A PC BASED TV SET-TOP BOX SYSTEM AND METHOD OF PROVIDING CONTENTS EXCLUSIVELY BY THE SYSTEM

TECHNICAL FIELD

The present invention includes TV set top boxes using TV to connect to the Internet, and in particular is directed to PC based set top box systems to connect to exclusive sites and methods of providing content exclusively by the system.

BACKGROUD ART

Internet connection using PC's is common as Internet use widens, and the supply of TV set top boxes is increasing gradually to use various service and contents by the Internet connection through home culture center medium TV.

This type of formal TV set top box connects to a specified server by built in software, and gets service through this server, which is designed to surf Internet sites freely by the user having an Internet browser built in.

In addition, since current service provided through the Internet is structured for a user to choose a contents provider, the contents provider at this structure has no choice but to be in passive position waiting for user to connect after registering at virtual site.

Therefore, at present, Internet users are at a nearly saturated state, an increase in contents providers brings decreased relative market size and severe competition among business providers.

Therefore, a need exists for a way for a content provider to provide their own content exclusively to Internet users reversing the structure, to more securely establish a good business foundation or relationship.

DISCLOSURE OF THE INVENTION

To satisfy above needs, this invention provides a TV set top box system which is able to connect to a particular site (content provider) only and method of providing content exclusively using this system.

To achieve above purpose, this invention system is specially composed of the following devices; a PC with operating software to operate a private browser and a set top box, which registers a password and subscriber's information at the site connecting to specific site at the first time of installation, the software communicates in serial with set top box and asks permission for a log in to server when operating. A request signal is received from set top box, and then operates the private browser and transmits operating permission to set top box after log in is permitted. A key input device is included where a user inputs to control set top box; and set top box which connects TV and above PC, requests for operation communication with the above PC when a signal from above key input device is received. The system offers preset passcode when a passcode request signal is received from the PC, and transmits a video signal and audio signal to the TV operating normally when operating permit signal from the PC is received.

Furthermore, to achieve the above goal, this invention specially includes the following steps; a step to register passcode loaded at above set top box and subscriber information to site offering above contents at initial installation at the system where the PC and TV connected through set top box, a PC screen is featured on the TV and the PC is connected to a content exclusive site through the Internet; includes a step where the set top box transmits a password and demands for operation communicating with the PC after a motion requiring signal is received from the input device; includes a step where the PC transmits password and subscriber information connecting to above site; includes a step where the site compares and permits log in if received information is the same with registered information; includes a step where the PC operates a private browser, receives the site's web page, and permits operation to the set top box after log in permission is received from the site; and includes a step where the set top box transmits and indicates a video signal and audio signal received from the PC to TV after operating permit signal is received.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention's desirable examples will be explained referencing the enclosed Figs. where:

to PC (130) through main set top box (110) when user operates wireless remote control, wireless keyboard, or wireless mouse in front of TV (102), and transmits video and audio signals received through main set top box (110) to TV (102) as is.

Main set top box (110) as described later changes video card (132) R, G, B signal installed at PC (130) to composite video for TV, controls TV controller (113 of FIG. 2) which connects or disconnects an audio signal and TV controller (113), equips microprocessor (111 of FIG. 2) to communicate with PC (130) and transmits an operation request to PC (130) when set top box power on signal is received through server set top box (120), and further transmits an already inputted 'passcode' when a pssscode request is received from PC (130), and makes an exclusive browser (136) screen appear on TV (102) by operating TV controller (113) in normal mode when operating permission is received from PC (130).

PC (130) which is equipped with a mainboard (131), video card (132), sound card (133), hardware including a serial communication port (134), set top box operating software (S/W) (135) to operate set top box (106), operating software, and exclusive browser (136) to connect to a designated site only through set top box (106). PC transmits a set top box (106) passcode when Internet a connection request (operation request) is made from set top box (106) and connects to server (142). PC transmits log in information (for example, passcode and subscriber ID, password etc.), and requests for log in, when the exclusive browser screen is displayed on TV (102) through set top box (106) transmitting an operating consent signal to set top box (106) when log in is granted from server (142).

Content provider (140) equips web server (142) and data base (144) and manages subscriber storing set top box user's passcode and user information (for example, user ID, password, address, name, SSN, contact information, etc.) at data base (144), and approves a verifying passcode and user information registered at data base (144) at the time of initial registration when log in is requested from PC (130) set top box operating software (135). The content provider provides basic web page (FIG. 7), menu and link, which can choose various contents, and provides contents selected by user. Here, an additional fee is charged when contents offered is with a fee.

FIG.1 is a block diagram showing an illustrative network system in accordance with the invention;

FIG. 2 is a block diagram illustrating a set top box configuration according to this invention;

FIG. 3 is a flow diagram illustrating a content providing process according to this invention;

FIG. 4 is a flow diagram illustrating steps for software of a set top box for execution according to the present invention;

FIG. 5 is flow diagram illustrating steps for executing software of a PC set top box according to the present invention;

FIG. 6 is flow diagram illustrating steps a server executes according to the present invention;

FIG. 7 is an example of an exclusive browser screen according to the present invention; and

FIG. 8 is a diagram showing a filter concept for a mouse and keyboard provided according to the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

FIG. 1 is a configuration diagram illustrating an entire network according to this invention. TV (102) is connected to Internet (108) through TV set top box (106) and PC (130), and contents provider (140) is connected to offer contents exclusively at Internet (108) according to this invention. Even though TV set top box (106) interfacing TV (102) to internet (108) using PC (130) is possible to embody as one integration type, when PC (130) and TV (102) are installed near-by, usually it is recommended to embody main set top box (110) connected to PC (130) and server set top box (120) connected to TV (102) separately, and main set top box (110) and server set top box (120) are connected by cable when they are separated like this.

Referencing FIG. 1, TV (102) is connected to server set top box (120), video AUX, audio l AUX, and audio R AUX. Furthermore, an infrared sensor along with video and audio terminals are built in at server set top box (120), which transmits an operation signal

According to this invention, set top box (106) is operated only by PC (130) set top box operating software (135). Set top box operating software (135) allows operation only with permission after reading a password and verifying with content provider (140) when set top box (106) operation is requested, and content is provided exclusively by allowing access to selected contents provider (140) only through exclusive browser (136).

FIG. 2 is a block diagram illustrating a set top box configuration according to this invention, this invention's set top box (106) is composed of a microprocessor (111), RS-232C driver (112), TV controller (113), buffer (114), infrared sensor (121), state LED (122), power LED (123), and various cable connectors (not illustrated). Here, if set top box (106) is separated into main set top box (110) and server set top box (120), install microprocessor (111), RS232C driver (112), TV controller (113), buffer (114) are included in main set top box (110) near PC (130) and video AUX, audio l AUX, audio R AUX, infrared sensor (121), LED (122, 123) are included in server set top box (120) near TV (102).

Referencing to FIG. 2, microprocessor (111) transmits along fixed protocol connected to PC serial port (134) as RX, TX, control signal line through RS232C driver (112), decodes this and transmits fixed format to PC (130) after receiving a signal from remote control (104) through infrared sensor (121). When power is on, power is indicated by turning on LED (123) and movement status indicated by state LED (122).

TV controller (113) is controlled using a reset signal and a control signal.

TV controller (113) operates as 'normal mode' and 'stand by mode' according to a microprocessor (111) control signal. At 'normal mode', R, G, B signal (VGA out R, VGA out G, VGA out B), horizontal motor (VGA out HB), and vertical motor signal (VGA out VB) are inputted from video card (132) through buffer (114), R, G, B video signal converted to composite video signal is transmitted to server set top box (120) after audio signal (speaker L, speaker R) is inputted from sound card (133), and audio signal is transmitted to server set top box (120) as is. At 'stand by mode', video is not displayed on TV (102) by blocking video output and audio output. Moreover, when reset signal is inputted from microprocessor (111), the screen is reset and operates from beginning again.

In FIG. 3, a step diagram is shown illustrating a content providing process according to this invention. A movement process between remote control (104) controlled by user and set top box (106), PC (130), server (142) is illustrated.

Referencing FIG. 3, after connecting set top box (106) with TV (102) and PC (130) at initial installation, set top box operating software (135) and exclusive browser (136) to PC (130) is installed.

Subsequently, a request for a serial number communicating with set top box (106) through a serial communication port (134) running set top box operating software (135) is performed. Then, the serial number and subscriber information are entered and registered (S1-S4) after logging in to server (142) after passcode is received from set top box (106). At this time, 'serial number' is a proper value (for example, 12 digit) stored at EEPROM inside microprocessor (111) when manufacturing set top box (106), and subscriber information is subscriber ID, password, address, name, social security number, contact point which set top box buyer (contents user) inputs to register after logging into contents provider's (140) server (142). This information is stored in data base (144) provided to server (142) at initial subscription and is used to manage subscriber (certification and excess charge, etc.).

When user (subscriber) turns remote control's (104) power on to use contents after subscription is completed in this way, the signal is transmitted to set top box microprocessor (111) through infrared sensor (121), and microprocessor (111) decodes this and transmits operating command signal to PC (130) (S5, S6).

When an operating command signal is received from set top box (106), PC (130) is turned on, and set top box operating software (135) executed. The serial number request order is transmitted through serial port (134) to set top box (106). When serial number is received from set top box (106), transmission is required information for log in of this serial number, ID and password to server (142) (S7-S10). At this time, devices to control PC power should be equipped to control PC (130) on/off through set top box (106).

When log in information is received from PC (130), server (142) transmits log in permission to PC (130) verifying and if accords with stored registration information at data

base (144). Thus, PC (130) operates exclusive browser (136) to view contents and provides operating consent signal to set top box (106).

Set top box (106) operates TV controller (113) at normal mode after receiving operating consent signal and transmits inputted signal from PC video card (132) and sound card (133) to TV (102) (S15-S17). At this time, RGB signal of video card (132) is transmitted as converted NTSC mode composite video signal. Thus, basic menu screen is displayed provided by contents provider (140) on TV (102).

In addition, when user watches basic menu screen of TV (102) and operates remote control's (104) menu key or up/down/left/right direction key, set top box (106) receives and decodes this and transmits to PC (130). PC (130) transmits this signal to server (142), so user can choose the content wanted (S18-S23). At this time, since screen provided by exclusive browser (136) does not have an address input window for web surfing different from general Internet browser, user cannot connect to sites other than offered by exclusive contents sites as default. Since it is composed to choose menu within screen provided at server (142), complicated input device is not needed such as wireless keyboard or wireless mouse. And because one can operate easily with remote control (104) with simple keys like power key, menu key, up/down/left/right direction key, people without much knowledge of the Internet or computer can use this interface easily. Furthermore, when contents selected by user is a toll site, excess charge begins according to agreement.

When user operates remote control (104) and turns power off, set top box (106) transmits off request signal to PC. After receiving off request signal, PC transmits log out request signal to server (142) and off consent signal to set top box (106), and then turns off PC (130) automatically. After off consent signal is received, set top box (106) converts TV controller (113) to stand by mode and blocks video signal and audio signal.

FIG. 4 is a flow diagram illustrating steps for software of main set top box execution according to this invention.

Referencing to FIG. 4, when software built in microprocessor (111) executes after power is on, set top box (106) processes self-diagnosis and an initial step, then stands by for an event occurrence (401-403). At this time, it indicates a movement or action state to user

by turning on power LED indicating power on state and LED indicating movement or action state.

When set top box power on signal is received through infrared sensor (121) from remote control (104) during stand by, transmit operating request signal to PC (130) (406, 407) and transmit serial number to PC (130) after code request signal from PC (130) is received (404, 405).

When operating consent signal is received during stand by, TV controller (113) is operated using controller signal (408, 409) and transmits off request signal to PC (130) after set top box power off signal is received (412, 413).

FIG. 5 is a flow diagram illustrating steps software of PC set top box execution according to this invention.

Referencing FIG. 5, PC set top box operating software (135) requires a serial number to set top box (106) at initial installation, logs in to server (142) after serial number is received, and registers entering serial number and subscriber information (501-505).

When operating request signal is received from set top box (106) after registration is completed, execute set top box operating software (135) after waking up and request serial number to set top box (106).

After the serial number is received, connect to server (142) and request for log in transmitting log in information like serial number, subscriber ID, and password (510-512).

When log in is granted from server (142), view content provided by contents provider (140) by running exclusive browser (137), and transmit operating consent signal to set top box (106) (513-515).

When power off call signal is received from set top box (106), request for log out connecting to server (142), transmit power off consent signal to set top box (106) and turn PC (130) off (516-519). Here, even PC (130) is turned off, basic devices to communicate with set top box (106) need to be in stand by mode.

If system timer is set at a fixed time interval to prevent a user from connecting to different sites other than exclusive sites allowed by set top box using public Internet browser, then verify operation status of exclusive browser with timer interruption occurs and lets the exclusive browser appear on screen first (520, 521).

FIG. 6 is a flow diagram illustrating steps server executes according to this invention.

Referencing FIG. 6, if optional PC (130) is connected and is first connection, register information like serial number, subscriber personal information, ID, and password at data base (144) (601, 602).

When log in is requested after registration, allow log in after verifying log in information like serial number, subscriber ID, password and if it matches previously registered information. If it does not match, then do not allow log in (603, 604).

When log in is successful, provide basic web page to choose content (605, 606). Provide relevant content when user chooses content, and start charging fee following preset method when it is fee based (607, 608). Stop providing contents when log out is requested, process log out, and stop charging fee (609, 610).

FIG. 7, as an example of an exclusive browser screen according to this invention, is an example of basic screen appearing after log in to contents provider (140) through set top box.

Referencing to FIG. 7, contents items (DVD, VOD, my video, today's movie) movable by menu button are displayed on bottom of screen. Title that can be chosen by up/down key is displayed on right side of screen, and a screen to choose channel with left/right direction key is displayed on a section.

Like this, exclusive browser according to this invention blocks Internet surfing routes and can limit user linking other Internet sites by offering a simple link set up menu only. Also, there is an advantage of operation being very simple since user can find wanted contents with direction key or menu key only at basic menu screen.

FIG. 8 is a diagram to describe a filter concept of a mouse and keyboard provided according to this invention. This kind of filter technology is to block user with double monitors viewing other contents than exclusive contents allowed by set top box.

Referencing to FIG. 8, input/output device (801) like keyboard or mouse gets processed first at system's first bios (basic input output system) (802), and contents processed at bios (802) get processed again at operating software (803) and transmitted to appropriate practical program (805). At this time, keyboard and mouse filter (804) according to this invention

are located between operating system (803) and practical program (805) and block newly executed program coming over to TV domain by limiting movement of computer input device keyboard and mouse.

INDUSTRIAL APPLICABILITY

As explained above, only Internet sites allowed by PC based TV set top box installed between PC and TV and set top box operating software installed at PC are linked and offered contents exclusively, and sites that are not allowed can be blocked from linking. Using this kind of feature, business stability is guaranteed providing contents exclusively to user after contents provider distributes set top box at free of charge of very low cost to public. From user standpoint, since operation is very simple, user can use contents easily even without knowing how to use Internet or computer. Furthermore, since serial number is stored at set top box, and serial number and user ID or password are used together at the time of certification at server or PC, illegal usage from set top box theft or illegal usage from software duplication can be prevented.

WHAT IS CLAIMED:

1. A system comprising a PC equipped with operating software to operate an exclusive browser and a set top box which registers a serial number and subscriber information to a special site during a first installation, and request a log in after an operating request signal is received from the set top box, said PC communicating in serial with the set top box, the PC further operates an exclusive browser when the log in is approved, and transmits operating permission to the set top box;

a key input device inputted by a user to operate the set top box; and

a PC based TV set top box system specially composed of the set top box which links a TV and the PC, and requests operation communication with the PC after a receiving signal from the key input device, and provides a preset serial number after receiving a serial input request signal from the PC, and operates normally when an operation consent signal is received from the PC and transmits a personal computer video signal and audio signal to the TV.

2. The system as recited in claim 1, wherein the set top box includes a TV controller for converting R, G, B signal inputted from a PC video card to provide a composite video signal, the TV controller being capable of linking or blocking audio signal inputted from the a PC sound card;

a sensor to detect operation of the key input device; and

the PC based TV set top box system further comprising a microprocessor which communicates through a serial port with the PC, transmits decoded signal to the PC after receiving an operating signal from the sensor, operates the TV controller in normal mode when an operating consent signal is transmitted from the PC, and controls the TV controller to operate in stand by mode when an off consent signal is received.

3. The system as recited in claim 1, wherein the set top box at claim 1 is

separated between a main set top box connected to the PC and a server set top box connected to the TV, such that the main set top box and server set top box are connected by cable,

wherein the main set top box includes a TV controller which converts R, G, B signal inputted from a video card of the PC to provide the video signal, connects or blocks the audio signal inputted from a sound card of the PC, and a microprocessor which communicates with the PC through a serial port, transmits decoded signal to the PC when an operating signal is received from a sensor, operates the TV controller in normal mode when an operating consent signal is received from the PC, and controls the TV controller to operate in stand by mode when an off consent signal is received,

and wherein the server set top box includes a sensor to detect the key input device operation, and a PC based TV set top box system including audio and video terminals with a special feature for connecting the PC and the TV located at different locations.

4. The system as recited in claim 2 or 3, wherein the server set top box sensor is a PC based TV set top box system having an infrared sensor as the special feature.

5. The system as recited in claim 2 or 3, wherein the set top box is a PC based TV set top box system with the special feature including a buffer to separate and send R, G, B signals inputted from the video card to the set top box and a monitor.

6. The system as recited in claim 1, wherein the set top box system includes a PC based TV set top box system having a plurality of content provider sites, the PC based TV set top box system manages subscriber information linked between the PC and Internet, and provides exclusive content when enabled.

7. The system as recited in claim 1, wherein the key input device is includes a remote control.

8. A method where a personal computer's screen is displayed on a television by a connection between the personal computer and the television through a set top box, and where the personal computer can connect to an exclusive contents site through Internet, the method steps comprising:

registering a serial number built in the set top box and subscriber information at the content providing site;

communicating between the set top box and the personal computer after an operating request signal is received from an input device, which transmits the serial number to request operation;

connecting the personal computer the exclusive site and transmitting the serial number and information to log in;

comparing the serial number received at the site and registered log in information and permitting log in if they match;

operating an exclusive browser after receiving log in permission from the site, receiving the site's web page, and permitting operation with the set top box; and

providing content exclusively using the PC based TV set top box system to provide a video signal and an audio signal received from the personal computer to the television.

9. The system as recited in claim 8, wherein the step of providing content includes providing a private browser to a top priority order at a regular time interval.

10. The system as recited in claim 8, wherein the serial number includes a special number of a designated unit stored in a set top box at the time of manufacturing, and subscriber information includes a subscriber ID and password.

11. The system as recited in claim 8, wherein the private browser limits the user from connecting to other sites on Internet by providing a simple link set menu where desired content is navigated using a direction key or menu key in a basic menu screen.