

SPECIFICATION

TITLE OF THE INVENTION

SYSTEM OF DOWNLOADING COMPUTER SOFTWARE WITH BROADCASTING

5 PROGRAM

BACKGROUND OF THE INVENTION

1.FIELD OF THE INVENTION:

The present invention relates to a software download
10 system in which a computer software product such as a computer
program is downloaded with a broadcasting program from a
center station to each terminal through a communication
satellite, a broadcasting satellite or a terrestrial
television broadcasting service in a digital broadcasting.

15 2.DESCRPTION OF THE RELATED ART:

A broadcasting system, in which a video signal and an audio
signal composing a broadcasting program are digitized and the
digital signals of the broadcasting program are transmitted
from a transmitting station to a receiving apparatus through a
20 broadcasting satellite, has been spread. Because digital data
is transmitted through a satellite or a terrestrial television
broadcasting service, it becomes possible that a digitized
computer program is transmitted through a satellite or a
terrestrial television broadcasting service in addition to the
25 digital video signal and the digital audio signal and is

stored in a storing unit of the receiving apparatus.

2.1. PREVIOUSLY PROPOSED ART:

A broadcasting method, in which a computer program (or a computer software product) transmitted through a satellite is received in a receiving apparatus and is stored in a storing unit of the receiving apparatus, is disclosed in a Published Unexamined Japanese Patent Application No. H8-195952 (1996). The broadcasting method is described with reference to Fig. 1.

As shown in Fig. 1, in a digital data receiving and processing apparatus 2000 of a user, an electric wave indicating a broadcasting signal is transmitted through a satellite and is received in an antenna 2001, the electric wave received in the antenna 2001 is converted into the broadcasting signal in a converter 2002 by changing a frequency of the electric wave, the demodulation and error correction are performed for the broadcasting signal in a front end 2003 to obtain a digital signal, and the digital signal is transmitted to a transport block 2004. In the transport block 2004, the digital signal is divided into video data, audio data and conditional access data including a computer program. Because the broadcasting signal is enciphered, the conditional access data is transmitted to an IC card 2006 through an IC card interface 2005, and the judgement whether or not the user has an access right for the broadcasting signal is performed according to the conditional

data by the IC card 2006. In cases where the user has an access right for the broadcasting signal, a cryptograph key used for the cryptanalysis is delivered from the IC card 2006 to the transport block 2004, and the video data, the audio data and the conditional access data are deciphered in the transport block 2004 by using the cryptograph key. The video data deciphered is decoded in a video decoder 2007 to produce decoded video data, the decoded video data is encoded in an NTSC encoder 2008 to produce an National Television System Committee (NTSC) type video signal, and the NTSC type video signal is output. The audio data deciphered is decoded in an audio decoder 2009 to produce audio signal, and the audio signal is output. Also, the computer program included in the deciphered conditional access data is stored in an electrically erasable and programmable read only memory (EEPROM) 2100 under control of a central processing unit (CPU) 2101. The processing of the CPU 2101 is performed according to a processing program stored in a ROM 2102, and data necessary for the processing of the CPU 2101 is stored in a RAM 2103.

2.2. PROBLEMS TO BE SOLVED BY THE INVENTION:

However, because the computer program is included in the conditional access data and because the computer program included in the conditional access data is always broadcasted with the video and audio data, a special frequency band used only for the computer program is required. Therefore, there is

a problem that a frequency band required for the transmission of the broadcasting signal is widened.

Also, because any computer program (or any computer software product) for presenting a broadcasting program guide including a broadcasting schedule and downloading one
5 broadcasting program is not transmitted to the digital data receiving and processing apparatus 2000, the user cannot select a desired broadcasting program from a plurality of broadcasting programs by watching a plurality of broadcasting
10 program guides displayed on an image screen.

SUMMARY OF THE INVENTION

An object of the present invention is to provide, with due consideration to the drawbacks of such a conventional
15 broadcasting method, a software download system in which a software product such as a computer software product is downloaded to user's terminal without requiring a special frequency band used only for the software product.

The object of the present invention is achieved by the
20 provision of a software download system, comprising:

broadcasting program guide preparing means of a center station for preparing a guide of a broadcasting program accompanied by a software product corresponding to a first version number, a version number of the software product being
25 changed each time the software product is revised in the

center station;

broadcasting program data storing means of the center station for storing data of the broadcasting program which is listed in the guide prepared by the broadcasting program guide
5 preparing means;

software storing means of the center station for storing data of the software product which is listed in the guide prepared by the broadcasting program guide preparing means;

transmitting means of the center station for transmitting
10 the guide of the broadcasting program with the software product prepared by the broadcasting program guide preparing means, and transmitting the data of the software product stored in the software storing means with the data of the broadcasting program stored in the broadcasting program data
15 storing means during a transmission time period of the broadcasting program through the same transmission channel as that of the broadcasting program under the control of the broadcasting program guide preparing means;

receiving means of a terminal for receiving the guide of
20 the broadcasting program with the software product from the transmitting means, and receiving the data of the software product with the data of the broadcasting program during the transmission time period from the transmitting means;

output means of the terminal for outputting the data of the
25 broadcasting program received by the receiving means during

the transmission time period;

version number managing means of the terminal for managing a second version number corresponding to the software product previously downloaded from the center station to the terminal;

5 download judging means of the terminal for checking whether or not the first version number of the software product of the guide received by the receiving means differs from the second version number of the software product managed by the version number managing means and judging to download the data of the
10 software product received by the receiving means to the terminal in cases where the first version number of the software product listed in the guide differs from the second version number of the software product managed by the version number managing means; and

15 downloading means of the terminal for extracting the data of the software product from the broadcasting program received by the receiving means during the transmission time period in cases where the downloading of the software product is judged by the download judging means and storing the data of the
20 software product to download the software product received by the receiving means from the center station to the terminal and to use the software product on user's side.

In the above configuration, a guide of a broadcasting program is prepared in the broadcasting program guide
25 preparing means. In the guide, a software product to be

transmitted with the broadcasting program is listed, a first version number indicating the version of the software product is listed, and a transmission time period of the broadcasting program is listed. The guide is transmitted from the
5 transmitting means to the receiving means.

Also, data of the software product stored in the software storing means is transmitted from the transmitting means to the receiving means with data of the broadcasting program stored in the broadcasting program data storing means during
10 the transmission time period through the same transmission channel as that of the broadcasting program under the control of the broadcasting program guide preparing means.

In the terminal, a second version number indicating the version of the software product previously downloaded is
15 managed in advance by the version managing means. When the guide is received by the receiving means, it is checked by the download judging means whether or not the first version number of the software product of the guide differs from the second version number of the software product managed by the version
20 managing means. In cases where the first version number of the software product of the guide differs from the second version number of the software product, because the software product is renewed in the center station, it is judged to download the software product received by the receiving means to the
25 terminal. Therefore, in the downloading means, the data of the

software product is extracted from the broadcasting program received by the receiving means during the transmission time period, so that the software product is downloaded from the center station to the terminal and is stored. Therefore, the
5 user can use the software product. For example, in cases where a computer software product representing the software product is downloaded to user's terminal, the user can execute the computer software product in user's computer.

Accordingly, because data of the software product is
10 transmitted from the center station to the terminal with data of the broadcasting program, the software product can be downloaded to user's terminal without requiring a special frequency band (or a special transmission channel) used only for the software product.

15 Also, in cases where the software product is revised in the center station, because the first version number of the software product of the guide differs from the second version number of the software product already managed by the version managing means, the revision of the software product can be
20 detected by the download judging means, so that the software product can be downloaded from the center station to the terminal. Therefore, the user can always use the updated software product.

It is preferred that the software download system further
25 comprise:

set-up information storing means of the center station for storing set-up information indicating a download completion notification flag, the set-up information being included in the guide prepared by the broadcasting program guide preparing
5 means;

download completion notification judging means of the terminal for judging whether or not the downloading of the software product performed by the downloading means is to be notified to the center station, the notification of the
10 downloading of the software product being judged by the download completion notification judging means according to the download completion notification flag;

download completion notice transmitting means of the terminal for transmitting an identification number of the
15 terminal and a name of the software product downloaded by the downloading means as a download completion notice to the center station in cases where the download completion notification judging means judges that the downloading of the software product performed by the downloading means is to be
20 notified; and

download record managing means of the center station for managing a record of the downloading of the software product performed in the terminal according to the identification number of the terminal and the name of the software product
25 transmitted from the download completion notice transmitting

means.

In this configuration corresponding to a second embodiment, in cases where a software product supplier wants to know that the software product transmitted with the broadcasting program is downloaded from the center station to the user's terminal, because a download completion notice flag corresponding to the software product is set in the set-up information, the request of a download completion notice can be recognized in the terminal by checking the download completion notice flag of the software product written in the guide of the broadcasting program.

Accordingly, in cases where the software product is actually downloaded from the center station to the terminal, the software product supplier can know the downloading of the software product by checking the identification number of the terminal.

It is also preferred that the software download system further comprise:

protocol processing means of the center station for processing the data of the software product stored in the software storing means according to each of a plurality of software communication protocols to produce a plurality of protocol-processed software products, each protocol-processed software product being communicable with a type of terminal according to one software communication protocol, the

protocol-processed software products being transmitted from the transmitting means to the receiving means of the terminal, and a particular protocol-processed software product selected from the protocol-processed software products being received
5 by the terminal on condition that a type of the terminal matches with a particular software communication protocol corresponding to the particular protocol-processed software product.

In this configuration corresponding to a seventh
10 embodiment, even though a plurality of terminals are classified into a plurality of groups respectively corresponding to one software communication protocol, because a plurality of protocol-processed software products corresponding to a plurality of software communication
15 protocol types are prepared from each software product and are transmitted to the terminals, one type protocol-processed software product can be reliably received in each terminal.

It is also preferred that the software download system further comprise:

20 protocol processing means of the center station for processing the data of the software product stored in the software storing means according to a particular software communication protocol to produce a particular protocol-processed software product communicable according to the
25 particular software communication protocol, a name of the

particular software communication protocol being listed in the
guide of the broadcasting program prepared by the
broadcasting program guide preparing means, the particular
protocol-processed software product being transmitted from the
5 transmitting means to the receiving means of the terminal, and
the particular protocol-processed software product being
received by the receiving means;

protocol processing program storing means of the terminal
for storing one or more protocol processing programs
10 respectively used for a protocol processing in which one
protocol-processed software product communicable according to
one software communication protocol is changed to data of one
software product;

protocol correspondence table holding means of the terminal
15 for holding a protocol correspondence table in which the
correspondence of one software communication protocol and one
protocol processing program is listed for each protocol
processing program stored in the protocol processing program
storing means;

20 software communication protocol judging means of the
terminal for checking whether or not the particular software
communication protocol, of which the name is listed in the
guide of the broadcasting program received by the receiving
means, is listed in the protocol correspondence table held by
25 the protocol correspondence table holding means in cases where

the download judging means judges to download the software product, and outputting the name of the particular software communication protocol in cases where the particular software communication protocol is listed in the protocol

5 correspondence table; and

protocol processing performing means of the terminal for receiving the name of the particular software communication protocol output from the software communication protocol judging means, extracting a particular protocol processing
10 program corresponding to the particular software communication protocol from the protocol processing program storing means, performing a protocol processing for the particular protocol-processed software product received by the receiving means according to the particular protocol processing program to
15 change the particular protocol-processed software product to the software product, the software product being downloaded by the downloading means.

In this configuration corresponding to an eighth embodiment, even though a particular protocol-processed
20 software product communicable according to a particular software communication protocol is transmitted with one broadcasting program from the center station to the terminal, in cases where a particular protocol processing program for changing the particular protocol-processed software product to
25 a software product is arranged in the terminal, the particular

protocol-processed software product can be changed to the software product by executing the particular protocol processing program, and the software product can be downloaded to the terminal.

5 The object of the present invention is also achieved by the provision of a software download system, comprising:

 broadcasting program guide preparing means of a center station for preparing guides of a first group of broadcasting programs and guides of a second group of broadcasting
10 programs, each broadcasting program of the first group being accompanied by a software product corresponding to a first version number, each broadcasting program being not accompanied by any software product, and a version number of the software product being changed each time the software
15 product is revised in the center station;

 broadcasting program data storing means of the center station for storing data of each broadcasting program of which the guide is prepared by the broadcasting program guide preparing means;

20 software storing means of the center station for storing data of one software product corresponding to the first version number for each software product of which the guide is prepared by the broadcasting program guide preparing means;

 transmitting means of the center station for transmitting
25 the guides of the broadcasting programs prepared by the

broadcasting program guide preparing means, transmitting the data of each broadcasting program stored in the broadcasting program data storing means during a transmission time period of the broadcasting program under the control of the

5 broadcasting program guide preparing means, and transmitting the data of each software product stored in the software storing means with the data of one broadcasting program through the same transmission channel as that of the broadcasting program under the control of the broadcasting

10 program guide preparing means;

receiving means of a terminal for receiving the guides of the broadcasting programs from the transmitting means, and receiving the data of the broadcasting programs and the data of the software products from the transmitting means;

15 output means of the terminal for outputting the data of each broadcasting program received by the receiving means during the transmission time period;

version number managing means of the terminal for managing a second version number corresponding to each software product

20 previously downloaded from the center station to the terminal;

broadcasting software program extracting means of the terminal for extracting the guide of each broadcasting program of the first group from the guides received by the receiving means as a guide of one broadcasting software program;

25 download judging means of the terminal for checking whether

or not the first version number of the software product of the
broadcasting software program of each guide extracted by the
broadcasting software program extracting means differs from
the second version number of the software product managed by
5 the version number managing means and judging to download the
software product of each broadcasting software program
received by the receiving means to the terminal in cases where
the first version number of the software product differs from
the second version number of the software product; and
10 downloading means of the terminal for extracting the data
of the software product from the broadcasting program received
by the receiving means during the transmission time period in
cases where the downloading of the software product is judged
by the download judging means and storing the data of the
15 software product to download the software product received by
the receiving means from the center station to the terminal
and to use the software product on user's side.

In the above configuration, guides of a plurality of
broadcasting programs are prepared in the broadcasting program
20 guide preparing means. The guides are transmitted from the
transmitting means to the receiving means.

Also, data of each broadcasting program stored in the
broadcasting program data storing means is transmitted from
the transmitting means to the receiving means during its
25 transmission time period, and data of each software product

stored in the software storing means is transmitted with one
broadcasting program from the transmitting means to the
receiving means during the transmission time period of the
broadcasting program through the same transmission channel as
5 that of the broadcasting program under the control of the
broadcasting program guide preparing means.

In the terminal, a second version number indicating the
version of the software product previously downloaded is
managed in advance by the version managing means. When the
10 guides are received by the receiving means, the guide of each
broadcasting program with one software product is extracted
from all guides by the broadcasting software program
extracting means as a guide of one broadcasting software
program, and it is checked by the download judging means
15 whether or not the first version number of one software
product transmitted with each broadcasting software program
differs from the second version number of the software product
managed by the version managing means. In cases where the
first version number of the software product differs from the
20 second version number of the software product, because the
software product is renewed in the center station, it is
judged to download the software product received by the
receiving means to the terminal. Therefore, in the downloading
means, the data of the software product is extracted from the
25 broadcasting program received by the receiving means during

the transmission time period, so that the software product is downloaded from the center station to the terminal and is stored. Therefore, the user can use the software product. For example, in cases where a computer software product

5 representing the software product is downloaded to user's terminal, the user can execute the computer software product in user's computer.

Accordingly, because data of each software product is transmitted from the center station to the terminal with data
10 of the broadcasting program through the same transmission channel as that of the broadcasting program, the software product can be downloaded to user's terminal without requiring a special frequency band (or a special transmission channel) used only for the software product.

15 Also, in cases where one software product is revised in the center station, because the first version number of the software product of the guide differs from the second version number of the software product already managed by the version managing means, the revision of the software product can be
20 detected by the download judging means, so that the software product can be downloaded from the center station to the terminal. Therefore, the user can always use the updated software product.

It is preferred that the software download system further
25 comprise:

set-up information storing means of the center station for storing set-up information indicating a software type of one software product for each software product of the guides prepared by the broadcasting program guide preparing means,
5 each software product being set to a first software type or a second software type, and the pieces of set-up information of the software products being added to the guides by the broadcasting program guide preparing means;

display broadcasting program extracting means of the
10 terminal for extracting one or more guides of display broadcasting programs with software products set to the first software type from the guides of the broadcasting programs received by the receiving means;

display broadcasting program displaying means of the
15 terminal for displaying the guides of the display broadcasting programs extracted by the display broadcasting program extracting means for a user to select one or more download-candidate display broadcasting programs from the display broadcasting programs, all guides of broadcasting programs
20 with software products set to the second software type being extracted from the guides of the broadcasting programs received by the receiving means as one or more guides of broadcasting software programs by the broadcasting software program extracting means, the guides of the broadcasting
25 software programs being added to the guides of the download-

candidate display broadcasting programs, the downloading of the software product transmitted with each download-candidate broadcasting program being judged by the download judging means in cases where the first version number of the software product differs from the second version number of the software product, and the downloading of the software product transmitted with each download-candidate broadcasting program being performed by the downloading means.

In this configuration corresponding to a third embodiment, a software product supplier of the center station sets one software product to a first type in cases where the software product supplier desires a user to judge whether or not the downloading of the software product from the center station to user's terminal is to be performed. Accordingly, a guide of a broadcasting program with the software product can be displayed, and the user can judge the downloading of the software product.

It is also preferred that the software download system further comprise:

software download reservation managing means of the terminal for managing the recording reservation for one or more recording-reserved broadcasting programs selected from the second group of broadcasting programs, of which the guides are prepared by the broadcasting program guide preparing means; and

download-reserved broadcasting program determining means of
the terminal for selecting a guide of a download-reserved
broadcasting program from guides of one or more broadcasting
programs, of which the software products are judged by the
5 download judging means to be downloaded to the terminal, on
condition that a transmission time period of the download-
reserved broadcasting program does not overlap with that of
any recording-reserved broadcasting program managed by the
software download reservation managing means, the software
10 product transmitted with the download-reserved broadcasting
program being downloaded by the downloading means.

In this configuration corresponding to a fourth embodiment,
even though the recording of one or more broadcasting programs
respectively accompanied by no software product is reserved,
15 one or more download-reserved broadcasting programs can be
selected from the broadcasting programs on condition that a
transmission time period of each download-reserved
broadcasting program does not overlap with that of any
broadcasting program, and the download-reserved broadcasting
20 programs can be downloaded to record the software product of
each download-reserved broadcasting program during its
transmission time period.

It is also preferred that the software download system
further comprise:
25 software product displaying and selecting means of the

terminal for displaying names of the software products of the
broadcasting software programs, which are listed in the guides
extracted by the broadcasting software program extracting
means, and receiving names of one or more particular software
5 products selected from the software products, the downloading
of each particular software product being judged by the
download judging means, and the particular software product
being downloaded by the downloading means in cases where the
download judging means judges to download the particular
10 software product.

In this configuration corresponding to a fifth embodiment,
names of software products transmitted with the broadcasting
software programs are displayed. Accordingly, the user can
select one or more particular software products in cases where
15 the user desires to download the particular software products
from the center station.

Also, because only the software name is displayed, the user
can select each particular software product without
considering the transmission time period.

20 It is also preferred that the software download system
further comprise:

software download reservation managing means of the
terminal for managing the recording reservation for one or
more first recording-reserved broadcasting programs selected
25 from the second group of broadcasting programs, of which the

guides are prepared by the broadcasting program guide
preparing means, and newly managing the recording reservation
for a second recording-reserved broadcasting program selected
from the second group of broadcasting programs, of which the
5 guides are prepared by the broadcasting program guide
preparing means;

download-reserved broadcasting program determining means of
the terminal for selecting a guide of a first particular
download-reserved broadcasting program from guides of one or
10 more particular broadcasting programs, which include the same
particular software product judged by the download judging
means to be downloaded to the terminal, on condition that a
transmission time period of the first download-reserved
broadcasting program does not overlap with any of the first
15 recording-reserved broadcasting program managed by the
software download reservation managing means; and

duplication reservation detecting means of the terminal for
detecting that a transmission time period of the first
particular download-reserved broadcasting program overlaps
20 with that of the second recording-desired broadcasting program
newly managed by the software download reservation managing
means, transmitting information indicating the duplication
reservation of the first particular download-reserved
broadcasting program to the download-reserved broadcasting
25 program determining means to select a guide of a second

particular download-reserved broadcasting program relating to
a specific transmission time period from the guides of the
particular broadcasting programs in the download-reserved
broadcasting program determining means on condition that the
5 specific transmission time period of the second particular
download-reserved broadcasting program does not overlap with
that of any first recording-desired broadcasting program or
the second recording-desired broadcasting program, and
transmitting the guide of the second particular download-
10 reserved broadcasting program relating to the specific
transmission time period to the software download reservation
managing means, the particular software product transmitted
with the second particular download-reserved broadcasting
program being downloaded by the downloading means at the
15 specific transmission time period under the control of the
software download reservation managing means.

In this configuration corresponding to a sixth embodiment,
even though the user reserves the recording of a second
recording-desired broadcasting program of which a transmission
20 time period overlaps with a transmission time period of a
first particular download-reserved broadcasting program
registered in a reservation table, the first particular
download-reserved broadcasting program relating to the
transmission time period is removed, and a second particular
25 download-reserved broadcasting program relating to a specific

transmission time period is selected on condition that the specific transmission time period of the second particular download-reserved broadcasting program does not overlap with that of any recording-desired broadcasting program.

5 Accordingly, the recording of the second recording-desired broadcasting program and the downloading of the second particular download-reserved broadcasting program can be performed.

It is also preferred that the data of each broadcasting
10 program is transmitted by the transmitting means at a transmission channel, the data of each software product transmitted with one broadcasting program is transmitted by the transmitting means at the same transmission channel as that of the broadcasting program, the data of a group of
15 broadcasting programs corresponding to a plurality of transmission channels and the data of one or more software products respectively transmitted with one broadcasting program of the group are transmitted as a transport stream, a plurality of transport streams are transmitted from the
20 transmitting means to the receiving means, one of the transport streams is received by the receiving means, one transmission channel and a transport stream identifier are listed in the guide of each broadcasting program by the broadcasting program guide preparing means, and
25 the software download system further comprise:

audience rating managing means of the center station for managing a broadcasting program audience rating table in which an audience rating of each broadcasting program, of which the guide is prepared by the broadcasting program guide preparing means, is listed, a broadcasting program of a high audience rating being set as a specific broadcasting program transmitted at a first transmission channel by the broadcasting program guide preparing means, and a transmission channel of a particular broadcasting program with a particular software product being set to a second transmission channel differing from the first transmission channel by the broadcasting program guide preparing means to transmit the particular broadcasting program with the specific broadcasting program as a specific transport stream;

channel setting means of the terminal for setting a transmission channel of one broadcasting program, of which the data is output to the output means, to the first transmission channel of the specific broadcasting program, the specific transport stream, in which the data of the specific broadcasting program transmitted at the first transmission channel is included, being specified by the receiving means; and

transmission channel checking means of the terminal for receiving a specific transport stream identifier of the specific transport stream listed in a guide of the specific

broadcasting program, of which the data is transmitted at the first transmission channel and is received by the receiving means to be output to the output means, from the receiving means, checking whether or not a particular transport stream identifier listed in the guide of the particular broadcasting program with the particular software product, which is transmitted at the second transmission channel and at the same transmission start time as that of the specific broadcasting program and is judged by the download judging means to be downloaded, agrees with the specific transport stream identifier of the specific transport stream, and transmitting a download-performable notice and the guide of the particular broadcasting program to the downloading means in cases where the particular transport stream identifier agrees with the specific transport stream identifier, the particular software product being downloaded by the downloading means according to the download-performable notice and the guide of the particular broadcasting program.

In this configuration corresponding to a ninth embodiment, the broadcasting of a particular broadcasting program with a particular software product is set to the same transmission time period as that of a specific broadcasting program not accompanied by any software product in the center station on condition that the transmission channel of the particular broadcasting program and the transmission channel of the

specific broadcasting program differ from each other and are included in the same transport stream to simultaneously receive the particular broadcasting program and the specific broadcasting program in the terminal.

5 Accordingly, even though a user does not select the particular broadcasting program but select the specific broadcasting program, the particular software product transmitted with the particular broadcasting program can be downloaded to the terminal.

10 Also, because a broadcasting program expected to be watched by users at high audience rating is set as the specific broadcasting program, the specific broadcasting program is expected to be watched by users at high probability, so that the particular software product
15 transmitted with the particular broadcasting program can be downloaded to the terminal at high probability.

It is also preferred that the software download system further comprise:

software product displaying and selecting means of the
20 terminal for displaying names of the software products of the broadcasting software programs, which are listed in the guides extracted by the broadcasting software program extracting means, receiving a name of a particular software product selected from the software products and receiving a former-
25 version selecting instruction, the name of the particular

software product selected and the former-version selecting instruction being received by the download judging means; and software product renewal managing means for managing a software product renewal table in which a renewed version number of one software product currently downloaded by the downloading means and a former version number of the software product previously downloaded by the downloading means before the renewal to the software product of the renewed version number are listed for each software product of which the guide is prepared by the broadcasting program guide preparing means, the former version number of the particular software product being recognized by the download judging means according to the former-version number selecting instruction, a guide of the particular software product of the former version number being transmitted from the broadcasting software program extracting means to the download judging means, the downloading of the particular software product of the former version number being judged by the download judging means, and the particular software product of the former version number being downloaded by the downloading means.

In this configuration corresponding to a tenth embodiment, even though the user is not satisfied with an updated software product obtained by renewing a software product of the former version number, because the software product of the former version number is transmitted with one broadcasting program,

the user can download the software product of the former version number to replace the updated software product with the software product of the former version number. Therefore, the user can again use the software product of the former version number. For example, in cases where a computer software product representing the software product is downloaded to user's terminal, the user can again execute the computer software product of the former version number in user's computer to perform a computer operation.

10 The object of the present invention is also achieved by the provision of a software download system, comprising:

 broadcasting program guide preparing means of a center station for preparing a guide table in which guides of one or more broadcasting programs and a guide of a software product corresponding to a first version number are listed, a version number of the software product being changed each time the software product is revised in the center station;

15 broadcasting program data storing means of the center station for storing data of each broadcasting program which is listed in the guide table prepared by the broadcasting program guide preparing means;

20 software storing means of the center station for storing data of the software product of which the guide is listed in the guide table prepared by the broadcasting program guide preparing means;

25

transmitting means of the center station for transmitting the guide table prepared by the broadcasting program guide preparing means, transmitting the data of each broadcasting program stored in the broadcasting program data storing means during a transmission time period of the broadcasting program under the control of the broadcasting program guide preparing means and transmitting the data of the software product stored in the software storing means through the same transmission channel as that of one broadcasting program during a specific time period in which any broadcasting program is not transmitted through the transmission channel;

receiving means of a terminal for receiving the guide table from the transmitting means, receiving the data of each broadcasting program from the transmitting means during the transmission time period and receiving the data of the software product from the transmitting means during the specific time period;

output means of the terminal for outputting the data of each broadcasting program received by the receiving means during the transmission time period;

version number managing means of the terminal for managing a second version number corresponding to the software product previously downloaded from the center station to the terminal;

download judging means of the terminal for checking whether or not the first version number of the software product of the

guide received by the receiving means differs from the second version number of the software product managed by the version number managing means and judging to download the data of the software product received by the receiving means to the
5 terminal in cases where the first version number of the software product listed in the guide differs from the second version number of the software product managed by the version number managing means; and

downloading means of the terminal for downloading the data
10 of the software product received by the receiving means to the terminal during the specific time period in cases where the downloading of the software product is judged by the download judging means, the software product being used on user's side.

In the above configuration, a guide of a software product
15 corresponding to a first version number are listed in the guide table prepared by the broadcasting program guide preparing means, and the data of the software product is transmitted from the center to the terminal through a transmission channel (or a frequency band) during a specific
20 time period in which any broadcasting program is not transmitted through the transmission channel.

Accordingly, the software product can be downloaded from the center to the terminal without any private frequency band.

Also, in cases where the software product is revised in the
25 center station, because the first version number of the

software product of the guide differs from the second version number of the software product already managed by the version managing means, the revision of the software product can be detected by the download judging means, so that the software product can be downloaded from the center station to the terminal. Therefore, the user can always use the updated software product.

BRIEF DESCRIPTION OF THE DRAWINGS

10 The objects, features and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a block diagram of a conventional digital data receiving and processing apparatus used for a broadcasting method disclosed in the Published Unexamined Japanese Patent Application No. H8-195952 (1996);

Fig. 2 is a block diagram of a software download system according to a first embodiment of the present invention;

20 Fig. 3 shows a table of pieces of set-up information of computer software products stored in a set-up information storing unit according to the first embodiment;

Fig. 4 shows a broadcasting program schedule table managed in a broadcasting program guide table preparing unit;

25 Fig. 5 shows a broadcasting program guide table prepared from the broadcasting program schedule table and the set-up

information in the broadcasting program guide table preparing unit according to the first embodiment;

Fig. 6 shows a table of broadcasting software programs extracted from the broadcasting program guide table in a
5 broadcasting software program extracting unit according to the first embodiment;

Fig. 7 shows a terminal management table managed in a terminal information managing unit according to the first embodiment;

10 Fig. 8 shows a version management table managed by a version managing unit according to the first embodiment;

Fig. 9 shows a download candidate table prepared in a download judging unit according to the first embodiment;

Fig. 10 shows a download table prepared in a download
15 judging unit according to the first embodiment;

Fig. 11 shows a new version management table renewed by a download performing unit according to the first embodiment;

Fig. 12 shows pieces of video data managed in a video data server;

20 Fig. 13 shows pieces of audio data managed in an audio data server;

Fig. 14 shows a plurality of files managed in a computer software server;

Fig. 15 shows an image of the broadcasting program guide
25 table displayed in a broadcasting program guide displaying

unit;

Fig. 16 shows a broadcasting software program extracting process performed in the download judging unit;

Fig. 17 shows a download table preparing process performed
5 in the download judging unit;

Fig. 18 shows information of a download broadcasting program transmitted from a broadcasting program reservation managing unit to the download performing unit according to the first embodiment;

10 Fig. 19 is a block diagram of a software download system according to a second embodiment of the present invention;

Fig. 20 shows a table of pieces of set-up information of computer software products stored in a set-up information storing unit according to the second embodiment;

15 Fig. 21 shows a broadcasting program guide table prepared from the broadcasting program schedule table and the set-up information in a broadcasting program guide table preparing unit according to the second embodiment;

Fig. 22 shows a terminal management table managed in a
20 terminal information managing unit according to the second embodiment;

Fig. 23 shows a download table prepared in a download judging unit according to the second embodiment;

Fig. 24 shows information of a download broadcasting
25 program transmitted from a broadcasting program reservation

managing unit to a download performing unit according to the second embodiment;

Fig. 25 shows a table of download records of a plurality of terminals prepared in a download records managing unit
5 according to the second embodiment;

Fig. 26 is a block diagram of a software download system according to a third embodiment of the present invention;

Fig. 27 shows a table of pieces of set-up information of computer software products stored in a set-up information
10 storing unit according to the third embodiment;

Fig. 28 shows a broadcasting program guide table prepared from a broadcasting program schedule table and the set-up information in a broadcasting program guide table preparing unit according to the third embodiment;

15 Fig. 29 shows a display broadcasting program guide table prepared in a display broadcasting program extracting unit according to the third embodiment;

Fig. 30 shows an image of the broadcasting program guide table displayed in a broadcasting program guide displaying
20 unit according to the third embodiment;

Fig. 31 shows a guide table of download-candidate broadcasting programs selected by a user according to the third embodiment;;

Fig. 32 shows a broadcasting software program guide table
25 prepared in a broadcasting software program extracting unit

according to the third embodiment;

Fig. 33 shows a message expressing the completion of a download reservation according to a download reservation notice;

5 Fig. 34 shows a message expressing no download reservation according to a download no-reservation notice;

Fig. 35 is a block diagram of a software download system according to a fifth embodiment of the present invention;

Fig. 36 shows a reservation table of recording-reserved
10 broadcasting programs originally stored in a broadcasting program recording reservation managing unit;

Fig. 37 shows a current date and time managed in a download-reserved broadcasting program determining unit;

Fig. 38 shows a download table prepared in a download
15 judging unit;

Fig. 39 is a flow chart showing a download-reserved broadcasting program determining process;

Fig. 40 is a flow chart showing a broadcasting program name checking process performed in the download-reserved
20 broadcasting program determining process;

Fig. 41 is a flow chart showing a transmission start time checking process performed in the download-reserved broadcasting program determining process;

Fig. 42 is a flow chart showing a duplication checking
25 process performed in the transmission start time checking

process;

Fig. 43 shows a guide table of name-checked broadcasting programs prepared in the broadcasting program name checking process;

5 Fig. 44 shows another guide table of name-checked broadcasting programs prepared in the broadcasting program name checking process;

Fig. 45 shows another guide table of name-checked broadcasting programs prepared in the broadcasting program
10 name checking process;

Fig. 46 shows a guide table of time-checked broadcasting programs prepared in the transmission start time checking process;

Fig. 47 shows a reservation table of download-reserved
15 broadcasting programs prepared in the download-reserved broadcasting program determining unit;

Fig. 48 shows a time-checked broadcasting program guide table

Fig. 49 shows a renewed reservation table of recording-
20 reserved broadcasting programs prepared in the download-reserved broadcasting program determining unit;

Fig. 50 is a block diagram of a software download system according to a fifth embodiment of the present invention;

Fig. 51 shows a guide table of broadcasting software
25 programs;

Fig. 52 is a flow chart showing a computer software selecting process performed in a computer software selecting unit;

Fig. 53 shows a computer software name table prepared in a
5 computer software name extracting process;

Fig. 54 shows a broadcasting software program output guide table prepared in the computer software selecting unit;

Fig. 55 is a flow chart showing a computer software name extracting process of the computer software selecting process;

10 Fig. 56 shows a computer software name table prepared in the middle of the computer software name extracting process;

Fig. 57 shows an image of the computer software name table;

Fig. 58 is a flow chart showing a computer software name receiving process;

15 Fig. 59 is a block diagram of a software download system according to a sixth embodiment of the present invention;

Fig. 60 shows a recording table of a recording-desired broadcasting program newly input by a user;

Fig. 61 is a flow chart showing a duplication reservation
20 detecting process performed in a duplication reservation detecting unit;

Fig. 62 shows a duplication-reserved broadcasting program table prepared in a duplication reservation detecting unit;

Fig. 63 shows a renewed download table;

25 Fig. 64 shows a renewed reservation table of download-

reserved broadcasting programs prepared in a duplication reservation detecting unit;

Fig. 65 shows a revised reservation table of revised download-reserved broadcasting programs;

5 Fig. 66 shows a reservation renewing process performed in a broadcasting program reservation managing unit;

Fig. 67 shows a second renewed reservation table;

Fig. 68 shows a finally renewed reservation table;

Fig. 69 is a block diagram of a software download system
10 according to a seventh embodiment of the present invention;

Fig. 70 shows the processing performed for files of a computer software product in a first protocol processing unit;

Fig. 71 is a block diagram of a software download system according to an eighth embodiment of the present invention;

15 Fig. 72 shows a broadcasting program guide table prepared in a broadcasting program guide table preparing unit according to the eighth embodiment;

Fig. 73 shows a broadcasting software program guide table prepared in a broadcasting software program extracting unit
20 according to the eighth embodiment;

Fig. 74 shows a protocol correspondence table held in a protocol correspondence table holding unit according to the eighth embodiment;

Fig. 75 shows a download broadcasting program table
25 prepared in a download judging unit according to the eighth

embodiment;

Fig. 76 shows a new download broadcasting program table prepared in a software communication protocol judging unit according to the eighth embodiment;

5 Fig. 77 is a flow chart showing a download broadcasting program extracting process performed in a software communication protocol judging unit according to the eighth embodiment;

10 Fig. 78 shows information of a download broadcasting program prepared in a broadcasting program reservation managing unit according to the eighth embodiment;

Fig. 79 shows another broadcasting program guide table prepared in the broadcasting program guide table preparing unit according to the eighth embodiment;

15 Fig. 80 shows information of another download broadcasting program prepared in the broadcasting program reservation managing unit according to the eighth embodiment;

Fig. 81 is a flow chart showing a protocol processing program setting process according to the eighth embodiment;

20 Fig. 82 shows a revised protocol correspondence table held in the protocol correspondence table holding unit according to the eighth embodiment;

Fig. 83 is a block diagram of a software download system according to a ninth embodiment of the present invention;

25 Fig. 84 shows a broadcasting program audience rating table

stored in an audience rating managing unit according to the ninth embodiment;

Fig. 85 shows a broadcasting program guide table stored in a broadcasting program guide table preparing unit according to the ninth embodiment;

Fig. 86 shows a revised broadcasting program guide table stored in a broadcasting program guide table preparing unit according to the ninth embodiment;

Fig. 87 shows a download broadcasting program table prepared in a download judging unit according to the ninth embodiment;

Fig. 88 shows data included in two transport streams transmitted from a transmitting unit according to the ninth embodiment;

Fig. 89 is a block diagram of a receiving unit according to the ninth embodiment;

Fig. 90 is a flow chart showing a transmission channel checking process performed in a transmission channel checking unit according to the ninth embodiment;

Fig. 91 shows information of a download broadcasting program transmitted to a download performing unit according to the ninth embodiment;

Fig. 92 is a block diagram of a software download system according to a tenth embodiment of the present invention;

Fig. 93 shows a broadcasting program guide table prepared

in a broadcasting program guide table preparing unit according to the tenth embodiment;

Fig. 94 shows an image of a plurality of computer software names displayed in a computer software selecting unit

5 according to the tenth embodiment;

Fig. 95 shows a computer software renewal log table initially managed in a computer software renewal log managing unit according to the tenth embodiment;

Fig. 96 shows a version management table managed by a
10 version managing unit according to the tenth embodiment;

Fig. 97 shows a broadcasting software program guide table prepared in a broadcasting software program extracting unit according to the tenth embodiment;

Fig. 98 shows a download broadcasting program table
15 prepared in a download judging unit according to the tenth embodiment;

Fig. 99 is a flow chart showing a download broadcasting program table preparing process performed in the download judging unit according to the tenth embodiment;

20 Fig. 100 shows a computer software renewal log table renewed in a computer software renewal log managing unit according to the tenth embodiment;

Fig. 101 is a block diagram of a software download system according to an eleventh embodiment of the present invention;

25 Fig. 102 shows a broadcasting program schedule table

managed in a broadcasting program guide table preparing unit according to the eleventh embodiment; and

Fig. 103 shows a broadcasting program guide table prepared from the broadcasting program schedule table and the set-up information in the broadcasting program guide table preparing unit according to the eleventh embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Preferred embodiments of a software download system according to the present invention are described with reference to the drawings.

In the present invention, a computer software product (or a piece of computer software) denotes a computer program executed in each user's terminal. Also, in cases where a volume of a computer software product executed to perform a certain function is too large, the computer software product is divided into a plurality of computer software products. Also, a broadcasting program (or a television program) is, for example, defined in accordance with the provisions of the Moving Picture Experts Group 2 (MPEG 2) and is displayed on a screen during a prescribed time period.

(First Embodiment)

Fig. 2 is a block diagram of a software download system according to a first embodiment of the present invention.

As shown in Fig. 2, a software download system 100

comprises

a center station 115 for outputting a broadcasting program guide table (or television program information, a program guide for television service, channel guide information or an electronic program guide) in which guides of a first group of broadcasting programs respectively not accompanied by any computer software product and guides of a second group of broadcasting programs respectively accompanied by a computer software product are listed, outputting audio/video data of each broadcasting program during its transmission time period (from a transmission start time to a transmission finish time), and outputting each computer software product transmitted with one broadcasting program at the same transmission channel (corresponding to one frequency band) as that of the broadcasting program;

a plurality of terminals 116 for respectively receiving the audio/video data of the broadcasting programs, the broadcasting program guide table and the computer software products from the center station 115, outputting the audio /video data, and downloading updated computer software products selected from the computer software products, the terminals 116 being classified into a plurality of groups, and each group of terminals 116 being identified by a terminal type; and

a transmission station 107, arranged in a broadcasting

satellite or a communication satellite, for transmitting the audio/video data of the broadcasting programs, the broadcasting program guide table and the computer software products output from the center station 115 to the terminals
5 116.

The center station 115 comprises:

a computer software server 102 for storing one or more files composing one computer software product for each of computer software products, each computer software product
10 being transmitted to each terminal 116 with one broadcasting program;

a set-up information storing unit 121 for storing a table of pieces of set-up information (refer to Fig. 3) in which a name of one computer software product, a version number
15 identifying a revised version of the computer software product, a terminal type fit for the computer software product, names of one or more files composing the computer software product and version numbers identifying revised versions of the files are listed for each computer software
20 product stored in the computer software server 102;

a software managing unit 101 for managing the relationship between each computer software product stored in the computer software server 102 and the piece of set-up information of the computer software product stored in the set-up information
25 storing unit 121;

a video data server 105 for storing video data of one
broadcasting program for each broadcasting programs;

an audio data server 106 for storing audio data of one
broadcasting program for each broadcasting programs;

5 a broadcasting program guide table preparing unit 103 for
managing a broadcasting program schedule listed in a schedule
table (refer to Fig. 4) in which a date, a transmission
channel, a transmission start time of one broadcasting
program, a transmission finish time of the broadcasting
10 program, a name of the broadcasting program, elements of the
broadcasting program and a name of a computer software product
transmitted with the broadcasting program are listed for each
broadcasting program, preparing a broadcasting program guide
table (refer to Fig. 5) from the pieces of set-up information
15 of the computer software products managed in the software
managing unit 101 and the broadcasting program schedule, and
controlling the computer software server 102, the video data
server 105 and the audio data server 106 to output the audio
/video data of one broadcasting program listed in the
20 broadcasting program guide table during its transmission time
period for each broadcasting program and to output the files
of the computer software product listed in the broadcasting
program guide table with one broadcasting program during its
transmission time period for each computer software product;
25 and

a transmitting unit 104 for transmitting the broadcasting program guide table prepared in the broadcasting program guide table preparing unit 103 to each terminal 116 through the transmission station 107, transmitting the audio/video data of one broadcasting program output from the video data server 105 and the audio data server 106 to each terminal 116 through the transmission station 107 for each broadcasting program and transmitting the files of one computer software product output from the computer software server 102 with one broadcasting program to each terminal 116 through the transmission station 107 for each computer software product.

Each terminal 116 comprises:

a receiving unit 108 for receiving the broadcasting program guide table transmitted through the transmission station 107, receiving the audio/video data of one broadcasting program transmitted through the transmission station 107 during its transmission time period for each broadcasting program and the files of the computer software product transmitted with one broadcasting program during its transmission time period for each computer software product;

a broadcasting software program extracting unit 109 for extracting guides of one or more broadcasting programs respectively accompanied by a computer software product (called one or more broadcasting software programs) from the broadcasting program guide table received in the receiving

unit 108, and preparing a broadcasting software program guide table (refer to Fig. 6) in which a date, a transmission channel, a transmission start time of one broadcasting software program, a transmission finish time of the
5 broadcasting software program, a name of the broadcasting software program, a name of a computer software product corresponding to the broadcasting software program, names of one or more files composing the computer software product, version numbers of the files, a version number of the computer
10 software product and a terminal type fit for the computer software product are listed for each broadcasting software program;

a terminal information managing unit 110 for managing a terminal management table (refer to Fig. 7) in which a
15 particular terminal type of the terminal 116 is written;

a version managing unit 112 for managing a version management table (refer to Fig. 8) in which a version number of one computer software product and version numbers of all files composing the computer software product are listed for
20 each computer software product;

a download judging unit 111 for receiving the terminal management table managed by the terminal information managing unit 110, the version management table managed by the version managing unit 112 and the broadcasting software program guide
25 table prepared by the broadcasting software program extracting

unit 109, extracting guides of one or more download-candidate
broadcasting software programs from the guides of the
broadcasting software programs listed in the broadcasting
software program guide table on condition that the terminal
5 types fit for computer software products transmitted with the
download-candidate broadcasting software programs agree with a
particular terminal type of the terminal 116 written in the
terminal management table, preparing a download candidate
table (refer to Fig. 9) in which information of one download-
10 candidate broadcasting software program is listed for each
download-candidate broadcasting software program, judging each
download-candidate broadcasting software program as a download
broadcasting program in cases where a version (refer to Fig.
9) of a computer software product corresponding to the
15 download-candidate broadcasting software program in the
download candidate table is newer (or the version number is
higher) than that (refer to Fig. 8) of a computer software
product corresponding to the same download-candidate
broadcasting software program in the version management table
20 already stored in the version managing unit 112, judging each
file of a download computer software product corresponding to
one download broadcasting program as a download file for each
download broadcasting program in cases where a version of the
file in the download candidate table is newer (or the version
25 number is higher) than that (refer to Fig. 8) of a computer

software product corresponding to the same download
broadcasting program in the version management table,
preparing a download broadcasting program table (refer to Fig.
10) in which a date, a transmission channel, a transmission
5 start time of one download broadcasting program, a
transmission finish time of the download broadcasting program,
a name of the download broadcasting program, a name of the
download computer software product corresponding to the
download broadcasting program, names of one or more download
10 files composing the download computer software product,
version numbers of the download files and a version number of
the download computer software product are listed for each
download broadcasting program;

a software download reservation managing unit 120 for
15 managing the download broadcasting program table from the
download judging unit 111 to reserve the downloading of one
download computer software product transmitted with one
download broadcasting program during the transmission time
period of the download broadcasting program for each download
20 broadcasting program of the table, outputting information (a
transmission channel, a name of one download broadcasting
program, a name of the download computer software product
corresponding to the download broadcasting program, names of
one or more download files composing the download computer
25 software product, version numbers of the download files and a

version number of the download computer software product) of the download broadcasting program written in the download broadcasting program table during the transmission time period of the download broadcasting program for each download

5 broadcasting program, and outputting a download instruction each time the information of the download broadcasting program is output;

 a download performing unit 113 for receiving the information of each download broadcasting program and the

10 download instruction from the software download reservation managing unit 120 during the transmission time period of the download broadcasting program, extracting the download files of one download computer software product from each download broadcasting program received in the receiving unit 108

15 according to the download instruction to download the download files of the download computer software product from the center station 115 to the terminal 116, and transmitting a name of the download computer software product corresponding to each download broadcasting program, a version number of the

20 download computer software product, names of the download files composing the download computer software product and version numbers of the download files to the version managing unit 112 to prepare a new version management table (refer to Fig. 11) in which the version number of the download computer

25 software product corresponding to one download broadcasting

program and the version numbers of the download files
composing the download computer software product are renewed
for each download broadcasting program;

5 a computer software storing unit 114 for storing the
download files of each download computer software product
transmitted to the download performing unit 113, a user
executing the download computer software product to perform a
computer operation;

10 a video data outputting unit 117 for outputting the video
data of the broadcasting program received by the receiving
unit 108 as an image during its transmission time period for
each broadcasting program to record the broadcasting programs;

an audio data outputting unit 118 for outputting the audio
data of the broadcasting program received by the receiving
15 unit 108 as a voice during its transmission time period for
each broadcasting program to record the broadcasting programs;
and

a broadcasting program guide displaying unit 119 for
displaying the broadcasting program guide table received by
20 the receiving unit 108 on a screen.

In the above configuration, an operation of the software
download system 100 is described.

The video data server 105 manages pieces of video data Dv1,
Dv2, Dv3,-- shown in Fig. 12, the audio data server 106
25 manages pieces of audio data Da1, Da2, Da3,-- shown in Fig.

13, and the computer software server 102 manages a plurality of files F11, F12, F13,-- shown in Fig. 14.

The broadcasting program guide table preparing unit 103 manages a broadcasting program schedule of a schedule table shown in Fig. 4. For example, in a broadcasting program having a name "morning news", a transmission channel is "CH1", a transmission start time is 6 o'clock (6:00) of June 25 in 1997, a transmission finish time is 7:00 of June 25 in 1997, elements composing the broadcasting program are the video data Dv1 managed by the video data server 105 and the audio data Da1 managed by the audio data server 106, and any computer software name is not registered because no computer software product is transmitted with the broadcasting program. Also, in a broadcasting program having a name "morning download", a transmission channel is 'CH1", a transmission start time is 7:30, a transmission finish time is 8:00, elements composing the broadcasting program are the files F11 and F15 managed by the computer software server 102, and a computer software name is "CA".

The software managing unit 101 manages the pieces of set-up information of the computer software products stored in the set-up information storing unit 121. As shown in Fig. 3, a version number of a computer software product having a name "CA" is 7, a terminal type corresponding to the computer software product is "M", the computer software product is

composed of a file F11 and a file F15, a version number of the file F11 is 3, and a version number of the file F15 is 4. In cases where the version of a file of one computer software product is up (the version number is increased), the version
5 of the computer software product is up.

In the broadcasting program guide table preparing unit 103, the pieces of set-up information managed by the software managing unit 101 are inserted into a broadcasting program schedule table shown in Fig. 4, and a broadcasting program
10 guide table shown in Fig. 5 is prepared. In the broadcasting program schedule table, because each broadcasting program, to which one computer software name is attached, is one broadcasting software program corresponding to one computer software product, the set-up information corresponding to the
15 computer software name "CA" is added to the broadcasting program "morning download", to which the computer software name "CA" is attached, and the set-up information corresponding to the computer software name "OS" is added to the broadcasting program "download A" to which the computer
20 software name "OS" is attached. The broadcasting program guide table is output to the transmitting unit 104.

Also, the broadcasting program guide table preparing unit 103 instructs the computer software server 102, the video data server 105 and the audio data server 106 to output the video
25 data of one broadcasting program, the audio data of the

broadcasting program and the files of one software to the transmitting unit 104 according to the broadcasting program schedule. For example, because a transmission start time of the broadcasting program "morning news" is 6:00 of June 25 in 1997 and a transmission finish time of the broadcasting program "morning news" is 7:00 of June 25 in 1997, the broadcasting program guide table preparing unit 103 controls the video data server 105 and the audio data server 106 to output the video data Dv1 and the audio data Da1 to the transmitting unit 104 at the transmission channel CH1 between 6:00 to 7:00. Also, because a transmission start time of the broadcasting program "morning download" is 7:30 and a transmission finish time of the broadcasting program "morning download" is 8:00, the broadcasting program guide table preparing unit 103 controls the computer software server 102 to output the files F11 and F15 to the transmitting unit 104 at the transmission channel CH1 between 7:30 to 8:00.

Thereafter, the transmitting unit 104 transmits the broadcasting program guide table prepared in the broadcasting program guide table preparing unit 103, the files of the computer software product output from the computer software server 102 and the audio/video data of the broadcasting program output from the video data server 105 and the audio data server 106 to the receiving unit 108 of each terminal 116 through the transmission station 107.

In the receiving unit 108, when the video data of one broadcasting program is received, the video data is transmitted to the video data outputting unit 117 and is output from the outputting unit 117 to a television set or a recording apparatus (not shown) as an image. When the audio data of one broadcasting program is received, the audio data is transmitted to the audio data outputting unit 118 and is output from the outputting unit 118 to the television set or the recording apparatus as a voice. Therefore, the user can watch the broadcasting program during its transmission time period, or the user can reproduce the image and voice of the broadcasting program at user's desired time. When the broadcasting program guide table is received, the broadcasting program guide table is transmitted to the broadcasting program guide displaying unit 119 and the broadcasting software program extracting unit 109, and the broadcasting program guide table is displayed on a screen as shown in Fig. 15 in the displaying unit 119. When the files of one computer software product are received with the audio/video data of one broadcasting program, the files of the computer software product are downloaded to the download performing unit 113 when the downloading operation is instructed by the software download reservation managing unit 120 at the transmission start time of the broadcasting program.

In the broadcasting software program extracting unit 109,

one or more broadcasting software programs respectively
accompanied by a computer software product are extracted from
the broadcasting programs of the broadcasting program guide
table, and a guide table of the broadcasting software programs
5 (or a broadcasting software program guide table) is prepared.
Because a computer soft name is attached to each broadcasting
software program, the broadcasting software program can be
distinguished from other broadcasting programs. For example,
in cases where the broadcasting program guide table is shown
10 in Fig. 5, the broadcasting software program guide table shown
in Fig. 6 is prepared. Thereafter, the broadcasting software
program guide table is transmitted to the download judging
unit 111.

In the download judging unit 111, the terminal types fit
15 for computer software products transmitted with the
broadcasting software programs of the guide table is collated
with a particular terminal type of the terminal 116 which is
written in the terminal management table managed by the
terminal information managing unit 110, and one or more
20 download-candidate broadcasting software programs
corresponding to one or more computer software products, which
are fit for terminal types agreeing with the particular
terminal type, are extracted from the broadcasting software
programs of which the names are listed in the broadcasting
25 software program guide table. This download-candidate

broadcasting software program extracting process is described with reference to Fig. 16.

As shown in Fig. 16, it is checked whether or not one terminal type fit for one computer software product

5 transmitted with one broadcasting software program agrees with the particular terminal type of the terminal 116 (step S1601). In the example of the broadcasting software program guide table shown in Fig. 6, because the particular terminal type of the terminal 116 is "M" as shown in Fig. 7, the terminal type

10 fit for one computer software product transmitted with the broadcasting software program "morning download" agrees with the particular terminal type of the terminal 116, and the broadcasting software program "morning download" is set as a download-candidate broadcasting software program. Thereafter,

15 information (a date, a transmission channel, a transmission start time of one broadcasting software program, a transmission finish time of the broadcasting software program, a name of the broadcasting software program, names of one or more files composing the broadcasting software program,

20 version numbers of the files, a name of a computer software product corresponding to the broadcasting software program, a version number of the computer software product and a terminal type fit for the computer software product) of the download-candidate broadcasting software program is stored as a

25 candidate for a broadcasting program downloaded (step S1602).

In this example, though only one broadcasting software program is extracted as a download-candidate broadcasting software program, in cases where terminal types fit for computer software products transmitted with a plurality of broadcasting software programs agree with the particular terminal type of the terminal 116, the broadcasting software programs are extracted as a plurality of download-candidate broadcasting software programs. Therefore, the steps S1601 is performed for each broadcasting software program listed in the broadcasting software program guide table (step S1603).

Thereafter, as shown in Fig. 9, a download candidate table of information (a date, a transmission channel, a transmission start time of one broadcasting software program, a transmission finish time of the broadcasting software program, a name of the broadcasting software program, names of one or more files composing the broadcasting software program, version numbers of the files, a name of a computer software product corresponding to the broadcasting software program and a version number of the computer software product) of the download-candidate broadcasting software programs is prepared.

Thereafter, the download candidate table is collated with a version management table managed by the version managing unit 112, and a download broadcasting program table is prepared while judging whether or not a computer software product of each download-candidate broadcasting software program is to be

downloaded from the receiving unit 108 to the download performing unit 113. This download broadcasting program table preparing process is described with reference to Fig. 17.

As shown in Fig. 17, it is judged whether or not a version number of a download-candidate computer software product corresponding to one download-candidate broadcasting software program in the download candidate table is higher than a version number of a computer software product corresponding to the same download-candidate broadcasting software program in the version management table already stored in the version managing unit 112 (step S1701). In cases where the version number of the download-candidate computer software product in the download candidate table is higher than that in the version management table, the download-candidate broadcasting software program is set as a download broadcasting program, and the download-candidate computer software product is set as a download computer software product (S1702). Fig. 8 shows a version management table managed by the version managing unit 112. In this example, the computer software names "CA", "OS" and "DSMCC" are listed, and the version numbers of the computer software products "CA", "OS" and "DSMCC" are 6, 6 and 5. Also, names of files composing each computer software product and version numbers of the files are listed. Because the version number "7" of a computer software product "CA" corresponding to the download-candidate broadcasting software

program "morning down-load" is higher than the version number "6" of the computer software product "CA" corresponding to the same download-candidate broadcasting software program "morning down-load" listed in the version management table of the
5 version managing unit 112, the download-candidate broadcasting software program "morning down-load" is set as a download broadcasting program, and the computer software product "CA" is set as a download computer software product.

Thereafter, it is judged whether or not a version number of
10 one file of the download computer software product in the download candidate table is higher than that of the file of the same computer software product in the version management table (step S1703). In cases where the version number of the file in the download candidate table is higher than that of
15 the file in the version management table, the file is set as a download file (step S1704). In this example, the version number "3" of the file F11 of the download computer software product "CA" shown in Fig. 9 is higher than the version number "2" of the file F11 of the download computer software product
20 "CA" shown in Fig. 8, the file F11 is set as a download file F11. In contrast, because the version number "4" of the file F15 of the download computer software product "CA" shown in Fig. 9 is not higher than the version number "4" of the file F15 of the download computer software product "CA" shown in
25 Fig. 8, the file F15 is not set as a download file F15.

The step S1703 is performed for all files of the download computer software product (step S1705). Also, the step S1701 is performed for all download-candidate computer software products (step S1706). Thereafter, a download broadcasting program table, in which a date, a transmission channel, a transmission start time of one download broadcasting program, a transmission finish time of the download broadcasting program, a name of the download broadcasting program, a name of the download computer software product corresponding to the download broadcasting program, names of one or more download files composing the download computer software product, version numbers of the download files and a version number of the download computer software product are listed for each download broadcasting program, is prepared from the download broadcasting programs and the download files (step S1706). In this example, a download broadcasting program table shown in Fig. 10 is prepared.

Thereafter, the download broadcasting program table is transmitted to the software download reservation managing unit 120, and information (a transmission channel, a name of one download broadcasting program, a name of the download computer software product corresponding to the download broadcasting program, names of one or more download files composing the download computer software product, version numbers of the download files and a version number of the download computer

software product) of the download broadcasting program written in the download broadcasting program table is output from the reservation managing unit 120 to the download performing unit 113 during the transmission time period of the download
5 broadcasting program for each download broadcasting program. For example, in cases where the download broadcasting program table shown in Fig. 10 is transmitted to the software download reservation managing unit 120, information of the download broadcasting program shown in Fig. 18 is transmitted to the
10 download performing unit 113 at 7:30 of June 25 in 1997.

Also, a download instruction is transmitted from the reservation managing unit 120 to the download performing unit 113 each time the information of one download broadcasting program is transmitted from the reservation managing unit 120
15 to the download performing unit 113.

In the download performing unit 113, the download files of the download computer software product are extracted from one download broadcasting program received in the receiving unit 108 according to the download instruction for each download
20 broadcasting program. Therefore, the download computer software product can be downloaded from the center station 115 to the terminal 116. Thereafter, the download files of the download computer software product are stored in the computer software storing unit 114 as an updated computer software
25 product for each download broadcasting program. Therefore, the

user can execute the download computer software product by using user's computer to perform a computer operation.

Thereafter, a name of the download computer software product corresponding to one download broadcasting program, a version number of the download computer software product, names of the download files composing the download computer software product and version numbers of the download files are transmitted from the performing unit 113 to the version managing unit 112 for each download broadcasting program, and the version management table managed by the unit 112 is renewed to a new version management table in which the version number of the download computer software product corresponding to one download broadcasting program and the version numbers of the download files composing the download computer software product are renewed for each download broadcasting program. In this example, the version number "6" of the download computer software product "CA" shown in Fig. 8 is renewed to the version number "7" of the download computer software product "CA" shown in Fig. 11, and the version number "2" of the download file F11 shown in Fig. 8 is renewed to the version number "3" of the download file F11 shown in Fig. 11.

Accordingly, because each computer software product is transmitted with one broadcasting software program from the center station 115 to each user's terminal 116, any private channel (or any private frequency band) for the transmission

of the computer software product is not required, and the computer software product can be transmitted through the same transmission channel as that for the broadcasting software program. That is, a frequency band for the data transmission
5 can be effectively utilized.

Also, because the broadcasting program guide table, in which a name of each computer software product is listed, is displayed on a screen under the control of the broadcasting program guide displaying unit 119, the user can easily
10 recognize the existence of the computer software product.

Also, because the update set-up information of each computer software product is included in a broadcasting program guide table in the broadcasting program guide table preparing unit 103 and is automatically transmitted to the
15 terminal 116, the version of each computer software product listed in the version management table can be automatically updated regardless of the operation of the user.

Also, when a plurality of computer software products are transmitted with a plurality of broadcasting software programs
20 to the terminal 116, because the version of each computer software product listed in the version management table is automatically updated, an updated computer software product can be automatically extracted from the computer software products, the updated computer software product can be
25 automatically downloaded to the download performing unit 113,

and the updated computer software product is stored in the computer software storing unit 114. Therefore, even though the user is unconscious of the version-up of the computer software product, the user can reliably use the updated computer
5 software product stored in the computer software storing unit 114.

Also, even though an updated computer software product is extracted, because a file of the updated computer software product is not extracted in cases where the file transmitted
10 from the center station 115 is not updated, the file is not stored in the computer software storing unit 114, and a version number of the file is not renewed in the version management table. Therefore, the downloading operation for files of updated computer software products can be efficiently
15 performed.

In this embodiment, one computer software product is transmitted with one broadcasting program from the center station 115 to the terminal 116. However, the present invention (the first embodiment and following embodiments) is
20 not limited to the computer software product. For example, a difference file, decoded music data, a logotype table, a nonstandard character table, a genre table, a driver module or virtual machine data can be transmitted with one broadcasting program. The difference file is used to increase a version
25 number of an operation system used in user's computer, the

user can entertain with a music, the user can use many
logotypes listed in the logotype table for the broadcasting
program guide table, the user can use many nonstandard
characters listed in the nonstandard character table for the
5 broadcasting program guide table, the user can lists a genre
of the genre table for each broadcasting program in the
broadcasting program guide table, or the user can receive the
broadcasting programs by using the driver module even though a
broadcasting method of the MPEG2 is changed to another.
10 Therefore, in the present invention, a software product such
as a computer software product, a difference file, decoded
music data, a logotype table, a nonstandard character table, a
genre table, a driver module or virtual machine data can be
transmitted with one broadcasting program.

15 Also, in this embodiment, a satellite communication is
performed between the center station 115 and each terminal
116. However, the present invention (the first embodiment and
following embodiments) is not limited to the satellite
communication. For example, a terrestrial-wave communication
20 (or a ground-wave communication) can be performed in a
television broadcasting between the center station 115 and
each terminal 116.

(Second Embodiment)

Fig. 19 is a block diagram of a software download system
25 according to a second embodiment of the present invention.

As shown in Fig. 19, a software download system 200 comprises:

a center station 201 for outputting a broadcasting program guide table of a plurality of broadcasting programs and
5 computer software products representing software products, outputting audio/video data of each broadcasting program during its transmission time period, outputting the computer software products respectively transmitted with one
broadcasting program at the same transmission channel as that
10 of the broadcasting program and managing download records of a plurality of terminals to which one computer software product is downloaded, for each computer software product;

a plurality of terminals 202 for respectively receiving the audio/video data of the broadcasting programs, the
15 broadcasting program guide table and the computer software products from the center station 201, outputting the audio /video data, downloading updated computer software products selected from the computer software products, and outputting a name of a computer software product and an identification
20 number of each terminal as a download completion notice, the terminals 202 being classified into a plurality of groups, and each group of terminals 202 being identified by a terminal type;

the transmission station 107; and
25 a download completion notice transmission station 203,

arranged in a broadcasting satellite or a communication
satellite, for transmitting the download completion notice
output from each terminal 202 to the center station 201, the
download records being prepared in the center station 201
5 according to the download completion notice.

The center station 201 comprises:

the computer software server 102;

a set-up information storing unit 204 for storing a table
of pieces of set-up information (refer to Fig. 20) in which a
10 name of one computer software product, a version number
identifying a version of the computer software product, a
terminal type fit for the computer software product, names of
one or more files composing the computer software product,
version numbers identifying versions of the files and a
15 download completion notice flag are listed for each computer
software product stored in the computer software server 102;

the software managing unit 101; the video data server 105;
the audio data server 106;

a broadcasting program guide table preparing unit 205 for
20 managing a broadcasting program schedule listed in a schedule
table (refer to Fig. 4) in which a date, a transmission
channel, a transmission start time of one broadcasting
program, a transmission finish time of the broadcasting
program, a name of the broadcasting program, elements of the
25 broadcasting program and a name of a computer software product

transmitted with the broadcasting program are listed for each
broadcasting program, preparing a broadcasting program guide
table (refer to Fig. 21) from the pieces of set-up information
of the computer software products managed in the software
5 managing unit 101 and the broadcasting program schedule, and
controlling the computer software server 102, the video data
server 105 and the audio data server 106 to output the video
data of the broadcasting programs listed in the broadcasting
program schedule, the audio data of the broadcasting programs
10 listed in the broadcasting program guide table and the files
of the computer software products listed in the broadcasting
program guide table;
the transmitting unit 104;

a download completion notice receiving unit 212 for
15 receiving the download completion notice from each terminal
202 through the download completion notice transmission
station 203; and

a download record managing unit 213 for preparing a table
of the download records (refer to Fig. 25) of a plurality of
20 terminals 202 from the download completion notices of the
terminals 202 transmitted from the download completion notice
receiving unit 212 and managing the table of the download
records to inform the user of the download records.

Each terminal 202 comprises:

25 the receiving unit 108; the broadcasting software program

extracting unit 109;

a terminal information managing unit 206 for managing a terminal management table (refer to Fig. 22) in which a terminal type of the terminal 202 and an identification number
5 of the terminal 202 are written;

the version managing unit 112;

a download judging unit 207 for receiving the terminal management table managed by the terminal information managing unit 206, the version management table managed by the version
10 managing unit 112 and the broadcasting software program guide table prepared by the broadcasting software program extracting unit 109, extracting one or more download-candidate broadcasting software programs from the broadcasting software programs listed in the broadcasting software program guide
15 table on condition that the terminal types fit for computer software products transmitted with the download-candidate broadcasting software programs agree with a particular terminal type of the terminal 202 written in the terminal management table, preparing a download candidate table (refer
20 to Fig. 9) in which information of one download-candidate broadcasting software program is listed for each download-candidate broadcasting software program, judging each download-candidate broadcasting software program as a download broadcasting program in cases where a version (refer to Fig.
25 9) of a computer software product corresponding to the

download-candidate broadcasting software program in the
download candidate table is newer (or the version number is
higher) than that (refer to Fig. 8) of a computer software
product corresponding to the same download-candidate
5 broadcasting software program in the version management table
already stored in the version managing unit 112, judging each
file of a download computer software product corresponding to
one download broadcasting program as a download file for each
download broadcasting program in cases where a version of the
10 file in the download candidate table is newer (or the version
number is higher) than that (refer to Fig. 8) of a computer
software product corresponding to the same download
broadcasting program in the version management table,
preparing a download broadcasting program table (refer to Fig.
15 23) in which a date, a transmission channel, a transmission
start time of one download broadcasting program, a
transmission finish time of the download broadcasting program,
a name of the download broadcasting program, a name of the
download computer software product corresponding to the
20 download broadcasting program, names of one or more download
files composing the download computer software product,
version numbers of the download files, a version number of the
download computer software product and a download completion
notice flag are listed for each download broadcasting program;
25 a software download reservation managing unit 208 for

managing the download broadcasting program table transmitted
from the download judging unit 111 to reserve the downloading
of one download computer software product transmitted with one
download broadcasting program during the transmission time
5 period of the download broadcasting program for each download
broadcasting program of the table, outputting information (a
transmission channel, a name of one download broadcasting
program, a name of the download computer software product
corresponding to the download broadcasting program, names of
10 one or more download files composing the download computer
software product, version numbers of the download files, a
version number of the download computer software product and a
download completion notice flag) of the download broadcasting
program written in the download broadcasting program table
15 during the transmission time period of the download
broadcasting program for each download broadcasting program,
and outputting a download instruction each time the
information of the download broadcasting program is output;
a download performing unit 209 for receiving the
20 information of each download broadcasting program and the
download instruction from the software download reservation
managing unit 208 during the transmission time period of the
download broadcasting program, downloading the download files
of the download computer software product corresponding to
25 each download broadcasting program from the receiving unit 108

according to the download instruction, and transmitting a name
of the download computer software product corresponding to
each download broadcasting program, a version number of the
download computer software product, names of the download
5 files composing the download computer software product and
version numbers of the download files to the version managing
unit 112 to prepare a new version management table (refer to
Fig. 11) in which the version number of the download computer
software product corresponding to one download broadcasting
10 program and the version numbers of the download files
composing the download computer software product are renewed
for each download broadcasting program;
the computer software storing unit 114; the video data
outputting unit 117; the audio data outputting unit 118; the
15 broadcasting program guide displaying unit 119;
a download completion notification judging unit 210 for
receiving the information (refer to Fig. 24) of one download
broadcasting program from the download performing unit 209,
judging to perform the notification of the downloading of the
20 download computer software product corresponding to the
download broadcasting program in cases where the download
completion notice flag included in the information of the
download broadcasting program is set to "1", judging not to
perform the notification of the downloading of the download
25 computer software product corresponding to the download

broadcasting program in cases where the download completion notice flag included in the information of the download broadcasting program is set to "0", and outputting a download completion notifying instruction and the name of the download
5 computer software product in cases where the notification of the downloading of the download computer software product is judged;

a download completion notice transmitting unit 211 for receiving the download completion notifying instruction and
10 the name of the download computer software product from the download completion notification judging unit 210, receiving the identification number of the terminal 202 from the terminal information managing unit 206 in cases where the download completion notifying instruction is received, and
15 outputting the name of the download computer software product and the identification number of the terminal 202 to the download completion notice transmission station 133.

In the above configuration, an operation of the software
20 download system 200 is described.

As shown in Fig. 20, a download completion notice flag is attached to one piece of set-up information of each computer software product. The download completion notice flag set to "1" denotes that the center station 201 requests a download
25 completion notice of the computer software product from one

terminal 202 in which the downloading of the computer software product from the center station 201 is completed. Also, the download completion notice flag set to "0" denotes that the center station 201 does not request a download completion notice of the computer software product from one terminal 202 in which the downloading of the computer software product from the center station 201 is completed. The pieces of set-up information with the download completion notice flags are inserted into the broadcasting program schedule in the broadcasting program guide table preparing unit 205, so that a broadcasting program guide table shown in Fig. 21 is prepared. Thereafter, the broadcasting program guide table, in which one download completion notice flag is listed for each computer software product, is transmitted to the broadcasting program guide displaying unit 110 and the broadcasting software program extracting unit 109 of each terminal 202.

Thereafter, a download broadcasting program table, in which one download completion notice flag is listed for each download computer software product, is prepared in the download judging unit 207 and is transmitted to the software download reservation managing unit 208. In the example shown in Fig. 23, the download completion notice flag indicating the request of a download completion notice is attached to the download computer software product "CA". Thereafter, information of the download broadcasting program written in

the download broadcasting program table is transmitted from the software download reservation managing unit 208 to the download performing unit 209 during the transmission time period of the download broadcasting program for each download
5 broadcasting program, and the files of the download computer software product are transmitted from the receiving unit 108 to the performing unit 209 for each download computer software product. Therefore, the download computer software product can be downloaded from the center station 201 to the terminal
10 202. Thereafter, the version management table is renewed, and the download computer software product is stored in the storing unit 114 in the same manner as in the first embodiment. In the example shown in Fig. 24, information (a transmission channel "CH1", a name "morning download" of one
15 download broadcasting program, a name "CA" of the download computer software product corresponding to the download broadcasting program, a name F11 of the download file composing the download computer software product, a version number "3" of the download file, a version number "7" of the
20 download computer software product and a download completion notice flag "1") is transmitted to the download performing unit 209.

After the downloading of the download computer software product is completed, the information of the download

broadcasting program is transmitted from the download
performing unit 209

to the download completion notification judging unit 210, and
the download completion notice flag included in the
5 information is checked.

In cases where the download completion notice flag is set
to "1", because the download completion notice flag requests a
download completion notice of the computer software product, a
download completion notifying instruction and the name of the
10 download computer software product are transmitted to the
download completion notice transmitting unit 211, the
identification number of the terminal 202 is received from the
terminal information managing unit 206 according to the
download completion notifying instruction. The identification
15 numbers of the terminals 202 are serially set, so that each
terminal 202 can be identified by its identification number.
Thereafter, the name of the download computer software product
and the identification number of the terminal 202 are output
to the center station 201 through the download completion
20 notice transmission station 133. In the example of Figs. 22
and 24, because the download completion notice flag of the
download computer software product "CA" is set to "1", the
name "CA" of the download computer software product and the
identification number "12345" of the terminal 202 are
25 transmitted to the center station 201.

In contrast, in cases where the download completion notice flag is set to "0", because the download completion notice flag does not requests a download completion notice of the computer software product, any download completion notifying
5 instruction is not transmitted to the download completion notice transmitting unit 211. Therefore, any download completion notifying operation is not performed.

Thereafter, the name of the download computer software product and the identification number of the terminal 202 are
10 received in the download completion notice receiving unit 212 of the center station 201, and the identification number of the terminal 202 is recorded in a block corresponding to the download computer software product in the download record managing unit 213. Therefore, the download records of a
15 plurality of terminals 202 are obtained, and a computer software product supplier of the center station 201 can know that one computer software product is downloaded to one terminal 202 by checking the identification number of the terminal 202 recorded in a block corresponding to the computer
20 software product. In the example of Fig. 25, the download computer software product "CA" is downloaded in the terminals "12345", "55555", "00001", --.

Accordingly, in cases where a computer software product supplier wants to know that a computer software product
25 transmitted with one broadcasting program is downloaded from

the center station 201 to each terminal 202, because a download completion notice flag corresponding to the computer software product is set to "1" in the set-up information stored in the storing unit 204 of the center station 202, the
5 request of a download completion notice can be recognized in each terminal 202 by checking the download completion notice flag of the computer software product included in the information of the download broadcasting program corresponding to the computer software product. Therefore, in cases where
10 the computer software product is actually downloaded from the center station 201 to the download performing unit 209 of one terminal 202, an identification number of the terminal 202 and a name of the computer software product are transmitted from the download completion notice transmitting unit 211 to the
15 download completion notice receiving unit 212 of the center station 201, the identification number of the terminal 202 is recorded in a block corresponding to the computer software product, so that the computer software product supplier can know that the computer software product is downloaded to the
20 terminal 202 by checking the identification number of the terminal 202.

In contrast, in cases where a computer software product supplier does not want to know that a computer software product transmitted with one broadcasting program is
25 downloaded from the center station 201 to each terminal 202,

because a download completion notice flag corresponding to the computer software product is set to "0" in the set-up information stored in the storing unit 204 of the center station 202, the no-necessity of a download completion notice
5 can be recognized in each terminal 202 by checking the download completion notice flag of the computer software product included in the information of the download broadcasting program corresponding to the computer software product. Therefore, even though the computer software product
10 is actually downloaded from the center station 201 to the download performing unit 209 of one terminal 202, any download completion notice is not transmitted from the terminal 202 to the center station 201. Accordingly, a no-necessity download completion notice can be omitted, and a traffic volume of the
15 download completion notice transmitted through the download completion notice transmission station 203 can be reduced.

In the second embodiment, in cases where a download completion notice flag corresponding to one computer software product is set to "1" in the set-up information, a download
20 completion notice is returned to the center station 201 from each of all terminals 202 to which the computer software product is actually downloaded from the center station 201. However, it is applicable that a download completion notice be returned to the center station 201 from each of a first group
25 of terminals 202 to which the computer software product is

actually downloaded from the center station 201 and any download completion notice be not returned to the center station 201 from each of a second group of terminals 202 to which the computer software product is actually downloaded

5 from the center station 201. For example, a plurality of terminals of identification numbers ranging from 1 to 1000 is set as the first group of terminals, and a plurality of terminals of identification numbers higher than 1000 is set as the second group of terminals. In this case, though the

10 computer software product supplier cannot know all terminals to which the computer software product is actually downloaded from the center station 201, a traffic volume of the download completion notice transmitted through the download completion notice transmission station 203 can be considerably reduced,

15 and the computer software product supplier can know a ratio of the number of terminals, to which the computer software product is actually downloaded from the center station 201, to the number of terminals to which the computer software product is not downloaded from the center station 201.

20 (Third Embodiment)

In this embodiment, in cases where a computer software product supplier of a center station desires a user to judge whether or not a computer software product is to be downloaded from the center station to a terminal of the user, the

25 computer software product supplier sets a type of the computer

software product to "user application", and a guide of a broadcasting program transmitted with the computer software product set to the type "user application" is displayed for the user's download judgement.

5 In contrast, in cases where the computer software product supplier desires a user not to judge about the downloading of a computer software product and desires that the downloading of the computer software product is automatically judged according to a terminal type, a version number of the computer
10 software product transmitted from the center station and a version number of the computer software product already stored in the user's terminal, the computer software product supplier sets a type of the computer software product to "system application". The computer software product set to the type
15 "user application" is, for example, a user program (or an application program), and the computer software product set to the type "system application" is, for example, a system program.

Fig. 26 is a block diagram of a software download system
20 according to a third embodiment of the present invention.

As shown in Fig. 26, a software download system 300 comprises:

a center station 301 for outputting a broadcasting program guide table of a plurality of broadcasting programs and
25 computer software products representing software products,

outputting audio/video data of each broadcasting program during its transmission time period, and outputting the computer software products respectively transmitted with one broadcasting program at the same transmission channel as that
5 of the broadcasting program, a type of each computer software product being set to "user application" or "system application";

a plurality of terminals 302 for respectively receiving the audio/video data of the broadcasting programs, the
10 broadcasting program guide table and the computer software products from the center station 301, outputting the audio /video data, and downloading updated computer software products selected from the computer software products, the terminals 302 being classified into a plurality of groups, and
15 each group of terminals 302 being identified by a terminal type; and

the transmission station 107.

The center station 301 comprises:

the computer software server 102;
20 a set-up information storing unit 303 for storing a table of pieces of set-up information (refer to Fig. 27) in which a name of one computer software product, a version number identifying a version of the computer software product, a terminal type fit for the computer software product, names of
25 one or more files composing the computer software product,

version numbers identifying versions of the files and a type ("user application" or "system application") of the computer software product are listed for each computer software product stored in the computer software server 102;

5 the software managing unit 101; the video data server 105; the audio data server 106;

 a broadcasting program guide table preparing unit 304 for managing a broadcasting program schedule listed in a schedule table (refer to Fig. 4), preparing a broadcasting program
10 guide table (refer to Fig. 28) from the pieces of set-up information of the computer software products managed in the software managing unit 101 and the broadcasting program schedule, and controlling the computer software server 102, the video data server 105 and the audio data server 106 to
15 output the video data of the broadcasting programs listed in the broadcasting program guide table, the audio data of the broadcasting programs listed in the broadcasting program guide table and the files of the computer software products listed in the broadcasting program guide table; and
20 the transmitting unit 104.

Each terminal 302 comprises:

 the receiving unit 108; the video data outputting unit 117; the audio data outputting unit 118; the terminal information managing unit 110; the version managing unit 112;

25 a display broadcasting program extracting unit 305 for

receiving the broadcasting program guide table from the
receiving unit 108, extracting guides of broadcasting programs
(called display broadcasting programs), which each are
accompanied with no computer software product or a computer
5 software product set to a type "user application", from the
guides of the broadcasting programs listed in the broadcasting
program guide table by removing a guide of one broadcasting
program, in which a type of one computer software product
corresponding to the broadcasting program is set to "system
10 application", from the guides of the broadcasting programs
listed in the broadcasting program guide table for each
broadcasting program and removing a guide of one broadcasting
program, in which the terminal type fit for a computer
software product transmitted with the broadcasting program
15 differs from a particular terminal type of the terminal 302
written in the terminal management table of the terminal
information managing unit 110, from the guides of the
broadcasting programs listed in the broadcasting program guide
table for each broadcasting program, and preparing a guide
20 table (refer to Fig. 29) of the display broadcasting programs;
a display broadcasting program displaying unit 306 for
displaying an image (refer to Fig. 30) of the display
broadcasting program guide table prepared by the display
broadcasting program extracting unit 305 for a user to select
25 one or more display broadcasting programs respectively

accompanied by one computer software product of the type "user application" as one or more download-candidate broadcasting programs;

a download-candidate broadcasting program specifying unit
5 307 for specifying one or more download-candidate broadcasting programs, which are selected by the user from the display broadcasting programs of the guide table displayed by the display broadcasting program displaying unit 306, and controlling the display broadcasting program extracting unit
10 305 to output a guide table (refer to Fig. 31) of the download-candidate broadcasting programs;

a broadcasting software program extracting unit 308 for extracting guides of all broadcasting software programs, which each are accompanied by a computer software product set to
15 "system application", from the broadcasting program guide table received in the receiving unit 108, and preparing a broadcasting software program guide table (refer to Fig. 32) in which a date, a transmission channel, a transmission start time of one broadcasting software program, a transmission
20 finish time of the broadcasting software program, a name of the broadcasting software program, a name of a computer software product corresponding to the broadcasting software program, names of one or more files composing the computer software product, version numbers of the files, a version
25 number of the computer software product, a terminal type

corresponding to the computer software product and a type "system application" of the computer software product are listed for each broadcasting software program;

a download judging unit 309 for receiving the broadcasting software program guide table from the broadcasting software program extracting unit 308, receiving the guide table of the download-candidate broadcasting programs from the display broadcasting program extracting unit 305 under the control of the download-candidate broadcasting program specifying unit 307, receiving the terminal management table managed by the terminal information managing unit 110, receiving the version management table managed by the version managing unit 112, inserting one or more broadcasting software programs of the guide table into the guide table of the download-candidate broadcasting programs as one or more download-candidate broadcasting programs on condition that terminal types fit for computer software products transmitted with the broadcasting software programs agree with a particular terminal type of the terminal 302 written in the terminal management table, judging each download-candidate broadcasting program as a download broadcasting program in cases where a version of a computer software product corresponding to the download-candidate broadcasting program in the download candidate table is newer (or the version number is higher) than that (refer to Fig. 8) of a computer software product corresponding to the same

download-candidate broadcasting program in the version management table already stored in the version managing unit 112, judging each file of a download computer software product corresponding to one download broadcasting program as a

5 download file for each download broadcasting program in cases where a version of the file in the download candidate table is newer (or the version number is higher) than that of a computer software product corresponding to the same download broadcasting program in the version management table,

10 preparing a download broadcasting program table in which a date, a transmission channel, a transmission start time of one download broadcasting program, a transmission finish time of the download broadcasting program, a name of the download broadcasting program, a name of the download computer software

15 product corresponding to the download broadcasting program, names of one or more download files composing the download computer software product, version numbers of the download files, a version number of the download computer software product and a type of the download computer software product

20 are listed for each download broadcasting program, transmitting a download reservation notice to the display broadcasting program displaying unit 306 to display a message (refer to Fig. 33) expressing the completion of a download reservation of one computer software product transmitted with

25 one download-candidate broadcasting program for each download-

candidate broadcasting program in cases where the download-
candidate broadcasting program is set in the download
broadcasting program table as one download broadcasting
program, and transmitting a download no-reservation notice to
5 the display broadcasting program displaying unit 306 to
display a message (refer to Fig. 34) expressing no download
reservation of one computer software product transmitted with
one download-candidate broadcasting program for each download-
candidate broadcasting program in cases where the download-
10 candidate broadcasting program is not set in the download
broadcasting program table as one download broadcasting
program;
the software download reservation managing unit 120; the
download performing unit 113; and the computer software
15 storing unit 114.

In the above configuration, an operation of the software
download system 300 is described.

As shown in Fig. 27, one piece of set-up information, to
which a type "user application" or "system application" of one
20 computer software product is attached, is stored in the set-up
information storing unit 303 for each computer software
product. The pieces of set-up information of the computer
software products having the types are inserted into the
broadcasting program schedule table in the guide table
25 preparing unit 304, so that a broadcasting program guide table

shown in Fig. 28 is prepared. Thereafter, the broadcasting
program guide table, in which the type of one computer
software product is listed for each computer software product,
is transmitted with the computer software products and the
5 audio/video data of a plurality of broadcasting programs to
each terminal 302.

In each terminal 302, the broadcasting program guide table
is received in the display broadcasting program extracting
unit 305 and the broadcasting software program extracting unit
10 308.

In the extracting unit 305, because the computer software
product supplier desires a user to judge about the downloading
of one or more computer software products set to a type "user
application", a guide of each broadcasting program with a
15 computer software product set to a type "system application"
is removed from the broadcasting program guide table. In the
example of Fig. 28, a guide of the broadcasting program
"download A", of which a computer software product is set to a
type "system application", is removed. Also, guides of one or
20 more broadcasting programs with one or more computer software
products set to the same type "user application" are removed
from the broadcasting program guide table on condition that
terminal types fit for the computer software products differ
from a particular terminal type of the terminal 302 written in
25 the terminal management table of the terminal information

managing unit 110. Therefore, a guide table of display
broadcasting programs which each are accompanied by no
computer software product or a computer software product set
to a type "user application", is prepared from the
5 broadcasting programs not removed. In the example of Fig. 28,
because the terminal type "P" fit for the computer soft
"DSMCC" transmitted with the broadcasting program "Let's
download" differs from the particular terminal type "M" of
the terminal 302, the broadcasting program "Let's download" is
10 removed. Therefore, a display broadcasting program guide table
shown in Fig. 29 is obtained.

Thereafter, a display broadcasting program guide produced
from the guide table of display broadcasting programs is
displayed in the broadcasting program guide displaying unit
15 306. Thereafter, a user specifies one or more display
broadcasting programs, for which the user desires the
downloading, as one or more download-candidate broadcasting
programs in the download-candidate broadcasting program
specifying unit 307. In the example of Fig. 29, a display
20 broadcasting program guide shown in Fig. 30 is displayed, and
the user specifies the display broadcasting program "morning
download". For example, a remote controller is used as the
specifying unit 307, the user operates an arrow button of the
remote controller to select one display broadcasting program,
25 and the selection of the display broadcasting program is

determined by pushing a determination button. Thereafter, the guide table of the download-candidate broadcasting programs is transmitted from the display broadcasting program extracting unit 305 to the download judging unit 309 under the control of
5 the download-candidate broadcasting program specifying unit 307. In this example, a guide table shown in Fig. 31 is transmitted to the download judging unit 309.

Also, in the broadcasting software program extracting unit 308, because a guide of each broadcasting program with a
10 computer software product set to "system application" is removed in the extracting unit 305, guides of all broadcasting programs with computer software products set to "system application" are extracted as broadcasting software programs from the broadcasting program guide table, and a guide table
15 of broadcasting software programs with computer software products set to "system application" is prepared. In the example of Fig. 32, a guide table of the broadcasting software program "download A" with a computer software product set to "system application" is prepared.

20 Thereafter, the broadcasting software program guide table is transmitted from the broadcasting software program extracting unit 308 to the download judging unit 309.

In the download judging unit 309, because the collation of a terminal type fit for a computer software product of each
25 broadcasting software program with a particular terminal type

of the terminal management table is not yet performed, one or more broadcasting software programs of the guide table is inserted into the guide table of the download-candidate broadcasting programs as one or more download-candidate broadcasting programs on condition that terminal types fit for computer software products of the broadcasting software programs agree with a particular terminal type of the terminal 302. Thereafter, each download-candidate broadcasting program is judged as a download broadcasting program in cases where the version number of a computer software product corresponding to the download-candidate broadcasting program in the download candidate table is higher than that of a computer software product corresponding to the same download-candidate broadcasting program in the version management table already stored in the version managing unit 112, each file of a download computer software product corresponding to one download broadcasting program is judged as a download file for each download broadcasting program in cases where a version number of the file in the download candidate table is higher than that of a computer software product corresponding to the same download broadcasting program in the version management table, a download table of the download broadcasting program is prepared, and the download broadcasting program table is transmitted to the software download reservation managing unit 120 in the same manner as in the first embodiment to reserve

the downloading of the computer software products transmitted with the download broadcasting programs.

Thereafter, each time one download-candidate broadcasting program is set in the download broadcasting program table as
5 one download broadcasting program, a download reservation notice is transmitted to the display broadcasting program displaying unit 306 to display a message expressing the completion of a download reservation of the computer software product transmitted with the download-candidate broadcasting
10 program. Also, in cases where one download-candidate broadcasting program is not set in the download broadcasting program table as one download broadcasting program, a download no-reservation notice is transmitted to the display broadcasting program displaying unit 306 to display a message
15 expressing no download reservation of the computer software product transmitted with the download-candidate broadcasting program. The download reservation notice or the download no-reservation notice is transmitted to the display broadcasting program displaying unit 306 for each download-candidate
20 broadcasting program. In the example of Fig. 33, the message "download of broadcasting program "morning download" is reserved now" is displayed in response to the download reservation notice, and the message "the download reservation of broadcasting program "morning download" is not performed
25 because the broadcasting program "morning download" has been

already reserved" is displayed in response to the download reservation notice.

Thereafter, the download operation is performed in the units 120, 113, 112 and 114 in the same manner as in the first
5 embodiment.

Accordingly, because a computer software product supplier of the center station 301 sets a type of a computer software product to "user application" in cases where the computer software product supplier desires a user to judge whether or
10 not the downloading of the computer software product from the center station to user's terminal is to be performed, a guide of a broadcasting program with the computer software product can be displayed, and the user can judges the downloading of the computer software product. Therefore, in cases where the
15 user judges to download the computer software product, the files of the computer software product is downloaded and stored in the computer software storing unit 114 on condition that the version of the computer software product is newer than that already stored in the version managing unit 112. In
20 addition, in cases where the downloading of one computer software product is reserved in the reservation managing unit 120, because a download reservation notice is transmitted to the display broadcasting program displaying unit 306, the user can confirm the completion of a download reservation of the
25 computer software product. In contrast, in cases where the

downloading reservation of one computer software product is not performed, because a download no-reservation notice is transmitted to the display broadcasting program displaying unit 306, the user can confirm no download reservation of the
5 computer software product.

Also, because guides of one or more broadcasting programs with one or more computer software products set to the same type "user application" are removed from the broadcasting program guide table on condition that terminal types fit for
10 the computer software products differ from a particular terminal type of the terminal 302 written in the terminal management table of the terminal information managing unit 110, the user's selection of one broadcasting program with one computer software product not operable in this terminal 302
15 can be avoided.

In the third embodiment, a version number of a computer software product of each display broadcasting program displayed in the displaying unit 306 is not collated with a version number of the computer software product of the same
20 broadcasting program stored in the version managing unit 112. However, it is applicable that a guide of each display broadcasting program with a computer software product set to the type "user application" be displayed in the displaying unit 306 on condition that a version number of the computer
25 software product is higher than that already stored in the

version managing unit 112. In this case, the user's selection of one broadcasting program with one updated computer software product, which has been already stored in the computer software storing unit 114, can be avoided.

5 (Fourth Embodiment)

In this embodiment, a broadcasting program recording reservation for one or more broadcasting programs respectively not accompanied by any computer software product is performed by a user in advance, and a recording reservation table of the
10 broadcasting programs is prepared. When one or more download broadcasting programs respectively accompanied by a computer software product are determined in a download judging unit, a broadcasting program download reservation for each download broadcasting program is performed on condition that a
15 transmission time period (from a transmission start time to a transmission finish time) of the download broadcasting program does not overlap with that of each broadcasting program already recording-reserved.

Fig. 35 is a block diagram of a software download system
20 according to a fourth embodiment of the present invention.

As shown in Fig. 35, a software download system 400 comprises:

the center station 115, the transmission station 107, and
a plurality of terminals 401 for respectively receiving the
25 audio/video data of the broadcasting programs, the

broadcasting program guide table and the computer software products representing software products from the center station 115, outputting the audio/video data, and reserving the recording of one or more updated computer software products selected from the computer software products on condition that a transmission time period of each broadcasting program with one updated computer software product does not overlap with any of transmission time periods of broadcasting programs already reserved, the terminals 401 being classified into a plurality of groups, and each group of terminals 401 being identified by a terminal type.

Each terminal 401 comprises:

the receiving unit 108; the video data outputting unit 117; the audio data outputting unit 118; the broadcasting program guide displaying unit 119; the terminal information managing unit 110; the broadcasting software program extracting unit 109, the download judging unit 111; the version managing unit 112;

a software download reservation managing unit 402 for managing the recording reservation for one or more recording-reserved broadcasting programs respectively not accompanied by any computer software product in advance in a form of a reservation table (refer to Fig. 36) of the recording-reserved broadcasting programs and managing a renewed reservation table (refer to Fig. 49) of the recording-reserved broadcasting

programs and one or more download-reserved broadcasting programs with computer software products;

5 a download-reserved broadcasting program determining unit 403 for managing a current data and time (refer to Fig. 37), referring the reservation table of the recording-reserved broadcasting programs managed by the software download reservation managing unit 402, receiving the download table of the download broadcasting programs from the download judging unit 111, selecting a guide of a download-reserved
10 broadcasting program with a computer software product from guides of a group of download broadcasting programs, which include the same computer software product and have the same name and different transmission time periods in the download table, on condition that a transmission time period of the
15 download-reserved broadcasting program does not overlap with that of any recording-reserved broadcasting program and a transmission start time of the download-reserved broadcasting program is placed after the current data and time, and adding a download reservation of the download-reserved broadcasting
20 program to the reservation table of the recording-reserved broadcasting programs managed by the managing unit 402 for each group of download broadcasting programs having the same name listed in the download table to prepare the renewed reservation table (Fig. 49), the renewed reservation table
25 being transmitted to the managing unit 402, and a download

instruction being transmitted from the managing unit 402 to the receiving unit 108 during the transmission time period of each download-reserved broadcasting program to download the files of the computer software product of the download-reserved
5 d broadcasting program from the transmitting unit 108;

a download performing unit 404 for receiving the information of each download-reserved broadcasting program of the renewed reservation table from the managing unit 402 during the transmission time period of the download-reserved broadcasting
10 program, downloading the download files of the computer software product corresponding to each download-reserved broadcasting program from the receiving unit 108 according to the download instruction, and transmitting a name of the computer software product corresponding to each download-
15 reserved broadcasting program, a version number of the download computer software product, names of the files composing the computer software product and version numbers of the files to the version managing unit 112 to prepare a new version management table in which the version number of the
20 computer software product corresponding to one download-reserved broadcasting program and the version numbers of the files composing the computer software product are renewed for each download-reserved broadcasting program; and

the computer software storing unit 114 for storing the
25 files of the computer software product of one download-

reserved broadcasting program downloaded to the download performing unit 404 during the transmission time period of the download-reserved broadcasting program for each download-reserved broadcasting program.

5 In the above configuration, an operation of the software download system 400 is described.

 The download broadcasting program table is prepared in the download judging unit 111 in the same manner as in the first embodiment. In the download broadcasting program table shown
10 in Fig. 38, a guide of each download broadcasting program is listed many times. For example, the download broadcasting program table indicates that the download broadcasting program "morning download" with the software "CA" is transmitted from the center station 115 to the terminal 401 during a first
15 transmission time period from 7:30 to 8:00, a second transmission time period from 8:30 to 9:00 and a third transmission time period from 9:30 to 10:00 and the download broadcasting program "weather data" with the software "DAT" is transmitted from the center station 115 to the terminal 401
20 during a first transmission time period from 8:00 to 8:30, a second transmission time period from 9:00 to 9:30 and a third transmission time period from 11:00 to 11:30. Therefore, even though one computer software product transmitted with one download broadcasting program cannot be recorded at one
25 transmission time period because the recording of one

broadcasting program not accompanied by any computer software product overlaps with the recording of the computer software product, the computer software product transmitted with the download broadcasting program can be recorded at another
5 transmission time period.

Also, a broadcasting program recording reservation for one or more recording-reserved broadcasting programs respectively not accompanied by any computer software product is managed in the software download reservation managing unit 402 in
10 advance. In this example, a reservation table of the recording-reserved broadcasting programs is shown in Fig. 36. As shown in Fig. 36, for example, because the recording of the broadcasting program "daytime drama" is reserved during the transmission time period (from 10:00 to 11:00) of June 25 in
15 1997, any computer software product transmitted with one download broadcasting program cannot be recorded in cases where the transmission time period of the download broadcasting program overlaps with that of the broadcasting program "daytime drama".

20 The download table of the download broadcasting programs is transmitted from the download judging unit 111 to the download-reserved broadcasting program determining unit 403. In the determining unit 403, a current data and time is managed, and one or more download-reserved broadcasting
25 programs are selected from the download broadcasting programs

of the download table on condition that a transmission time period of each download-reserved broadcasting program does not overlap with that of any recording-reserved broadcasting program and a transmission start time of each download-reserved broadcasting program is placed after the current data and time. This download-reserved broadcasting program determining process is described with reference to Figs. 39 to 42.

Fig. 39 is a flow chart showing the download-reserved broadcasting program determining process, Fig. 40 is a flow chart showing a broadcasting program name checking process performed in the download-reserved broadcasting program determining process, Fig. 41 is a flow chart showing a transmission start time checking process performed in the download-reserved broadcasting program determining process, and Fig. 42 is a flow chart showing a duplication checking process performed in the transmission start time checking process.

As shown in Fig. 39, a broadcasting program name checking process for preparing a guide table of one or more broadcasting programs corresponding to the same broadcasting program name is performed for each broadcasting program name in a step S3901, and a transmission start time checking process for checking whether or not one transmission start time of each download broadcasting program having a particular name is placed after the current data and time and is nearest

to the current data and time among a plurality of transmission start times of the download broadcasting programs having the same particular name and checking whether or not a transmission time period of each download broadcasting program does not overlap with that of any recording-reserved broadcasting program is performed in a step S3902.

In the broadcasting program name checking process (the step S3901), as shown in Fig. 40, one broadcasting program name is selected from the download table as a checking program name (step S4001). In the example of Fig. 38, the broadcasting program name "morning download" is selected as a checking program name. Thereafter, all guides of the download broadcasting programs having the checking program name are extracted from the download broadcasting program table and are registered in a guide table of name-checked broadcasting programs (step S4002). The steps S4001 and S4002 are performed for all broadcasting program names listed in the download broadcasting program table (step S4003). In this example, when the broadcasting program name "morning download" is selected as a checking program name, a guide table of three name-checked broadcasting programs shown in Fig. 43 is prepared. When the broadcasting program name "weather data" is selected as a checking program name, a guide table of three name-checked broadcasting programs shown in Fig. 44 is prepared. When the broadcasting program name "special download" is

selected as a checking program name, a guide table of a name-checked broadcasting program shown in Fig. 45 is prepared.

Thereafter, the transmission start time checking process (the step S3902) is performed.

5 In the checking process, an allowable upper date and time, which is capable to be set as a checking time, is initially set (step S4101). In this example, because the latest transmission start time in the guide tables shown in Figs. 43 to 45 is 11:30 of June 25 in 1997, the checking time is
10 initially set to 0:00 of June 26 in 1997. Thereafter, the transmission start time of one broadcasting program in one name-checked broadcasting program guide table is selected from one or more transmission start times of the broadcasting program (step S4102), and it is checked whether or not the
15 selected transmission start time is placed after the current data and time and is placed before the checking time (step S4103). In cases where the transmission start time is placed after the current data and time and is placed before the checking time, the checking time is set to the selected
20 transmission start time (step S4104). The steps S4102 to S4104 are performed for the transmission start times of the broadcasting programs of all guides listed in the name-checked broadcasting program guide table (step S4105). Therefore, a guide of the broadcasting program corresponding to a
25 particular transmission start time, which is placed after the

current date and time and is nearest to the current date and time among all transmission start times in the name-checked broadcasting program guide table, is determined. The particular transmission start time of the broadcasting program is registered in a time-checked broadcasting program guide table (step S4106).

In the example of Fig. 43, because the transmission start time 7:30 of the broadcasting program "morning download" is placed before the current date and time 8:15 of June 25 in 1977 (Fig. 37), the transmission start time 7:30 is not selected. Also, because the transmission start time 8:30 of the broadcasting program "morning download" is placed before the transmission start time 9:30 of the broadcasting program "morning download", the transmission start time 8:30 is selected and is registered in a time-checked broadcasting program guide table shown in Fig. 46.

Thereafter, it is checked whether or not one transmission start time is registered in the time-checked broadcasting program guide table (step S4107). In cases where any transmission start time is not registered in the time-checked broadcasting program guide table, because any duplication checking process is not needed, a transmission start time checking process for a next name-checked broadcasting program guide table is performed. In contrast, in cases where one transmission start time is registered in the time-checked

broadcasting program guide table, a duplication checking process is performed for the transmission start time registered in the time-checked broadcasting program guide table (step S4108).

5 As shown in Fig. 42, in the duplication checking process, it is checked whether or not a particular transmission time period relating to the particular transmission start time registered in the time-checked broadcasting program guide table overlaps with one of the transmission time periods of
10 the recording-reserved broadcasting programs registered in the recording-reserved software download reservation table (step S4201). In cases where the particular transmission time period relating to the particular transmission start time does not overlap with any transmission time period of the recording-
15 reserved broadcasting program registered in the recording-reserved software download reservation table, the guide of the broadcasting program registered in the time-checked broadcasting program guide table is registered in a download-reserved software download reservation table as a download
20 reservation of one download-reserved broadcasting program (step S4202), the duplication checking process for the name-checked broadcasting program guide table is successfully completed, and the procedure proceeds to a step S4109.

 In contrast, in cases where the particular transmission
25 time period relating to the particular transmission start time

overlaps with one of the transmission time periods of the recording-reserved broadcasting programs, the guide of the broadcasting program relating to the particular transmission start time is deleted from the name-checked broadcasting program guide table (step S4203), and the steps S4101 to S4108 are repeated to determine another particular transmission start time of the broadcasting program. In this example, because the particular transmission time period (8:30 to 9:00) relating to the transmission start time 8:30 of the broadcasting program "morning download" shown in Fig. 46 does not overlap with any transmission time period of the recording-reserved broadcasting program registered in the recording-reserved software download reservation table (Fig. 36), the guide of the broadcasting program "morning download" shown in Fig. 46 is registered in a download-reserved software download reservation table shown in Fig. 47 as a guide of one download-reserved broadcasting program.

The transmission start time checking process is performed for each name-checked broadcasting program guide table (step S4109), and the download-reserved broadcasting program determining process is completed. In this example, the transmission start time 9:00 of a broadcasting program "weather data" shown in Fig. 44 is selected and is registered in a time-checked broadcasting program guide table shown in Fig. 48, and the guide of the broadcasting program "weather

data" is registered in the download-reserved software download reservation table shown in Fig. 47 as a guide of another download-reserved broadcasting program. However, though the transmission start time 10:00 of a broadcasting program "special download" shown in Fig. 45 is selected and is registered in a time-checked broadcasting program guide table (not shown), because the transmission time period of the broadcasting program "special download" overlaps with that of the recording-reserved broadcasting program "daytime drama", the guide of the broadcasting program "daytime drama" is not registered in the download-reserved software download reservation table shown in Fig. 47.

Thereafter, the download-reserved software download reservation table prepared in the download-reserved broadcasting program determining unit 403 is transmitted to the software download reservation managing unit 402 to add one or more guides of download-reserved broadcasting programs listed in the reservation table to the recording-reserved software download reservation table, so that the reservation table is renewed. In this example, a reservation table shown in Fig. 49 is prepared in the managing unit 402.

Thereafter, the operation for the renewed reservation table is performed in the download performing unit 404 in the same manner as in the operation of the performing unit 113, one or more computer software products downloaded from the receiving

unit 108 to the download performing unit 404 are stored in the computer software storing unit 114, and version numbers of the computer software products are recorded in the version managing unit 112.

5 Accordingly, even though the recording of one or more broadcasting programs respectively accompanied by no computer software product is reserved, one or more download-reserved broadcasting programs can be selected from the download broadcasting programs of the download table on condition that
10 a transmission time period of each download-reserved broadcasting program does not overlap with that of any broadcasting program and a transmission start time of each download-reserved broadcasting program is placed after the current data and time, and the download-reserved broadcasting
15 programs can be downloaded to record the computer software product of each download-reserved broadcasting program during its transmission time period.

(Fifth Embodiment)

 In this embodiment, names of a plurality of computer
20 software products corresponding to the broadcasting software programs of the guide table prepared in the broadcasting software program extracting unit 109 are displayed, a user selects names of one or more particular computer software products from the names of the computer software products, and
25 the particular computer software products are downloaded from

the receiving unit 108 to the download performing unit 113.

Fig. 50 is a block diagram of a software download system according to a fifth embodiment of the present invention.

As shown in Fig. 50, a software download system 500
5 comprises:
the center station 115, the transmission station 107, and
a plurality of terminals 501 for respectively receiving the
audio/video data of the broadcasting programs, the
broadcasting program guide table and the computer software
10 products representing software products from the center
station 115, outputting the audio/video data, displaying a
plurality of names of computer software products, downloading
one or more particular computer software products selected by
a user, the terminals 401 being classified into a plurality of
15 groups, and each group of terminals 401 being identified by a
terminal type.

Each terminal 501 comprises:

the receiving unit 108; the video data outputting unit 117;
the audio data outputting unit 118; the broadcasting program
20 guide displaying unit 119; the terminal information managing
unit 110; the broadcasting software program extracting unit
109, the version managing unit 112;

a computer software selecting unit 502 for displaying names
of a plurality of computer software products corresponding to
25 the broadcasting software programs of the guide table prepared

in the broadcasting software program extracting unit 109 and receiving names of one or more particular computer software products input by a user;

the down load judging unit 111; the software download
5 reservation managing unit 120; the download performing unit 113; and the computer software storing unit 114.

In the above configuration, an operation of the software download system 500 is described.

A broadcasting software program guide table is prepared in
10 the broadcasting software program extracting unit 109 in the same manner as in the first embodiment. For example, a guide table of broadcasting software programs shown in Fig. 51 is prepared in the extracting unit 109. In this example, a guide of each broadcasting software program is listed many times.
15 For example, the broadcasting software program "morning download" with the computer software product "CA" is transmitted from the center station 115 to the terminal 501 at a first transmission start time 7:30 and a second transmission start time 8:30. Therefore, even though the computer software
20 product "CA" of the broadcasting software program "morning download" cannot be downloaded at the first transmission start time 7:30, the computer software product "CA" can be downloaded at the second transmission start time 8:30.

The broadcasting software program guide table is
25 transmitted to the computer software selecting unit 502. In

the selecting unit 502, a computer software selecting process shown in Fig. 52 is performed.

As shown in Fig. 52, a computer software name extracting process for extracting names of all computer software products listed in the broadcasting software program guide table is performed to prepare a table of computer software names (Fig. 53) in a step S5201, a computer software name table displaying process for displaying the names of the computer software products listed in the computer software name table on a screen is performed in a step S5202, a computer software name receiving process, in which one or more particular computer software names selected by a user is received while the user watches the displayed computer software name table, is performed in a step S5203, and a selected broadcasting software program guide table preparing process for preparing an output guide table (Fig. 54) of one or more selected broadcasting software programs relating to one or more particular computer software products selected by the user is performed in a step S5204.

As shown in Fig. 55, in the computer software name extracting process (the step S5201), a guide of one broadcasting software program listed in the broadcasting software program guide table is set as a checking guide (step S5501). Thereafter, the name of the computer software product of the checking guide is set as a checking software name (step

S5502), and the checking software name is registered in a computer software name table (step S5503). In this example, the computer software name "CA" is first set as a checking software name, and the checking software name "CA" is
5 registered in a computer software name table (Fig. 56).
Thereafter, because guides of one or more broadcasting software programs with the same computer software product are listed in the broadcasting software program guide table, guides of one or more broadcasting software programs relating
10 to the same computer software name as the checking software name are deleted from the broadcasting software program guide table (step S5504). Thereafter, it is checked whether or not at least one guide of one broadcasting software program remains in the broadcasting software program guide table (step
15 S5505). In cases where at least one guide of one broadcasting software program remains in the broadcasting software program guide table, the steps S5201 to S5504 are repeated. Therefore, names of all computer software products are registered in the computer software name table (Fig. 53). In the example of the
20 guide table shown in Fig. 51, six guides of the broadcasting software programs are listed in the guide table, and four computer software names "DAT", "GUI" and "OS" are registered in the computer software name table (Fig. 53).

Thereafter, in the computer software product table
25 displaying process (the step S5202), the computer software

name table is displayed on a screen to request a user to select names of one or more particular computer software products. In this example, an image shown in Fig. 57 is displayed in the terminal 501. In this embodiment, because any
5 program transmission time period is not displayed, the user can select the particular computer software products without considering the program transmission time period.

Thereafter, the computer software name receiving process (the step S5203) shown in Fig. 58 is performed.

10 As shown in Fig. 58, one name of one particular computer software product is set as a checking software name in a step S5801. In this example, the user selects the computer software product "CA", so that the name "CA" is set as one checking software name. Thereafter, it is checked whether or not each
15 computer software name listed in the broadcasting software program guide table agrees with the checking software name (step S5802). In cases where the computer software name agreeing with the checking software name is listed in one or more guides, one or more guides of one broadcasting software
20 program relating to the computer software name are registered in an output guide table (step S5803). The steps S5801 to S5803 are performed for each of the particular computer software names (step S5804). In this example, two guides of the broadcasting software program "morning download" are
25 registered in an output guide table, so that a broadcasting

software program output guide table shown in Fig. 54 is prepared.

Thereafter, the broadcasting software program output guide table is transmitted to the download judging unit 111, and one
5 or more download broadcasting programs are determined according to the output guide table in the same manner as in the first embodiment.

Accordingly, because names of computer software products transmitted with the broadcasting software programs are
10 displayed, the user can select one or more particular computer software products in cases where the user desires to download the particular computer software products from the center station 115.

Also, because only the computer software name is displayed,
15 the user can select one or more particular computer software products without considering the transmission time period.
(Sixth Embodiment)

When a user newly desires to record a recording-desired broadcasting program not accompanied by any computer software
20 product, the user inputs the recording reservation of the recording-desired broadcasting program to user's terminal.
Therefore, a download-reserved broadcasting program, of which a transmission time period overlaps with that of the recording-desired broadcasting program, cannot be downloaded
25 even though the download-reserved broadcasting program is

determined according to the fourth embodiment.

In this embodiment, a transmission time period of the recording-desired broadcasting program is compared with those of download-reserved broadcasting programs listed in the renewed reservation table (Fig. 49). In cases where a particular transmission time period of a particular download-reserved broadcasting program listed in the renewed reservation table overlaps with that of the recording-desired broadcasting program, a guide of the particular download-reserved broadcasting program relating to the particular transmission time period is deleted from the renewed reservation table, and the download broadcasting program table (Fig. 38) is searched for a guide of the particular download-reserved broadcasting program relating to another transmission time period according to the fourth embodiment. In cases where a specific guide of the particular download-reserved broadcasting program relating to a specific transmission time period is found out, the specific guide of the particular download-reserved broadcasting program is added to the renewed reservation table on condition that the specific transmission time period of the particular download-reserved broadcasting program does not overlap with that of the recording-desired broadcasting program, and the particular download-reserved broadcasting program is downloaded from a center station to user's terminal during the specific transmission time period.

Fig. 59 is a block diagram of a software download system according to a sixth embodiment of the present invention.

As shown in Fig. 59, a software download system 600 comprises:

- 5 the center station 115, the transmission station 107, and a plurality of terminals 601 for respectively receiving the audio/video data of the broadcasting programs, the broadcasting program guide table and the computer software products representing software products from the center
- 10 station 115, outputting the audio/video data, and reserving the download of a particular broadcasting program of which a transmission time period does not overlaps with any broadcasting program already recording-reserved or a recording broadcasting program, the terminals 601 being classified into
- 15 a plurality of groups, and each group of terminals 601 being identified by a terminal type.

Each terminal 601 comprises:

- the receiving unit 108; the video data outputting unit 117; the audio data outputting unit 118; the broadcasting program
- 20 guide displaying unit 119; the terminal information managing unit 110; the broadcasting software program extracting unit 109, the download judging unit 111; the version managing unit 112;

- a software download reservation managing unit 602 for
- 25 managing the recording reservation for one or more recording-

reserved broadcasting programs respectively not accompanied by any computer software product in advance in a form of a reservation table (refer to Fig. 36) of the recording-reserved broadcasting programs and preparing and managing a recording
5 table of one or more recording-desired broadcasting programs, of which the recording reservation is newly desired by a user;
a download-reserved broadcasting program determining unit 603 for managing a current data and time (refer to Fig. 37), referring the reservation table of the recording-reserved
10 broadcasting programs managed by the software download reservation managing unit 602, receiving the download table of the download broadcasting programs from the download judging unit 111, selecting a guide of a download-reserved
broadcasting program with a computer software product from
15 guides of a group of download broadcasting programs, which include the same computer software product and have the same name and different transmission time periods in the download table, on condition that a transmission time period of the download-reserved broadcasting program does not overlap with
20 that of any recording-reserved broadcasting program and a transmission start time of the download-reserved broadcasting program is placed after the current data and time, and adding a download reservation of the download-reserved broadcasting program to the reservation table of the recording-reserved
25 broadcasting programs managed by the managing unit 402 for

each group of download broadcasting programs having the same name listed in the download table to prepare a first renewed reservation table (Fig. 49) in the managing unit 602, a download instruction being transmitted from the managing unit 602 to the receiving unit 108 during the transmission time period of each download-reserved broadcasting program to download the files of the computer software product of the download-reserved broadcasting program from the transmitting unit 108;

10 a duplication reservation detecting unit 604 for referring the download-reserved broadcasting programs of the first renewed reservation table prepared by the download-reserved broadcasting program determining unit 603 and the recording-desired broadcasting program table managed by the software download reservation managing unit 602, comparing a transmission time period of each recording-desired broadcasting program with those of the download-reserved broadcasting programs to detect a particular download-reserved broadcasting program, of which a particular transmission time period overlaps with that of one recording-desired broadcasting program, transmitting a particular guide of the particular download-reserved broadcasting program relating to the particular transmission time period to the download-reserved broadcasting program determining unit 603 to delete a

25 guide of one download broadcasting program agreeing with the

particular guide of the particular download-reserved
broadcasting program from the download broadcasting program
table in the determining unit 603 and to select a specific
guide of the particular download-reserved broadcasting program
5 relating to a specific transmission time period from the
guides of each download broadcasting program of the download
broadcasting program table in the determining unit 603 on
condition that the specific transmission time period of the
particular download-reserved broadcasting program does not
10 overlap with that of any recording-desired broadcasting
program, and transmitting the particular guide of the
download-reserved broadcasting program relating to the
particular transmission time period and the specific guide of
the particular download-reserved broadcasting program relating
15 to the specific transmission time period to the managing unit
602 through the detecting unit 604, a second renewed
reservation table being prepared from the first renewed
reservation table in the managing unit 602 by deleting a guide
of a broadcasting program agreeing with the particular guide
20 of the download-reserved broadcasting program from the first
renewed reservation table, and a finally renewed reservation
table being prepared from the second renewed reservation table
in the managing unit 602 by adding the specific guide of the
particular download-reserved broadcasting program and the
25 guides of the recording-desired broadcasting programs in the

recording table to the second renewed reservation table;

a download performing unit 605 for receiving the information of each download-reserved broadcasting program of the finally renewed reservation table from the managing unit 602 during
5 the transmission time period of the download-reserved broadcasting program, downloading the download files of the computer software product corresponding to each download-reserved broadcasting program from the receiving unit 108 according to the download instruction, and transmitting a name
10 of the computer software product corresponding to each download-reserved broadcasting program, a version number of the download computer software product, names of the files composing the computer software product and version numbers of the files to the version managing unit 112 to prepare a new
15 version management table in which the version number of the computer software product corresponding to one download-reserved broadcasting program and the version numbers of the files composing the computer software product are renewed for each download-reserved broadcasting program; and
20 the computer software storing unit 114 for storing the files of the computer software product of one download-reserved broadcasting program downloaded to the download performing unit 605 during the transmission time period of the download-reserved broadcasting program for each download-
25 reserved broadcasting program.

In the above configuration, an operation of the software download system 600 is described.

A download table of one or more download broadcasting programs is prepared in the download judging unit 111 in the same manner as in the first and fourth embodiments. An example of the download broadcasting program table is shown in Fig. 38. Thereafter, a download-reserved software download reservation table (Fig. 47) is prepared in the download-reserved broadcasting program determining unit 603 in the same manner as in the fourth embodiment, and a first renewed reservation table (Fig. 49) in which one or more download-reserved broadcasting programs are registered with one or more recording-reserved broadcasting programs, is prepared in the determining unit 603 and is managed in the managing unit 602 in the same manner as in the fourth embodiment.

Also, when a user newly desires to record one or more recording-desired broadcasting programs respectively accompanied by no computer software product, the user inputs the recording reservation of the recording-desired broadcasting programs to a broadcasting program recording requesting means (not shown). Therefore, the recording reservation is transmitted to the software download reservation managing unit 602, and a recording table of the recording-desired broadcasting programs is prepared and managed in the managing unit 602. In this example, as shown in

Fig. 60, a recording table of a recording-desired broadcasting program "morning wide show" relating to a transmission time period from 9:00 to 10:00 is managed in the managing unit 602, and an information format of the table is the same as that of
5 the first renewed reservation table.

Thereafter, a duplication reservation detecting process is performed in the duplication reservation detecting unit 604. The duplication reservation detecting process is described with reference to Fig. 61.

10 In a step S6101, the download-reserved broadcasting programs of the first renewed reservation table and the recording-desired broadcasting programs of the recording table are referred. Thereafter, one transmission time period of one recording-desired broadcasting program is compared with those
15 of the download-reserved broadcasting programs, and it is checked whether or not one transmission time period of one download-reserved broadcasting program in one guide overlaps with that of one recording-desired broadcasting program (step S6102). In cases where a particular download-reserved
20 broadcasting program, of which a particular transmission time period overlaps with that of one recording-desired broadcasting program, is detected, the particular guide of the particular download-reserved broadcasting program relating to the particular transmission time period is registered in a
25 duplication-reserved broadcasting program table as one guide

of one duplication-reserved broadcasting program (step S6103).
The steps S6101 to S6103 are performed for all guides of the
first renewed reservation table (step S6104). Therefore, one
or more guides of duplication-reserved broadcasting programs
5 are registered in the duplication-reserved broadcasting
program table.

In this example, because the transmission time period
(9:00 to 9:30 of June 25 in 1997) of the broadcasting program
"weather data" registered in the first renewed reservation
10 table of Fig. 49 overlaps with that (9:00 to 10:00) of the
recording-desired broadcasting program "morning wide show" of
Fig. 60, the guide of the broadcasting program "weather data"
relating to the transmission time period (9:00 to 9:30) is
registered in a duplication-reserved broadcasting program
15 table shown in Fig. 62.

Thereafter, the duplication-reserved broadcasting program
table is transmitted from the detecting unit 604 to the
download-reserved broadcasting program determining unit 603.
In the determining unit 603, one or more guides of download
20 broadcasting programs agreeing with the guides of the
duplication-reserved broadcasting programs are deleted from
the download broadcasting program table, so that a renewed
download broadcasting program table is prepared. In this
example, the guide of the broadcasting program "weather data"
25 relating to the transmission time period (9:00 to 9:30) is

deleted from the download broadcasting program table of Fig. 38, and a renewed download broadcasting program table of Fig. 63 is prepared.

Thereafter, the download-reserved broadcasting program
5 determining process shown in Fig. 39 is performed in the same manner as in the fourth embodiment according to all download broadcasting programs of the renewed download broadcasting program table, all recording-reserved broadcasting programs of the first renewed reservation table managed by the managing
10 unit 602 and all recording-desired broadcasting programs of the recording table, and a renewed reservation table of one or more download-reserved broadcasting programs is prepared in the determining unit 603. Because the download-reserved broadcasting program determining process is performed by
15 considering the recording table, a transmission time period of each download-reserved broadcasting program of the renewed reservation table does not overlaps with that of any recording-desired broadcasting program. In this example, as shown in Fig. 64, a renewed reservation table, in which the
20 guide of the broadcasting program "weather data" relating to the transmission time period (11:00 to 11:30) is registered with the guide of the broadcasting program "morning download" relating to the transmission time period (8:30 to 9:00), is prepared.

25 Thereafter, one guide of one download-reserved broadcasting

program, of which the name agrees with that of one
duplication-reserved broadcasting program of the duplication-
reserved broadcasting program table is extracted as one guide
of one revised download-reserved broadcasting program from the
5 renewed reservation table of the download-reserved
broadcasting programs for each duplication-reserved
broadcasting program, and a revised reservation table of one
or more revised download-reserved broadcasting programs is
prepared. Each revised download-reserved broadcasting program
10 is planned to be downloaded in place of the corresponding
duplication-reserved broadcasting program. In this example, as
shown in Fig. 65, because the guide of the broadcasting
program "weather data" relating to the transmission time
period (11:00 to 11:30) is extracted as one guide of one
15 revised download-reserved broadcasting program, the guide of
the broadcasting program "morning download" having no
relationship with any duplication-reserved broadcasting
program is not registered in the revised reservation table.

Thereafter, the revised reservation table of the revised
20 download-reserved broadcasting programs and the duplication-
reserved broadcasting program table are transmitted from the
determining unit 603 to the software download reservation
managing unit 602 through the detecting unit 604.

In the managing unit 602, a reservation renewing process
25 for renewing the first renewed reservation table is performed

according to the revised reservation table and the duplication-reserved broadcasting program table. The reservation renewing process is described with reference to Fig. 66.

5 In a step S6601, it is checked whether or not of each download-reserved broadcasting program registered in the first renewed reservation table agrees with one duplication-reserved broadcasting program of the duplication-reserved broadcasting program table. In cases where one download-reserved
10 broadcasting program agrees with the duplication-reserved broadcasting program, the guide of the download-reserved broadcasting program is deleted from the first renewed reservation table (step S6602). The steps S6601 and S6602 are performed for all duplication-reserved broadcasting programs
15 of the duplication-reserved broadcasting program table (step S6603), and a second renewed reservation table is prepared. In this example, the guide of the broadcasting program "weather data" relating to the transmission time period (9:00 to 9:30) is deleted from the first reservation table of Fig. 49, and a
20 second renewed reservation table shown in Fig. 67 is prepared.

 Thereafter, in a step S6604, guides of all revised download-reserved broadcasting programs of the revised reservation table and guides of all recording-desired broadcasting programs of the recording table are added to the
25 second renewed reservation table, so that a finally renewed

reservation table of recording-reserved broadcasting programs and download-reserved broadcasting programs is prepared. In this example, the guide of the revised download-reserved broadcasting program "weather data" relating to the
5 transmission time period (11:00 to 11:30) and the guide of the recording-desired broadcasting program "morning wide show" are added to the second renewed reservation table of Fig. 67, and a finally renewed reservation table shown in Fig. 68 is prepared.

10 Thereafter, the computer software products of the download-reserved broadcasting programs of the finally renewed reservation table are downloaded from the receiving unit 108 to the download performing unit 404, and the computer software products are stored in the software storing unit 114 in the
15 same manner as in the first and fourth embodiments.

Accordingly, even though the user reserves the recording of a recording-desired broadcasting program of which a transmission time period overlaps with a particular transmission time period of one download-reserved broadcasting
20 program registered in a reservation table, because the download-reserved broadcasting program relating to the particular transmission time period is removed from the reservation table and the download-reserved broadcasting program relating to a specific transmission time period is
25 registered in the reservation table on condition that the

specific transmission time period of the download-reserved
broadcasting program does not overlap with that of the
recording-desired broadcasting program, the recording of the
recording-desired broadcasting program and the downloading of
5 the download-reserved broadcasting program can be performed.
(Seventh Embodiment)

In this embodiment, a computer software product is
processed according to various software communication
protocols to produce various protocol-processed computer
10 software products, and the protocol-processed computer
software products are simultaneously transmitted from a center
station to a plurality of terminals with one broadcasting
program.

Fig. 69 is a block diagram of a software download system
15 according to a seventh embodiment of the present invention.

As shown in Fig. 69, a software download system 700
comprises:

a center station 701 for outputting audio/video data of
each broadcasting program during its transmission time period,
20 processing a computer software product representing a software
product according to various software communication protocols
to produce computer software products of various protocol-
processed types for each computer software product,
simultaneously outputting each protocol-processed type
25 computer software product with the same broadcasting program

at the same transmission channel as that of one broadcasting program, and outputting a broadcasting program guide table of the broadcasting programs with the computer software products;

a plurality of terminals 702 for respectively receiving the
5 audio/video data of one broadcasting program and one protocol-processed computer software product transmitted with the broadcasting program from the center station 701 for each broadcasting program, respectively receiving the broadcasting program guide table from the center station 701, outputting
10 the audio/video data and downloading updated computer software products selected from the computer software products, the terminals 702 being classified into a plurality of groups respectively corresponding to one software communication protocol, and each group of terminals 702 being identified by
15 a terminal type; and

a plurality of transmission stations 107, arranged in a communication satellite or a broadcasting satellite, for respectively transmitting the audio/video data of each broadcasting program, one protocol-processed type computer
20 software product and the broadcasting program guide table from the center station 701 to one group of terminals 702.

The center station 701 comprises:

the computer software server 102; the set-up information storing unit 121; the software managing unit 101; the video
25 data server 105; the audio data server 106; the broadcasting

program guide table preparing unit 103;

a first protocol processing unit 703 for processing each computer software product stored in the computer software server 102 according to a software communication protocol A to
5 produce a first type protocol-processed computer software product communicable with a terminal according to the software communication protocol A;

a second protocol processing unit 704 for processing each computer software product stored in the computer software
10 server 102 according to a software communication protocol B to produce a second type protocol-processed computer software product communicable with a terminal according to the software communication protocol B;

a first transmitting unit 705 for transmitting the
15 broadcasting program guide table prepared in the guide table preparing unit 103, the files of the first type protocol-processed computer software product produced in the first protocol processing unit 703 and the audio/video data of the broadcasting programs output from the video data server 105
20 and the audio data server 106 to a first group of terminals 702 through the transmission station 107; and

a second transmitting unit 706 for transmitting the broadcasting program guide table prepared in the guide table preparing unit 103, the files of the second type protocol-
25 processed computer software product produced in the second

protocol processing unit 704 and the audio/video data of the broadcasting programs output from the video data server 105 and the audio data server 106 to a second group of terminals 702 through the transmission station 107.

5 In the above configuration, an operation of the software download system 700 is described.

Files of each computer software product stored in the computer software server 102 are processed in the first protocol processing unit 703 to files of a first type
10 protocol-
processed computer software product communicable according to the software communication protocol A. Also, files of each computer software product stored in the computer software server 102 are processed in the second protocol processing
15 unit 704 to files of a second type protocol-processed computer software product communicable according to the software communication protocol B.

Fig. 70 shows the processing performed for files of each computer software product in the first protocol processing
20 unit 703.

As shown in Fig. 70, a computer software product composed of a file F1 and a file F2 is divided into three pieces of file data arranged in three data blocks. The data blocks have the same data length determined according to the software
25 communication protocol A. Also, a message header is inserted

into each data block, so that a data block message composed of one message header and one file data is arranged in each data block. Also, a command message with a command header and computer software product information (size of each data block message, the number of files and the like) is prepared. Therefore, each first type protocol-processed computer software product is composed of one command message and one or more data block messages. In the same manner, each second type protocol-processed computer software product is composed of one command message and one or more data block messages arranged in one or more data blocks which have the same data length determined according to the software communication protocol B.

Thereafter, the first type protocol-processed computer software product is transmitted to the first transmitting unit 705, and the second type protocol-processed computer software product is transmitted to the first transmitting unit 706. Also, a broadcasting program guide table prepared in the guide table preparing unit 103 and the audio/video data stored in the video data server 105 and the audio data server 106 are transmitted to the transmitting units 705 and 706 in the same manner in the first embodiment.

Thereafter, the first type protocol-processed computer software product, the audio/video data and the broadcasting program guide table are transmitted to the terminal 702

corresponding to the software communication protocol A through the transmission station 107, and the second type protocol-processed computer software product, the audio/video data and the broadcasting program guide table are transmitted to the terminal 702 corresponding to the software communication protocol B through the transmission station 107.

In each terminal 702, the data block message information is extracted from the command message, and the file data is extracted from each data block according to the data block message information.

In this embodiment, two software communication protocol types are considered. However, the number of software communication protocol types is not limited to two. For example, in cases where a group of terminals corresponding to a software communication protocol C are used, a protocol processing unit, a transmitting unit and a transmission station corresponding to the software communication protocol C are arranged in the software download system 700.

Accordingly, even though the terminals 702 are classified into a plurality of groups respectively corresponding to one software communication protocol, because a plurality of protocol-processed computer software products corresponding to a plurality of software communication protocol types are prepared from each computer software product and are simultaneously transmitted to the terminals, one type

protocol-processed computer software product can be reliably received in each terminal.

(Eighth Embodiment)

In this embodiment, a protocol-processed computer software product obtained by processing a computer software product according to one software communication protocol is downloaded from a center station to a terminal, the software communication protocol corresponding to the protocol-processed computer software product is detected, a protocol processing is performed for the protocol-processed computer software product according to the detected software communication protocol to obtain the computer software product, and the computer software product is stored.

Fig. 71 is a block diagram of a software download system according to an eighth embodiment of the present invention.

As shown in Fig. 71, a software download system 800 comprises:

a center station 801 for outputting audio/video data of each broadcasting program during its transmission time period, outputting each protocol-processed computer software product, which is obtained by processing one computer software product representing one software product according to one software communication protocol, with one broadcasting program, and outputting a broadcasting program guide table of the broadcasting programs with the computer software products;

a plurality of terminals 802 for respectively receiving the audio/video data of one broadcasting program and one protocol-processed computer software product transmitted with the broadcasting program from the center station 801 for each
5 broadcasting program, respectively receiving the broadcasting program guide table from the center station 801, detecting a software communication protocol corresponding to one protocol-processed computer software product for each protocol-processed computer software product, performing a protocol
10 processing for each protocol-processed computer software product according to the detected software communication protocol to obtain one computer software product, outputting the audio/video data and downloading updated computer software products selected from the computer software products, the
15 terminals 802 being classified into a plurality of groups, and each group of terminals 802 being identified by a terminal type; and

the transmission station 107.

The center station 801 comprises:

20 the computer software server 102;

a set-up information storing unit 803 for storing a table of pieces of set-up information in which a name of one computer software product, a version number identifying a version of the computer software product, a terminal type fit
25 for the computer software product, names of one or more files

composing the computer software product, version numbers identifying versions of the files and a name of a software communication protocol;

the software managing unit 101; the video data server 105;
5 the audio data server 106;

a broadcasting program guide table preparing unit 804 for managing a broadcasting program schedule listed in a schedule table in which a date, a transmission channel, a transmission start time of one broadcasting program, a transmission finish
10 time of the broadcasting program, a name of the broadcasting program, elements of the broadcasting program and a name of a computer software product transmitted with the broadcasting program are listed for each broadcasting program, preparing a broadcasting program guide table (refer to Fig. 72) from the
15 pieces of set-up information of the computer software products managed in the software managing unit 803 and the broadcasting program schedule, and controlling the computer software server 102, the video data server 105 and the audio data server 106 to output the video data of the broadcasting programs listed
20 in the broadcasting program guide table, the audio data of the broadcasting programs listed in the broadcasting program schedule and the files of the computer software products listed in the broadcasting program guide table;

a protocol processing unit 805 for processing each computer
25 software product output from the computer software server 102

according to one software communication protocol, of which the name is listed in the broadcasting program guide table, to produce a protocol-processed computer software product communicable with a terminal according to the software
5 communication protocol; and

the transmitting unit 104 for transmitting the broadcasting program guide table prepared in the guide table preparing unit 103, the files of the protocol-processed computer software products output from the protocol processing unit 805 and the
10 audio/video data of the broadcasting programs output from the video data server 105 and the audio data server 106 to the transmission station 107.

Each terminal 802 comprises:

the receiving unit 108; the video data outputting unit 117;
15 the audio data outputting unit 118; the broadcasting program guide displaying unit 119; the terminal information managing unit 110;

the broadcasting software program extracting unit 109 for extracting guides of one or more broadcasting software
20 programs with computer software products from the broadcasting program guide table received in the receiving unit 108, and preparing a broadcasting software program guide table (refer to Fig. 73) in which a date, a transmission channel, a transmission start time of one broadcasting software program,
25 a transmission finish time of the broadcasting software

program, a name of the broadcasting software program, a name of a computer software product corresponding to the broadcasting software program, names of one or more files composing the computer software product, version numbers of the files, a version number of the computer software product, a terminal type fit for the computer software product and a name of a software communication protocol are listed for each broadcasting software program;

the version managing unit 112; the download judging unit 111;
10 a protocol processing program storing unit 806 for storing a first protocol processing program for processing one protocol-processed computer software product communicable according to the software communication protocol A to extract files of one computer software product from the protocol-processed computer software product and storing a second
15 protocol processing program for processing one protocol-processed computer software product communicable according to the software communication protocol B to extract files of one computer software product from the protocol-processed computer
20 software product;

a protocol correspondence table holding unit 807 for holding a protocol correspondence table (refer to Fig. 74) in which the correspondence of one software communication protocol and one protocol processing program is listed for each protocol
25 processing program stored in the protocol processing program

storing unit 806;

a software communication protocol judging unit 808 for receiving the download broadcasting program table (refer to Fig. 75) prepared in the download judging unit 111, referring
5 the protocol correspondence table held in the protocol correspondence table holding unit 807, checking whether or not one software communication protocol corresponding to each computer software product listed in the download table is listed in the protocol correspondence table, extracting the
10 guide of the download broadcasting program with the computer software product from the download table in cases where the software communication protocol corresponding to the computer software product is listed in the protocol correspondence table, and registering the guide of the download broadcasting
15 program extracted from the download table in a new download broadcasting program table (refer to Fig. 76);

a software download reservation managing unit 809 for managing the new download broadcasting program table transmitted from the software communication protocol judging
20 unit 808 to reserve the downloading of one computer software product transmitted with one download broadcasting program during the transmission time period of the download broadcasting program for each download broadcasting program, outputting a name of a software communication protocol
25 corresponding to one computer software product of one download

broadcasting program written in the new download broadcasting program table during the transmission time period of the download broadcasting program for each download broadcasting program, and outputting information (a transmission channel, a name of one download broadcasting program, a name of the download computer software product corresponding to the download broadcasting program, names of one or more download files composing the download computer software product, version numbers of the download files, a version number of the download computer software product, a terminal type corresponding to the computer software product and a name of a software communication protocol corresponding to the computer software product) of the download broadcasting program;

a protocol processing performing unit 810 for receiving the name of the software communication protocol corresponding to the computer software product of the download broadcasting program from the software download reservation managing unit 809 for each download broadcasting program of the new download broadcasting program table, referring the protocol correspondence table held in the protocol correspondence table holding unit 807, specifying a particular protocol processing program corresponding to the software communication protocol in the protocol correspondence table as a processing program for changing the protocol-processed computer software product transmitted with the download broadcasting program to the

computer software product of the download broadcasting
program, outputting a protocol processing completion notice to
the software download reservation managing unit 809, receiving
the protocol-processed computer software product of the
5 download broadcasting program from the receiving unit 108,
extracting the particular protocol processing program from the
protocol processing program storing unit 806, performing a
protocol processing for the protocol-processed computer
software product according to the particular protocol
10 processing program to obtain files of the computer software
product, and outputting the computer software product of the
download broadcasting program;
a download performing unit 811 for receiving the
information of the download broadcasting program from the
15 software download reservation managing unit 809 during the
transmission time period of the download broadcasting program,
outputting a protocol-processed computer software product
receiving instruction to the receiving unit 108 to transmit
the protocol-processed computer software product of the
20 download broadcasting program from the receiving unit 108 to
the protocol processing performing unit 810 and to receive the
computer software product from the protocol processing
performing unit 810, and transmitting a name of the computer
software product corresponding to each download broadcasting
25 program, a version number of the computer software product,

names of the files composing the computer software product and version numbers of the files to the version managing unit 112 to prepare a new version management table; and the computer software storing unit 114.

5 In the above configuration, an operation of the software download system 800 is described.

 In a set-up information table stored in the set-up information storing unit 803, a name of a software communication protocol is added to each piece of set-up
10 information as compared with that in the first embodiment. Therefore, in a broadcasting program guide table prepared in the guide table preparing unit 804, a name of a software communication protocol corresponding to one computer software product is added to one guide of one broadcasting program with
15 the computer software product for each computer software product. In the example shown in Fig. 72, the software communication protocol A corresponding to the computer software product "CA" is added to the guide of the broadcasting program "morning download", and the software
20 communication protocol C corresponding to the computer software product "OS" is added to the guide of the broadcasting program "download A".

 Thereafter, the broadcasting program guide table is transmitted to each terminal 802 through the transmitting unit
25 104 and the transmission station 107. Also, when one computer

software product of each broadcasting program is transmitted from the computer software server 102 to each terminal 802 with the audio/video data of the broadcasting program during its transmission time period, the computer software product is processed in the protocol processing unit 805 according to one software communication protocol, of which the name is listed in the broadcasting program guide table, and a protocol-processed computer software product communicable according to the software communication protocol is produced. Therefore, the protocol-processed computer software product is transmitted to each terminal 802 in place of the computer software product. In this example, the protocol-processed computer software product "CA" produced from the computer software product "CA" of the broadcasting program "morning download" is communicable according to the software communication protocol A, and the protocol-processed computer software product "OS" produced from the computer software product "OS" of the broadcasting program "download A" is communicable according to the software communication protocol C.

In the terminal 802, a broadcasting software program guide table, in which a name of a software communication protocol corresponding to one computer software product is added to one guide of one broadcasting software program with the computer

software product for each computer software product, is prepared in the broadcasting software program extracting unit 109 in the same manner as in the first embodiment. In this example, a broadcasting software program guide table shown in 5 Fig. 73 is prepared. Thereafter, a download broadcasting program table, in which a name of a software communication protocol corresponding to one computer software product is added to one guide of one download broadcasting program with the computer software product for each computer software 10 product, is prepared in the download judging unit 111. In this example, a download broadcasting program table shown in Fig. 75 is prepared.

Thereafter, a process for extracting a guide of a download broadcasting program on condition that a protocol-processed 15 computer software product transmitted with the download broadcasting program is communicable with the terminal 802 is performed in the software communication protocol judging unit 808. Fig. 77 is a flow chart showing the process performed in the software communication protocol judging unit 808.

20 As shown in Fig. 77, a protocol correspondence table held in the protocol correspondence table holding unit 807 is referred (step S7701). In the example shown in Fig. 74, the software communication protocols A and B are listed. Thereafter, it is checked whether or not one software 25 communication protocol corresponding to one computer software

product of one download broadcasting program listed in the download broadcasting program table is listed in the protocol correspondence table (step S7702). In cases where the software communication protocol corresponding to the computer software product is listed in the protocol correspondence table, because a protocol-processed computer software product transmitted with the download broadcasting program is communicable with the terminal 802, the guide of the download broadcasting program with the computer software product is extracted from the download broadcasting program table, and the guide of the download broadcasting program is registered in a new download broadcasting program table (step S7703). The steps S7701 to S7703 are performed for all download broadcasting programs listed in the download broadcasting program table (step S7704). In this example, because the software communication protocol A corresponding to the computer software product "CA" of the broadcasting program "morning download" listed in the download broadcasting program table of Fig. 75 is listed in the protocol correspondence table of Fig. 74, the protocol-processed computer software product transmitted with the download broadcasting program "morning download" is communicable with the terminal 802 by processing the protocol-processed computer software product with the protocol processing program A. Therefore, the guide of the broadcasting program "morning download" is registered

in a new download broadcasting program table of Fig. 76. In contrast, because the software communication protocol C corresponding to the computer software product "OS" of the broadcasting program "download A" listed in the download
5 broadcasting program table of Fig. 75 is not listed in the protocol correspondence table of Fig. 74, any protocol processing program for processing the protocol-processed computer software product transmitted with the download broadcasting program "download A" is not arranged in the
10 terminal 802. Therefore, the guide of the broadcasting program "download A" is not registered in the new download broadcasting program table of Fig. 76.

Thereafter, the new download broadcasting program table is transmitted to the software download reservation managing unit
15 809. In the managing unit 809, the name of the software communication protocol corresponding to the computer software product of each download broadcasting program listed in the table is output to the protocol processing performing unit 810 during the transmission time period of the download
20 broadcasting program. In the performing unit 810, each time the name of the software communication protocol corresponding to the computer software product of the download broadcasting program is received, a particular protocol processing program corresponding to the name of the software communication
25 protocol is specified among from the processing programs of

the protocol correspondence table held in the protocol correspondence table holding unit 807. In this example, the name of the software communication protocol A corresponding to the computer software product "CA" of the download

5 broadcasting program "morning download" is output to the protocol processing performing unit 810 at the transmission start time 7:30, and the protocol processing program A corresponding to the software communication protocol A in the protocol correspondence table is specified.

10 Thereafter, a protocol processing completion notice is transmitted from the performing unit 810 to the software download reservation managing unit 809. In the managing unit 809, information of the download broadcasting program written in the new download broadcasting program table is transmitted
15 to the download performing unit 811. In this example, information of the download broadcasting program "morning download" shown in Fig. 78 is transmitted to the download performing unit 811.

When the information of the download broadcasting program
20 is received in the download performing unit 811, a protocol-processed computer software product receiving instruction is transmitted from the download performing unit 811 to the receiving unit 108, so that the protocol-processed computer software product transmitted with the download broadcasting
25 program is transmitted from the receiving unit 108 to the

protocol processing performing unit 810.

In the performing unit 810, the particular protocol processing program is extracted from the protocol processing program storing unit 806, and a protocol processing is
5 performed for the protocol-processed computer software product according to the particular protocol processing program. Therefore, the files of the computer software product are obtained from the protocol-processed computer software product for each download broadcasting program. In this example, the
10 protocol-processed computer software product transmitted with the download broadcasting program "morning download" is transmitted from the receiving unit 108 to the protocol processing performing unit 810, the protocol processing program A is extracted from the protocol processing program
15 storing unit 806, and the files of the computer software product "CA" are obtained from the protocol-processed computer software product according to the protocol processing program A.

Thereafter, the files of the computer software product are
20 transmitted to the download performing unit 113. Therefore, the computer software product can be downloaded from the center station 801 to the terminal 802. Thereafter, the files of the computer software product are stored in the computer software storing unit 114.

25 Accordingly, even though a protocol-processed computer

software product communicable according to a software communication protocol is transmitted with one broadcasting program from the center station 801 to the terminal 802, in cases where a protocol processing program for extracting files of a computer software product from the protocol-processed computer software product is arranged in the terminal 802, the protocol-processed computer software product is changed to the computer software product by using the protocol processing program, and the computer software product is stored.

10 Therefore, the computer software product of the broadcasting program can be downloaded from the center station 801 to the terminal 802.

Also, in cases where a protocol processing program for extracting files of a computer software product from the protocol-processed computer software product is not arranged in the terminal 802, the computer software product of the broadcasting program cannot be downloaded to the terminal 802. Therefore, even though a protocol-processed computer software product communicable according to a software communication protocol is transmitted with a broadcasting program from the center station 801 to a plurality of unspecified terminals 802, the computer software product of the broadcasting program can be downloaded from the center station 801 to a particular group of terminals 802 in which a protocol processing program for extracting files of the computer software product from the

15
20
25

protocol-processed computer software product is arranged.

Accordingly, the center station 801 is not required to specify a group of terminals, so that the center station 801 can be simplified.

5 Next, the downloading of a third protocol processing program treated as one computer software product from the center station 801 to the terminal 802 is described. One or more files of a computer software product is extracted from one protocol-processed computer software product communicable
10 according to the software communication protocol C by using the third protocol processing program.

The third protocol processing program is stored in the computer software server 102. In the broadcasting program guide table preparing unit 804, a broadcasting program guide
15 table shown in Fig. 79 is prepared. In this table, a name of the third protocol processing program is registered as a name of one computer software product in a guide of the broadcasting program "the download", a name "B" of a software communication protocol B corresponding to the third protocol
20 processing program is registered in the guide, and a name "C" of the software communication protocol C relating to the function of the third protocol processing program is registered in the guide.

In the protocol processing unit 805, the third protocol
25 processing program stored in the computer software server 102

is processed under the control of the guide table preparing unit 804 to produce a particular protocol-processed computer software product communicable with a terminal according to the software communication protocol B. Thereafter, the particular
5 protocol-processed computer software product is transmitted to the terminal 802 with the broadcasting program "the download".

In the terminal 802, information of the broadcasting program "the download" shown in Fig. 80 is transmitted from the managing unit 809 to the download performing unit 811 at
10 the transmission start time 9:00.

In the download performing unit 811, because a name "C" of the software communication protocol C relating to the function of the third protocol processing program is registered in the guide of the broadcasting program "the download", it is
15 recognized that one protocol processing program is transmitted with one broadcasting program. Therefore, a protocol processing program setting process is performed according to a flow chart shown in Fig. 81.

In a step S8101, the downloading of the third protocol
20 processing program to the download performing unit 811 is performed, and it is checked whether or not a name of the software communication protocol relating to the function of the third protocol processing program is registered in the guide of the broadcasting program "the download" (step S8102).
25 Because the name "C" of the software communication protocol C

relating to the function of the third protocol processing program is registered in the guide, the third protocol processing program is stored in the protocol processing program storing unit 806 (step S8103), a protocol registering instruction is delivered to the protocol processing performing unit 810 with the name of the third protocol processing program and the name "C" of the software communication protocol C (step S8104), the correspondence of the third protocol processing program and the software communication protocol C is registered in the protocol correspondence table of the protocol correspondence table holding unit 807 under the control of the protocol processing performing unit 810 (step S8105), and the version number of the third protocol processing program and the name of the third protocol processing program are delivered to the version managing unit 112 (step S8106). Therefore, the protocol correspondence table shown in Fig. 82 is stored in the protocol correspondence table holding unit 807.

Accordingly, in cases where a user desires to receive a particular computer software product processed to a particular protocol-processed computer software product communicable with a terminal according to a particular software communication protocol, because a particular protocol processing program used for changing the particular protocol-processed computer software product to the particular computer software product

can be downloaded from the center station 801 to the user's terminal 802, the user can receive the particular computer software product from the center station 801.

(Ninth Embodiment)

5 In this embodiment, a plurality of broadcasting programs of a plurality of transmission channels included in the same transport stream can be simultaneously received in each terminal. In a center station, the broadcasting of a particular broadcasting program with a particular computer
10 software product is set to the same transmission time period as that of a specific broadcasting program expected to be watched by users at high probability, and the transmission channel of the particular broadcasting program and the transmission channel of the specific broadcasting program not
15 accompanied by any computer software product differ from each other and are included in the same transport stream. Therefore, even though a user does not watch the particular broadcasting program with the particular computer software product, the particular computer software product transmitted
20 with the particular broadcasting program is downloaded to user's terminal while the user watches the specific broadcasting program.

Fig. 83 is a block diagram of a software download system according to a ninth embodiment of the present invention.

25 As shown in Fig. 83, a software download system 900

comprises:

a center station 901 for scheduling a particular
broadcasting program with a computer software product (which
represents a software product) to transmit the particular
5 broadcasting program during the same transmission time period
as that of a broadcasting program expected to be watched by
users at high audience rating on condition that the
transmission channel of the particular broadcasting program
and the transmission channel of the broadcasting program
10 differ from each other and are included in the same transport
stream, outputting audio/video data of a plurality of
broadcasting programs of one or more transmission channels
included in one transport stream during those transmission
time periods, one or more computer software products
15 respectively transmitted at the same transmission channel as
that of one broadcasting program for each transport stream,
and outputting a broadcasting program guide table of the
broadcasting programs with the computer software products;
a plurality of terminals 902 for respectively receiving the
20 audio/video data of the broadcasting programs transmitted at
one or more transmission channels of the same transport stream
from the center station 901, respectively receiving one
computer software product transmitted with one of the
broadcasting programs from the center station 901 and
25 respectively receiving the broadcasting program guide table

from the center station 901, outputting the audio/video data,
and downloading the computer software product, the terminals
902 being classified into a plurality of groups, and each
group of terminals 902 being identified by a terminal type;

5 and

a transmission station 903, arranged in a broadcasting
satellite or a communication satellite, for transmitting the
audio/video data of the broadcasting programs and the computer
software products of the transmission channels of the

10 transport streams output from the center station 901 to the
terminals 902, transmitting the broadcasting program guide
table output from the center station 901 to the terminals 902.

The center station 901 comprises:

an audience rating managing unit 904 for managing a
15 broadcasting program audience rating table (refer to Fig. 84)
in which an audience rating of each broadcasting program is
listed;

the computer software server 102; the set-up information
storing unit 121; the software managing unit 101; the video
20 data server 105; the audio data server 106;

a broadcasting program guide table preparing unit 905 for
managing a broadcasting program schedule listed in a schedule
table in which a date, a transmission channel, a transmission
start time of one broadcasting program, a transmission finish
25 time of the broadcasting program, a name of the broadcasting

program, elements of the broadcasting program and a name of a computer software product transmitted with the broadcasting program are listed for each broadcasting program, initially preparing a broadcasting program guide table (refer to Fig. 85) from the pieces of set-up information of the computer software products managed in the software managing unit 101 and the broadcasting program schedule, searching the broadcasting program audience rating table stored in the audience rating managing unit 904 for a specific broadcasting program which is expected to be watched by users at high audience rating and is listed in the broadcasting program guide table, preparing a particular guide of a particular broadcasting program with a particular computer software product, in which the transmission time period is the same as that of the specific broadcasting program not accompanied by any computer software product, on condition that the transmission channel of the particular broadcasting program and the transmission channel of the specific broadcasting program differ from each other and are included in the same transport stream, adding the particular guide of the particular broadcasting program to the broadcasting program guide table to prepare a revised broadcasting program guide table (refer to Fig. 86), and controlling the computer software server 102, the video data server 105 and the audio data server 106 to output the audio/video data of one or more

broadcasting programs and the files of one or more computer software products of one transport stream listed in the revised broadcasting program guide table during those transmission time periods for each transport stream; and

5 a transmitting unit 906 for transmitting the revised broadcasting program guide table prepared in the guide table preparing unit 905 to each terminal 902 through the transmission station 903, transmitting the audio/video data of one or more broadcasting programs of one or more transmission

10 channels of one transport stream output from the video data server 105 and the audio data server 106 to each terminal 902 through the transmission station 903 for each transport stream and transmitting the files of one or more computer software products of one transport stream output from the computer

15 software server 102 to each terminal 902 through the transmission station 903 for each transport stream.

Each terminal 902 comprises:

 a channel setting unit 907 for setting a transmission channel received in the terminal 902 to a desired transmission

20 channel according to user's intention;

 a receiving unit 908 for receiving the revised broadcasting program guide table from the transmitting unit 906, specifying a specific transport stream with the desired transmission channel set by the channel setting unit 907, receiving the

25 audio/video data of one or more broadcasting programs and the

files of one or more computer software products of one or more transmission channels included in the specific transport stream from the center station 901;

the video data outputting unit 117; the audio data outputting unit 118; the broadcasting program guide displaying unit 119; the terminal information managing unit 110; the version managing unit 112; the broadcasting software program extracting unit 109; the download judging unit 111;

a software download reservation managing unit 909 for managing a download broadcasting program table (refer to Fig. 87) transmitted from the download judging unit 111 to reserve the downloading of one computer software product transmitted with one broadcasting program during the transmission time period of the broadcasting program for each broadcasting program of the table, outputting a transport stream identifier listed in the guide of each download broadcasting program of the download table during its transmission time period, receiving a download-performable notice or a download-impossible notice in reply to the transport stream identifier, and outputting information (a transmission channel, a name of one download broadcasting program, a name of the download computer software product corresponding to the download broadcasting program, names of one or more download files composing the download computer software product, version numbers of the download files, a version number of the download computer

software product, a name of a terminal type corresponding to the download broadcasting program and one or more packet identifiers) of the download broadcasting program written in the download broadcasting program table during the

5 transmission time period of the download broadcasting program in cases where the download-performable notice is received;

a transmission channel checking unit 910 for receiving the transport stream identifier listed in the guide of one download broadcasting program from the software download

10 reservation managing unit 909 for each download broadcasting program, receiving a specific transport stream identifier of the specific transport stream from the receiving unit 908, checking whether or not the transport stream identifier listed in the guide of the download broadcasting program agrees with

15 the specific transport stream identifier, outputting one download-performable notice to the software download reservation managing unit 909 in cases where the transport stream identifier listed in the guide of the download broadcasting program agrees with the specific transport stream

20 identifier, and outputting one download-impossible notice to the software download reservation managing unit 909 in cases where the transport stream identifier listed in the guide of the download broadcasting program differs from the specific transport stream identifier;

25 the download performing unit 113; and the computer software

storing unit 114.

In the above configuration, an operation of the software download system 900 is described.

In the software download system 900, pieces of data
5 included in a plurality of transport streams are transmitted from the center station 901 to each terminal 902, and audio-video data of one or more broadcasting programs and one or more computer software products included in one transport stream are received in each terminal 902.

10 Fig. 88 shows data included in two transport streams. As shown in Fig. 88, each transport stream is identified by a transport stream identifier, and data of one or more transmission channels are transmitted as one transport stream. In each transmission channel, audio data, video data and
15 computer software product data are respectively arranged in a packet with a packet identifier. The packets have the same data length. Therefore, the audio data of each broadcasting program is arranged in one or more packets, the video data of each broadcasting program is arranged in one or more packets,
20 and files of each computer software product are arranged in one or more packets as computer software product data. In this example, a first transport stream identified by a transport stream identifier IDt1 and a second transport stream identified by a transport stream identifier IDt2 are
25 transmitted from the center station 901 to each terminal 902.

Data of the transmission channels CH1 and CH3 are transmitted as the first transport stream, audio data, video data and computer software product data of the transmission channel CH1 are arranged in six packets identified by packet identifiers P1 to P7, computer software product data are arranged in two packets identified by packet identifiers P11 to P12.

In the broadcasting program guide table preparing unit 905, a broadcasting program guide table is initially prepared from the pieces of set-up information of the computer software products managed in the software managing unit 101 and the broadcasting program schedule. In the broadcasting program guide table, a transport stream identifier and a packet identifier are added to each guide. Thereafter, to transmit a particular computer software product during the same transmission time period as that of a specific broadcasting program expected to be watched by users at high probability and to download the particular computer software product to one terminal 902 when a user of the terminal 902 watches the specific broadcasting program, the broadcasting program audience rating table stored in the audience rating managing unit 904 is searched for a specific broadcasting program expected to be watched by users at high audience rating and is listed in the broadcasting program guide table. In this example, as shown in Fig. 84, because the broadcasting program "ping-pong kids" gets the highest audience rating according to

the past broadcasting results, the broadcasting program "ping-pong kids" is set as a specific broadcasting program.

Thereafter, a particular guide of a particular broadcasting program with a particular computer software product is

5 prepared. In this particular guide, the transmission start time and transmission finish time of the particular broadcasting program are set to those of the specific broadcasting program not accompanied by any computer software product, and a transmission channel of the particular

10 broadcasting program is set to differ from that of the specific broadcasting program on condition that the transmission channel of the particular broadcasting program and the transmission channel of the specific broadcasting program are included in the same transport stream. Thereafter,

15 the particular guide of the particular broadcasting program is added to the broadcasting program guide table to prepare a revised broadcasting program guide table. In this example, as shown in Fig. 86, a particular guide of a particular broadcasting program "the download" with a particular computer

20 software product "system" is prepared, the transmission start time 7:00 and transmission finish time 7:30 of the particular broadcasting program "the download" are the same as those of the specific broadcasting program "ping-pong kids", and the transmission channel CH3 of the particular broadcasting

25 program "the download" and the transmission channel CH1 of the

specific broadcasting program "ping-pong kids" are included in the same transport stream IDt1.

Thereafter, the audio/video data of one or more broadcasting programs and the files of one or more computer software products of one transport stream listed in the revised broadcasting program guide table are transmitted from the servers 102, 105 and 106 during those transmission time periods to each terminal 902 through the transmitting unit 906 under the control of the broadcasting program guide table preparing unit 905 for each transport stream. Also, the revised broadcasting program guide table prepared in the guide table preparing unit 905 is transmitted to each terminal 902 through the transmitting unit 906.

In the terminal 902, when the revised broadcasting program guide table is received in the receiving unit 904 and is displayed by the broadcasting program guide displaying unit 119, the user selects a desired transmission channel of a desired broadcasting program, so that the desired transmission channel is set by the channel setting unit 907. The desired transmission channel is transmitted to the receiving unit 908.

Fig. 89 is a block diagram of the receiving unit 908.

As shown in Fig. 89, the receiving unit 908 comprises: a data reception managing unit 911 for receiving the revised broadcasting program guide table from the center station 901, outputting the revised broadcasting program guide table to the

broadcasting program guide displaying unit 119 and the
broadcasting software program extracting unit 109, receiving
the desired transmission channel from the channel setting unit
907, specifying a specific transport stream with the desired
5 transmission channel according to the revised broadcasting
program guide table, and specifying all packet identifiers of
all packets of all broadcasting programs included in the
specific transport stream according to the revised
broadcasting program guide table;

10 a tuner 912 for selecting the specific transport stream
specified by the data reception managing unit 911 from among a
plurality of transport streams transmitted from the center
station 901;

a packet extracting unit 913 for extracting the packet having
15 each packet identifier specified by the data reception
managing unit 911 during its transmission time period from the
specific transport stream and transmitting the revised
broadcasting program guide table to the data reception
managing unit 911;

20 a video data decoder 914 for detecting video data from the
packets extracted by the packet extracting unit 913 and
outputting the video data to the video data outputting unit
117;

an audio data decoder 915 for detecting audio data from the
25 packets extracted by the packet extracting unit 913 and

outputting the audio data to the audio data outputting unit 118; and

a computer software decoder 916 for detecting computer software product data from the packets extracted by the packet
5 extracting unit 913 and outputting the computer software product data to the download performing unit 113.

In the above configuration of the receiving unit 908, a specific transport stream with the desired transmission channel and all packet identifiers of all packets of the
10 specific transport stream are specified in the managing unit 911. Therefore, the specific transport stream is selected from among a plurality of transport streams transmitted from the center station 901 in the tuner 913, and the packets are extracted from the specific transport stream in the packet
15 extracting unit 913. Thereafter, the video data of one or more broadcasting programs included in the specific transport stream are detected from the packets in the video data decoder 914, the audio data of the broadcasting programs included in the specific transport stream are detected from the packets in
20 the audio data decoder 915, and the files of one or more computer software products included in the specific transport stream are detected from the packets in the computer software decoder 916. In this example, because the user desires to watch the broadcasting program "ping-pong kids", the user
25 selects the transmission channel CH1, so that the transport

stream IDt1 is selected. Therefore, as shown in Fig. 86, not only the broadcasting programs "morning news", "ping-pong kids" and "morning download" of the transmission channel CH1 but also the broadcasting program "the download" of the
5 transmission channel CH3 are transmitted from the center station 901 to the terminal 902 during those transmission time periods. In particular, the audio/video data of the broadcasting program "ping-pong kids" and the computer software product "system" transmitted with the broadcasting
10 program "the download" are received in the receiving unit 908 at the transmission start time 7:00.

Thereafter, a download broadcasting program table prepared in the download judging unit 111 is transmitted to the software download reservation managing unit 909 in the same
15 manner as in the first embodiment. In this example, a download broadcasting program table shown in Fig. 87 is received in the managing unit 909.

In the managing unit 909, a transport stream identifier listed in the guide of one download broadcasting program of
20 the download table is output to the transmission channel checking unit 910. Therefore, a transmission channel checking process shown in Fig. 90 is performed in the transmission channel checking unit 910.

As shown in Fig. 90, it is checked whether or not the
25 transport stream identifier listed in the guide of the

download broadcasting program agrees with a specific transport stream identifier of the specific transport stream received from the receiving unit 908 (step S9001). In cases where the transport stream identifier listed in the guide of the

5 download broadcasting program agrees with the specific transport stream identifier, because the computer software product registered in the guide of the download broadcasting program is transmitted to the receiving unit 908 during its transmission time period, the downloading of the computer

10 software product to the terminal 902 can be performed. Therefore, a download-performable notice is output to the software download reservation managing unit 909 (step S9002). In contrast, in cases where the transport stream identifier listed in the guide of the download broadcasting program

15 differs from the specific transport stream identifier, because a transport stream with the download broadcasting program is not selected in the receiving unit 908, the computer software product transmitted with the download broadcasting program is not received in the receiving unit 908. Therefore, a download-

20 impossible notice is output to the software download reservation managing unit 909 (step S9003).

Thereafter, in cases where the download-performable notice is received in the managing unit 909, information of the download broadcasting program and a download instruction are

25 transmitted from the managing unit 909 to the download

performing unit 113, and the computer software product transmitted with the download broadcasting program is downloaded from the center station 901 to the download performing unit 113 through the receiving unit 908 and is
5 stored in the computer software storing unit 114 in the same manner as in the first embodiment. In this example, information of the download broadcasting program shown in Fig. 91 is transmitted to the download performing unit 113, and the computer software product "system" transmitted with the
10 broadcasting program "the download" is downloaded to the terminal 902.

In contrast, in cases where the download-impossible notice is received in the managing unit 909, any information or instruction is not transmitted to the download performing unit
15 113, so that any downloading operation is not performed in the download performing unit 113.

Accordingly, because the broadcasting of a particular broadcasting program with a particular computer software product is set to the same transmission time period as that of
20 a specific broadcasting program not accompanied by any computer software product in the center station 901 on condition that the transmission channel of the particular broadcasting program and the transmission channel of the specific broadcasting program differ from each other and are
25 included in the same transport stream to simultaneously

receive the particular broadcasting program and the specific
broadcasting program in the terminal 902, even though a user
does not watch the particular broadcasting program but watch
the specific broadcasting program, the particular computer
5 software product transmitted with the particular broadcasting
program can be downloaded to the terminal 902.

Also, because a broadcasting program expected to be watched
by users at high audience rating is set as the specific
broadcasting program, the specific broadcasting program is
10 expected to be watched by users at high probability, so that
the particular computer software product transmitted with the
particular broadcasting program can be downloaded to the
terminal 902 at high probability.

(Tenth Embodiment)

15 In this embodiment, when a particular computer software
product is updated in a center station, not only a guide of a
first particular broadcasting program with an updated
particular computer software product (version No. = Nv1) but
also a guide of the particular broadcasting program with a
20 former-version particular computer software product (version
No. = Nv1 - 1) are listed in a broadcasting program guide
table, and the broadcasting program guide table, files of the
updated computer software product and files of the former-
version computer software product are transmitted from the
25 center station to each terminal even though the former-version

computer has been already downloaded to a terminal of a user.

In cases where the user is not satisfied with a computer operation performed according to the updated computer software product after the updated computer software product is

5 downloaded to user's terminal, the user again download the former-version computer software product from the center station to user's terminal. Therefore, the user can be satisfied with a computer operation performed according to the former-version computer software product.

10 Fig. 92 is a block diagram of a software download system according to a tenth embodiment of the present invention.

As shown in Fig. 92, a software download system 1000 comprises:

a center station 1001 for outputting audio/video data of
15 each broadcasting program during its transmission time period, one or more computer software products (which represent one or more software products) respectively transmitted at the same transmission channel as that of one broadcasting program, and outputting a broadcasting program guide table in which a guide
20 of a first particular broadcasting program with an updated particular computer software product (version No. = $Nv1$) and a guide of a second particular broadcasting program with a former-version particular computer software product (version No. = $Nv1 - 1$) are listed with other guides of broadcasting
25 programs;

a plurality of terminals 1002 for respectively receiving the audio/video data of the broadcasting programs, the broadcasting program guide table and the computer software products from the center station 115, outputting the audio
5 /video data, and downloading the former-version computer software product, the terminals 1002 being classified into a plurality of groups, and each group of terminals 1002 being identified by a terminal type; and the transmission station 107.

10 The center station 1001 comprises:

the computer software server 102; the set-up information storing unit 121; the software managing unit 101; the video data server 105; the audio data server 106;

a broadcasting program guide table preparing unit 1003 for
15 managing a broadcasting program schedule listed in a schedule table, preparing a broadcasting program guide table (refer to Fig. 93), in which a guide of a first particular broadcasting program with an updated particular computer software product (version No. = $Nv1$) and a guide of a second particular
20 broadcasting program with a former-version particular computer software product (version No. = $Nv1 - 1$) are listed with other guides of broadcasting programs, from the pieces of set-up information of the computer software products managed in the software managing unit 101 and the broadcasting program
25 schedule, and controlling the computer software server 102,

the video data server 105 and the audio data server 106 to
output the audio/video data of one broadcasting program listed
in the broadcasting program guide table during its
transmission time period for each broadcasting program and to
5 output the files of the computer software product listed in
the broadcasting program guide table with one broadcasting
program during its transmission time period for each computer
software product; and
the transmitting unit 104.

10 Each terminal 1002 comprises:

the receiving unit 108; the video data outputting unit 117;
the audio data outputting unit 118; the broadcasting program
guide displaying unit 119; the terminal information managing
unit 110; the broadcasting software program extracting unit
15 109, the version managing unit 112;

a computer software selecting unit 1004 for displaying an
image (refer to Fig. 94) of a plurality of computer software
names corresponding to the broadcasting software programs
listed in the guide table prepared in the broadcasting
20 software program extracting unit 109, and receiving a name of
the particular computer software product and a former-version
selecting instruction input by a user;

a computer software renewal log managing unit 1005 for
managing a computer software renewal log table (refer to Fig.
25 95) in which a version renewal log of all computer software

products managed in the version managing unit 112 is listed;

a download judging unit 1006 for receiving the terminal management table from the terminal information managing unit 110, receiving the version management table (refer to Fig. 96) from the version managing unit 112, receiving the particular computer software name, the former-version selecting instruction and the broadcasting software program guide table (refer to Fig. 97) from the computer software selecting unit 1004, receiving the computer software renewal log table from the computer software renewal log managing unit 1005, extracting the guide of the second particular computer software product with the former-version particular computer software product from the broadcasting software program guide table in response to the former-version selecting instruction according to the terminal management table, the version management table and the computer software renewal log table, and preparing a download broadcasting program table (refer to Fig. 98) of the guide of the second particular computer software product with the former-version particular computer software product;

the software download reservation managing unit 120; the download performing unit 113; and the computer software storing unit 114.

In the above configuration, an operation of the software download system 1000 is described.

In the center station 1001, a particular computer software product is updated, so that a former-version particular computer software product is renewed to an updated particular computer software product. In this case, a broadcasting
5 program guide table is prepared in the broadcasting program guide table preparing unit 1003 to include a guide of a first particular broadcasting program with an updated particular computer software product (version No. = Nv1) and a guide of a second particular broadcasting program with a former-version
10 particular computer software product (version No. = Nv1 - 1). In this example, as shown in Fig. 93, the guide of the broadcasting program "morning download" with an updated computer software product "CA" of the version number "7" and the guide of the broadcasting program "daytime download" with
15 an former-version computer software product "CA" of the version number "6" are listed in a broadcasting program guide table.

Thereafter, the broadcasting program guide table is transmitted from the center station 1001 to each terminal
20 1002. Also, audio/video data of the first particular broadcasting program is transmitted with updated files of the updated particular computer software product to each terminal 1002 during its transmission time period. In this example, the broadcasting program "morning download" is transmitted with
25 the updated computer software product "CA" at the transmission

start time 7:30.

In the terminal 1004, because the particular computer software product "CA" is updated in the center station 1001, the updated computer software product "CA" is stored in the computer software storing unit 114 during its transmission time period, and the version number of the updated particular computer software product and version numbers of the updated files of the updated particular computer software product are recorded in a version management table managed by the version managing unit 112 in the same manner as in the fifth embodiment. Also, a version renewal log of the updated particular computer software product is listed in a computer software renewal log table managed in the computer software renewal log managing unit 1005. In this example, as shown in Fig. 96, the version number "7" of the computer software product "CA" transmitted with the broadcasting program "morning download", the version number "3" of the file F11 and the version number "4" of the file F15 are recorded in a version management table. Also, as shown in Fig. 95, the version number "7" of the computer software product "CA" is recorded as a renewed version with a renewal date "June 25 in 1997" in a computer software renewal log table, and the version number "6" of the computer software product "CA" already written in the computer software renewal log table" is recorded as a former version.

Thereafter, a plurality of computer software names corresponding to the broadcasting software programs of the broadcasting software program guide table prepared in the extracting unit 109 are displayed on a screen under the control of the computer software selecting unit 1004 in the same manner as in the fifth embodiment. Also, a former-version selecting request is displayed. In this example, as shown in Fig. 94, names "CA", "DAT", "GUI" and "OS" of the computer software products are displayed.

10 In cases where the user is not satisfied with the updated particular computer software product when the user executes the updated particular computer software product to perform a user's computer operation, the user desires to again obtain the former-version particular computer software product.

15 Therefore, the user selects the name of the particular computer software product and inputs a former-version selecting instruction. In this example, because the user is not satisfied with the updated particular computer software product "CA", the user selects the computer software product "CA" and inputs the selection of the former-version as a former-version selecting instruction.

The name of the particular computer software product and the former-version selecting instruction are transmitted to the download judging unit 1006. In the judging unit 1006, the terminal management table is received from the terminal

information managing unit 110, the version management table is received from the version managing unit 112, the broadcasting software program guide table is received from the computer software selecting unit 1004 with the particular
5 computer software name and the former-version selecting instruction, and the computer software renewal log table is received from the computer software renewal log managing unit 1005. Thereafter, in a download broadcasting program table preparing process, the guide of the second particular computer
10 software product with the former-version particular computer software product is extracted from the broadcasting software program guide table in response to the former-version selecting instruction according to the terminal management table, the version management table and the computer software
15 renewal log table, and a download broadcasting program table of the guide of the second particular computer software product with the former-version particular computer software product is prepared. The download broadcasting program table preparing process is described in detail with reference to
20 Fig. 99.

In a step S9901, one or more guides relating to the particular computer software product selected by the user are extracted from the broadcasting software program guide table. In this example, a guide of the broadcasting program "morning
25 download" with the computer software product "CA" and a guide

of the broadcasting program "daytime download" with the computer software product "CA" are extracted from the broadcasting software program guide table shown in Fig. 93. Thereafter, a former version number of the particular computer software product recorded in the computer software renewal log table as the former version is checked (step S9902). In this example, a former version number of the computer software product "CA" recorded as the former version is "6".

Thereafter, it is checked whether or not the version number of the particular computer software product in each guide extracted from the broadcasting software program guide table agrees with the former version number of the particular computer software product, and a particular guide relating to the particular computer software product, of which the version number agrees with the former version number of the particular computer software product, is detected from the broadcasting software program guide table (step S9903). In this example, the guide of the broadcasting program "daytime download" with the computer software product "CA" of the version number "6" is detected. Thereafter, it is checked whether or not the version number of one file of the particular computer software product registered in the version management table is higher than the version number of the same file of the particular computer software product relating to the particular guide detected from the broadcasting software program guide table

(step S9904). In cases where the version number of one file of the particular computer software product registered in the version management table is higher than the version number of the same file of the particular computer software product
5 detected from the broadcasting software program guide table, a guide of the file of the particular computer software product detected from the broadcasting software program guide table is recorded in a download broadcasting program table (step S9905). The steps S9904 and S9905 are performed for all files
10 of the particular computer software product (step S9906), so that the download broadcasting program table is prepared. In this example, because the version number "3" of the file F11 of the computer software product "CA" in the version management table is higher than the version number "2" of the
15 file F11 of the computer software product "CA" in the broadcasting software program guide table, a guide of the file F11 of the computer software product "CA" is recorded. However, because the version number "4" of the file F15 of the computer software product "CA" in the version management table
20 is not higher than the version number "4" of the file F15 of the computer software product "CA" in the broadcasting software program guide table, a guide of the file F15 of the computer software product "CA" is not recorded. Therefore, a download broadcasting program table shown in Fig. 98 is
25 prepared.

Thereafter, the download broadcasting program table is transmitted to the software download reservation managing unit 120. In the managing unit 120, information (a transmission channel, the name of the particular broadcasting program, the name of the particular computer software product, names of one or more files of the particular computer software product, the version numbers of the files, the version number of the particular computer software product, and a name of a terminal type corresponding to the particular broadcasting program) written in the download broadcasting program table is output to the download performing unit 113 with a download instruction during the transmission time period of the particular broadcasting program.

In the download performing unit 113, a channel setting instruction is output to the receiving unit 108 to receive a broadcasting program transmitted through the same transmission channel as that written in the information of the download broadcasting program table. Therefore, audio/video data of the second particular broadcasting program with the former-version particular computer software product is received in the receiving unit 108 during its transmission time period, and one or more files of the particular computer software product written in the information of the download broadcasting program table are downloaded to the download performing unit 113. In this example, as shown in Fig. 93, the broadcasting

program "daytime download" is transmitted with the computer software product "CA" of the version number "6" at the transmission start time 12:30.

Thereafter, the files of the former-version particular
5 computer software product downloaded from the center station 1001 are stored in the computer software storing unit 114 in the same manner as in the first and fifth embodiments. Also, the name of the former-version particular computer software product, the names of the files stored in the storing unit
10 114, the version number of the former-version particular computer software product and the version numbers of the files are recorded in the version management table of the version managing unit 112. Thereafter, the name of the former-version particular computer software product and the version number of
15 the former-version particular computer software product are transmitted from the managing unit 112 to the computer software renewal log managing unit 1005, and the name and version number of the former-version particular computer software product are recorded as a version renewal log in the
20 computer software renewal log table. In this example, as shown in Fig. 100, the version number "6" of the particular computer software product "CA" is set as a renewed version, and the version number "7" of the particular computer software product "CA" is set as a former version.

25 Accordingly, even though the user is not satisfied with an

updated computer software product obtained by renewing a former-version computer software product, because the former-version computer software product is transmitted with one broadcasting program, the user can download the former-version computer software product to replace the updated computer software product with the former-version computer software product. Therefore, the user can again execute the former-version computer software product in user's computer to perform a computer operation.

10 (Eleventh Embodiment)

In the first to tenth embodiments, each computer software product is transmitted with one broadcasting program. However, the present invention is not limited to the downloading of the computer software product transmitted with one broadcasting program. In this embodiment, a specific time period, in which any broadcasting program is not transmitted from a center station to a terminal, exists even though a plurality of broadcasting programs are transmitted from the center station to the terminal, a computer software product is downloaded from the center station to the terminal during the specific time period. In this case, the transmission of the computer software product is performed by using the same frequency band (or the same transmission channel) as that for the data transmission of one broadcasting program.

25 Fig. 101 is a block diagram of a software download system

according to an eleventh embodiment of the present invention.

As shown in Fig. 101, a software download system 1100 comprises

a center station 1101 for outputting a broadcasting program
5 guide table in which guides of a plurality of broadcasting
programs respectively not accompanied by any computer software
product and guides of a plurality of computer software
products are listed, outputting audio/video data of each
broadcasting program during its transmission time period, and
10 outputting each computer software product during its
transmission time period at the same transmission channel as
that of one broadcasting program when data of any broadcasting
program is not transmitted;

the terminals 116 for respectively receiving the audio/video
15 data of the broadcasting programs, the broadcasting program
guide table and the computer software products from the center
station 1101, outputting the audio/video data, and downloading
updated computer software products selected from the computer
software products; and

20 the transmission station 107.

The center station 1101 comprises:

the computer software server 102; the set-up information
storing unit 121; the software managing unit 101; the video
data server 105; the audio data server 106;

25 a broadcasting program guide table preparing unit 1102 for

managing a broadcasting program schedule listed in a schedule table (refer to Fig. 102) in which a date, a transmission channel, a transmission start time, a transmission finish time, a name and elements are listed for each broadcasting program and a date, a transmission channel, a transmission start time, a transmission finish time, elements and a name are listed for each computer software product, preparing a broadcasting program guide table (refer to Fig. 103) from the pieces of set-up information of the computer software products managed in the software managing unit 101 and the broadcasting program schedule, and controlling the computer software server 102, the video data server 105 and the audio data server 106 to output the audio/video data of each broadcasting program listed in the broadcasting program guide table during its transmission time period and to output the files of each computer software product listed in the broadcasting program guide table through a transmission channel during a specific time period in which data of any broadcasting program is not output from the servers 105 and 106 through the transmission channel; and the transmitting unit 104.

In the above configuration, a broadcasting program schedule listed in a schedule table is managed in the broadcasting program guide table preparing unit 1102. In the schedule table, as shown in Fig. 102, any audio/video data is not written as an element of each computer software product, but

one or more files F1 are written as elements of each computer software product. a broadcasting program guide table is prepared from the schedule table and the set-up information of the computer software products. Therefore, as shown in Fig.

5 103, one or more files are written as the elements of each computer software product.

After the broadcasting program guide table is transmitted from the center station 1001 to each terminal 116 in the same manner as in the first embodiment, the audio/video data of
10 each broadcasting program output from the servers 105 and 106 are transmitted from the center station 1001 to each terminal 116 during its transmission time period under the control of the preparing unit 1102 in the same manner as in the first embodiment.

15 Also, each computer software product listed in the broadcasting program guide table is output from the computer software server 102 and is transmitted to each terminal 116 through a transmission channel during a specific time period listed in the guide of the computer software product under the
20 control of the preparing unit 1102. In this case, because any audio/video data is not written in the guide of the computer software product, any broadcasting program is not transmitted through the same transmission channel (or the same frequency band) as that for the data transmission of the computer
25 software product. Thereafter, one or more updated computer

software products are downloaded to the terminal 116 in the same manner as in the first embodiment, and updated version numbers of the updated computer software products are stored and managed in the version managing unit 112.

5 Accordingly, because each computer software product is transmitted to the terminal 116 through a transmission channel (or a frequency band) during a specific time period in which any broadcasting program is not transmitted through the transmission channel, any private channel (or any private
10 frequency band) for the transmission of the computer software product is not required. That is, a frequency band for the data transmission can be effectively utilized.

 Having illustrated and described the principles of the present invention in a preferred embodiment thereof, it should
15 be readily apparent to those skilled in the art that the invention can be modified in arrangement and detail without departing from such principles. We claim all modifications coming within the scope of the accompanying claims.



WHAT IS CLAIMED IS:

1. A software download system, comprising:

broadcasting program guide preparing means of a center station for preparing a guide of a broadcasting program
5 accompanied by a software product corresponding to a first version number, a version number of the software product being changed each time the software product is revised in the center station;

broadcasting program data storing means of the center
10 station for storing data of the broadcasting program which is listed in the guide prepared by the broadcasting program guide preparing means;

software storing means of the center station for storing data of the software product which is listed in the guide
15 prepared by the broadcasting program guide preparing means;

transmitting means of the center station for transmitting the guide of the broadcasting program with the software product prepared by the broadcasting program guide preparing means, and transmitting the data of the software product
20 stored in the software storing means with the data of the broadcasting program stored in the broadcasting program data storing means during a transmission time period of the broadcasting program through the same transmission channel as that of the broadcasting program under the control of the
25 broadcasting program guide preparing means;



receiving means of a terminal for receiving the guide of the broadcasting program with the software product from the transmitting means, and receiving the data of the software product with the data of the broadcasting program during the transmission time period from the transmitting means;

output means of the terminal for outputting the data of the broadcasting program received by the receiving means during the transmission time period;

version number managing means of the terminal for managing a second version number corresponding to the software product previously downloaded from the center station to the terminal;

download judging means of the terminal for checking whether or not the first version number of the software product of the guide received by the receiving means differs from the second version number of the software product managed by the version number managing means and judging to download the data of the software product received by the receiving means to the terminal in cases where the first version number of the software product listed in the guide differs from the second version number of the software product managed by the version number managing means; and

downloading means of the terminal for extracting the data of the software product from the broadcasting program received by the receiving means during the transmission time period in cases where the downloading of the software product is judged



by the download judging means and storing the data of the software product to download the software product received by the receiving means from the center station to the terminal and to use the software product on user's side.

5

2. A software download system according to claim 1, further comprising:

set-up information storing means of the center station for storing set-up information indicating the first version number
10 of the software product and first version numbers of files composing the software product, the set-up information being added to the guide prepared by the broadcasting program guide preparing means, second version numbers of the files composing the software product being managed by the version number
15 managing means, the downloading of each file of the software product from the center station to the terminal being judged by the download judging means in cases where the first version number of the file differs from the second version number of the file, and the file judged to be downloaded being extracted
20 from the broadcasting program by the downloading means and being stored.

3. A software download system according to claim 1, further comprising:

25 set-up information storing means of the center station for



storing set-up information indicating a specific terminal type required of the terminal, the set-up information being added to the guide prepared by the broadcasting program guide preparing means; and

5 terminal information managing means of the terminal for managing a particular terminal type of the terminal, the downloading of the software product from the center station to the terminal being judged by the download judging means in cases where the particular terminal type agrees with the
10 specific terminal type listed in the guide, and the software product being extracted from the broadcasting program by the downloading means and being stored.

4. A software download system according to claim 1, further
15 comprising:

software download reservation managing means of the terminal for managing the download reservation of the software product transmitted with the broadcasting program in cases where the downloading of the software product is judged by the
20 download judging means, and instructing the downloading means to download the software product to the terminal during the transmission time period of the broadcasting program.

5. A software download system according to claim 2 in which
25 the downloading of one file of the software product from the



center station to the terminal is judged by the download
judging means in cases where the first version number of the
software product listed in the guide is newer than the second
version number of the software product managed by the version
5 number managing means and the first version number of the file
is newer than the second version number of the file managed by
the version number managing means.

6. A software download system according to claim 1, further
10 comprising:

download completion notification judging means of the
terminal for judging whether or not the downloading of the
software product performed by the downloading means is to be
notified to the center station; and

15 download completion notice transmitting means of the
terminal for transmitting an identification number of the
terminal and a name of the software product downloaded by the
downloading means as a download completion notice to the
center station in cases where the download completion
20 notification judging means judges that the downloading of the
software product performed by the downloading means is to be
notified.

7. A software download system according to claim 6, further
25 comprising:



download record managing means of the center station for managing a record of the downloading of the software product performed in the terminal according to the identification number of the terminal and the name of the software product
5 transmitted from the download completion notice transmitting means.

8. A software download system according to claim 6, further comprising:

10 set-up information storing means of the center station for storing set-up information indicating a download completion notification flag, the set-up information being included in the guide prepared by the broadcasting program guide preparing means, and the notification of the downloading of the software
15 product being judged by the download completion notification judging means according to the download completion notification flag.

9. A software download system, comprising:

20 broadcasting program guide preparing means of a center station for preparing guides of a first group of broadcasting programs and guides of a second group of broadcasting programs, each broadcasting program of the first group being accompanied by a software product corresponding to a first
25 version number, each broadcasting program being not



accompanied by any software product, and a version number of the software product being changed each time the software product is revised in the center station;

5 broadcasting program data storing means of the center station for storing data of each broadcasting program of which the guide is prepared by the broadcasting program guide preparing means;

software storing means of the center station for storing data of one software product corresponding to the first
10 version number for each software product of which the guide is prepared by the broadcasting program guide preparing means;

transmitting means of the center station for transmitting the guides of the broadcasting programs prepared by the broadcasting program guide preparing means, transmitting the
15 data of each broadcasting program stored in the broadcasting program data storing means during a transmission time period of the broadcasting program under the control of the broadcasting program guide preparing means, and transmitting the data of each software product stored in the software
20 storing means with the data of one broadcasting program through the same transmission channel as that of the broadcasting program under the control of the broadcasting program guide preparing means;

receiving means of a terminal for receiving the guides of
25 the broadcasting programs from the transmitting means, and



receiving the data of the broadcasting programs and the data of the software products from the transmitting means;

output means of the terminal for outputting the data of each broadcasting program received by the receiving means
5 during the transmission time period;

version number managing means of the terminal for managing a second version number corresponding to each software product previously downloaded from the center station to the terminal;

broadcasting software program extracting means of the
10 terminal for extracting the guide of each broadcasting program of the first group from the guides received by the receiving means as a guide of one broadcasting software program;

download judging means of the terminal for checking whether or not the first version number of the software product of the
15 broadcasting software program of each guide extracted by the broadcasting software program extracting means differs from the second version number of the software product managed by the version number managing means and judging to download the software product of each broadcasting software program
20 received by the receiving means to the terminal in cases where the first version number of the software product differs from the second version number of the software product; and

downloading means of the terminal for extracting the data of the software product from the broadcasting program received
25 by the receiving means during the transmission time period in



cases where the downloading of the software product is judged
by the download judging means and storing the data of the
software product to download the software product received by
the receiving means from the center station to the terminal
5 and to use the software product on user's side.

10. A software download system according to claim 9, further
comprising:

software download reservation managing means of the
10 terminal for managing the download reservation of each
software product received by the receiving means in cases
where the downloading of the software product transmitted with
the broadcasting program is judged by the download judging
means, and instructing the downloading means to download the
15 software product to the terminal during the transmission time
period of the broadcasting program.

11. A software download system according to claim 9, further
comprising:

20 set-up information storing means of the center station for
storing set-up information indicating a software type of one
software product for each software product of the guides
prepared by the broadcasting program guide preparing means,
each software product being set to a first software type or a
25 second software type, and the pieces of set-up information of



the software products being added to the guides by the
broadcasting program guide preparing means;

display broadcasting program extracting means of the
terminal for extracting one or more guides of display
5 broadcasting programs with software products set to the first
software type from the guides of the broadcasting programs
received by the receiving means; and

display broadcasting program displaying means of the
terminal for displaying the guides of the display broadcasting
10 programs extracted by the display broadcasting program
extracting means for a user to select one or more download-
candidate display broadcasting programs from the display
broadcasting programs, the downloading of the software product
transmitted with each download-candidate broadcasting program
15 being judged by the download judging means in cases where the
first version number of the software product differs from the
second version number of the software product, and the
downloading of the software product transmitted with each
download-candidate broadcasting program being performed by the
20 downloading means.

12. A software download system according to claim 11 in which
one or more guides of broadcasting programs with software
products set to the second software type are extracted from
25 the guides of the broadcasting programs received by the



receiving means as one or more guides of broadcasting software programs by the broadcasting software program extracting means.

5 13. A software download system according to claim 11, further comprising:

terminal information managing means of the terminal for managing a particular terminal type of the terminal, a specific terminal type required of the terminal being included
10 in the set-up information stored in the set-up information storing means for each software product, and the downloading of the software product transmitted with each download-candidate broadcasting program being judged by the download judging means in cases where the particular terminal type of the
15 terminal agrees with the specific terminal type listed in the guide of the download-candidate broadcasting program, and the software product being extracted from the download-candidate broadcasting program by the downloading means and being stored.

20

14. A software download system according to claim 11 in which a download reservation notice is transmitted from the download judging means to the display broadcasting program displaying means each time the downloading of one software product
25 transmitted with one download-candidate broadcasting program



is judged by the download judging means, a message expressing the completion of a download reservation of the software product being displayed in response to the download reservation notice by the display broadcasting program
5 displaying means.

15. A software download system according to claim 9, further comprising:

software download reservation managing means of the
10 terminal for managing the recording reservation for one or more recording-reserved broadcasting programs selected from the second group of broadcasting programs, of which the guides are prepared by the broadcasting program guide preparing means; and
15 download-reserved broadcasting program determining means of the terminal for selecting a guide of a download-reserved broadcasting program from guides of one or more broadcasting programs, of which the software products are judged by the download judging means to be downloaded to the terminal, on
20 condition that a transmission time period of the download-reserved broadcasting program does not overlap with that of any recording-reserved broadcasting program managed by the software download reservation managing means, the software product transmitted with the download-reserved broadcasting
25 program being downloaded by the downloading means.



16. A software download system according to claim 15 in which the guide of the download-reserved broadcasting program is selected on condition that a transmission start time of the download-reserved broadcasting program is placed after current
5 data and time.

17. A software download system according to claim 15 in which a plurality of guides of broadcasting programs with the same particular software product are prepared by the broadcasting
10 program guide preparing means, data of the broadcasting programs stored in the broadcasting program data storing means are transmitted by the transmitting means at different transmission time periods, one or more name-checked broadcasting programs with the particular software product
15 being selected from the broadcasting programs with the same particular software product by the download-reserved broadcasting program determining means on condition that a transmission time period of each name-checked broadcasting program does not overlap with that of any recording-reserved
20 broadcasting program, and the download-reserved broadcasting program with the particular software product being selected from the name-checked broadcasting programs by the download-reserved broadcasting program determining means on condition that a transmission start time of the download-reserved
25 broadcasting program is the earliest among those of the name-



checked broadcasting programs.

18. A software download system according to claim 9, further comprising:

5 software product displaying and selecting means of the
terminal for displaying names of the software products of the
broadcasting software programs, which are listed in the guides
extracted by the broadcasting software program extracting
means, and receiving names of one or more particular software
10 products selected from the software products, the downloading
of each particular software product being judged by the
download judging means, and the particular software product
being downloaded by the downloading means in cases where the
download judging means judges to download the particular
15 software product.

19. A software download system according to claim 9, further comprising:

 software download reservation managing means of the
20 terminal for managing the recording reservation for one or
more first recording-reserved broadcasting programs selected
from the second group of broadcasting programs, of which the
guides are prepared by the broadcasting program guide
preparing means, and newly managing the recording reservation
25 for a second recording-reserved broadcasting program selected



from the second group of broadcasting programs, of which the guides are prepared by the broadcasting program guide preparing means;

download-reserved broadcasting program determining means of
5 the terminal for selecting a guide of a first particular
download-reserved broadcasting program from guides of one or
more particular broadcasting programs, which include the same
particular software product judged by the download judging
means to be downloaded to the terminal, on condition that a
10 transmission time period of the first download-reserved
broadcasting program does not overlap with any of the first
recording-reserved broadcasting program managed by the
software download reservation managing means; and

duplication reservation detecting means of the terminal for
15 detecting that a transmission time period of the first
particular download-reserved broadcasting program overlaps
with that of the second recording-desired broadcasting program
newly managed by the software download reservation managing
means, transmitting information indicating the duplication
20 reservation of the first particular download-reserved
broadcasting program to the download-reserved broadcasting
program determining means to select a guide of a second
particular download-reserved broadcasting program relating to
a specific transmission time period from the guides of the
25 particular broadcasting programs in the download-reserved



broadcasting program determining means on condition that the specific transmission time period of the second particular download-reserved broadcasting program does not overlap with that of any first recording-desired broadcasting program or
5 the second recording-desired broadcasting program, and transmitting the guide of the second particular download-reserved broadcasting program relating to the specific transmission time period to the software download reservation managing means, the particular software product transmitted
10 with the second particular download-reserved broadcasting program being downloaded by the downloading means at the specific transmission time period under the control of the software download reservation managing means.

15 20. A software download system according to claim 19 in which the guide of the first particular download-reserved broadcasting program and the guide of the second particular download-reserved broadcasting program are selected on condition that a transmission start time of each download-
20 reserved broadcasting program is placed after current data and time.

21. A software download system according to claim 1, further comprising:
25 protocol processing means of the center station for



processing the data of the software product stored in the software storing means according to each of a plurality of software communication protocols to produce a plurality of protocol-processed software products, each protocol-processed software product being communicable with a type of terminal according to one software communication protocol, the protocol-processed software products being transmitted from the transmitting means to the receiving means of the terminal, and a particular protocol-processed software product selected from the protocol-processed software products being received by the terminal on condition that a type of the terminal matches with a particular software communication protocol corresponding to the particular protocol-processed software product.

15

22. A software download system according to claim 1, further comprising:

protocol processing means of the center station for processing the data of the software product stored in the software storing means according to a particular software communication protocol to produce a particular protocol-processed software product communicable according to the particular software communication protocol, a name of the particular software communication protocol being listed in the guide of the broadcasting program prepared by the

25



broadcasting program guide preparing means, the particular protocol-processed software product being transmitted from the transmitting means to the receiving means of the terminal, and the particular protocol-processed software product being

5 received by the receiving means;

protocol processing program storing means of the terminal for storing one or more protocol processing programs respectively used for a protocol processing in which one protocol-processed software product communicable according to
10 one software communication protocol is changed to data of one software product;

protocol correspondence table holding means of the terminal for holding a protocol correspondence table in which the correspondence of one software communication protocol and one
15 protocol processing program is listed for each protocol processing program stored in the protocol processing program storing means;

software communication protocol judging means of the terminal for checking whether or not the particular software
20 communication protocol, of which the name is listed in the guide of the broadcasting program received by the receiving means, is listed in the protocol correspondence table held by the protocol correspondence table holding means in cases where the download judging means judges to download the software
25 product, and outputting the name of the particular software



communication protocol in cases where the particular software communication protocol is listed in the protocol correspondence table; and

5 protocol processing performing means of the terminal for
receiving the name of the particular software communication
protocol output from the software communication protocol
judging means, extracting a particular protocol processing
program corresponding to the particular software communication
protocol from the protocol processing program storing means,
10 performing a protocol processing for the particular protocol-
processed software product received by the receiving means
according to the particular protocol processing program to
change the particular protocol-processed software product to
the software product, the software product being downloaded by
15 the downloading means.

23. A software download system according to claim 9 in which
the data of each broadcasting program is transmitted by the
transmitting means through a transmission channel, the data of
20 each software product registered in the guide of one
broadcasting program is transmitted by the transmitting means
at the same transmission channel as that of the broadcasting
program, the data of a group of broadcasting programs
corresponding to a plurality of transmission channels and the
25 data of one or more software products registered in guides of



one or more broadcasting programs of the group are transmitted as a transport stream, a plurality of transport streams are transmitted from the transmitting means to the receiving means, one of the transport streams is received by the receiving means, and one transmission channel and a transport stream identifier are listed in the guide of each broadcasting program by the broadcasting program guide preparing means.

24. A software download system according to claim 23, further comprising:

transmission channel checking means of the terminal for receiving a specific transport stream identifier of a specific transport stream listed in a guide of a specific broadcasting program, of which the data is transmitted at a first transmission channel and is received by the receiving means to be output to the output means, from the receiving means, checking whether or not a particular transport stream identifier listed in a guide of a particular broadcasting program with a particular software product, which is transmitted at a second transmission channel differing from the first transmission channel and at the same transmission start time as that of the specific broadcasting program and is judged by the download judging means to be downloaded, agrees with the specific transport stream identifier of the specific transport stream, and transmitting a download-performable



notice and the guide of the particular broadcasting program to the downloading means in cases where the particular transport stream identifier agrees with the specific transport stream identifier, the particular software product being downloaded
5 by the downloading means according to the download-performable notice and the guide of the particular broadcasting program.

25. A software download system according to claim 24, further comprising:

10 channel setting means of the terminal for setting a transmission channel of one broadcasting program, of which the data is output to the output means, to the first transmission channel of the specific broadcasting program, the specific transport stream, in which the data of the specific
15 broadcasting program transmitted at the first transmission channel is included, being specified by the receiving means.

26. A software download system according to claim 24, further comprising:

20 audience rating managing means of the center station for managing a broadcasting program audience rating table in which an audience rating of each broadcasting program, of which the guide is prepared by the broadcasting program guide preparing means, is listed, a broadcasting program of a high audience
25 rating being set as the specific broadcasting program by the



broadcasting program guide preparing means, and the second transmission channel of the particular broadcasting program with the particular software product being set by the broadcasting program guide preparing means to transmit the particular broadcasting program with the specific broadcasting program as the specific transport stream.

27. A software download system according to claim 9, further comprising:

10 software product displaying and selecting means of the terminal for displaying names of the software products of the broadcasting software programs, which are listed in the guides extracted by the broadcasting software program extracting means, receiving a name of a particular software product
15 selected from the software products and receiving a former-version number selecting instruction, the name of the particular software product selected and the former-version number selecting instruction being received by the download judging means; and

20 software renewal managing means for managing a software renewal table in which a renewed version number of one software product currently downloaded by the downloading means and a former version number of the software product previously downloaded by the downloading means before the renewal to the
25 software product of the renewed version number are listed for



each software product of which the guide is prepared by the
broadcasting program guide preparing means, the former version
number of the particular software product being recognized by
the download judging means according to the former-version
5 number selecting instruction, a guide of the particular
software product of the former version number being
transmitted from the broadcasting software program extracting
means to the download judging means, the downloading of the
particular software product of the former version number being
10 judged by the download judging means, and the particular
software product of the former version number being downloaded
by the downloading means.

28. A software download system, comprising:

15 broadcasting program guide preparing means of a center
station for preparing a guide table in which guides of one or
more broadcasting programs and a guide of a software product
corresponding to a first version number are listed, a version
number of the software product being changed each time the
20 software product is revised in the center station;

broadcasting program data storing means of the center
station for storing data of each broadcasting program which is
listed in the guide table prepared by the broadcasting program
guide preparing means;

25 software storing means of the center station for storing



data of the software product of which the guide is listed in the guide table prepared by the broadcasting program guide preparing means;

transmitting means of the center station for transmitting
5 the guide table prepared by the broadcasting program guide preparing means, transmitting the data of each broadcasting program stored in the broadcasting program data storing means during a transmission time period of the broadcasting program under the control of the broadcasting program guide preparing
10 means and transmitting the data of the software product stored in the software storing means through the same transmission channel as that of one broadcasting program during a specific time period in which any broadcasting program is not transmitted through the transmission channel;

15 receiving means of a terminal for receiving the guide table from the transmitting means, receiving the data of each broadcasting program from the transmitting means during the transmission time period and receiving the data of the software product from the transmitting means during the
20 specific time period;

output means of the terminal for outputting the data of each broadcasting program received by the receiving means during the transmission time period;

version number managing means of the terminal for managing
25 a second version number corresponding to the software product



previously downloaded from the center station to the terminal;

download judging means of the terminal for checking whether or not the first version number of the software product of the guide received by the receiving means differs from the second
5 version number of the software product managed by the version number managing means and judging to download the data of the software product received by the receiving means to the terminal in cases where the first version number of the software product listed in the guide differs from the second
10 version number of the software product managed by the version number managing means; and

downloading means of the terminal for downloading the data of the software product received by the receiving means to the terminal during the specific time period in cases where the
15 downloading of the software product is judged by the download judging means, the software product being used on user's side.

29. A software download system according to claim 28, further comprising:

20 set-up information storing means of the center station for storing set-up information indicating the first version number of the software product and first version numbers of files composing the software product, the set-up information being added to the guide of the software product listed in the guide
25 table of the broadcasting program guide preparing means,



second version numbers of the files composing the software product being managed by the version number managing means, the downloading of each file of the software product from the center station to the terminal being judged by the download
5 judging means in cases where the first version number of the file differs from the second version number of the file, and the file judged to be downloaded being extracted from the data of the software product by the downloading means and being downloaded to the terminal.

10

30. A software download system according to claim 28, further comprising:

set-up information storing means of the center station for storing set-up information indicating a specific terminal type
15 required of the terminal, the set-up information being added to the guide of the software product listed in the guide table of the broadcasting program guide preparing means; and

terminal information managing means of the terminal for managing a particular terminal type of the terminal, the
20 downloading of the software product from the center station to the terminal being judged by the download judging means in cases where the particular terminal type agrees with the specific terminal type added to the guide of the software product, and the software product being downloaded to the
25 terminal by the downloading means.



31. A software download system according to claim 28, further comprising:

software download reservation managing means of the
5 terminal for managing the download reservation of the software
product received by the receiving means in cases where the
downloading of the software product is judged by the download
judging means, and instructing the downloading means to
download the software product to the terminal during the
10 specific time period.

32. A software download system according to claim 29 in which
the downloading of one file of the software product from the
center station to the terminal is judged by the download
15 judging means in cases where the first version number of the
software product listed in the guide is newer than the second
version number of the software product managed by the version
number managing means and the first version number of the file
is newer than the second version number of the file managed by
20 the version number managing means.