored in the storage device (user-profile-server functions part 50 to be described later) provided in the user-information

management server 4c. This means that the user-profile-server functions part 50 constitutes user-authentication reference-information storage means.

[0080] When the user who has input the user authentication information is authenticated to be a valid user by the IMS authentication part 32, the call connection controller 31 transmits a SIP message containing user-authentication success information to the user equipment 2. However, if the user who has input the user authentication information is not authenticated to be a valid user by the IMS authentication part 32, the call connection controller 31 does not transmit a SIP message containing user-authentication success information to the user equipment 2.

[0081] Upon receiving a bandwidth guarantee instruction from the service control server 4a, the call connection controller 31 establishes connection between the media server 4b and the user equipment 2. The bandwidth guarantee instruction contains media-delivery specification information, which is used to specify the media server 4b, and communication bandwidth information, which represents a communication bandwidth. The call connection controller 31 transmits, to the transport functions part 80, the received communication bandwidth information and communication-channel specification information for specifying a communication channel between the user equipment 2 and the media server 4b specified by the received media-delivery specification information.

[0082] Additionally, the transport functions part 80 includes a bandwidth guarantee part 81. The bandwidth guarantee part 81 receives the communication bandwidth information and the communication-channel specification information from the call connection controller 31 and executes a process to guarantee a communication bandwidth represented by the communication bandwidth information for a communication channel specified by the received communication-channel specification information (bandwidth guarantee process).

[0083] (Functions: user-information management server)

Functions of the user-information management server 4c include a user-profile-server functions (UPSF) part 50. The user-profile-server functions part 50 stores profile information of the user of the user equipment 2. The user-profile-server functions part 50 includes a user-basic-information storage part 51.

[0084] The user-basic-information storage part 51 stores user basic information in association with the user identification information for identifying the user of the user equipment 2. The user basic information is information for specifying advertisement attribute information representing an attribute of advertisement content (in this example, categories of advertisement content such as cars, real estate, travel, insurance, cell-phones, coffee, gadgets, and so on). In this example, the user basic information contains, as shown in FIG. 3, a plurality of information sets consisting of advertisement attribute information and priority information representing priority levels (in this example, indicated by integer values which increase as the priority level rises). The user basic information forms part of advertisement selection information.

[0085] (Functions: Service Control Server)

Functions of the service control server 4a include a service control functions (SCF) part 40.

[0086] The service-control functions part 40 includes an information transceiver (transmission-request reception means and selected-advertisement-content specification-information transmission means) 41, a content-basic-information storage part 42, an advertisement-attribute-information storage part (part of content storage means, or part of a content storing processing step) 43, an advertisement-insertion-information storage part 44, a playlist generator (advertisement-content selection means) 45, and a deliver request part 46.

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[0087] The information transceiver 41 receives various pieces of information (requests, instructions, notifications, and so on) transmitted by the user equipment 2 or the media server 4b via the core IMS part 30 (routed through the core IMS part 30). Additionally, the information transceiver 41 transmits the various pieces of information to the user equipment 2 or the media server 4b via the core IMS part 30. In this example, the various pieces of information are contained in the SIP message.

[0088] Only when the service control server 4a receives a process request containing user-authentication success information from the user equipment 2, the service control server 4a executes a process according to the process

request. Thus, it can be said that the application server system 4 executes a process according to the process request when the user who has input the user authentication information is authenticated to be a valid user by the IMS authentication part 32.

[0089] The content-basic-information storage part 42 stores content basic information in association with main-content identification information for identifying the main content. The content basic information is information for specifying advertisement attribute information. In this example, like the user basic information, the content basic information includes a plurality of information sets consisting of advertisement attribute information and priority information representing priority levels. The content basic information forms part of the advertisement selection information.

[0090] The advertisement-attribute-information storage part 43 stores advertisement-content identification information for identifying advertisement content in association with the advertisement attribute information.

[0091] The advertisement-insertion-information storage part 44 stores the main-content identification information, number-of-insertions information, and inserting-position information in association with each other. The number-of-insertions information is information representing the number of insertions, i.e., the number of advertisement content items inserted in the main content. The inserting-position information is information representing the inserting positions, i.e., positions in the main content where the advertisement content is to be inserted (in this example, it is indicated by a play time from the beginning of the main content).

[0092] The playlist generator 45 accepts a content transmission request received by the information transceiver 41 as a process request. The content transmission request is transmitted by the user equipment 2. It contains user-authentication success information (i.e., user identification information), equipment address information, and main-content identification information.

[0093] From user basic information stored in the user-basic-information storage part 51, the playlist generator 45 acquires the user basic information stored in association with the user identification information contained in the content transmission request received by the information transceiver 41.

[0094] Further, from content basic information stored in the content-basic-information storage part 42, the playlist generator 45 acquires the content basic information stored in association with the main-content identification information contained in the content transmission request.

[0095] The playlist generator 45 then calculates a final priority level for each advertisement-attribute information item by combining a priority level represented by the priority information contained in the acquired user basic information and a priority level represented by the priority information contained in the acquired content basic information for each advertisement-attribute information item

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[0096] Subsequently, the playlist generator 45 extracts, from advertisement-content identification information stored in the advertisement-attribute-information storage part 43, the advertisement-content identification information associated with the advertisement-attribute information item with the highest calculated final priority level.

[0097] On the other hand, the playlist generator 45 acquires, from number-of-insertions information and the inserting-position information stored in the advertisement-insertion-information storage part 44, number-of-insertions information and inserting-position information stored in association with the main-content identification information contained in the content transmission request.

[0098] Then, from extracted advertisement-content identification information, the playlist generator 45 selects a number of advertisement-content identification information items, said number being that represented by the acquired number-of-insertions information. Thus, it can be said that the playlist generator 45 selects advertisement content data stored in association with the advertisement attribute information specified on the basis of the user basic information associated with the user identification information for identifying the user of the user equipment 2 which has transmitted the content transmission request and the content basic information associated with the main-content identification information contained in the content transmission request.

[0099] Subsequently, the playlist generator 45 generates playlist information based on the selected advertisement-content identification information, the main-content identification information contained in the content transmission request, and the acquired inserting-position information.

[0100] In this example, the playlist information contains multiple pieces of content element information each comprising a set consisting of content identification information (main-content identification information or advertisement-content identification information), and the reproduction start and end positions of the content identified by the content identification information. Thus, the playlist information is information containing the main-content identification information contained in the content transmission request and the selected-advertisement-content specification information specifying the advertisement content data selected by the playlist generator 45. Further, the playlist information is information containing information indicating the sequence in which the main content identified by the main-content identification information concerned and the advertisement content specified by the selected-advertisement-content specification information concerned are arranged in viewing content.

[0101] The delivery requesting part 46 outputs a content transmission instruction. The content transmission instruction contains the playlist information generated by the playlist generator 45, the user-authentication success information contained in the content transmission request (i.e., user identification information), the equipment address information, and the main-content identification information. The information transceiver 41 transmits the content transmission instruction output by the delivery requesting part 46 to the media server 4b via the core IMS part 30.

[0102] (Functions: Media Server)

Functions of the media server 4b include a media functions (MF) part 60. The media functions part 60 includes a media control functions (MCF) part and a media delivery functions (MDF) part.

[0103] The media functions part 60 includes an information transceiver (selected-advertisement-content specification-information reception means) 61, a content data storage part (part of content storage means, or part of a content storing processing step) 62, a content delivery controller 63, a content generator (viewing-content generation means), and a content delivering part (viewing-content transmission means) 65.

[0104] The information transceiver 61 receives various pieces of information transmitted by the service control server 4a via the core IMS part 30. Specifically, the information transceiver 61 receives a content transmission instruction and so on that are transmitted by the service control server 4a via the core IMS part 30. And the information transceiver 61 transmits the various pieces of information to the service control server 4a via the core IMS part 30.

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[0105] The content-data storage part 62 stores main content data representing main content and main-content identification information for identifying the main content in association with each other. Further, the content-data storage part 62 stores advertisement content data representing advertisement content and advertisement-content identification information for identifying the advertisement content in association with each other.

[0106] The content delivery controller 63 receives a content viewing request from the user equipment 2. The content viewing request contains main-content identification information and user identification information.

[0109] Furthermore, the content delivery controller 63 receives a reproduction start request from the user equipment 2. The reproduction start request is information indicating that transmission of the content data is requested.

[0107] From the content transmission instructions received by the information transceiver 61, the content generator 64 acquires playlist information contained in a content transmission instruction that includes the main-content identification information and user identification information included in the content viewing request received by the content delivery controller 63.

[0108] Then, the content generator 64 generates viewing content data based on the acquired playlist information, and the advertisement content data and main content data stored in the content-data storage part 62.

[0109] Specifically, from content data (main content data or advertisement content data) stored in the content data storage part 62 in association with content identification information constituting content element

information included in the acquired playlist information, the content generator 64 extracts the portion constituting the relevant content element information from the reproduction start position to the reproduction end position as the content element data, doing so for each piece of content element data.

[0110] Then, the content generator 64 links the extracted content element data to thereby generate viewing content data. [0108] That is, the content generator 64 generates viewing content data based on the main content data and advertisement content data specified by the playlist information.

[0111] In this way, the content generator 64 generates viewing content data representing viewing content in which advertisement content is inserted into main content.

[0112] Once a reproduction start request is received by the content delivery controller 63, the content delivering part 65 transmits the viewing content data generated by the content generator 64 to the user equipment 2. In this state, the content delivering part 65 transmits the data using a session established by the core IMS part 30, according to a predetermined communication protocol (in this example, RTP (Real-time Transport Protocol)).

[0113] Thus, it can be said that the content delivering part 65 transmits viewing content data generated by the content generator 64 to the user equipment 2 that has transmitted the content transmission request is established by the connection control system 3, doing so when the connection between the media server 4b and said user equipment 2.

[0114] (Operation)

Next, operation of the aforementioned content delivery system 1 will be described.

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[0115] (Operation: Authentication Process)

The operation of the content delivery system 1 performed when the content delivery system 1 authenticates the user of the user equipment 2 will be described with reference to the sequence diagram shown in FIG. 4.

[0116] Firstly, power is supplied to the user equipment 2 by the user setting the state of the power switch of the equipment 2 to the ON state. This causes the user equipment 2 to transmit an equipment authentication request containing the stored equipment specification information to the connection control server 3a (core IMA part 30) (step A401).

[0117] The core IMA part 30 authenticates whether or not the user equipment 2 is valid equipment (executes an equipment authentication process) by determining whether or not the equipment specification information contained in the received equipment authentication request corresponds to (in this example, coincides with) the prestored equipment-authentication reference information (step B401). If the user equipment 2 is authenticated to be valid equipment, the core IMA part 30 then transmits equipment-authentication success information to the user equipment 2 (step B402). The equipment-authentication success information contains equipment address information and indicates that the user equipment 2 is authenticated to be valid equipment.

[0118] Upon receiving the equipment-authentication success information, the user equipment 2 causes a television receiver (not shown) to display an image to prompt the user UA to input his or her user authentication information. In response to this, the user UA inputs the user authentication information by manipulating a remote controller.

[0119] Upon accepting the input of the user authentication information, the user equipment 2 transmits a user authentication request containing the accepted user authentication information to the core IMS part 30 (step A402).

[0120] Thus, the core IMS part 30 receives the user authentication request. The core IMS part 30 determines whether or not the user authentication information contained in the received user authentication request corresponds to (in this example, coincides with) the prestored user-authentication reference information, whereby it is authenticated whether or not the user identified by the user identification information contained in the user-authentication reference information (the user who has input the user authentication information) is a valid user (executes a user authentication process) (step B403, user authentication). If the user who has input the user authentication information is authenticated to be a valid user, the core IMS part 30 transmits user-authentication success information to the user equipment 2 (step B404).

[0121] Thus, the user equipment 2 receives the user-authentication success information. After that, the user equipment 2 transmits a process request (a SIP message containing the same) containing the user-authentication success information to the core IMS part 30.

[0122] (Operation: Content Viewing Process)

Next, the operation which the content delivery system 1 performs when transmitting content data to the user equipment 2 in response to an input by the user of the user equipment 2 will be described with reference to the sequence diagrams of FIG. 5.

[0123] Firstly, the user of the user equipment 2 inputs, in the user equipment 2, information for instructing the user equipment to transmit a process request requesting transmission of content list information representing a list of viewable content. In response to this, the user equipment 2 transmits the process request to the service control server 4a (service-control functions part 40) via the core IMS part 30.

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[0124] The service-control functions part 40 transmits content list information representing a list of main contents represented by the main content data stored in the content-data storage part 62 to the user equipment 2 via the core IMS part 30. Upon receiving the content list information, the user equipment 2 causes a television receiver (not shown) to display the list of the main contents represented by the received content list information.

[0125] Incidentally, the content delivery system 1 may be configured such that the content list information is transmitted to the user equipment 2 from a portable server (not shown) which is configured to be communicable with the user equipment 2 according to HTTP (Hypertext Transfer Protocol).

[0126] With the list of main content being displayed on the television receiver, the user of the user equipment 2 selects the main content that the user wishes to view, and inputs main-content identification information to identify the selected main content.

[0127] Thus, the user equipment 2 transmits, to the core IMS part 30, a content transmission request as a process request containing the input main-content identification information, user-authentication success information as the user identification information for identifying the user, and equipment address information (step A501). The content transmission request is transmitted as an INVITE message (message in which "INVITE" is set as the method) of a SIP message.

[0128] The core IMS part 30 thus receives the content transmission request. Subsequently, the core IMS part 30 executes a bandwidth reservation process as preparation for guaranteeing a communication bandwidth. The core IMS part 30 then transmits the received content transmission request to the service-control functions part 40 (step B501).

[0129] Subsequently, the service-control functions part 40 receives the content transmission request (transmission-request reception step). The service-control functions part 40 acquires user basic information and content basic information on the basis of the user identification information and main-content identification information contained in the received content transmission request.

[0130] The service-control functions part 40 then calculates a final priority level for each item of the advertisement attribute information based on the acquired user basic information and the acquired content basic information. The service-control functions part 40 extracts from the advertisement-content identification information stored in the advertisement-attribute-information storage part 43, advertisement-content identification information associated with the advertisement-attribute information item with the highest calculated final priority level.

[0131] On the other hand, the service-control functions part 40 acquires, from number-of-insertions information and inserting-position information stored in the advertisement-insertion-information storage part 44, the number-of-insertions information and the inserting-position information stored in association with the main-content identification information contained in the content transmission request.

[0132] The service-control functions part 40 then selects, from extracted advertisement-content identification information, a number of advertisement-content identification information items, said number being that represented by the acquired number-of-insertions information (advertisement-content selection step). Subsequently, the service-control functions part 40 generates playlist information on the basis of the selected

advertisement-content identification information, the main-content identification information contained in the content transmission request, and the acquired inserting-position information (step C501). The playlist information is information containing the main-content identification information and the selected-advertisement-content specification information.

[0133] The service-control functions part 40 then selects a media server 4b (media functions part 60) and transmits the content transmission instruction to the selected media functions part 60 via the core IMS part 30 (step C502, selected-advertisement-content specification-information transmission step). The content transmission instruction contains the generated playlist information, the user identification information, and the equipment address information.

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[0134] The content transmission instruction is transmitted as an INVITE message of a SIP message. As shown in FIG. 6, the INVITE message includes a header HD and a body BD. In this example, the playlist information PL is contained as values in the field of "X-video-sequence" in the header HD of the INVITE message.

[0135] In this example, the playlist information PL includes five portions of content element information separated with commas. The first portion of the content element information comprises a set of values separated with semicolons, said set of values consisting of "adv1" as the advertisement-content identification information, "0" as the reproduction start position of the advertisement content, and "30" as the reproduction end position of the advertisement content. The second portion of the content element information comprises a set of values separated with semicolons, said set of values consisting of "content1" as the main-content identification information, "0" as the reproduction start position of the main content, and "300" as the reproduction end position of the main content. The third to fifth portions of the content element information are formed in the same manner as the first and second portions of the content element information.

[0136] This INVITE message is one of connection establishment messages which the core IMS part 30 exchanges with the user equipment 2, the service-control functions part 40, and the media functions part 60 so that the core IMS part 30 establishes connection between the user equipment 2 and media functions part 60.

[0137] Thus, the inference is that the service-control functions part 40 transmits selected-advertisement-content specification information to the media functions part 60 (media server 4b) via the core IMS part 30 by incorporating the selected-advertisement-content specification information in the connection establishment message.

[0138] In other words, it can be said that the service-control functions part 40 transmits playlist information containing the selected-advertisement-content specification information to the media server 4b via the core IMS part 30 when the core IMS part 30 executes a process for establishing a connection between the user equipment 2 and the media functions part 60.

[0139] The media functions part 60 thus receives the content transmission instruction (selected-advertisement-content specification-information reception step). Subsequently, the media functions part 60 determines a media server to which the content data is to be transmitted on the basis of the main-content identification information and the equipment address information contained in the content transmission instruction. Further, the media functions part 60 transmits a transmission permission notification to the service-control functions part 40 via the core IMS part 30 (step D501).

[0140] The transmission permission notification contains media-delivery specification information, which is used to specify the determined media server (in this example, the media server 4b), and the main-content identification information. The transmission permission notification is transmitted as an OK message (response containing "OK" and "200" as a status code in the start line) of a SIP message.

[0141] Thus, the service-control functions part 40 receives the media-delivery specification information and the main-content identification information. The service-control functions part 40 then determines a communication bandwidth required for transmitting the main content data identified by the main-content identification information, on the basis of the received media-delivery specification information and main-content identification information.

[0142] Further, the service-control functions part 40 transmits, to the core IMS part 30, a bandwidth guarantee instruction containing communication bandwidth information indicating the determined communication bandwidth, as well as the received media-delivery specification information and main-content identification information (step C503). The bandwidth guarantee instruction is transmitted as an OK message of a SIP message.

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[0143] Upon receiving the bandwidth guarantee instruction, the core IMS part 30 transmits, to the transport functions part 80, the received communication bandwidth information and communication-channel specification information for specifying a communication channel between the user equipment 2 and the media server 4b specified by the received media-delivery specification information. Thus, the transport functions part 80 executes a process to guarantee the communication bandwidth represented by the received communication bandwidth information on the communication channel specified by the received communication-channel specification information (bandwidth guarantee process).

[0144] Upon completing the bandwidth guarantee process, the core IMS part 30 transmits a transmission-preparation completion notification to the user equipment 2 (step B502). The transmission-preparation completion notification contains the received media-delivery specification information and content identification information. The transmission-preparation completion notification is transmitted as an OK message of a SIP message.

[0145] Upon receiving the transmission-preparation completion notification, the user equipment 2 transmits a connection-preparation completion notification to the service-control functions part 40 via the core IMS part 30 (step A502). The connection-preparation completion notification is transmitted as an ACK message (message in which “ACK” is set as the method) of a SIP message.

[0146] Upon receiving the connection-preparation completion notification, the service-control functions part 40 transmits a connection-preparation completion notification, which is the same as the received connection-preparation completion notification, to the media functions part 60 via the core IMS part 30 (step C504). This connection-preparation completion notification is also transmitted as an ACK message of a SIP message.

[0147] The connection (session) between the media server 4b and the user equipment 2 is established by the media functions part 60 receiving the connection-preparation completion notification (step E501). Incidentally, the processes in step A501 to step E501 together make up a connection establishment step. Additionally, it can be said that the core IMS part 30 establishes the connection between the media server 4b (media functions part 60) and the user equipment 2 by relaying the SIP message.

[0148] Incidentally, it can also be said that the SIP message which the connection control system 3 (core IMS part 30) exchanges with the user equipment 2, the service control server 4a, and the media server 4b in step A501 to step E501 is a connection establishment message for the connection control system 3 establishing a connection between the user equipment 2 and the media server 4b.

[0149] Incidentally, in this example, both the connection for performing communication according to RTSP (Real Time Streaming Protocol) and the connection for performing communication according to RTP are established simultaneously.

[0150] Subsequently, the user equipment 2 transmits a content viewing request to a media server 4b (media functions part 60) specified by the media-delivery specification information contained in the transmission-preparation completion notification thus received (step A503).

[0151] The content viewing request contains main-content identification information included in the transmission-preparation completion notification and user identification information for identifying the user of the user equipment 2. The content viewing request is transmitted as a SETUP message (message in which “SETUP” is set as the method) of a RTSP message (message according to RTSP).

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[0152] The media functions part 60 then receives the content viewing request. Subsequently, from the above-mentioned content transmission instructions that have been received, the content generator 60 acquires a content

transmission instruction that contains the main-content identification information and user identification information included in said received content viewing request. Then, the media functions part 60 acquires the advertisement playlist information contained in the content transmission instruction thus acquired.

[0153] Subsequently, the media functions part 60 generates viewing content data based on the playlist information thus acquired as well as the advertisement content data and main content data that are stored in the content data storage part 62. Thus, the content generator 60 generates viewing content data representing viewing content in which advertisement content is inserted into main content (step D502, viewing-content generation step).

[0154] The media functions part 60 then transmits a content-delivery-preparation completion notification to the user equipment 2 which has transmitted the content viewing request (step D503). The content-delivery-preparation completion notification is transmitted as an OK message (response containing "OK" and "200" as a status code in the start line) of a RTSP message.

[0155] Upon receiving the transmission-preparation completion notification, the user equipment 2 transmits a reproduction start request to the media functions part 60 (step A504). The reproduction start request is transmitted as a PLAY message (message in which "PLAY" is set as the method) of a RTSP message.

[0156] Subsequently, upon receiving the reproduction start request, the media functions part 60 transmits a reproduction start notification to the user equipment 2. The reproduction start notification is information indicating that transmission of the content data is started. The reproduction start notification is transmitted as an OK message of a RTSP message.

[0157] Then, the media functions part 60 transmits, to the user equipment 2, viewing content data generated in the above-mentioned step D502 (step D505, viewing-content transmission step). This transmission of the data is performed by the media functions part 60 using the session established by the core IMS part 30 according to RTP.

[0158] Thus, the user equipment 2 receives the viewing content data and causes a television receiver (not shown) to display the content represented by the received content data (in this example, a video) represented by the viewing content data thus received.

[0159] As described above, according to the first embodiment of the content delivery system claimed by the present invention, the content delivery system 1 transmits, to user equipment 2, viewing content data representing viewing content in which advertisement content selected based on the advertisement selection information is inserted into the main content. Accordingly, it is possible to cause the user to view viewing content with advertisement content corresponding to the advertisement selection information inserted therein.

[0160] Further, in the first embodiment described above, the advertisement selection information contains user basic information associated with the user identification information. This enables the content delivery system 1 to cause the user of the user equipment 2 which has transmitted a content transmission request to view viewing content with advertisement content according to the user inserted therein.

[0161] In the first embodiment described above, the advertisement selection information additionally contains the content basic information associated with the main-content identification information. This enables the content delivery system 1 to cause the user to view the viewing content in which the advertisement content selected according to the main content identified by the main-content identification information contained in the received content transmission request is inserted.

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[0162] Further, in the first embodiment, the service-control functions part 40 is configured to transmit playlist information containing selected-advertisement-content specification information to the media server 4b via the connection control system 3 when the connection control system 3 executes a process for establishing the connection. This enables the service control server 4a to transmit, to the media server 4b, playlist information reflecting the latest advertisement selection information as of the point in time when the connection control system 3 executes a process for establishing the connection.

[0163] In addition, in the first embodiment described above, the service-control functions part 40 is configured to transmit playlist information containing selected-advertisement-content specification information to the media server 4b via the connection control system 3 by incorporating the playlist information into a connection establishment message.

[0164] This eliminates the need for the service control server to transmit other messages besides a connection establishment message in order to transmit playlist information to a media server 4a. This means that the number of communications carried out among the connection control system 3, the service control server 4a, and the media server 4b can be reduced. In other words, the processing load and/or the communication load required for the connection control system 3, the service control server 4a, and the media server 4b to exchange messages can be reduced.

[0165] Although in the first embodiment described above, the playlist information is contained in the header HD of the INVITE message, the playlist information may be contained in the start line (Request-Line) of the INVITE message. For example, as shown in FIG. 7, the playlist information PL may be contained in the Request-URI (Uniform Resource Identifier) in the start line.

[0166] Although in the first embodiment described above, the playlist information is contained in the header HD of the INVITE message, the playlist information may be contained in the body BD of the INVITE message. For example, as shown in FIG. 8, the playlist information PL may be contained in the body BD as a value of "videosequence" in the values of type "a" in SDP (Session Description Protocol).

[0167] Further, although in the first embodiment described above, the playlist information is contained in the header HD of an INVITE message, the body BD of the INVITE message may be formed of a first part according to a first format and a second part according to a second format (that is, the body BD is multi-parted), and the playlist information may be contained in one of the first and second parts.

[0168] For example, as shown in FIG. 9, the body may include a first part BD1 according to SDP format and a second part BD2 according to text format, and the playlist information may be contained in the second part BD2.

[0169] Further, although in the first embodiment described above, the playlist information is contained directly in the INVITE message, reference information may be contained in the INVITE message so that the playlist information can be referred to in the reference information. For example, as shown in FIG. 10, reference information (substantially playlist information) PL representing the URI for referring to (acquiring) the playlist information may be contained in the INVITE message as the value of the type "u" in SDP in the body BD.

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[0170] The first embodiment described above is configured to simultaneously establish both of the connection for performing communication according to RTSP (RTSP connection) and the connection for performing communication according to RTP (RTP connection) by the execution of the processes of step A501 to step E501. Now, in another modification of the first embodiment, the configuration may be such that the RTSP connection is established first by the execution of the processes of step A501 to step E501 and then the RTP connection is established by the execution of the same processes as those in step A501 to step E501.

[0171] <First Modification of the First Embodiment>

A content delivery system according to a first modification of the first embodiment of the present invention will be described. This content delivery system according to the first modification is different from the content delivery system according to the first embodiment in that the playlist information is contained in a message other than the connection establishment message. Therefore, the following description will be made focusing on the difference.

[0172] Unlike the first embodiment, the service-control functions part 40 according to the first modification does not generate playlist information upon receiving a content transmission request transmitted by the user equipment 2. The service-control functions part 40 transmits a content transmission instruction containing no playlist information to the media functions part 60 via the core IMS part 30, as shown in FIG. 11 (step C1101).

[0173] Upon receiving the content transmission instruction, the media functions part 60 transmits a transmission permission notification to the service-control functions part 40 via the core IMS part 3 in the same manner as in step D501 according to the first embodiment (step D1101). The transmission permission notification is transmitted as an OK message of a SIP message.

[0174] Upon receiving the transmission permission notification, the service-control functions part 40 generates playlist information in the same manner as in step C501 according to the first embodiment (step C1102).

Subsequently, the service-control functions part 40 transmits a playlist notification containing the generated playlist information to the media functions part 60 via the core IMS part 30 (step C1103). The playlist notification is transmitted as an INFO message (message in which "INFO" is set as the method) of a SIP message. Incidentally, the playlist notification may be transmitted as a MESSAGE message (message in which "MESSAGE" is set as the method) in a SIP message.

[0175] Thus, the media functions part 60 receives the playlist notification. The media functions part 60 then transmits a playlist reception completion notification to the service-control functions part 40 via the core IMS part 30 (step D1102). The playlist reception completion notification is information indicating that the playlist notification has been received. The playlist reception completion notification is transmitted as an OK message of a SIP message.

[0176] Then, once the service-control functions part 40 receives the playlist reception completion notification, the content delivery system 1 establishes connection between the user equipment 2 and the media server 4b by executing the same processes as those in step C503 and onwards according to the first embodiment, and transmits viewing content data from the media server 4b to the user equipment 2. This first modification also provides the same advantages and effects as those of the first embodiment.

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[0177] <Second Modification of the First Embodiment>

A content delivery system according to a second modification of the first embodiment of the present invention will be described. This content delivery system according to the second modification differs from the content delivery system according to the first embodiment in that the playlist information is contained in a message other than the connection establishment message. Therefore, the following description will be made focusing on the difference.

[0178] Unlike the first embodiment, the service-control functions part 40 according to the second modification does not generate playlist information upon receiving a content transmission request transmitted by the user equipment 2. The service-control functions part 40 transmits a content transmission instruction containing no playlist information to the media functions part 60 via the core IMS part 30, as shown in FIG. 12 (step C1201).

[0179] Upon receiving the content transmission instruction, the media functions part 60 transmits a transmission permission notification to the service-control functions part 40 via the core IMS part 3 in the same manner as in step D501 according to the first embodiment (step D1201). The transmission permission notification is transmitted as an OK message of a SIP message.

[0180] Further, the media functions part 60 transmits a playlist transmission request to the service-control functions part 40 via the core IMS part 30 (step D1202). The playlist transmission request contains user identification information, equipment address information and main-content identification information contained in the received content transmission instruction, and is information indicating a request for transmission of playlist information. The playlist transmission request is transmitted as an INFO message of a SIP message. Incidentally, the playlist transmission request may be transmitted as a MESSAGE message of a SIP message.

[0181] Upon receiving the playlist transmission request, the service-control functions part 40 generates playlist information in the same manner as in step C501 according to the first embodiment (step C1202). Subsequently, the service-control functions part 40 transmits a playlist notification containing the generated playlist information to the media functions part 60 via the core IMS part 30 (step C1203). The playlist notification is transmitted as an OK message of a SIP message.

[0182] Thus, the media functions part 60 receives the playlist notification. The media functions part 60 then transmits a playlist reception completion notification to the service-control functions part 40 via the core IMS part 30 (step D1203). The playlist reception completion notification is information indicating that the playlist notification has been received. The playlist reception completion notification is transmitted as an OK message of a SIP message.

[0183] Then, once the service-control functions part 40 receives the playlist reception completion notification, the content delivery system 1 establishes connection between the user equipment 2 and the media server 4b by executing the same processes as those in step C503 and onwards according to the first embodiment, and transmits

viewing content data from the media server 4b to the user equipment 2. This first modification also provides the same advantages and effects as those of the first embodiment.

[0184] <Second Embodiment>

Next, a content delivery system according to a second embodiment of the present invention will be described. The content delivery system according to the second embodiment differs from the content delivery system according to the first embodiment in that while advertisement attribute information is transmitted to the media functions part 60 from the service-control functions part 40, the media functions part 60 generates playlist information based on this advertisement attribute information. Therefore, the following description will be made focusing on the difference.

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[0185] As shown in FIG. 13, the service-control functions part 40 according to the second embodiment does not include the advertisement-attribute-information storage part 43, the advertisement-insertion-information storage part 44, or the playlist generator 45. The service-control functions part 40 includes an advertisement selection information acquiring part 47.

[0186] The advertisement selection information acquiring part 47 accepts a content transmission request as a process request received by the information transceiver 41. The advertisement selection information acquiring part 47 acquires, from the user basic information stored in the user-basic-information storage part 51, user basic information stored in association with the user identification information contained in the content transmission request received by the information transceiver 41.

[0187] Further, the advertisement selection information acquiring part 47 acquires, from the content basic information stored in the content-basic-information storage part 42, content basic information stored in association with the main-content identification information contained in the content transmission request.

[0188] The delivery requesting part 46 outputs a content transmission instruction. The content transmission instruction contains advertisement selection information containing the user basic information and content basic information acquired by the advertisement selection information acquiring part 47, and user-authentication success information (i.e., user identification information), equipment address information and main-content identification information contained in the content transmission request. The information transceiver (transmission request reception means and advertisement-selection-information transmission means) 41 transmits the content transmission instruction output by the delivery requesting part 46 to the media server 4b via the core IMS part 30.

[0189] The media functions part 60 includes an advertisement attribute information storage 66 similar to the advertisement-attribute-information storage part 43, an advertisement-insertion-information storage part 67 similar to the advertisement-insertion-information storage part 44, and a playlist generator (advertisement-content selection means) 68 similar to the playlist generator 45.

[0190] From the content transmission instructions received by the information transceiver (advertisement-selection-information reception means) 61, the playlist generator 68 acquires advertisement selection information contained in a content transmission instruction that includes the main-content identification information and user identification information included in the content viewing request received by the content delivery controller 63.

[0191] The playlist generator 68 then calculates a final priority level for each item of the advertisement attribute information based on the acquired advertisement selection information. Subsequently, the playlist generator 68 extracts, from the advertisement-content identification information stored in the advertisement attribute information storage 66, advertisement-content identification information associated with the advertisement-attribute information item with the highest calculated final priority level.

[0192] On the other hand, the playlist generator 68 acquires, from the number-of-insertions information and the inserting-position information stored in the advertisement-insertion-information storage part 67, number-of-insertions information and inserting-position information stored in association with the main-content identification information contained in the content viewing request.

[0193] Then, from extracted advertisement-content identification information, the playlist generator 68 selects a number of advertisement-content identification information items, said number being that represented by the acquired number-of-insertions information. Subsequently, the playlist generator 68 generates playlist information based on the selected advertisement-content identification information, the main-content identification information contained in the content transmission request, and the acquired inserting-position information.

[0194] Then, the content generator 64 generates viewing content data based on the playlist information generated by the playlist generator 68, and the advertisement content data and main content data stored in the content-data storage part 62.

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[0195] Unlike the first embodiment, the service-control functions part 40 according to the second embodiment does not generate playlist information upon receiving the content transmission request transmitted by the user equipment 2 (transmission-request reception step). As shown in FIG. 14, the service-control functions part 40 transmits a content transmission instruction containing advertisement selection information instead of the playlist information, to the media functions part 60 via the core IMS part 30 (step C1401, advertisement-selection-information transmission step).

[0196] The content transmission instruction is transmitted as an INVITE message of a SIP message. As shown in FIG. 15, the INVITE message includes a header HD and a body BD. In this example, the user basic information UI in the advertisement selection information is contained as values of the field "X-user-favorite" in the header HD of the INVITE message. The content basic information CI in the advertisement selection information is contained as values of the field "X-content-favorite" in the header HD of the INVITE message.

[0197] In this example, each of the user basic information UI and the content basic information CI includes portions of element information separated with commas. In each portion of the element information, the leading part of the two parts separated with a semicolon (;) represents advertisement attribute information (e.g., "car" represents automobiles, and "real estate" represents real estate properties). The end part of the two parts separated with a semicolon (;) represents priority information.

[0198] This INVITE message is one of connection establishment messages which the core IMS part 30 exchanges with the user equipment 2, the service-control functions part 40, and the media functions part 60 so that the core IMS part 30 establishes connection between the user equipment 2 and media functions part 60.

[0199] Thus, the inference is that the service-control functions part 40 transmits selected-advertisement-content specification information to the media functions part 60 (media server 4b) via the core IMS part 30 by incorporating the selected-advertisement-content specification information in the connection establishment message.

[0200] In other words, it can be said that the service-control functions part 40 transmits playlist information containing the selected-advertisement-content specification information to the media server 4b via the core IMS part 30 when the core IMS part 30 executes a process for establishing a connection between the user equipment 2 and the media functions part 60.

[0201] Then, once the media functions part 60 receives the content transmission instruction (advertisement-selection-information reception step), the content delivery system 1 establishes connection between the user equipment 2 and the media server 4b by executing the processes in steps D501 through E501 according to the first embodiment.

[0202] Subsequently, the user equipment 2 transmits a content viewing request to a media server 4b (media functions part 60) specified by the media-delivery specification information contained in the transmission-preparation completion notification thus received (step A503).

[0203] The media functions part 60 then receives the content viewing request. Subsequently, from the above-mentioned content transmission instructions that have been received, the content generator 60 acquires a content transmission instruction that contains the main-content identification information and user identification information included in said received content viewing request. Subsequently, the media functions part 60 acquires advertisement selection information contained in the acquired content transmission instruction.

[0204] Subsequently, the media functions part 60 selects advertisement-content identification information based on the acquired advertisement selection information, the advertisement-content identification information stored in the advertisement attribute information storage 66, and the number-of-insertions information and inserting-position information stored in the advertisement-insertion-information storage part 67 (advertisement-content selection step). Further, the media functions part 60 generates playlist information based on the selected advertisement-content identification information, the main-content identification information contained in the content viewing request, and the inserting-position information stored in the advertisement-insertion-information storage part 67 (step D1401).

[0205] Subsequently, the media functions part 60 generates viewing content data based on the generated playlist information, and the advertisement content data and main content data stored in the content data storage part 62 (step D502, viewing-content generation step).

[0206] Then, the content delivery system 1 executes the same processes as those performed in step D503 and onwards according to the first embodiment, and transmits viewing content data thus generated from the media server 4b to the user equipment 2 (viewing-content transmission step).

[0207] As described above, according to the second embodiment of the content delivery system claimed by the present invention, the content delivery system 1 transmits, to user equipment 2, viewing content data representing viewing content in which advertisement content selected based on the advertisement selection information is inserted into the main content, in the similar manner as in the first embodiment. Accordingly, it is possible to cause the user to view viewing content in which advertisement content corresponding to the advertisement selection information is inserted.

[0208] Further, in the second embodiment, the advertisement selection information contains user basic information associated with user identification information. This enables the content delivery system 1 to cause the user of the user equipment 2 which has transmitted a content transmission request to view viewing content in which advertisement content according to the user is inserted.

[0209] In addition, in the second embodiment, the advertisement selection information contains content basic information associated with main-content identification information. This enables the content delivery system 1 to cause the user to view the viewing content in which the advertisement content selected according to the main content identified by the main-content identification information contained in the received content transmission request is inserted.

[0210] Further, in the second embodiment, the service-control functions part 40 is configured to transmit advertisement selection information to the media server 4b via the connection control system 3 when the connection control system 3 executes a process for establishing the connection. This enables the service control server 4a to transmit to the media server 4b the latest advertisement selection information at the time when the connection control system 3 executes the process for establishing the connection. As a result, the media server 4b is able to select advertisement content data based on this updated advertisement selection information.

[0211] In addition, in the second embodiment, the service-control functions part 40 is configured to transmit the advertisement selection information to the media server 4b via the connection control system 3 by incorporating the advertisement selection information in a connection establishment message.

[0212] This releases the service control server 4a from the need to transmit other messages besides the connection establishment message in order to transmit the advertisement selection information to the media server 4b. This means that the number of communications carried out among the connection control system 3, the service control server 4a, and the media server 4b can be reduced. In other words, the processing load and/or the communication load required for the connection control system 3, the service control server 4a, and the media server 4b to exchange messages can be reduced.

[0213] <Third Embodiment>

Next, the content delivery system according to a third embodiment of the present invention will be described. The content delivery system according to the third embodiment differs from the content delivery system according to the first embodiment in that, while selected-advertisement-content specification information is transmitted from the service-control functions part 40 to the media functions part 60, the media functions part 60 generates playlist information based on the selected-advertisement-content specification information. Therefore, the following description will be made focusing on the difference.

[0214] The service-control functions part 40 according to the third embodiment as shown in FIG. 16 does not include the advertisement-insertion-information storage part 44 or the playlist generator 45. The service-control functions part 40 includes an advertisement content selector (advertisement-content selection means) 48.

[0215] The content-basic-information storage part 42 according to the third embodiment stores content basic information and number-of-insertions information in association with main-content identification information for identifying main content.

[0216] The advertisement content selector 48 accepts a content transmission request as a process request received by the information transceiver 41. The advertisement content selector 48 acquires, from user basic information stored in the user-basic-information storage part 51, the user basic information stored in association with the user identification information contained in the content transmission request received by the information transceiver 41.

[0217] Further, the advertisement content selector 48 acquires, from content basic information stored in the content-basic-information storage part 42, the content basic information stored in association with the main-content identification information contained in the content transmission request.

[0218] The advertisement content selector 48 then calculates a final priority level for each item of the advertisement attribute information, based on the acquired user basic information and the acquired content basic information. Subsequently, the advertisement content selector 48 extracts, from advertisement-content identification information stored in the advertisement-attribute-information storage part 43, the advertisement-content identification information associated with the advertisement-attribute information item with the highest calculated final priority level.

[0219] On the other hand, the advertisement content selector 48 acquires, from number-of-insertions information stored in the content-basic-information storage part 42, the number-of-insertions information stored in association with the main-content identification information contained in the content transmission request. The advertisement content selector 48 then selects, from the extracted advertisement-content identification information, a number of advertisement-content identification information items, said number being that represented by the acquired number-of-insertions information.

[0220] The delivery requesting part 46 outputs a content transmission instruction. The content transmission instruction includes selected-advertisement-content specification information containing the advertisement-content identification information selected by the advertisement content selector 48, and user-authentication success information (i.e., user identification information), equipment address information, and main-content identification information contained in the content transmission request. The information transceiver (transmission request reception means and selected-advertisement-content specification-information transmission means) 41 transmits the content transmission instruction output by the delivery requesting part 46 to the media server 4b via the core IMS part 30.

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[0221] The media functions part 60 includes an advertisement-insertion-information storage part 67, which is similar to the advertisement-insertion-information storage part 44, and a playlist generator 68, which is similar to the playlist generator 45.

[0222] from the content transmission instructions received by the information transceiver (advertisement-selection-information reception means) 61, the playlist generator 68 acquires selected-advertisement-content specification information contained in a content transmission instruction that includes the main-content identification information and user identification information included in the content viewing request received by the content delivery controller 63.

[0223] On the other hand, the playlist generator 68 acquires, from inserting-position information stored in the advertisement-insertion-information storage part 67, the inserting-position information stored in association with the main-content identification information contained in the content viewing request.

[0224] The playlist generator 68 then generates playlist information based on the advertisement-content identification information contained in the acquired selected-advertisement-content specification information, the main-content identification information contained in the content transmission request, and the acquired inserting-position information.

[0225] Then, the content generator 64 generates viewing content data based on the playlist information, which has been generated by the playlist generator 68, as well as the advertisement content data and main content data, which are stored in the content-data storage part 62.

[0226] Unlike the first embodiment, the service-control functions part 40 according to the second embodiment does not generate playlist information upon receiving the content transmission request transmitted by the user equipment 3 (transmission-request reception step). As shown in FIG. 17, the service-control functions part 40 transmits a content transmission instruction containing selected-advertisement-content specification information instead of playlist information to the media functions part 60 via the core IMS part 30 (step C1701, selected-advertisement-content specification-information transmission step).

[0227] The content transmission instruction is transmitted as an INVITE message of a SIP message. As shown in FIG. 18, the INVITE message includes a header HD and a body BD. In this example, selected-advertisement-content specification information AD is contained as values of the field "X-video-advertisement" in the header HD of the INVITE message. In this example, the selected-advertisement-content specification information AD includes advertisement-content identification information separated with commas.

[0228] This INVITE message is one of connection establishment messages which the core IMS part 30 exchanges with the user equipment 2, the service-control functions part 40, and the media functions part 60 so that the core IMS part 30 establishes connection between the user equipment 2 and media functions part 60.

[0229] Thus, the inference is that the service-control functions part 40 transmits selected-advertisement-content specification information to the media functions part 60 (media server 4b) via the core IMS part 30 by incorporating the selected-advertisement-content specification information in the connection establishment message.

[0230] In other words, it can be said that the service-control functions part 40 transmits playlist information containing the selected-advertisement-content specification information to the media server 4b via the core IMS part 30 when the core IMS part 30 executes a process for establishing a connection between the user equipment 2 and the media functions part 60.

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[0231] Then, once the media functions part 60 receives the content transmission instruction (selected-advertisement-content specification-information reception step), the content delivery system 1 establishes connection between the user equipment 2 and the media server 4b by executing the processes in steps D501 through E501 according to the first embodiment.

[0232] Subsequently, the user equipment 2 transmits a content viewing request to a media server 4b (media functions part 60) specified by the media-delivery specification information contained in the transmission-preparation completion notification thus received (step A503).

[0233] The media functions part 60 then receives the content viewing request. Subsequently, from the above-mentioned content transmission instructions that have been received, the content generator 60 acquires a content transmission instruction that contains the main-content identification information and user identification information included in said received content viewing request. Subsequently, the media functions part 60 acquires selected-advertisement-content specification information contained in the acquired content transmission instruction.

[0234] Subsequently, the media functions part 60 generates playlist information based on advertisement-content identification information contained in the acquired selected-advertisement-content specification information,

inserting-position information stored in the advertisement-insertion-information storage part 67, and main-content identification information contained in the content viewing request (step D1701).

[0235] Subsequently, the media functions part 60 generates viewing content data based on the generated playlist information, and the advertisement content data and main content data stored in the content data storage part 62 (step D502, viewing-content generation step).

[0236] Then, the content delivery system 1 executes the same processes as those performed in step D503 and onwards according to the first embodiment, and transmits viewing content data thus generated from the media server 4b to the user equipment 2 (viewing-content transmission step).

[0237] This third embodiment is also capable of providing the same advantages and effects as those of the second embodiment.

[0238] It should be noted that the present invention is not limited to the above-mentioned embodiments, but various modifications may be employed without departing from the scope of the present invention. For example, an arbitrary combination of the above-described embodiments and modification examples described above may be employed as other modifications of the above-mentioned embodiments.

[0239] Additionally, as shown in FIG. 19, functions of the content delivery system 1 according to other modifications of each embodiment mentioned above may include a content storage part RC, a transmission request receiver 101, an advertisement content selector 102, a viewing content generator 103, and a viewing content transmitter 104.

[0240] The content storage part RC stores advertisement content data representing advertisement content and main content data representing main content. The transmission request receiver 101 receives, via the connection control system 3, a content transmission request containing main-content identification information for identifying main content and transmitted by the user equipment 2.

[0241] The advertisement content selector 102 selects the advertisement content data stored in the content storage part RC based on advertisement selection information containing advertisement attribute information representing an attribute of the advertisement content.

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[0242] The viewing content generator 103 generates viewing content that represents viewing content in which advertisement content represented by the advertisement content data concerned is inserted in the main content represented by the main content data concerned, doing so based on selected advertisement content data and main content data identified by content transmission request received by the transmission request receiver 101.

[0243] The viewing content transmitter 104 transmits viewing content data generated by the viewing content generator 103 to the user equipment 2 when the connection with the user equipment 2 that has transmitted the content transmission request is established by the connection control system 3.

[0244] According to this modification as well, the content delivery system transmits, to user equipment, viewing content data representing viewing content in which advertisement content selected based on the advertisement selection information is inserted into the main content. Therefore, for example, the content delivery system 1 may be configured to select advertisement content according to the main content (content that the user wants to view) and/or the user, thereby allowing users to view viewing content with advertisement content according to the main content and/or the user inserted therein.

[0245] Although, in each embodiment described above, the advertisement selection information contains both user basic information and content basic information, it may contain only one of the user basic information and the content basic information.

[0246] Although the user-profile-server functions part 50 in each embodiment described above is configured to include the user-basic-information storage part 51, the service-control functions part 40 instead of the user-profile-server functions part 50 may be configured to include the user-basic-information storage part 51. In other words, the service-control functions part 40 may store the user basic information in association with the user identification information.

[0247] Although the advertisement selection information in the embodiments described above contains the user basic information and the content basic information, the advertisement selection information may contain user-

equipment position information representing the position of the user equipment 2, date-and-time-of-transmission information representing the date and time (day of the week may also be included) when the content transmission request is transmitted, and/or user attribute information representing an attribute of the user who has transmitted the content transmission request (e.g., the user's place of residence, age, gender, height, weight and/or occupation), in place of the user basic information and/or the content basic information, or in addition to the user basic information and the content basic information. Furthermore, in this case, the content delivery system 1 may be configured to transmit the user-equipment position information stored in the core IMS part 30 to the media functions part 60.

[0248] Although the content element information contained in the playlist information in the embodiments described above is composed of the combination of the content identification information and the reproduction start and end positions of the content identified by the content identification information, the playlist information may be composed only of the content identification information. In this case, the content data stored in the content-data storage part 62 is preferably data representing respective portions of the content generated by means of dividing a single item of main content at positions where advertisement content is inserted.

[0249] Additionally, in the embodiments described above, the final priority level is calculated by means of combining a priority level represented by priority information contained in the user basic information and a priority level represented by priority information contained in the content basic information. Alternatively, the final priority level may be calculated by combining a value obtained by means of multiplying the priority level, which is indicated in the priority information contained in the user basic information, by a first factor and a value obtained by multiplying the priority level, which is indicated in the priority information contained in the content basic information, by a second factor.

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[0250] Although in each embodiment mentioned above, the advertisement attribute information associated with the advertisement content to be selected is composed only of a single advertisement-attribute information item (with the highest calculated final priority level), the advertisement attribute information may be composed of a plurality of advertisement-attribute information items. In this case, each embodiment described above is preferably configured such that an advertisement-attribute information item associated with advertisement content with the highest calculated final priority level is selected with a higher priority.

[0251] In a modification of the embodiments above, a server acting as both the service control server 4a and the media server 4b may be provided in place of the service control server 4a and the media server 4b. Further, in a modification of the embodiments above, a server acting as both the service control server 4a and the user-information management server 4c may be provided in place of the service control server 4a and the user-information management server 4c.

[0252] Although the media server 4b in the embodiments described above has the entire media functions part 60, it may be configured in such a way that the first server has a portion of the media functions part 60 (media control functions part) and the second server has the remaining portion of the media functions part 60 (media delivery functions part). Additionally, a plurality of servers having the media delivery functions of the media functions part 60 may be provided in a modification of the embodiments above.

[0253] Although the connection control system 3 includes a plurality of connection control servers (connection control servers 3a, 3b, and so on) in the modifications of the embodiments above, the connection control system 3 may include a single connection control server.

[0254] Although the content delivery system 1 in each embodiment mentioned above is configured to transmit playlist information or advertisement attribute information according to SIP, it may be configured to transmit such information according to another communication protocol (such as RTSP).

[0255] It should be noted that although the user equipment 2 is a set-top box in each embodiment mentioned above, the user equipment 2 may be a cell-phone, a PDA (Personal Data Assistance), a Smartphone, a PHS (Personal Handyphone System), a game machine, car navigation equipment, a personal computer, or the like. Further, although the content is a video in each embodiment mentioned above, the content may be images only or audio only.

[0256] Although the components of the content delivery system 1 represent constituent elements of the IMS (IP Multimedia Subsystem) in the description of each embodiment above, they may represent constituent elements of an MMS (Multimedia Messaging Service).

INDUSTRIAL APPLICABILITY

[0257] The present invention is applicable to video-on-demand systems for content delivery via IP networks as well as IPTV systems for TV broadcasting via IP networks.

BRIEF EXPLANATION OF THE DRAWINGS

[0258]

FIG. 1 is a diagram illustrating a schematic configuration of a content delivery system according to the first embodiment of the present invention;

FIG. 2 is a block diagram schematically illustrating functions of the content delivery system shown in FIG. 1;

FIG. 3 is a table illustrating user basic information stored in the user-information management server shown in FIG. 1;

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FIG. 4 is a sequence diagram illustrating operation performed by the content delivery system shown in FIG. 1 when authenticating user equipment or the user of the user equipment;

FIG. 5 is a sequence diagram illustrating operation performed by the content delivery system shown in FIG. 1 when transmitting viewing content data to a user equipment in response to an input of the user of the user equipment;

FIG. 6 is a diagram showing an INVITE message containing a content transmission instruction;

FIG. 7 is a diagram showing an INVITE message containing a content transmission instruction according to the modification of the first embodiment;

FIG. 8 is a diagram showing an INVITE message containing a content transmission instruction according to the modification of the first embodiment;

FIG. 9 is a diagram showing an INVITE message containing a content transmission instruction according to the modification of the first embodiment;

FIG. 10 is a diagram showing an INVITE message containing a content transmission instruction according to the modification of the first embodiment;

FIG. 11 is a sequence diagram showing operation performed by a content delivery system according to the first modification of the first embodiment when transmitting viewing content data to the user equipment in response to an input of the user of the user equipment;

FIG. 12 is a sequence diagram showing operation performed by a content delivery system according to the second modification of the first embodiment when transmitting viewing content data to the user equipment in response to an input of the user of the user equipment;

FIG. 13 is a block diagram schematically illustrating a content delivery system according to the second embodiment of the present invention;

FIG. 14 is a sequence diagram showing operation performed by the content delivery system according to the second embodiment of the invention when transmitting viewing content data to the user equipment in response to an input of the user of the user equipment;

FIG. 15 is a diagram showing an INVITE message containing a content transmission instruction according to the second embodiment of the present invention;

FIG. 16 is a block diagram schematically illustrating functions of a content delivery system according to the third embodiment of the present invention;

FIG. 17 is a sequence diagram illustrating operation performed by the content delivery system according to the third embodiment of the present invention when transmitting viewing content data to the user equipment in response to an input of the user of the user equipment;

FIG. 18 is a diagram showing an INVITE message containing a content transmission instruction according to the third embodiment of the present invention; and
 FIG. 19 is a block diagram schematically illustrating functions of a content delivery system according to the fourth embodiment of the present invention.

EXPLANATION OF REFERENCE CODING

[0259]

- 1 Content delivery system
- 2 User equipment
- 3 Connection control system
- 3a Connection control server
- 3b Connection control server
- 4 Application server system
- 4a Service control server
- 4b Media server
- 4C User-information management server
- 11 Request transmitter
- 30 Core IMS part
- 31 Call connection controller

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- 32 IMS authentication part
- 40 Service-control functions part
- 41 Information transceiver
- 42 Content basic information storage part
- 43 Advertisement-attribute-information storage part
- 44 Advertisement-insertion-information storage part
- 45 Playlist generator
- 46 Delivery requesting part
- 47 Advertisement selection information acquiring part
- 48 Advertisement content selection part
- 50 User-profile-server functions part
- 51 User basic information storage part
- 60 Media functions part
- 61 Information transceiver
- 62 Content data storage part
- 63 Content delivery controller
- 64 Content generator
- 65 Content delivering part
- 66 Advertisement-attribute-information storage part 67 Advertisement-insertion-information storage part
- 68 Playlist generator
- 80 Transport functions part
- 81 Bandwidth guarantee part
- 101 Transmission request receiver
- 102 Advertisement content selection part
- 103 Viewing content generator
- 104 Viewing content transmitter
- AD Selected-advertisement-content specification information
- BD Body part
- BD1 The first portion

BD2 The second portion
CI Content basic information
HD Header section
NW1 User-side communication line
NW2 Provider-side communication line
PL Playlist information
RC Content storage part
UI User basic information

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[Name of Document] **DRAWINGS**

[Figure 1]

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[Figure 2]

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[Figure 3]

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[Figure 4]

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[Figure 5]

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[Figure 6]

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[Figure 7]

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[Figure 8]

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[Figure 9]

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[Figure 10]

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[Figure 11]

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[Figure 12]

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[Figure 13]

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[Figure 14]

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[Figure 15]

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[Figure 16]

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[Figure 17]

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[Figure 18]

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[Figure 19]

I, Yukie Hirose, hereby declare as follows:

1. I, Yukie Hirose, hereby certify that I am a professional translator fluent in both Japanese and English and I am competent to translate from Japanese into English.
2. I am a translator at Nelles Translations, which is located at 3 Grant Square, #336, Hinsdale, IL 60521.
3. I possess advanced knowledge of the Japanese and English languages.
4. The attached translation is, to the best of my knowledge and belief, a true and accurate English translation of Japanese text in Exhibit 2016 10912 document of IPR2023-01240 and IPR-2023-01241.
5. I declare under penalty of perjury that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code.

Dated: 4/30/2024

A handwritten signature in black ink, appearing to read 'Yukie Hirose', is written over a solid black horizontal line.

Ms. Yukie Hirose