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(54) **SYSTEM AND METHOD FOR ZERO LATENCY BROWSING**

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(51) **Int. Cl.**

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H04N 21/235	(2011.01)
H04N 21/44	(2011.01)
H04N 21/61	(2011.01)
H04N 21/643	(2011.01)
H04N 21/81	(2011.01)

(52) **U.S. Cl.**

CPC ***H04N 21/4782*** (2013.01); ***H04N 21/222*** (2013.01); ***H04N 21/2355*** (2013.01); ***H04N 21/44004*** (2013.01); ***H04N 21/6143*** (2013.01); ***H04N 21/6193*** (2013.01); ***H04N 21/643*** (2013.01); ***H04N 21/8126*** (2013.01)

USPC **709/231**; 725/110

(58) **Field of Classification Search**

USPC 709/231; 725/110

See application file for complete search history.

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(57) **ABSTRACT**

A system replicates Internet websites on a large number of user computers having browsers. The system includes a gateway platform having a gateway server and a cache. In the broadcast mode, the gateway server periodically or continuously images broadcast data (e.g., popular websites), compresses the website images, and stores the compressed website images in the gateway cache. The gateway server then broadcasts all of the compressed broadcast data to all (millions) of the user computers over a broadcast device (such as a satellite), for subsequent display by the user in the browser. In the unicast mode, the user requests unicast data (e.g., less-popular websites or websites having highly user-customized information) at the browser. The gateway server images that one web page, compresses the unicast data, and transmits the compressed unicast data over the broadcast device substantially in real time to the one requesting user computer.

31 Claims, 2 Drawing Sheets

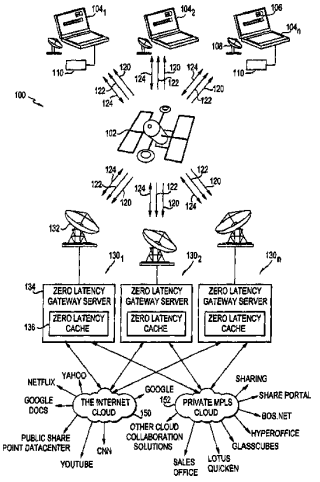

EXHIBIT
1003

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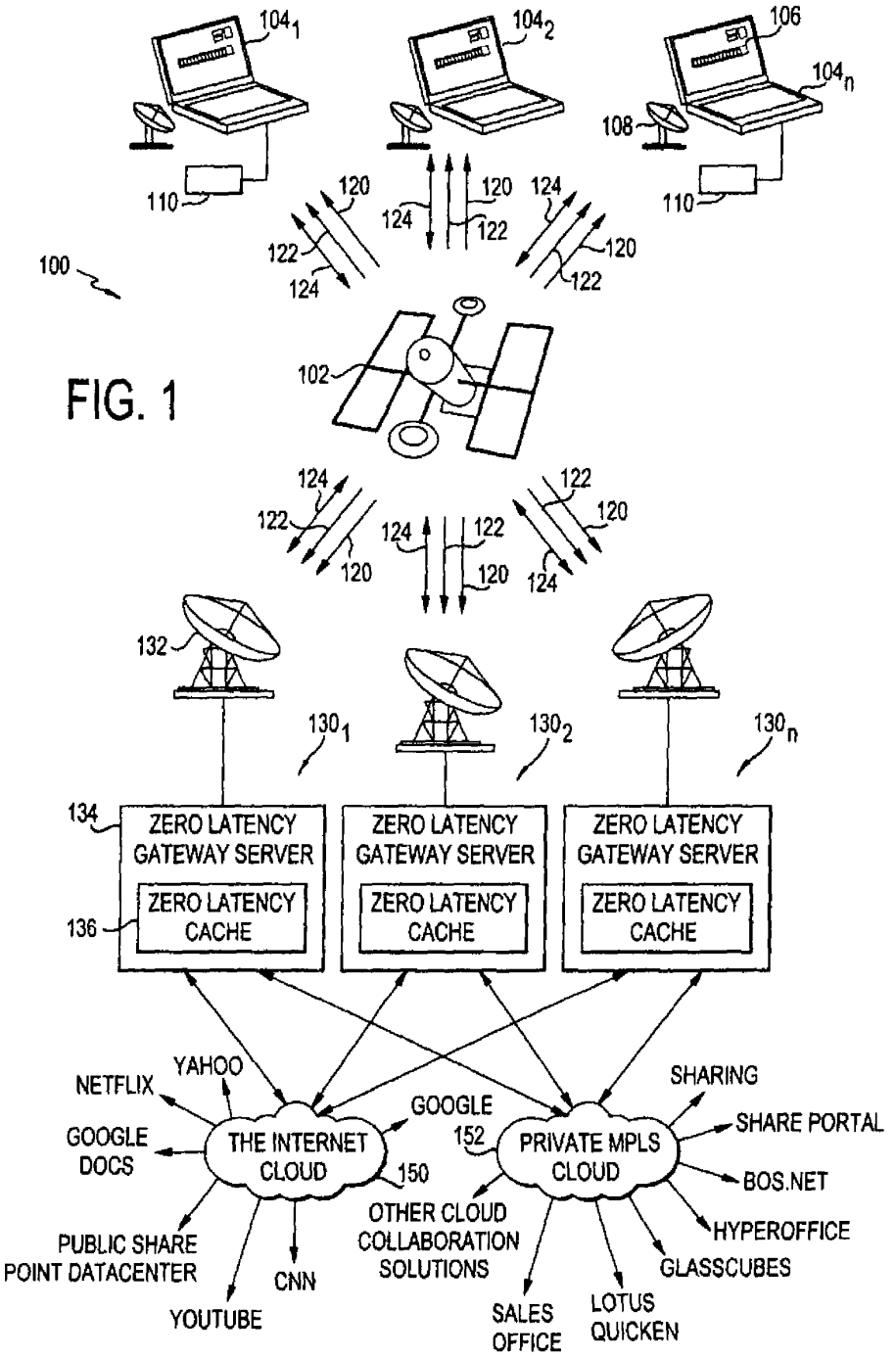
104₁
104₂
106
104ₙ
108
110
110
120
122
124
100
102
132
130₁
130₂
130ₙ
134
136
ZERO LATENCY GATEWAY SERVER
ZERO LATENCY CACHE
ZERO LATENCY GATEWAY SERVER
ZERO LATENCY CACHE
ZERO LATENCY GATEWAY SERVER
ZERO LATENCY CACHE
NETFLIX
YAHOO
GOOGLE DOCS
THE INTERNET CLOUD
150
GOOGLE
PUBLIC SHARE POINT DATACENTER
CNN
YOUTUBE
152
PRIVATE MPLS CLOUD
SHARING
SHARE PORTAL
BOS.NET
HYPEROFFICE
GLASSCUBES
OTHER CLOUD COLLABORATION SOLUTIONS
SALES OFFICE
LOTUS QUICKEN

FIG. 1

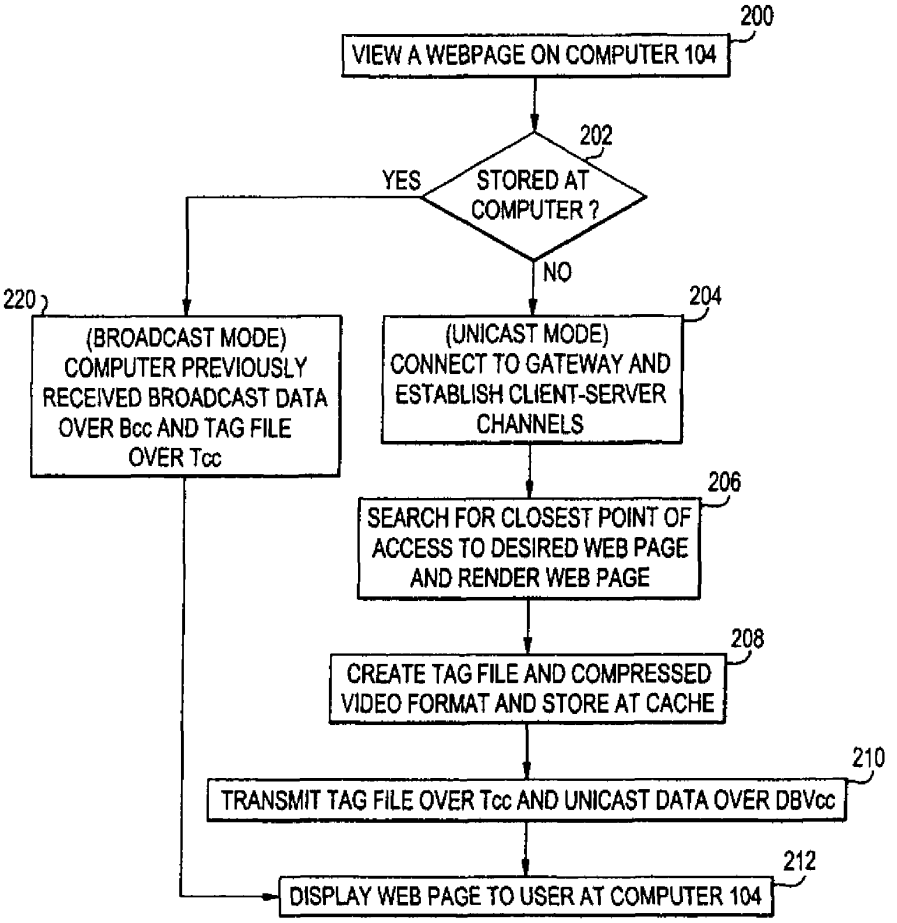
200
VIEW A WEBPAGE ON COMPUTER 104
202
STORED AT COMPUTER ?
YES
NO
220
(BROADCAST MODE) COMPUTER PREVIOUSLY RECEIVED BROADCAST DATA OVER Bcc AND TAG FILE OVER Tcc
204
(UNICAST MODE) CONNECT TO GATEWAY AND ESTABLISH CLIENT-SERVER CHANNELS
206
SEARCH FOR CLOSEST POINT OF ACCESS TO DESIRED WEB PAGE AND RENDER WEB PAGE
208
CREATE TAG FILE AND COMPRESSED VIDEO FORMAT AND STORE AT CACHE
210
TRANSMIT TAG FILE OVER Tcc AND UNICAST DATA OVER DBVcc
212
DISPLAY WEB PAGE TO USER AT COMPUTER 104

FIG. 2

SYSTEM AND METHOD FOR ZERO LATENCY BROWSING

RELATED APPLICATIONS

This application is a Continuation of U.S. patent application Ser. No. 13/109,581, filed May 17, 2011, which claims priority to U.S. Provisional Patent Application Ser. No. 61/434,089, filed Jan. 19, 2011, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

As noted on Wikipedia, the Internet or Internet cloud is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet is composed primarily of HTML documents transmitted from web servers to web browsers using the Hypertext Transfer Protocol (HTTP). However, HTTP is used to serve images, sound, and other content, in addition to HTML. To allow the Web browser to know how to handle each document it receives, other information is transmitted along with the document. This meta data usually includes the MIME type (e.g. text/html or application/xhtml+xml) and the character encoding.

The purpose of a web browser is to read HTML documents and compose them into visual or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. The HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts in languages such as JavaScript which affect the behavior of HTML web pages.

The primary function of a web server is to deliver web pages on request to clients. This means delivery of HTML documents and any additional content that may be included by a document, such as images, style sheets and JavaScripts. A client, commonly a web browser or web crawler, initiates communication by making a request for a specific resource using HTTP and the server responds with the content of that resource or an error message if unable to do so. The resource is typically a real file on the server's secondary memory, but this is not necessarily the case and depends on how the web server is implemented.

Internet traffic consumes a significant percentage of the existing communication channels around the world. In many cases, copies of the same Internet content are being sent thousands of times in a single second. Each of these transmissions across the Internet uses a communication channel and fills the channel with unnecessary and redundant data.

One of the most common ways to access the Internet is via a terrestrial, high-capacity connection. However, terrestrial connections are limited in geographical coverage and performance. Terrestrial connections are also inconsistent in quality, even in some of the most developed countries like the United States and Japan. In emerging markets, Internet access is even more difficult. Often, local Internet exchanges are not available, and web pages or corporate data centers are hosted in different continents. As a result, WAN use severely limits

Internet performance. By contrast, satellite connectivity is unlimited in geographical coverage.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the invention to provide information from a network to user computers in a near-zero latency environment. It is a further object of the invention to broadcast information from a web server over a broadcast device to a multitude of user computers without loss of functionality. It is yet another object of the invention to provide Internet broadcasting channels for broadcasting information in real time. It is still another object of the invention to provide dedicated channels in a broadcast system, for sending specific information to a single user computer.

The present invention is directed to a system and method for providing high definition (HD) Internet in a near-zero latency environment. The current invention addresses latency and bandwidth efficiency by managing Internet access more efficiently and with user performance that allows viewing and interaction with web pages significantly faster than legacy systems available today over terrestrial, wireless, fiber and satellite links.

In accordance with these and other objectives, a system is provided for replicating Internet websites on a large number of user computers having browsers. The system includes a gateway platform having a gateway server and a cache. In a broadcast mode, the gateway server periodically or continuously images broadcast data (e.g., popular websites) from a public (i.e., Internet) or private network, compresses the website images, and stores the compressed website images in the gateway cache. The gateway server then broadcasts all of the compressed broadcast data to all (millions) of the user computers over a broadcast device (such as a satellite or repeater). The broadcast data is sent over one of a plurality of Broadcast Communication Channels using a transmission protocol which is substantially uniform and low bandwidth. The user computers locally store the website images in a storage device. When the user subsequently points the user computer browser to a website, the user computer checks the local storage and immediately retrieves and displays the previously-broadcast information to the user in the browser.

In a unicast mode, the user has requested unicast data (e.g., less-popular websites or websites having highly user-customized information) at the browser, which is not broadcast data and therefore has not been previously broadcast to the user computer or stored in the local storage. Instead, the browser requests the single desired web page from the gateway server. The gateway server images that web page from the network, compresses the unicast data, and transmits the compressed unicast data over the broadcast device. The unicast data is sent using a high speed, high bandwidth transmission protocol so that it is received by the requesting user computer substantially in real time, such as Differential Burst Video Transmission. The unicast data is transmitted via the broadcast device over one of a plurality of Differential Burst Video Communication Channels.

The website images capture the graphical features of the websites. To retain the functionality of the website in both the broadcast and unicast modes, the gateway computer creates a tag file which maps (e.g., using x and y coordinates) the location of various action points (e.g., selectable links, text boxes, etc.) of the web page and identifies the type of action point at each location. The tag file is sent to the user computer over one of a plurality of Tag Communication Channels and is synchronized with the image file at the user computer. Accordingly, as the image file is displayed to the user at the

user computer, the actions taken by the user can be transmitted to the gateway server over a return channel on the broadcast device. The gateway server can then reproduce the user's actions on the website at the network. Thus, the system is able to provide the complete functionality and display of a website at the user computer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** provides a non-limiting example of a non-limiting embodiment of the system for HD Internet according to the present invention; and

FIG. **2** illustrates a non-limiting method according to the present invention.

DESCRIPTION OF THE EMBODIMENTS

The non-limiting embodiments of the present invention will be described hereinafter with reference to the accompanying drawings, wherein like numerals represent like elements.

As shown in FIG. **1**, the system **100** generally includes a broadcast device **102**, user computers **104**$_1$-**104**$_n$, gateway platforms **130**$_1$-**130**$_n$, and networks **150**, **152**. The system **100** communicates data, such as websites, from the networks **150**, **152** to the user computers **104**, via the gateway platforms **130** and the broadcast device **102**. The user utilizes a virtual browser **106** at a display of one of the user computers **104**$_1$-**104**$_n$ to access the remote networks **150**, **152** through the broadcast device **102** and the remotely-located gateway platform **130**$_1$-**130**$_n$. The virtual browser **106** controls the gateway server **134** and is a remote client of the remotely-located gateway server **134**. Thus, the user computers **104**$_1$-**104**$_n$ can be a dumb terminal which runs the browser **106**. The user computers **104**$_1$-**104**$_n$ can also have a wireless connection **108**, and a storage device **110**, which can be the computer's hard drive, ROM, RAM or other memory. The storage device **110** can be integral with the user computer **104**, or a separate component which is in communication with the computer **104**, as shown in FIG. **1**.

The connection **108** enables the browser **106** of the user computers **104**$_1$-**104**$_n$ to communicate with the gateway platform **130**$_1$-**130**$_n$ via the broadcast device **102**. The connection **108** can be located at the same site as the user computer **104** and directly wired or wirelessly connected to the user computer **104**. Or, the connection **108** can be located remote from the user computer **104** and communicate with the computer **104** wirelessly or wired. Thus, the connection **108** can be an air card, GSM connection, Wi Fi, Wi Max, satellite antenna, or any other wired or wireless medium which facilitates broadcasting of information from the gateway **130** to multiple user computers **104**.

The user computers **104**$_1$-**104**$_n$ can be any suitable device, though preferably one having a processor, such as a laptop computer, desktop computer, smartphone, tablet PC, laptop, and Internet equipped television. The user computers **104**$_1$-**104**$_n$ can also have other hardware or software to implement the invention, such as a monitor or display and a memory or storage device **110**. And, the user computers **104**$_1$-**104**$_n$ preferably have user input devices for entering information and/or operating the user computers **104**$_1$-**104**$_n$ and the browser **106**, including a mouse, select button, keyboard, and/or a touchscreen, touchpad, or other suitable input device.

Each of the gateway platforms **130**$_1$-**130**$_n$ includes a respective satellite antenna **132** or a broadcast transmitter/receiver, and a gateway server **134** has a cache **136**. Each gateway platform **130**$_1$-**130**$_n$ can communicate information to any one or more of the user computers **104**$_1$-**104**$_n$ via a forward channel on one of the unidirectional links **120**, **122** or the bi-directional link **124** between the gateway platform **130**$_1$-**130**$_n$ and the satellite **102**; and then continuing over a forward channel on one of the unidirectional links **120**, **122** or the bi-directional link **124** between the satellite **102** and the user computers **104**$_1$-**104**$_n$. And, each computer **104**$_1$-**104**$_n$ can communicate information to any one or more of the gateway platforms **130**$_1$-**130**$_n$ through a return channel on the bi-directional link **124** between the user computers **104**$_1$-**104**$_n$ and the satellite **102**, and then continuing over the bi-directional link **124** between the satellite **102** and the gateway platform **130**$_1$-**130**$_n$.

The gateway server **134** may be configured to communicate with the public computers, servers, networks or clouds such as the Internet cloud **150**, and/or one or more private computers, servers, networks or clouds **152** such as a private MPLS (MultiProtocol Label Switching) cloud. Generally, the system **100** provides for the user computers **104**$_1$-**104**$_n$ to access the Internet **150** and/or private network cloud **152** through a virtual browser **106** of the gateway **130**. The user operates the browser **106** which sends a signal over the satellite **102** to the gateway **130**. The gateway **130** accesses the networks **150**, **152** and returns the results to the virtual browser **106** via the satellite **102**.

The gateway server **134** can be a server farm that is adapted to act as a secure and fast gateway to the Internet **150**, **152**, and may be a network of servers, mainframe computer(s) or other high speed and high capacity processing devices. Its speed is enhanced because it may be positioned at a strategic Internet Exchange Point (IXP), which is where Internet service providers exchange Internet traffic between their networks. For instance, the satellite antennas **132** can serve as a teleport having various ports which connect to the networks **150**, **152** at multiple 1 gigabyte per second.

As shown in FIG. **1**, the broadcast device **102** can be a satellite **102** which communicates with a satellite antenna **132** at the gateway end, and also communicates with a repeater or the like (not shown) at the user end. The repeater in turn communicates with a plurality of user computers **104** over a wired or wireless connection **108**. However, the broadcast device **102** can be any suitable broadcast medium, such as a repeater, and a satellite need not be used. And, the satellite antenna **132** and wireless connection **108** can be any suitable devices which communicate with the broadcast device **102**, so that the gateway platform **130** can broadcast information over the antennas **132** and the broadcast device **102** to a large number of user computers **104** via the wired or wireless connection **108**. For instance, the user computer **104** can be in communication with the gateway platform **130** through a repeater, which in turn communicates with a plurality of user computers **104**, and a satellite **102** need not be used. Though a wireless connection **108** is shown, any suitable connection can be utilized, such as a hard wire or wireless connection to a remote centralized satellite antenna.

As mentioned above, the browser software **106** resides at the gateway **134**, and is configured to run as a virtual browser as a remote client of the gateway server **134**. Because the browser **106** functions as a virtual browser, viruses that attack operating systems and threaten users' security are unable to infest the user's individual computing devices. In addition, the remote browser **106** may rely upon the computing power and very high-speed connection of the gateway server **134** to resolve and render pages, images, and documents from the networks **150**, **152**. The gateway server **134** then images those web pages (which are typically in an HTTP format) to a video or image frame format. This is preferably done by taking an

image of the entire web page from top to bottom, including any portion that would normally be accessed by scrolling up/down or left/right but not immediately displayed on the screen because it is too long for a single screen.

In addition, web pages often have information which is rendered over a period of time, such as a video, streaming information, or an animated display. Accordingly, the gateway server **134** continuously captures images of the web page until it detects a repeating pattern of information in the web page. Thus, the gateway server **134** will be certain to capture all the information on the web page even if that information continues over a period of time. Once the page is imaged (including any audio on the web page), the gateway server **134** compresses the image or video frame format and sends it to the browser **106** via the satellite **102**.

In a non-limiting aspect of the invention, a web-to-HD video protocol may be used to capture and transmit images/audio of a web page, including a full multimedia web page, regardless of its size or original format (e.g., HTTP). The protocol may be configured to compress the data into a compressed digital video format that can be sent to the user computer **104** for display in the browser **106**. Since HTTP is inefficient and slow, the web to HD video capture protocol improves the performance of satellite channels to be equal or better than 50 msec terrestrial high-capacity channels not accessed via HD Internet using the present invention. Though the web pages are preferably imaged, any suitable technique can be used to place the web pages in a format suitable for broadcasting to a large number of user computers **104**, such as converting the HTTP code to an image frame format or the like. Preferably, however, the technique is independent of the HTTP content, as in imaging.

It is noted that many web sites include selectable fields or other items which may require user interaction. By way of a non-limiting example, a website may have selectable buttons, scroll bar, browsing bar, drop-down menu, hover links, menus, selectable links, or data entry points. For ease of description, these features are collectively referred to in this application as tag data or action points. When the website is captured in a video frame format, those action points are imaged, but their functionality is not retained in the video images. Rather, a separate tag file is created which maps the various locations of the action points on the web page. That tag file is associated with the compressed video file based on the domain name for the imaged page, and the video is synchronized with the tag file so that the proper action points are associated with the video images. Accordingly, when the user views the video file on the browser **106**, the user retains all the functionality of the website. Thus, the video file and the tag file cooperate to emulate or reproduce the website at the browser **106**, so it appears to the user that the web page is actually being displayed in the browser **106**.

For instance, it is assumed that the user has accessed a search website which has a search box where the terms to be searched are entered. The website is virtually displayed on the browser **106** as a video image of the actual site. The user may then use the mouse to click the pointer in the search box. The browser **106** recognizes from the tag file that the user has positioned the pointer in the search box, and transmits that action to the Internet site on the Internet cloud **150**, via the platform **130**. The user may then use the keyboard to start typing a term in the search box. Again, that action is replicated and sent to the actual website at the Internet cloud **150**. The Internet site at the Internet cloud **150** then responds to the user's action, and the result is captured to an image file, compressed and sent back to the user's computer **104** for display on the browser **106**. Further action may include, but is not limited to, opening another page, downloading or opening a file, printing a document, refreshing a page, filling form fields, and drag and drop mouse actions. Thus, all user actions may be performed on the computer **104** and either implemented at the user computer **104** (such as saving a file to the storage device **110** and scrolling down on the page) or recognized at the website at the Internet cloud **150** or the private cloud **152** (such as opening a link, opening a drop-down menu, and hovering over a link). Typing information may be communicated when pages are refreshed, which eliminates latency perception by the user.

The gateway server **134** transmits the video data to the user computers $\mathbf{104}_1$-$\mathbf{104}_n$ for display on the browser **106**. The browser **106** includes all of the command and function features of a standard browser, including home, back, print, favorites, and address, and can have the standard bars, including the menu, status and command bars. The browser **106** also interfaces to the computer **104** peripherals, such as the printer, hard drive, USB ports, and the like. In addition, the browser **106** of the present invention is capable of searching the local storage device **110** to see if a web page has been previously received in the broadcast mode. The browser **106** also generates and sends commands and a tag file to the gateway server **134** so that the gateway server **134** retrieves the information desired by the user. In addition, the browser **106** controls and synchronizes the tag file and echo. For instance, if the user enters a web domain in the address field of the browser **106**, the typed letters will appear in the browser **106**. But, the browser **106** will not transmit the domain to the gateway server **134** until the user hits the ENTER command key or clicks the mouse to enter the domain name. Likewise, if the user moves the mouse, the mouse pointer moves on the screen of the user computer **104**. However, the browser **106** does not transmit that movement to the gateway server **134** unless the mouse pointer is hovered over a link (a type of action point), or if the user clicks the mouse at an action point.

The browser **106** then recognizes when the user uses any of the input devices at the computer **104**. If the user requests a web page, the user computer **104** checks its local storage device **110** for the desired information. If the requested information has been previously broadcast and stored in the storage device **110**, that information is immediately displayed in the browser **106**. If the requested information has not been previously stored in the storage device **110**, the browser **106** prepares a tag file with the location of the action and the action point. It then transmits that tag file to the gateway platform **130** where the gateway server **134** first checks the cache **136** for the requested information. If the information is stored in the cache **136**, it is sent to the user computer **104**. If the information is not stored in the cache **136**, the server **134** replicates the action point to the website on the Internet cloud **150**. The website response is then imaged, compressed and returned to the browser **106** using a differential burst video transmission via the satellite **102**.

It will be apparent that the virtual browser **106** can be any software application which can display the received video frame data to look like the web page is actually being displayed in a browser. The gateway servers **134** may also be configured to handle other computational requirements of multimedia and video related services accessed by users. Accordingly, the browser **106** takes advantage of the high processing speeds and the high speed connections (e.g., 1 Gb per second and higher) of the gateway server **134** to access information from the networks **150**, **152**.

The system **100** preferably has two primary modes of operation, a unicast mode to communicate unicast data using differential burst video transmission, and a broadcast mode to

communicate broadcast data. Both modes are implemented at the browser **106** and/or the gateway platform **130**. The unicast mode is used to send highly customized information from a single website at network **150**, **152** to a single user computer **104** in real time as it is requested by the user. Accordingly, the unicast mode utilizes the differential burst video transmission to provide a very fast transmission of data having a high bandwidth over a very short period of time. And, the unicast data is given transmission priority over the broadcast data. In contrast, the broadcast mode is used to send information that is accessed by a large number of users from a single website at network **150**, **152** to a large number of user computers **104**. The information is continuously or periodically updated and broadcast so that it is immediately available at the user computers **104** when subsequently requested by the user. So, the information need not be sent by the differential burst video transmission protocol, but instead can be sent over a more uniform lower-bandwidth transmission over a longer period of time. And, since the broadcast data is not needed by the user as immediately as the unicast data, the broadcast data can have a lower transmission priority to the unicast data.

Thus, the mode of operation which is implemented by the gateway server **136** and the user computer **104** depends on the information (such as a website or other source) the user accesses. The information will either be unicast data or broadcast data, depending on the popularity, image-intensity and how customized the information is to the user. For instance, the gateway server **134** may track the type of usage that the users make of the networks **150**, **152**. It can then determine which websites are most frequently accessed and/or contain the most graphics. Based on that information, the gateway server **134** can determine that the website is unicast data or broadcast data.

Unicast data includes information from the network **150**, **152** which is less popular and/or is highly customized to the user. Thus, the unicast mode is used to transmit specific sites or information to a single user computer **104**, and especially those sites or information which are not amenable to being broadcast to a large number of users. The unicast data is intended to include information, such as websites, which is not frequently accessed since those sites do not (by definition) take a substantial amount of the bandwidth. And, unicast data also includes information, such as websites, which are highly specific in use or are very customized to the user, such as a search site like Google or web email like gmail or yahoo mail. Those sites are not very amenable to being broadcast to multiple users since the pages are different for each user. As a result, those sites need to be sent directly to the particular user in response to the user's request. The computer **104** can save the site to the local storage device **110**, though it doesn't have to.

Since the unicast mode is for customized information, the unicast data is sent in real time without delay, directly from the network cloud **150**, **152** via the gateway platform **130** and the broadcast device **102** to the user computer **104**, where it may be immediately displayed (once decompressed at the computer **104**). Accordingly, the unicast mode provides fast processing which is achieved using a fast differential burst video transmissions instead of standard back and forward negotiations used by existing Internet browsers, like Internet Explorer, Chrome, FireFox, Opera, and the like. The burst transmission is a high-bandwidth (several Mbits/s) transmission of data over a very short period of time, especially as compared to a TCP/IP transmission which provides a lower-bandwidth transmission over a greater period of time. The shorter transmission time also reduces the time needed by the satellite **102** to retransmit the information, which can typically have a very wide bandwidth capacity.

In addition, the differential aspect of the transmission protocol provides that only the change in the video is transmitted. For instance, suppose the first frame of a video shows a person sitting in a chair. An initial burst transmission of data is transmitted showing the person sitting in the chair. If the person raises his/her leg in the second frame, then the system only needs to transmit the leg being raised and need not transmit the rest of the person's body or the chair. The raising of the leg is sent in a short burst transmission, but there is less information to send so that burst of data will require less bandwidth and time than the initial burst transmission of data.

The broadcast mode, on the other hand, is used to send the same information to a wide number of user computers **104**. Thus, the broadcast data is intended to include the most frequently visited and/or graphics-intensive web pages, but less specifically-customized information. Accordingly, suitable sites for the broadcast mode are news sites like CNN, BBC, newspaper, live streaming television feeds, movies, music downloads, or ESPN. Those sites provide the same information to a wide number of users over and over again. Though users may select to view different information, that information is not specific to the user (unlike a search site). In addition, there can be a number of broadcast channels and each channel can have a specific theme, such as country music, military television, etc. The user can then tune the browser **106** to one of the broadcast channels to receive that content. Thus, the broadcast channel can be configured here to receive live content, or to update the storage device **110** of the user computer **104**.

For instance, the main page of ESPN presents the same information to all viewers, which may include scores of hockey games and basketball games. If a large number of viewers choose to select a certain hockey game, that page of the website can also be sent in the broadcast mode. On the other hand, if the user desires information which is not frequently viewed (such as about high school sports on ESPN), that information will be delivered to the computer **104** in the unicast mode and optionally stored at the storage device **110** of that computer **104**.

In the broadcast mode, the gateway server **134** retrieves the desired data from the networks **150**, **152**, captures that data (including audio) to a video (or image) frame format, compresses that video data and stores the compressed video data in the gateway **130** at the cache **136**. The cache **136** is a cache server adapted to store web pages and is in communication with the gateway server **134**. The cache **136** is shown in FIG. **1** as part of the server **134**, but can be separate from the server **134**, and can be memory or other storage device. The gateway cache **136** preferably stores the web pages in the compressed video format, but can store the data in any suitable format(s) including HTTP format.

Once the broadcast data is stored in the gateway cache **136**, the gateway server **134** then transmits that data to the multiple user computers **104**, which then store that data on the storage device **110**. Thus, the storage device **110** can be synchronized with the gateway cache **136** so that they both store the same information. However, the local storage device **110** can also store client-specific content that is not present in the gateway cache **136** to provide faster access to client-unique requirements and flexibility and support of the gateway cache **136**.

As the broadcast sites are updated, the updated sites are cached **136** and sent to the user computers **104**. The gateway server **134** can track the updates in several ways. For instance, the server **134** can continuously capture the broadcast data at the networks **150**, **152**. Or, the gateway server **134** can con-

tinuously or periodically compare the broadcast data stored in the cache **136** with the broadcast data at the networks **150**, **152** and re-capture any broadcast data which is updated. As the information is updated, the updated broadcast data is compressed, saved to cache **136**, broadcast to the user computers **104**, and stored in the storage device **110**.

Accordingly, the broadcast mode operates proactively, before the user requests any broadcast data, so that the information is immediately available for display in the browser **106** when the user subsequently desires to access it. The data can also (or alternatively) be stored at the user's computer **104** (or from the gateway server **136**) to a CD, DVD, downloadable file, ftp site, or USB memory stick, such as one having a terabyte capacity, so that the information is available at any computer **104** that the user may access.

Thus, in the broadcast mode, the gateway server **134** accesses a website at the network **150**, **152**, then broadcasts that data to multiple user computers **104** at one time. For instance, the server **134** can broadcast thousands of websites to millions or tens of millions of user computers **104**. That broadcast then eliminates the need to transmit the same information from those websites back and forth millions of times from the clouds **150**, **152** to the user computers **104**. That, in turn, reduces the bandwidth needed to communicate that information, reduces traffic on the satellite **102**, and significantly improves the user experience.

As noted above, communications between the computers **104** and the gateway server **134** are over various unidirectional links **120**, **122** and bidirectional links **124**. Specifically, the unidirectional links include a Broadcast Communication Channel (Bcc) **120** and a Differential Burst Video Communication Channel (DBVcc) **122**, while the bidirectional links include a Tag Communication Channel (Tcc) **124**. Though only a single Bcc, DBVcc and Tcc channels are shown, multiple channels can be provided for each.

The Broadcast Communication Channel (Bcc) **120** is a multi-cast channel which is configured to forward broadcast data to a plurality of user computers **104**. It is only used in the broadcast mode of operation. Though only one channel **120** is shown, there may be multiple broadcast channels **120** provided. Accordingly, the gateway server **134** sends the broadcast data that is stored in the gateway cache **136**, over the Bcc **120** to several or all of the user computers $\mathbf{104}_1$-$\mathbf{104}_n$. The broadcast information is sent from the gateway cache **136** at one of the gateway platforms $\mathbf{130}_1$-$\mathbf{130}_n$ on the forward broadcast communication channel **120** to the satellite **102**. The satellite **102**, in turn, retransmits that data on the forward broadcast communication channel **120** to the browsers **106** of every user computers $\mathbf{104}_1$-$\mathbf{104}_n$. Thus, only one of the gateway servers **134** in communication with each satellite **102** needs to store web data in its cache **136**, since the satellite **102** can retransmit that data to all of the computers **104** with which it communicates. So, each satellite **102** only needs to be in communication with a single the gateway server **134** which has a cache **136**, though preferably more than one server **134** stores Internet data in a cache **136** for redundancy and to better distribute communication channels for that server **134**. Accordingly, the server **134** which is closes to a particular data center can access information for a given website. For instance, the first gateway platform $\mathbf{130}_1$ may be closest to the data center for the CNN site, and the second gateway platform $\mathbf{130}_2$ can be closest to the data center for the BBC site. So, the first platform $\mathbf{130}_1$ will store the CNN site in its cache **136** and the second platform $\mathbf{130}_2$ will store the BBC site in its cache **136**.

Once the broadcast data is stored at the user computer **104**, that information is immediately available for display on the browser **106** when the user subsequently desires to access that data. Each user computer **104** stores all of the broadcast data. The broadcast channel **120** is unidirectional since it is only used to broadcast information to a large number of potential users. By broadcasting the broadcast data to a large number of user computers **104**, the system **100** avoids having to bog down the satellite **102** (as well as the gateway server **134**) with repeated individual requests from a large number of user computers **104** for those frequently-viewed sites.

Instead, those individual requests are handled immediately at the user computer **104** itself and the requested data is retrieved from the user storage device **110**. This improves the overall communication flow and maximizes the efficiency of the system **100** by reducing the use of the satellite **102**; which also optimizes the cost-effectiveness of the system **100** by minimizing the cost which is typically associated with the use of a satellite **102**. Thus, it is advantageous to broadcast as many sites as possible in the broadcast mode to as many user computers **104** as possible. The cost of storage devices **110** continues to become exponentially cheaper, so that a large amount of broadcast data (i.e., compressed imaged websites) can easily be stored at the local storage device **110** in a cost-effective manner.

The broadcast channel **120** synchronizes the information that is transmitted. Periodically or as desired, based on user profiles, the gateway **134** may push the cache **136** to the multiple users. The gateway server **134** preferably broadcasts all of the broadcast data stored in the cache **136** to all of the user computers **104**, which includes all updated sites. By sending the cache **136** to the users, bandwidth is conserved and fewer images are re-transmitted. By transmitting the cached sites over the broadcast channel **120**, the system **100** need not continuously transmit the same information from those sites to each requesting computer **104** individually, which in turn reduces the bandwidth and time to view a page. That also reduces the number of times the websites themselves need to be accessed through the network cloud **150**, **152**.

As an illustrative example, the gateway server **134** at the first gateway platform $\mathbf{130}_1$ may be provided with a cache **136**, but the second and n^{th} gateway platforms $\mathbf{130}_2$-$\mathbf{130}_n$ need not have caches **136** and need not communicate on a broadcast communication channel **120**. That first gateway platform $\mathbf{130}_1$ can then determine that the website for the news organization CNN is a popular site. The gateway server **134** can track the CNN site on the Internet cloud **150** and store the site to the gateway cache **136** whenever the site is modified and/or at predetermined periodic intervals. The server **134** at the first gateway platform $\mathbf{130}_1$ can then transmit the CNN site on the broadcast communication channel **120** to the satellite **102**. The satellite **102** then transmits the CNN site to each of the user computers $\mathbf{104}_1$-$\mathbf{104}_n$ over the broadcast communication channel **120**. The user computers $\mathbf{104}_1$-$\mathbf{104}_n$ are then able to display the CNN site whenever it is called up by the browser **106** at the user computer $\mathbf{104}_1$-$\mathbf{104}_n$.

To further illustrate a feature of the invention, the gateway server **134** at the first platform $\mathbf{130}_1$ (or the second platform $\mathbf{130}_2$), may detect that users in the state of Florida access CNN in Spanish. The system **100** can then have the first platform $\mathbf{130}_1$ server **134** cache and broadcast the CNN site in Spanish to Florida users, which is a subgroup of all the user computers $\mathbf{104}_1$-$\mathbf{104}_n$. The CNN site can be stored in a local hard drive of the user computers $\mathbf{104}_1$-$\mathbf{104}_n$, if desired. This methodology conserves bandwidth because websites are transmitted as video images and the data is compressed and transmitted to several user computers $\mathbf{104}_1$-$\mathbf{104}_n$, at once rather than the

same information being transmitted multiple times by legacy Internet-based systems using HTTP, HTTPS, and TCP/IP.

The system **100** also has a Differential Burst Video Communication Channel (DBVcc) **122** which is used only in the unicast mode of operation. The DBVcc **122** is also a unidirectional channel. Though only one channel **122** is shown, there may be multiple DBVcc channels **122** provided. It is used to transmit digital video images of a web page from the gateway server **134** to one of the user computers $\mathbf{104}_1$-$\mathbf{104}_n$ via the satellite **102**. Thus, the Differential Burst Video Communication Channel **122** is similar to the Broadcast Communication Channel **120**, except that the DBVcc **122** is used to send video data to a single user computer **104** in the unicast operational mode, and the Bcc **120** is used to send video data to multiple user computers **104** in the broadcast operational mode. The DBVcc **122** is preferably a priority channel of communication, and is given priority over the Bcc **120**. This can be accomplished, for instance, by setting aside a certain number of channels just for the DBVcc **122**, and/or by giving priority to unicast mode communications under a COS (Class Of Service) or QOS (Quality Of Service) protocol. The priority protocol can be implemented by the server **134** and/or by the browser **106**.

The Tag Communication Channel (Tcc) **124** is a two-way channel which is utilized in both the unicast mode and the broadcast mode. The Tag Communication Channel **124** transmits information related to the tag data or action points of a web page like tags and local echo for typing. Though only one channel **120** is shown, there may be multiple broadcast channels **120** provided. More specifically, the Tcc **124** provides a forward channel from the gateway server **134** to the user computer **104**. The tag file includes the action points associated with a web page. The tag file is sent on the forward Tcc channel **124** so that the virtual browser **106** (as a client of the gateway server **134**) can identify the action points of the website being viewed by the user. The tag file and compressed video file can also include information (such as a time stamp, ID, code, or the like) which facilitates synchronization of the tag file to the video. For instance, for a given search site, the tag file can include at least the domain name for the web page and the location (x pixels down and y pixels over) of the action taken. It can also include the action type and the action taken.

The browser **106** then creates a tag file which includes the domain name for the web page, the location where the action is taken (x pixels down and y pixels over) and the action taken (such as the movement or click of the mouse, the typing of a letter or command (tab, backspace, etc.) on the keyboard, etc.). That tag file is sent to the gateway server **134** via the satellite **102** on the return Tcc channel **124**. In this manner, the browser **106** communicates the user's actions to the gateway server **134**. The gateway server **134** can then replicate that action on the website on the Internet cloud **150** or private cloud **152**. However, certain actions, such as scrolling the web page, can be handled by the browser **106** itself since the entire web page is imaged and saved in the local storage device **110**; so that the browser **106** need not be sent to the gateway server **134**.

The Tcc **124** operates in conjunction with the Bcc **120** and the DBVcc **122** to provide the complete virtual appearance of the website being accessed by the user via the gateway server **134**. That is, the Tcc **124** provides the functionality of the website being accessed and either the Bcc **120** or the DBVcc **122** provides the image of the website. More specifically, the Bcc **120** provides the image of the website when the browser **106** views a site (via the satellite **102** and gateway server **134**) which is sent over the broadcast channel **120** in the broadcast mode. And, the DBVcc **122** provides the image of the website when the browser **106** views a site (via the satellite **102** and the gateway server **134**) which is sent over the Differential Burst Video Communication Channel **122** in the unicast mode.

The system **100** can switch between the broadcast mode and the unicast mode as the user moves between different web pages or even within subpages of a single website. For instance, if the user has accessed the CNN site in broadcast mode and clicks on a CNN link to a page which is not frequently accessed or which is customized to the user, the system **100** can switch to the unicast mode. One alternative feature of the invention is to provide one or more unidirectional Multi-cast Communication Channels (Mcc), each of which carries transmissions to a predetermined a group or subset of users. For example, users may decide to join a multi-cast group, and communications unique to that group would be transmitted to those user computers $\mathbf{104}_1$-$\mathbf{104}_n$ over that multi-cast channel. For example, the caching engine at the gateway server **134** may push the cache **136** periodically onto the computers **104** by multi-casting it to subscribers. In the example above, the user computers $\mathbf{104}_1$-$\mathbf{104}_n$ located in Florida can be assigned to a common multi-cast group having a designated multi-cast channel. By storing a portion or all of the gateway cache **136** at the gateway **134**, the retransmission of video images associated with pages can be eliminated, which results in greater speed. This configuration also enables the immediate start of video, which enhances the user's experience.

All of the unicast and broadcast data are communicated over the broadcast device **102**. There may be periods of high volume use which challenge the transmission capabilities of the broadcast device **102**. Thus, as with the DBVcc **122**, the Tcc **124** can be designated as a priority channel when the communication is in the unicast mode, so that it has priority over the Bcc **120** and over other Tcc communications which are in the broadcast mode. Thus, the order of priority for the transmissions is as follows: (a) Bcc when used for live broadcasting, (b) Tcc, (c) DBVcc, and (d) Bcc when not used for live broadcasting. In addition, all of the Tcc information can have the assigned priority, or only the tag files from the user computer **104** and when used for DBVcc can have the assigned priority; and tag files associated with the broadcast data can have a lower priority. This priority protocol can be implemented by the server **134**, for instance, by setting aside a certain number of channels just for the priority channels, such as Bcc for live broadcasting, unicast Tcc **124** communications, and/or by giving priority to unicast mode communications under a COS or QOS protocol. The channels can be dedicated channels, or non-dedicated channels.

The private cloud **152** can be maintained by the operator of the gateway platform **130**. Although it is globally accessible, it is a private cloud. Users at remote computer **104** can access the private cloud **152** via a private link, via the gateway **130**. The private link is established by a dedicated IPL (International Private Line) or MPLS (MultiProtocol Layered Switching links) established between the gateway server **134** and the private cloud **152**.

One exemplary feature of the invention provides that the gateway server **134** maintains a list of the broadcast data which is to be broadcast to the user computers. This may be, for instance, a list of the web pages which is to be regularly imaged, compressed and broadcast. That list can be updated manually and/or automatically, such as by utilizing artificial intelligence at the gateway server **134** to improve the information that is determined to be broadcast data. The user computer **104** can track the percentage of success of the requested information being stored in the storage device **110**.

It can send those statistics to the gateway server **134** to learn what information or web pages should be designated as broadcast data.

Another exemplary feature of the invention enables the browser **106** to apply a one-time unique login for a user. Through this feature, the user is only required to authenticate once, namely the first time the user accesses the gateway server **134**. The server **134** identifies allowable computers **104** by its MAC address and provides access to authorized computers **104**. The gateway server **134** can also maintain an account history to determine how many times a computer **104** connects to the gateway server **134** for billing or other purposes. The user only needs to log in one time, during which the user can download the browser **106** to the user computer **104**. When the browser **106** initially connects to the gateway server **134**, it sends the MAC address for the computer **104** to the gateway server **134**. All subsequent communications are based on the MAC address.

FIG. **2** illustrates exemplary method steps performed by the system **100** of the present invention. First, in step **200**, the system recognizes that a web page option has been selected by a user at the browser **106**. At step **202**, the browser **106** determines if the desired web page (based on the domain name for the web page) is stored locally at the memory or storage device **110** of the computer **104**. If the site is not stored at the computer **104**, the browser **106** (in unicast mode) at step **204** connects to the gateway server **134** via the browser **106** and the satellite **102**. At step **206**, the gateway server **134** checks the cache **136** for the requested information and, if not found, searches for the closest point of access (such as a data center) to the desired web page on the cloud **150**, **152**. The gateway server **134** then connects to the site over the cloud **150**, **152** and renders the site.

At step **208**, the server **134** creates a compressed video format of the web page. The compressed video format may include all of the page's graphical information and data from different sources in a single video signal representing the image of the web page. The data may include Java, html, flash, or other programs known to those of skill in the art. Also at step **208**, the server **134** creates a tag file which maps the desired website. The tag file may include positions of the scroll bar click, prompt locations, and any other action points of the web page. As mentioned above, the tag file retains the functionality of the website on the browser **106**. The tag file may be periodically updated at the gateway server **134** and the computer **104** as the web page at the network **150**, **152** changes, so that both views of the page are synchronized. The system can optionally store the compressed video format and the tag file in the gateway cache **136** at the gateway server **134**.

At step **210**, the tag file data is then transmitted to the computer **104** using the Tag Communication Channel **124**, and the compressed video data is transmitted to the computer **104** using the DBVcc **122**. The tag file is preferably transmitted to the user computer **104** with the compressed video data, so that the information is synchronized. At step **212**, the browser **106** receives the compressed video data and the tag file from the gateway server **134** and displays the web page.

Returning to step **202**, if the computer **104** determines that the requested web page is locally available in the computer memory **110**, then the locally available version of the web page is used in the browser **106**. The requested web page would be in the memory of the computer **104** (or the cache **136**) if it is broadcast data which has been previously imaged, compressed, tagged, cached and broadcast over the Bcc **120** to the user computer **104**; and the associated tag file was sent over the Tcc **124**. The broadcast data can then be immediately displayed to the user in step **212**, and the system **100** need not perform steps **204-210**.

Although the steps in FIG. **2** have been described in sequential order for ease of understanding, it is important to note that many, if not all, of these steps may be performed in varying orders and/or in parallel. For instance, the server **134** can operate in the broadcast mode and the unicast mode at the same time. All such combinations of steps are within the scope of the present invention.

One of the benefits of the present invention is that no local process on the computer **104** is required, other than the effective display of the web page images. The gateway **130** does all the processing, so that the computer **104** can be a dumb terminal.

Accordingly, the present invention provides a gateway server **134** and a gateway cache **136** which provides public or private information from a public or private network to the browser **106** in real time. In addition, the system **100** enables a reduced, and near-zero, latency of the satellite **102**. Thus, the gateway server **134**, cache **136** and browser **106** provide a near-zero latency.

The gateway server **134**, as well as the broadcast device **102**, can be implemented by a computer having a processor to perform various functions and operations in accordance with the invention. The computer can be, for instance, a personal computer (PC), server or mainframe computer. The processor may also be provided with one or more of a wide variety of components including, for example, input device, display or monitor, and a memory or storage device such as a cache **136** or database. The system and processes implemented at the gateway platform **130**, the broadcast device **102** and/or the user computer **104**, can be stored on or read from computer-readable media which stores machine executable instructions for performing the processes described. Computer readable media may include, for instance, hard disks, floppy disks, DVD, memory stick, CD-ROM, dowloadable file, read-only memory (ROM) or random-access memory (RAM).

As shown and described herein, the gateway platform **130** is preferably separate from the broadcast device **102**. However, all or part of the gateway platform **130**, including the server **134** and the cache **136** and its associated functionality, can be integrated with and located together with the broadcast device **102**. In an embodiment where the broadcast device **102** is a satellite, the satellite can have the features discussed in co-pending application Ser. No. 61/350,211, filed Jun. 1, 2010, the entire contents of which are hereby incorporated by reference.

In addition, a firewall can be provided at the gateway server **134**, so that any forward communications from the gateway server **134** have to pass through the firewall before being transmitted to the satellite **102**. This greatly simplifies security by reducing the number of security points and firewalls that might otherwise be needed. The system **100** also provides a secure access for public and private cloud **150**, **152** services.

Other features of the invention can include time stamping the data stored in cache **136**, and/or time stamping the access made by the users and storing that information in the user's account.

Finally, while the preferred embodiment of the invention has been described to communicate websites over a broadcast system, other information may be communicated. For instance, movies, database and HD movies can be broadcast to user computers **104**.

Numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the

appended claims, the invention may be practiced otherwise than as specifically described herein.

The invention claimed is:

1. A system for communicating first and second data from a plurality of first computers to a plurality of second computers remotely located from the plurality of first computers, the system comprising:

a processing device configured to capture the first data in a video frame format from at least one of the plurality of first computers, transmit the first data via satellite over a first satellite communication channel using a differential burst video transmission to no more than one of the plurality of second computers to display the captured data in the video frame format, to capture the second data from at least one of the plurality of first computers and to broadcast the second data via satellite over a second satellite communications channel different from the first communications channel to the plurality of second computers,

wherein the plurality of second computers includes a first plurality of second computers and a second plurality of second computers different from he first plurality of second computers, and wherein said processing device is further configured to receive requests for data from at least a portion of the first plurality of second computers and at least a portion of the second plurality of second computers, determine most frequently requested data for the first plurality of second computers, determine most frequently-requested data for the second plurality of second computers separate from determining the most frequently requested data for the first plurality of second computers, capture the requested data from at least one of the plurality of first computers, transmit the captured requested data as first data to the first plurality of second computers if it is determined that the requested data is not the most frequently requested data for the first plurality of second computers, transmit he captured requested data as first data to the second plurality of second computers if it is determined that the requested data is not the most frequently requested data for the second plurality of second computers, transmit the captured requested data as second data to the first plurality of second computers if it is determined that the requested data is the most frequently requested data for the first plurality of second computers, and transmit the captured requested data as second data to the second plurality of second computers if it is determined that the requested data is the most frequently requested data for the second plurality of second computers.

2. The system of claim **1**, wherein the data is provided by the plurality of first computers in a first format, and said processing device captures at least a portion of the data in a video frame format, and the video frame format is different from and independent of the first format.

3. The system of claim **2**, wherein the first format is an HTTP format.

4. The system of claim **2**, wherein said processing device captures the entirety of the data to a video frame format.

5. The system of claim **1**, wherein each of the plurality of first computers is a server accessible through a global network, and the plurality of second computers are dumb terminals.

6. The system of claim **1**, wherein the data is a web page and said processing device causes the plurality of second computers to display a virtual image of the web page.

7. The system of claim **1**, wherein said processing device comprises a processor.

8. The system of claim **1**, wherein further comprising a storage device for storing the captured data.

9. The system of claim **1**, wherein said processing device comprises a processor in communication with a storage device and said processor stores the captured data in said storage device.

10. The system of claim **1**, wherein the plurality of second computers are configured to receive a user input action command, and in response to the user input action command create a tag file comprising a location of the user input action command, a type of the user input action command, and the user input action command.

11. The system of claim **10**, wherein the location of the user input action command comprises an x coordinate and a y coordinate.

12. The system of claim **10**, wherein the type of the user action input comprises a keyboard entry or a mouse entry.

13. The system of claim **10**, wherein the user input action command comprises a mouse click, a scroll, or a typed key command.

14. The system of claim **10**, wherein said processing device further receives the tag file and performs the user input action command on the plurality of first computers.

15. A system for presenting first and second web pages of at least one web server on a plurality of user computers remotely located from the at least one web server, wherein the plurality of user computers includes a first plurality of user computers and a second plurality of user computers different from the first plurality of user computers, the system comprising:

a gateway storage device; and,

a gateway processor in communication with said gateway storage device, said gateway processor configured to access the first web page from the at least one web server in an HTTP format, create a web page image of the first web page in a graphics format, store the web page image to said gateway storage device, and transmit the web page image to the user computer via satellite over a first satellite communication channel, said gateway processor further configured to access the second web page from the at least one web server and transmit the second web page to the user computer via satellite over a second satellite communication channel different than the first satellite communication channel;

wherein said gateway processor is further configured to receive requests for data from at least a portion of the first plurality of user computers and at least a portion of the second plurality of user computers, determine most frequently requested data for the first plurality of user computers, determine most frequently requested data for the second plurality of user computers separate from determining the most frequently requested data for the first plurality of user computers, capture the requested data from at least one of the plurality of first computers, transmit the captured requested data as first data to the first plurality of user computers if it is determined that the requested data is not the most frequently requested data for the first plurality of user computers, transmit the captured requested data as first data to the second plurality of user computers if it is determined that the requested data is not the most frequently requested data for the second plurality of user computers, transmit the captured requested data as second data to the first plurality of user computers if it is determined that the requested data is the most frequently requested data for the first plurality of user computers, and transmit the captured requested data as second data to the second

plurality of user computers if it is determined that the requested data is the most frequently requested data for the second plurality of user computers.

16. The system of claim **15**, said gateway processor further configured to display the web page image at the user computer.

17. The system of claim **15**, further comprising a plurality of user computers, said gateway processor broadcasting the same web page image to each of the plurality of user computers.

18. A system for virtually replicating a web page of a web server on a plurality of user computers remotely located from the web server, wherein the plurality of user computers includes a first plurality of user computers and a second plurality of user computers different from the first plurality of user computers, the system comprising:

a gateway storage device; and,

a gateway processor in communication with said gateway storage device, said gateway processor configured to access the web page from the web server, create a web page image of the web page, create a tag file identifying an action point of the web page and a location of the action point, transmit the web page image to the user computer via satellite over a first satellite communication channel, and transmit the tag file to the user computer via satellite over a second satellite communication channel different from the first satellite communication channel;

wherein said gateway processor is further configured to receive requests for data from at least a portion of the first plurality of user computers and at least a portion of the second plurality of user computers, determine most frequently requested data for the first plurality of user computers, determine most frequently requested data for the second plurality of user computers separate from determining the most frequently requested data for the first plurality of user computers, capture the requested data from at least one of the plurality of first computers, transmit the captured requested data as first data to the first plurality of user computers if it is determined that the requested data is not the most frequently requested data for the first plurality of user computers, transmit he captured requested data as first data to the second plurality of user computers if it is determined that the requested data is not the most frequently requested data for the second plurality of user computers, transmit the captured requested data as second data to the first plurality of user computers if it is determined that the requested data is the most frequently requested data for the first plurality of user computers, and transmit the captured requested data as second data to the second plurality of user computers if it is determined that the requested data is the most frequently requested data for the second plurality of user computers.

19. The system of claim **18**, said gateway processor transmitting the tag file to the user computer to display the action point on the user computer.

20. The system of claim **19**, wherein the tag file is synchronized with the web page image.

21. The system of claim **15**, wherein there is a first web page and a second web page, a first tag file associated with the first web page, a second tag file associated with the second web page, and at least one web server, and said gateway processor operates in a broadcast mode to broadcast the first web page to a plurality of user computers via satellite over the first satellite communication channel and the first tag file via satellite over the second satellite communication channel, and said gateway processor operates in a unicast mode to transmit the second web page to one of the plurality of user computers via satellite over a third satellite communication channel different than the first and second satellite communication channels and the second tag file via satellite over the second satellite communication channel.

22. The system of claim **1**, said processing device having a master cache and said second computers each having a local cache, said processing device configured to synchronize the master cache via the second satellite communications channel to the local cache of the second computers.

23. The system of claim **22**, wherein the master cache includes most visited web pages and their sub-links.

24. The system of claim **23**, wherein the local cache is client specific and includes information that is not in the master cache to provide faster access to client unique requirements and flexibility and support of the master cache.

25. The system of claim **22**, further storing a replica of the master cache in a mobile storage device.

26. The system of claim **10**, wherein the tag file is transmitted over a third communications channel different from the first and second satellite communications channels.

27. The system of claim **1**, wherein the plurality of second computers are each configured to transmit a request for the first data to said processing device via satellite.

28. The system of claim **1**, wherein said processing device is further configured to receive a request for data from the plurality of second computers, determine most frequently requested data, capture the requested data from at least one of the plurality of first computers, transmit the captured requested data as first data if it is determined that the requested data is not the most frequently requested data, and transmit the captured requested data as second data if it is determined that the requested data is the most frequently requested data.

29. The system of claim **1**, wherein the differential burst video transmission comprises a first data format, and said processing device is configured to broadcast the second data in a second data format different from the first data format.

30. The system of claim **15**, wherein said processing device is configured to broadcast the second data in a data format different from the graphics format.

31. A system for communicating first and second data from a plurality of first computers to a plurality of second computers remotely located from the plurality of first computers, the system comprising:

a processing device configured to capture the first data in a video frame format from at least one of the plurality of first computers, transmit the first data via satellite over a first satellite communication channel using a differential burst video transmission to no more than one of the plurality of second computers to display the captured data in the video frame format, to capture the second data from at least one of the plurality of first computers and to broadcast the second data via satellite over a second satellite communications channel different from the first communications channel to the plurality of second computers, wherein said processing device only transmits changes in the first data.

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