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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	19459-6102
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Derry		Shribman	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Netanya	Country Of Residence	IL
Citizenship under 37 CFR 1.41(b)	IL		

Mailing Address of Applicant:

Address 1	1 Gad Manela Street		
Address 2			
City	Netanya	State/Province	
Postal Code		Country	IL

Applicant 2

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ofer		Vilenski	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Netanya	State/Province		Country of Residence	IL
Citizenship under 37 CFR 1.41(b)	US				

Mailing Address of Applicant:

Address 1	1 Gad Manela Street		
Address 2			
City	Netanya	State/Province	
Postal Code		Country	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	19459-6102
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Customer Number	57449		
Email Address	pnieves@sheehan.com	Add Email	Remove Email
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION		
Attorney Docket Number	19459-6102	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	15	**Suggested Figure for Publication (if any)**	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	57449		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	non provisional of	61/249624	2009-10-08

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	19459-6102
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number	Country	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			○ Yes ◉ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1

If the Assignee is an Organization check here. ☒

Organization Name	hola, Inc.		
Mailing Address Information:			
Address 1	7th Giborei Israel Street		
Address 2	PO BOX 8025		
City	Natanya	**State/Province**	
Country	IL	Postal Code	42507
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the **Add** button.

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature				Date (YYYY-MM-DD)	2010-07-14
First Name	Peter A.	Last Name	Nieves	Registration Number	48173

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to copending U.S. provisional patent application entitled "FASTER AND MORE EFFICIENT DATA COMMUNICATION SYSTEM," having serial number 61/249,624, filed October 8, 2009, which is hereby incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

The present invention is related to Internet communication, and more particularly, to improving data communication speed and bandwidth efficiency on the Internet.

BACKGROUND OF THE INVENTION

There are several trends in network and Internet usage, which tremendously increase the bandwidth that is being used on the Internet. One such trend is that more and more video is being viewed on demand on the Internet. Such viewing includes the viewing of both large and short video clips. In addition, regular shows and full-featured films may be viewed on the Internet. Another trend that is increasing the traffic on the Internet is that Web sites (such as shopping portals, news portals, and social networks) are becoming global, meaning that the Web sites are serving people in many diverse places on the globe, and thus the data is traversing over longer stretches of the Internet, increasing the congestion.

The increase in bandwidth consumption has created several major problems, a few of which are described below:

The problem for users – the current Internet bandwidth is not sufficient, and thus the effective 'speed' experienced by users is slow;

The problem for content owners – the tremendous amount of data being viewed by users is costing large amounts of money in hosting and bandwidth costs; and

The problem for Internet Service Providers (ISPs) – the growth in Internet traffic is requiring the ISPs to increase the infrastructure costs (communication lines, routers, etc.) at tremendous financial expense.

The need for a new method of data transfer that is fast for the consumer, cheap for the content distributor and does not require infrastructure investment for ISPs, has become a major issue which is yet unsolved.

There have been many attempts at making the Internet faster for the consumer and cheaper for the broadcaster. Each such attempt is lacking in some aspect to become a widespread, practical solution, or is a partial solution in that it solves only a subset of the major problems associated with the increase in Internet traffic. Most of the previous solutions require billions of dollars in capital investment for a comprehensive solution. Many of these attempts are lacking in that much of the content on the Internet has become dynamically created per the user and the session of the user (this is what used to be called the "Web2.0" trend). This may be seen on the Amazon Web site and the Salesforce Web site, for example, where most of the page views on these Web sites is tailored to the viewer, and is thus different for any two viewers. This dynamic information makes it impossible for most of the solutions offered to date to store the content and provide it to others seeking similar content.

One solution that has been in use is called a "proxy". FIG. 1 is a schematic diagram providing an example of use of a proxy within a network 2. A proxy, or proxy server 4, 6, 8 is a device that is placed between one or more clients, illustrated in FIG. 1 as client devices 10, 12,

14, 16, 18, 20, that request data, via the Internet 22, and a Web server or Web servers 30, 32, 34 from which they are requesting the data. The proxy server 4, 6, 8 requests the data from the Web servers 30, 32, 34 on their behalf, and caches the responses from the Web servers 30, 32, 34, to provide to other client devices that make similar requests. If the proxy server 4, 6, 8 is geographically close enough to the client devices 10, 12, 14, 16, 18, 20, and if the storage and bandwidth of the proxy server 4, 6, 8 are large enough, the proxy server 4, 6, 8 will speed up the requests for the client devices 10, 12, 14, 16, 18, 20 that it is serving.

It should be noted, however, that to provide a comprehensive solution for Internet surfing, the proxy servers of FIG. 1 would need to be deployed at every point around the world where the Internet is being consumed, and the storage size of the proxy servers at each location would need to be near the size of all the data stored anywhere on the Internet. The abovementioned would lead to massive costs that are impractical. In addition, these proxy solutions cannot deal well with dynamic data that is prevalent now on the Web.

There have been commercial companies, such as Akamai, that have deployed such proxies locally around the world, and that are serving a select small group of sites on the Internet. If all sites on the Web were to be solved with such a solution, the capital investment would be in the range of billions of dollars. In addition, this type of solution does not handle dynamic content.

To create large distribution systems without the large hardware costs involved with a proxy solution, "peer-to-peer file sharing" solutions have been introduced, such as, for example, BitTorrent. FIG. 2 is a schematic diagram providing an example of a peer-to-peer file transfer network 50. In the network 50, files are stored on computers of consumers, referred to herein as client devices 60. Each consumer can serve up data to other consumers, via the Internet 62, thus taking the load of serving off of the distributors and saving them the associated costs, and providing the consumer multiple points from which to download the data, referred to herein as

peers 70, 72, 74, 76, 78, thus increasing the speed of the download. However, each such peer-to-peer solution must have some sort of index by which to find the required data. In typical peer-to-peer file sharing systems, because the index is on a server 80, or distributed among several servers, the number of files available in the system is not very large (otherwise, the server costs would be very large, or the lookup time would be very long).

The peer-to-peer file sharing solution is acceptable in file sharing systems, because there are not that many media files that are of interest to the mass (probably in the order of magnitude of millions of movies and songs that are of interest). Storing and maintaining an index of millions of entries is practical technically and economically. However, if this system were to be used to serve the hundreds of billions of files that are available on the Internet of today, the cost of storing and maintaining such an index would be again in the billions of dollars. In addition, these types of peer-to-peer file sharing systems are not able to deal with dynamic HTTP data.

In conclusion, there does not exist a system that enables fast transmission of most of the data on the Internet, that does not incur tremendous costs, and/or that provides only a very partial solution to the problem of Internet traffic congestion. Thus, a heretofore unaddressed need exists in the industry to address the aforementioned deficiencies and inadequacies.

SUMMARY OF THE INVENTION

The present system and method provides for faster and more efficient data communication within a communication network. Briefly described, in architecture, one embodiment of the system, among others, can be implemented as follows. A network is provided for accelerating data communication, wherein the network contains: at least one client communication device for originating a data request for obtaining the data from a data server; at least one agent communication device which is assigned to the data server for receiving the data

request from the client communication device, wherein the agent keeps track of which client communication devices have received responses to data requests from the assigned data server; at least one peer communication device for storing portions of data received in response to the data request by the at least one client communication device, wherein the portions of data may be transmitted to the at least one client communication device upon request by the client communication device; and at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

The present system and method also provides a communication device within a network, wherein the communication device contains: a memory; and a processor configured by the memory to perform the steps of: originating a data request for obtaining data from a data server; being assigned to a data server, referred to as an assigned data server; receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

Other systems, methods, features, and advantages of the present invention will be or become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional systems, methods, features, and advantages be included within this description, be within the scope of the present invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the invention can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a schematic diagram providing a prior art example of use of a proxy within a network.

FIG. 2 is a schematic diagram providing a prior art example of a peer-to-peer file transfer network.

FIG. 3 is a schematic diagram providing an example of a communication network in accordance with the present invention.

FIG. 4 is a schematic diagram further illustrating a communication device of the communication network of FIG. 3.

FIG. 5 is a schematic diagram further illustrating the memory of FIG. 4.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application of FIG. 5, as well as communication paths of the acceleration application.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network.

FIG. 8 is a flowchart illustrating operation of the acceleration system initializer module.

FIG. 9 is a flowchart further illustrating communication between different elements of the communication network.

FIG. 10 is a flowchart continuing the flowchart of FIG. 9 and focused on agent response to the HTTP request.

FIG. 11 is a flowchart continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent.

FIG. 12 is a flowchart illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid.

FIG. 13 is a flowchart outlining operation of the acceleration server.

FIG. 14 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention.

FIG. 15 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

DETAILED DESCRIPTION

The present system and method provides for faster and more efficient data communication within a communication network. An example of such a communication network 100 is provided by the schematic diagram of FIG. 3. The network 100 of FIG. 3 contains multiple communication devices. Due to functionality provided by software stored within each communication device, which may be the same in each communication device, each communication device may serve as a client, peer, or agent, depending upon requirements of the network 100, as is described in detail herein. It should be noted that a detailed description of a communication device is provided with regard to the description of FIG. 4.

Returning to FIG. 3, the exemplary embodiment of the network 100 illustrates that one of the communication devices is functioning as a client 102. The client 102 is capable of communication with one or more peers 112, 114, 116 and one or more agents 122. For exemplary purposes, the network contains three peers and one agent, although it is noted that a client can communicate with any number of agents and peers.

The communication network 100 also contains a Web server 152. The Web server 152 is the server from which the client 102 is requesting information and may be, for example, a typical HTTP server, such as those being used to deliver content on any of the many such servers on the Internet. It should be noted that the server 152 is not limited to being an HTTP server . In fact, if a different communication protocol is used within the communication network, the server may be a server capable of handling a different protocol. It should also be noted that while the present description refers to the use of HTTP, the present invention may relate to any other communication protocol and HTTP is not intended to be a limitation to the present invention.

The communication network 100 further contains an acceleration server 162 having an acceleration server storage device 164. As is described in more detail herein, the acceleration server storage device 164 has contained therein an acceleration server database. The acceleration server database stores Internet protocol (IP) addresses of communication devices within the communication network 100 having acceleration software stored therein. Specifically, the acceleration server database contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. For each such agent, the acceleration server assigns a list of IP addresses.

In the communication network 100 of FIG. 3, the application in the client 102 is requesting information from the Web server 152, which is why the software within the communication device designated this communication device to work as a client. In addition, since the agent 122 receives the request from the client 102 as the communication device closest

to the Web server 152, functionality of the agent 122, as provided by the software of the agent 122, designates this communication device to work as an agent. It should be noted, that in accordance with an alternative embodiment of the invention, the agent need not be the communication device that is closest to the Web server. Instead, a different communication device may be selected to be the agent.

Since the peers 112, 114, 116 contain at least portions of the information sought by the client 102 from the Web server 152, functionality of the peers 112, 114, 116, as provided by the software of the peers 112, 114, 116, designates these communication devices to work as peers. It should be noted that the process of designating clients, agents, and peers is described in detail herein. It should also be noted that the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 may differ from the number illustrated by FIG. 3. In fact, the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 are not intended to be limited by the current description.

Prior to describing functionality performed within a communication network 100, the following further describes a communication device 200, in accordance with a first exemplary embodiment of the invention. FIG. 4 is a schematic diagram further illustrating a communication device 200 of the communication network 100, which contains general components of a computer. As previously mentioned, it should be noted that the communication device 200 of FIG. 4 may serve as a client, agent, or peer.

Generally, in terms of hardware architecture, as shown in FIG. 4, the communication device 200 includes a processor 202, memory 210, at least one storage device 208, and one or more input and/or output (I/O) devices 240 (or peripherals) that are communicatively coupled via a local interface 250. The local interface 250 can be, for example but not limited to, one or more buses or other wired or wireless connections, as is known in the art. The local interface 250 may

have additional elements, which are omitted for simplicity, such as controllers, buffers (caches), drivers, repeaters, and receivers, to enable communications. Further, the local interface 250 may include address, control, and/or data connections to enable appropriate communications among the aforementioned components.

The processor 202 is a hardware device for executing software, particularly that stored in the memory 210. The processor 52 can be any custom made or commercially available processor, a central processing unit (CPU), an auxiliary processor among several processors associated with the communication device 200, a semiconductor based microprocessor (in the form of a microchip or chip set), a macroprocessor, or generally any device for executing software instructions.

The memory 210, which is further illustrated and described by the description of FIG. 5, can include any one or combination of volatile memory elements (*e.g.*, random access memory (RAM, such as DRAM, SRAM, SDRAM, *etc.*)) and nonvolatile memory elements (*e.g.*, ROM, hard drive, tape, CDROM, *etc.*). Moreover, the memory 210 may incorporate electronic, magnetic, optical, and/or other types of storage media. Note that the memory 210 can have a distributed architecture, where various components are situated remote from one another, but can be accessed by the processor 202.

The software 212 located within the memory 210 may include one or more separate programs, each of which contains an ordered listing of executable instructions for implementing logical functions of the communication device 200, as described below. In the example of FIG. 4, the software 212 in the memory 210 at least contains an acceleration application 220 and an Internet browser 214. In addition, the memory 210 may contain an operating system (O/S) 230. The operating system 230 essentially controls the execution of computer programs and provides scheduling, input-output control, file and data management, memory management, and communication control and related services. It should be noted that, in addition to the

acceleration application 220, Internet browser 214, and operating system 230, the memory 210 may contain other software applications.

While the present description refers to a request from the client originating from an Internet browser, the present invention is not limited to requests originating from Internet browsers. Instead, a request may originate from an email program or any other program that would be used to request data that is stored on a Web server, or other server holding data that is requested by the client device.

Functionality of the communication device 200 may be provided by a source program, executable program (object code), script, or any other entity containing a set of instructions to be performed. When a source program, then the program needs to be translated via a compiler, assembler, interpreter, or the like, which may or may not be included within the memory 210, so as to operate properly in connection with the operating system 230. Furthermore, functionality of the communication device 200 can be written as (a) an object oriented programming language, which has classes of data and methods, or (b) a procedure programming language, which has routines, subroutines, and/or functions.

The I/O devices 240 may include input devices, for example but not limited to, a keyboard, mouse, scanner, microphone, *etc.* Furthermore, the I/O devices 240 may also include output devices, for example but not limited to, a printer, display, *etc.* Finally, the I/O devices 240 may further include devices that communicate via both inputs and outputs, for instance but not limited to, a modulator/demodulator (modem; for accessing another device, system, or network), a radio frequency (RF) or other transceiver, a telephonic interface, a bridge, a router, *etc.*

When the communication device 200 is in operation, the processor 202 is configured to execute the software 212 stored within the memory 210, to communicate data to and from the memory 210, and to generally control operations of the communication device 200 pursuant to

the software 212. The software 212 and the O/S 230, in whole or in part, but typically the latter, are read by the processor 202, perhaps buffered within the processor 202, and then executed.

When functionality of the communication device 200 is implemented in software, as is shown in FIG. 4, it should be noted that the functionality can be stored on any computer readable medium for use by or in connection with any computer related system or method. In the context of this document, a computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer related system or method. The functionality of the communication device 200 can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any means that can store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (electronic), a read-only memory (ROM) (electronic), an erasable programmable read-only memory (EPROM, EEPROM, or Flash memory) (electronic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM) (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then

compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

In an alternative embodiment, where the functionality of the communication device 200 is implemented in hardware, the functionality can be implemented with any or a combination of the following technologies, which are each well known in the art: a discrete logic circuit(s) having logic gates for implementing logic functions upon data signals, an application specific integrated circuit (ASIC) having appropriate combinational logic gates, a programmable gate array(s) (PGA), a field programmable gate array (FPGA), *etc.*

The at least one storage device 208 of the communication device 200 may be one of many different categories of storage device. As is described in more detail herein, the storage device 208 may include a configuration database 280 and a cache database 282. Alternatively, the configuration database 280 and cache database 282 may be located on different storage devices that are in communication with the communication device 200. The description that follows assumes that the configuration database 280 and cache database 282 are located on the same storage device, however, it should be noted that the present invention is not intended to be limited to this configuration.

The configuration database 280 stores configuration data that is common to all elements of the communication network 100 and is used to provide set up and synchronization information to different modules of the acceleration application 220 stored within the memory 210, as is described in further detail herein. The cache database 282 stores responses to HTTP requests that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. As is explained in additional detail herein, the responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the communication

network 100 that need to retrieve this information and will use this communication device as either a peer or an agent.

In addition to the abovementioned, as is explained in further detail herein, the cache database 282 has stored therein a list of URLs that the communication device is aware of (i.e., has seen requests for). For each URL, the cache database 282 has stored therein the URL itself, HTTP headers returned by the Web Server for this URL, when the last time was that the contents of this URL was loaded directly from the Web Server, when the contents of the URL had last changed on the Web Server, as well as a list of chunks that contain the contents of this URL, and the chunks of data themselves. Chunks in the present description are defined as equally sized pieces of data that together form the whole content of the URL. It should be noted that while the present description provides for chunks being equally sized pieces of data, in accordance with an alternative embodiment of the invention, the chunks may instead be of different size.

FIG. 5 is a schematic diagram further illustrating the memory 210 of FIG. 4. As shown by FIG. 5, the memory 210 may be separated into two basic levels, namely, an operating system level 260 and an application level 270. The operating system level 260 contains the operating system 230, wherein the operating system 230 further contains at least one device driver 262 and at least one communication stack 264. The device drivers 262 are software modules that are responsible for the basic operating commands for various hardware devices of the communication device 200, such as the processor 202, the storage device 208 and the I/O devices 240. In addition, the communication stacks 264 provide applications of the communication device 200 with a means of communicating within the network 100 by implementing various standard communication protocols.

The application level 270 includes any application that is running on the communication device 200. As a result, the application level 270 includes the Internet browser 214, which is used to view information that is located on remote Web servers, the acceleration application 220,

as described in more detail below, and any other applications 216 stored on the communication device 200.

As is explained in additional detail below, the acceleration application 220 intercepts the requests being made by applications of the communication device (client) that use the Internet, in order to modify the requests and route the requests through the communication network. There are various methods that may be used to intercept such requests. One such method is to create an intermediate driver 272, which is also located within the memory 210, that attaches itself to all communication applications, intercepts outgoing requests of the communication applications of the communication device 200, such as the Internet browser 214, and routes the requests to the acceleration application 220. Once the acceleration application 220 modifies the requests, routes the requests to other system elements on the communication network 100, and receives replies from other system elements of the communication network 100, the acceleration application 220 returns the replies to the intermediate driver 272, which provides the replies back to the requesting communication application.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application 220, as well as communication paths of the acceleration application 220. The acceleration application 220 contains an acceleration system initializer module 222, which is called when the acceleration application 220 is started. The acceleration system initializer module 222 is capable of initializing all elements of the communication device 200 The acceleration application 220 also contains three separate modules that run in parallel, namely, a client module 224, a peer module 226, and an agent module 228, each of which comes into play according to the specific role that the communication device 200 is partaking in the communication network 100 at a given time. The role of each module is further described herein.

The client module 224 provides functionality required when the communication device 200 is requesting information from the Web server 152, such as, for example, but not limited to,

Web pages, data, video, or audio. The client module 224 causes the communication device 200 having the client module 224 therein to intercept the information request and pass the information request on to other elements of the communication network 100, such as, servers, agents or peers. This process is further described in detail herein.

The peer module 226 provides functionality required by the communication device 200 when answering other clients within the communication network 100 and providing the other clients with information that they request, which this communication device 200, having this peer module 226 therein, has already downloaded at a separate time. This process is further described in detail herein.

The agent module 228 provides functionality required when other communication devices of the communication network 100 acting as clients query this communication device 200, having this agent module 228 therein, as an agent, to obtain a list of peers within the communication network 100 that contain requested information. This process is further described in detail herein.

The acceleration application 220 interacts with both the configuration database 280 and the cache database 282 of the storage device 208. As previously mentioned herein, the configuration database 280 stores configuration data that may be common to all communication devices of the communication network 100 and is used to provide setup and synchronization information to different modules 222, 224, 226, 228 of the acceleration application 220 stored within the memory 210.

The cache database 282 stores responses to information requests, such as, for example, HTTP requests, that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. The responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the communication network 100 that need

to retrieve this same information and will use this communication device 200 as either a peer or an agent. This process is described in detail herein.

Information stored within the cache database 282 may include any information associated with a request sent by the client. As an example, such information may include, Meta data and actual requested data. For example, for an HTTP request for a video, the Meta data may include the version of the Web server answering the request from the client and the data would be the requested video itself. In a situation where there is no more room for storage in the cache database, the software of the associated communication device may cause the communication device to erase previous data stored in order to clear room for the new data to store in the cache database. As an example, such previous data may include data that is most likely not to be used again. Such data may be old data or data that is known to no longer be valid. The communication device may choose to erase the least relevant data, according to any of several methods that are well known in the art.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network 100, namely, the acceleration server database 164 and the cache database 282. As previously mentioned, the acceleration server database 164 stores IP addresses of communication devices located within the communication network 100, which have acceleration software stored therein. Specifically, the acceleration server database 164 contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. The acceleration server assigns a list of IP addresses to each communication device functioning as an agent. Each communication device will be the agent for any Web servers whose IP address is in the range 'owned' by that communication device. As an example, when a first ever communication device goes online, namely, the first communication device as described herein having the acceleration application 220 therein, the acceleration server assigns all IP addresses in the world to this communication device, and this communication device will be the agent for any Web server. When a second

communication device goes online it will share the IP address list with the first communication device, so that each of the communication devices will be responsible for a different part of the world wide web servers.

The cache database 282 of the communication device 200 has stored therein a list of URLs 286 of which the communication device 200 is aware. The communication device 200 becomes aware of a URL each time that the communication device 200 receives a request for information located at a specific URL. As shown by FIG. 7, for each URL 288 within the list of URLs 286, the cache database 282 stores: the URL itself 290; HTTP headers 292 returned by the Web Server 152 for this URL; when the last time 294 was that the contents of this URL were loaded directly from the Web Server 152; when the contents of the URL last changed 296 on the Web Server 152; and a list of chunks 298 that contain the contents of this URL, and the content of the chunk. As previously mentioned, chunks, in the present description, are defined as equally sized pieces of data, that together form the entire content of the URL, namely, the entire content whose location is described by the URL. As a non-limiting example, a chunk size of, for example, 16KB can be used, so that any HTTP response will be split up into chunks of 16KB. In accordance with an alternative embodiment of the invention, if the last chunk of the response is not large enough to fill the designated chunk size, such as 16KB for the present example, the remaining portion of the chunk will be left empty.

For each such chunk 300, the cache database 282 includes the checksum of the chunk 302, the data of the chunk 304 itself, and a list of peers 306 that most likely have the data for this chunk. As is described in additional detail herein, the data for the chunk may be used by other clients within the communication network 100 when other communication devices of the communication network 100 serve as peers to the clients, from which to download the chunk data.

For each chunk, a checksum is calculated and stored along side of the chunk itself. The checksum may be calculated in any of numerous ways known to those in the art. The purpose of having the checksum is to be able to identify data uniquely, whereas the checksum is the "key" to the data, where the data is the chunk. As an example, a client may want to load the contents of a URL, resulting in the agent that is servicing this request sending the checksums of the chunks to the client, along with the peers that store these chunks. It is to be noted that there could be a different peer for every different chunk. The client then communicates with each such peer, and provides the checksum of the chunk that it would like the peer to transmit back to the client. The peer looks up the checksum (the key) in its cache database, and provides back the chunk (data) that corresponds to this checksum (the key). As shown by FIG. 7, for each peer 308 within the list of peers 306, the cache database 282 includes the peer IP address 310, as well as the connection status 312 of the peer, which represents whether the peer 308 is online or not.

In accordance with one embodiment of the invention, the cache database 282 may be indexed by URL and by Checksum. Having the cache database indexed in this manner is beneficial due to the following reason. When the agent is using the cache database, the agent receives a request from a client for the URL that the client is looking for. In such a case the agent needs the cache database to be indexed by the URL, to assist in finding a list of corresponding peers that have the chunks of this URL. When the peers are using this cache database, the peers obtain a request from the client for a particular checksum, and the peers need the database to be indexed by the checksum so that they can quickly find the correct chunk. Of course, as would be understood by one having ordinary skill in the art, the cache database may instead be indexed in any other manner.

Having described components of the communication network 100, the following further describes how such components interact and individually function. FIG. 8 is a flowchart 300 illustrating operation of the acceleration system initializer module 222 (hereafter referred to as the initializer 222 for purposes of brevity). It should be noted that any process descriptions or

blocks in flowcharts should be understood as representing modules, segments, portions of code, or steps that include one or more instructions for implementing specific logical functions in the process, and alternative implementations are included within the scope of the present invention in which functions may be executed out of order from that shown or discussed, including substantially concurrently or in reverse order, depending on the functionality involved, as would be understood by those reasonably skilled in the art of the present invention.

The initializer 222 is the first element of the communication device 200 to operate as the communication device 200 starts up (block 302). As the initializer 222 starts, it first communicates with the acceleration server 162 to sign up with the acceleration server 162. This is performed by providing the acceleration server 162 with the hostname, and all IP addresses and media access control (MAC) addresses of the interfaces on the communication device 200 having the initializer 222 thereon.

In accordance with an alternative embodiment of the invention, as shown by block 304, the initializer 222 checks with the acceleration server 162 whether a more updated version of the acceleration application software is available. This may be performed by any one of many known methods, such as, but not limited to, by providing the version number of the acceleration application software to the acceleration server 162. The message received back from the acceleration server 162 indicates whether there is a newer version of the acceleration application software or not. If a newer version of the acceleration application software exists, the initializer 222 downloads the latest version of the acceleration application software from the acceleration server 162, or from a different location, and installs the latest version on the communication device 200. In addition to the abovementioned, the initializer 222 may also schedule additional version checks for every set period of time thereafter. As an example, the initializer 222 may check for system updates every two days.

As shown by block 306, the initializer 222 then redirects outgoing network traffic from the communication device 200 to flow through the acceleration application 162. As previously mentioned, one way to redirect the outgoing network traffic is to insert an intermediate driver 212 that intercepts and redirects the traffic. It should be noted that there are many other ways to implement this redirection, which are well known to those having ordinary skill in the art.

As shown by block 308, the initializer 222 then launches the client module 224 of the communication device 200, and configures the client module 224 of the communication device 200 to intercept to all outgoing network communications of the communication device 200 and route the outgoing network communications to the client module 224, from the intermediate driver 272 or other routing method implemented. This is performed so that the client module 224 is able to receive all network traffic coming from the network applications, modify the network traffic if necessary, and re-route the traffic. As is known by those having ordinary skill in the art, in order to re-route the traffic, the traffic needs to be modified, as an example, to change the destination of requests.

As shown by block 310, the initializer 222 then launches the agent module 228 and the peer module 226 to run on the communication device 200. The agent module 228 and peer module 226 listen on pre-determined ports of the communication device 200, so that incoming network traffic on these ports gets routed to the agent module 228 and peer module 226. As is explained in further detail herein, the abovementioned enables the communication device 200 to function as an agent and as a peer for other communication devices within the communication network 100, as needed.

FIG. 9 is a flowchart 350 further illustrating communication between different elements of the communication network 100, in accordance with the present system and method for providing faster and more efficient data communication.

As shown by block 352, an application running on the client 200 initiates a request for a resource on a network. Such a request may be, for example, "GET http://www.aol.com/index.html HTTP/1.1". The request may come from an Internet browser 214 located on the client 200, where the Internet browser 214 is loading a page from the Internet, an application that wants to download information from the Internet, fetch or send email, or any other network communication request.

Through the intermediate driver 272, or other such mechanism as may be implemented that is re-routing the communication to the client module 224 of the client 200, the resource request is intercepted by the client module 224 that is running on the client 200 (block 354). The client module 224 then looks up the IP address of the server 152 that is the target of the resource request (e.g., the IP address of the Web server that is the host of www.aol.com in the example above), and sends this IP address to the acceleration server 162 (block 356) in order to obtain a list of communication devices that the client 200 can use as agents (hereafter referred to as agents). It should be noted that the process of performing an IP lookup for a server is known by one having ordinary skill in the art, and therefore is not described further herein.

In response to receiving the IP address of the server 152, the acceleration server 162 prepares a list of agents that may be suitable to handle the request from this IP address (block 358). The size of the list can differ based on implementation. For exemplary purposes, the following provides an example where a list of five agents is prepared by the acceleration server 162. The list of agents is created by the acceleration server 162 by finding the communication devices of the communication network 100 that are currently online, and whose IP address is numerically close to the IP of the destination Web server 152. A further description of the abovementioned process is described here in.

As shown by block 360, the client module 224 then sends the original request (e.g., "GET http://www.aol.com/index.html HTTP/1.1") to all the agents in the list received from the

acceleration server 162 in order to find out which of the agents in the list is best suited to be the one agent that will assist with this request.

It should be noted that, in accordance with an alternative embodiment of the invention, the communication device 200 may be connected to a device that is actually requesting data. In such an alternative embodiment, the communication device would be a modular device connected to a requesting device, where the requesting device, such as, for example, a personal data assistant (PDA) or other device, would request data, and the communication device connected thereto, either through a physical connection, wireless connection, or any other connection, would receive the data request and function as described herein. In addition, as previously mentioned, it should be noted that the HTTP request may be replaced by any request for resources on the Web.

FIG. 10 is a flowchart continuing the flowchart 380 of FIG. 9 and focused on agent response to the request. As shown by block 382, upon receiving the request from the client 200, each agent that received the request from the client responds to the client 200 with whether it has information regarding the request, which can help the client to download the requested information from peers in the network. Specifically, each agent responds with whether the agent has seen a previous request for this resource that has been fulfilled. In such a case, the agent may then provide the client with the list of peers and checksums of the chunks that each of them have.

As shown by block 384, the client then decides which of the agents in the list to use as its agent for this particular information request. To determine which agent in the list to use as its agent for the particular information request, the client may consider multiple factors, such as, for example, factoring the speed of the reply by each agent and whether that agent does or does not have the information required. There are multiple ways to implement this agent selection, one practical way being to start a timer of a small window of time, such as, for example, 5ms, after receiving the first response from the agents, and after the small window, choosing from the list of

agents that responded, the agent that has the information about the request, or in the case that none of the agents responded, to choose the first agent from the list received from the acceleration server 162.

As shown by block 386, after selecting an agent, the client notifies the selected agent that it is going to use it for this request, and notifies the other agents that they will not be used for this request. The client then sends the selected agent a request for the first five chunks of data of the original information request (block 388). By specifying to the selected agent the requested chunks by their order in the full response, the client receives the peer list and checksums of the requested chunks from the selected agent. As an example, for the first five chunks the client will ask the selected agent for chunks one through five, and for the fourth batch of five chunks the client will ask the agent for chunks sixteen through twenty. As previously mentioned, additional or fewer chunks may be requested at a single time.

As shown by block 390, after receiving the request from the client, the selected agent determines whether it has information regarding the requested chunks of data by looking up the request in its cache database and determining if the selected agent has stored therein information regarding peers of the communication network that have stored the requested data of the request, or whether the selected agent itself has the requested data of the request stored in its memory. In addition to determining if the selected agent contains an entry for this request in its database, the selected agent may also determine if this information is still valid. Specifically, the selected agent determines whether the data that is stored within the memory of the selected agent or the memory of the peers, still mirrors the information that would have been received from the server itself for this request. A further description of the process utilized by the selected agent to determine if the information is still valid, is described in detail herein.

As shown by block 392, if the information (requested data of the request) exists and is still valid, then the agent prepares a response to the client, which includes for each of the chunks:

(i) the checksum of the chunk; (ii) a list of peers that according to the database of the selected agent contains these chunks; and (iii) if these are the first five chunks of the information, then the selected agent also provides the specific protocol's headers that would have been received from the server, had the initial request from the client been made directly to the server.

As shown by block 394, the list of peers for each chunk is sorted by geographical proximity to the requesting client. In accordance with the present example, only the five closest peers are kept in the list for every chunk, and the rest of the peers are discarded from this list. As shown by block 396, the prepared response, namely, the list of closest peers, is sent back to the client. It should be noted that, if this were the last set of chunks to be provided for this request, then it would be beneficial to include information about this to the client.

If the selected agent discovers that it does not have information about this request, or if the selected agent discovers that the information it has is no longer valid, the selected agent needs to load the information directly from the server in order to be able to provide an answer to the requesting client. As shown by block 400, the selected agent then sends the request directly to the server. The selected agent then stores the information it receives from the server (both the headers of the request, as well as chunks of the response itself) in its database, for this particular response to the client, as well as for future use to other clients that may request this data (block 402). The selected agent then prepares a response (list) for the client, where the response includes the protocol headers (if these are the first five chunks), and the checksums of the five chunks, and provides itself as the only peer for these chunks (block 404). This list is then sent back to the client (block 406).

FIG. 11 is a flowchart 420 continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent. As shown by block 422, the client receives the response from the agent (including the list of chunks and their corresponding data, including peers and other information previously mentioned) and, for each of

the five chunks, the client sends a request to each of the peers listed for the chunk to download the chunk. The chunk request that the client sends to each of the peers is the checksum of the data that the client seeks to receive, which is the key (identifier) of the chunk.

As shown by block 424, the peers then respond regarding whether they still have the data of the chunk. As an example, some of the peers may not currently be online, some may be online but may have discarded the relevant information, and some may still have the relevant information, namely, the chunk. As shown by block 426, the client then selects the quickest peer that responds with a positive answer regarding the requested information, the client lets that peer know that it is chosen to provide the client with the chunk, and the client notifies the other peers that they are not chosen.

As shown by block 428, the chosen peer then sends the chunk to the client. It should be noted that if no peers answer the request of the client, the client goes back to the agent noting that the peers were all negative, and the agent either provides a list of 5 other agents, if they exist, or the agent goes on to download the information directly from the Web server as happens in the case where no peers exist as described above.

The client then stores the chunks in its cache for future use (block 430), when the client may need to provide the chunks to a requesting communication device when acting as a peer for another client that is looking for the same information. As shown by block 432, if some of the chunks were not loaded from any of the peers, the client requests the chunks again from the agent in a next round of requests, flagging these chunks as chunks that were not loadable from the client list of peers. In this situation, the agent will load the data directly from the server and provide it back to the client.

The client then acknowledges to the agent which of the chunks it received properly (block 434). The agent then looks up these chunks in the database of the agent, and adds the client to

the list of peers for these chunks, specifically, since this client is now storing these chunks, and can provide these chunks to other clients that turn to it as a peer (block 436).

As shown by block 438, the client then passes the data on to the Web browser or other application of the client that made the original request, for it to use as it had originally intended. The client then checks whether all of the chunks for this request were received (block 440), by checking the flag set by the agent. Specifically, when the agent is providing the list of the last 5 chunks, the agent includes that information as part of its reply to the client, which is referred to herein as a flag. This information is what enables the client to know that all information has been received for a particular resource request.

If the last received chunks were not the last chunks for this request, the processing flow of the client continues by returning to the functionality of block 384 of FIG. 10, but instead sending the chosen agent a request for the next five chunks of data of the original information request. Alternatively, if all chunks for this request were received, the request is complete, and the flow starts again at block 352 of FIG. 9.

FIG. 12 is a flowchart 500 illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid. Specifically, the following provides an example of how the agent, client, or peer can determine whether particular data that is stored within the memory of the agent, or the memory of a peer or client, still mirrors the information that is currently on the Web server. As shown by block 502, the HTTP request is looked up in the cache database of the agent, client or peer that is checking the validity of the HTTP request. As an example, the HTTP protocol, defined by RFC 2616, outlines specific methods that Web servers can define within the HTTP headers signifying the validity of certain data, such as, but not limited to, by using HTTP header information such as "max age" to indicate how long this data may be cached before becoming invalid, "no cache" to indicate that the data may never be cached, and using other information.

As shown by block 504, these standard methods of validation are tested on the HTTP request information in question. As shown by block 506, a determination is made whether the requested information that is stored is valid or not. If the requested information is valid, a "VALID" response is returned (block 508). Alternatively, if the requested information is not valid, an HTTP conditional request is sent to the relevant Web server, to determine if the data stored for this request is still valid (block 510). If the data stored for this request is still valid, a "VALID" response is returned (block 508). Alternatively, if the data stored for this request is not valid, an "INVALID" response is returned (block 514). It should be noted, that the abovementioned description with regard to FIG. 12 is an explanation of how to check if HTTP information is still valid. There are similar methods of determining validity for any other protocol, which may be utilized, and which those having ordinary skill in the art would appreciate and understand.

FIG. 13 is a flowchart 550 outlining operation of the acceleration server, whose main responsibility in the present system and method is to provide clients with information regarding which agents serve which requests, and to keep the network elements all up to date with the latest software updates. As shown by block 552, the acceleration server sends "keep alive" signals to the network elements, and keeps track within its database as to which network elements are online. As shown by block 554, the acceleration server continues to wait for a client request and continues to determine if one is received.

Once a request is received, the acceleration server tests the type of request received (block 556). If the client request is to sign up the client within the network, an event that happens every time that the client starts running on its host machine, then that client is added to the list of agents stored on the acceleration server, sorted by the IP address of the client (block 558).

If the request is to find an agent to use for a particular request, the acceleration server creates a new agent list, which is empty (block 560). The acceleration server then searches the

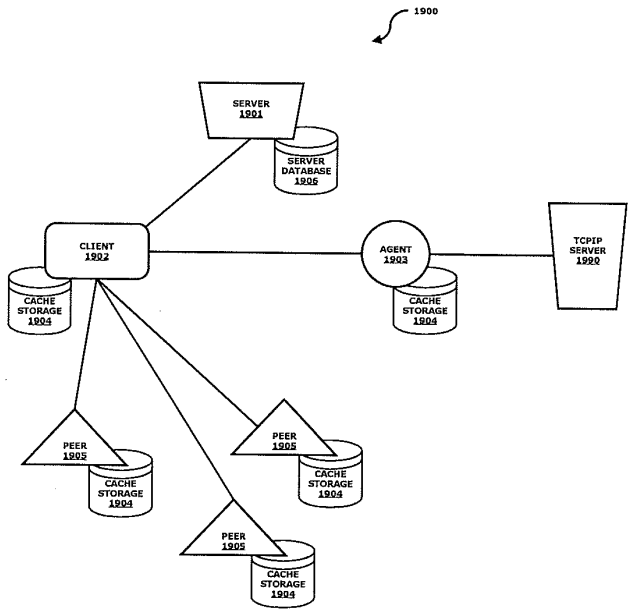
agent database for the next 5 active agents whose IP address is closest to the IP address of the server who is targeted in the request (block 562). In this context, 192.166.3.103 is closer to 192.166.3.212 than to 192.167.3.104. The acceleration server then sends this agent list to the client (block 564).

If instead, the request is to check the version of the latest acceleration software then the acceleration server sends that network element (client, peer or agent) the version number of the latest existing acceleration software version, and a URL from where to download the new version, for the case that the element needs to upgrade to the new version (block 566).

While the abovementioned example is focused on HTTP requests for data, as previously mentioned, other protocol requests are equally capable of being handled by the present system and method. As an example, in separate embodiments the acceleration method described may accelerate any communication protocol at any OSI layer (SMTP, DNS, UDP, ETHERNET, etc.). In the following alternative embodiment, it is illustrated how the acceleration method may accelerate TCPIP. As is known by those having ordinary skill in the art, TCPIP is a relatively low-level protocol, as opposed to HTTP, which is a high level protocol. For purposes of illustration of TCPIP communication, reference may be made to FIG. 3, wherein the Web server is a TCPIP server.

In TCPIP there are three communication commands that are of particular interest, namely, connect, write, and read. Connect is a command issued by an application in the communication device that is initiating the communication to instruct the TCPIP stack to connect to a remote

FIG. 49 - TCPIP ACCELERATION SYSTEM SETUP



communication device. The connect message includes the IP address of the communication device, and the port number to connect to. An application uses the write command to instruct the TCPIP stack to send a message (i.e., data) to a communication device to which it is connected. In addition, an application uses the read command to ask the TCPIP stack to provide the message that was sent from the remote communication device to which it is connected. A communication session typically exists of a connect, followed by a read and write on both sides.

FIG. 14 is a flowchart 600 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention. As shown by blocks 601 and 602 when an application

of the communication device makes a request to the communications stack to connect with the TCPIP server, that communication is intercepted by the acceleration application.

To find an agent, upon receiving that connect message from the communication device application, which includes the IP address of the TCPIP server and the port to connect to, the acceleration application in the client makes a request to the acceleration server to find out who the agent for the communication with the TCPIP server is. This step is performed in a similar manner to that described with regard to the main HTTP embodiment of the invention (block 604). As shown by block 606, the server then provides the client with a list of agents, for example, a primary agent and four others.

To establish a connection, as shown by block 608, the client issues a TCPIP connect with the primary agent or one of the other agents if the primary agent does not succeed, to create a connection with the agent. The client then sends to the agent the IP address of the TCPIP server and connection port that were provided by the communication device application (block 610). As shown by block 612, that agent in turn issues a TCPIP connect to the TCPIP server to the port it received from the client, to create a connection with the agent.

FIG. 15 is a flowchart 800 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

As shown by block 802, if the network application within the client wants to send a message to the TCPIP server, the network application within the client writes the message to the TCPIP stack in the operating system of the client. This WRITE command is received by the

acceleration application of the client and handled in the manner described below. If the TCPIP server wants to send a message to the client, the TCPIP server writes the message to the TCPIP stack of TCPIP operating system, on the connection to the agent, since this agent is where the server received the original connection. This WRITE command is received by the acceleration application of the agent and handled in the manner described below.

When the acceleration application of the client receives a message from the network application of the client to be sent to the agent, or when the acceleration application of the agent receives a message from the connection to the TCPIP server that is to be sent to the client, the acceleration application proceeds to send the message to the communication device on the other side. For instance, if the client has intercepted the message from the communication application, the client sends the message to the agent, and if it is the agent that intercepted the message from the connection to the TCPIP server, such as the TCPIP server sending a message that is intended for the communication with client, the agent sends the message to the client in the following manner:

As shown by block 804, the acceleration application breaks up the content of the message to chunks and calculates the corresponding checksums, in the same manner as in the main embodiment described herein. The acceleration application then looks up each checksum in its cache database (block 806). As shown by block 808, the acceleration application checks if the checksum exists in the cache database,. If it does, then, as shown by block 810, the acceleration application prepares a list of peers that have already received the chunk of the checksum in the past (if any), and adds the communication device of the other side to the list of communication devices that have received this chunk (adds it to the peer list of the checksum in its database), to

be provided to other communication devices requesting this information in the future. As shown by block 812, the list of peers is sent to the receiving communication device, which, as shown by block 814 retrieves the chunks from the peers in the list received, in the same manner as in the main embodiment.

If the checksum does not exist within the cache database of the sending communication device then, as shown by block 820, the acceleration application adds the checksum and chunk to its cache database, sends the chunk to the communication device on the other side, and adds the other communication device to the list of peers for that checksum in its database.

As shown by block 816, a determination is then made as to whether all chunks have been received. If all chunks have not been received, the process continues on again from block 806.

Once all data has been received, as shown by block 818, the acceleration application passes the data on to the requester. Specifically, in the client, the acceleration application passes on the complete data to the communication application, and in the agent, the acceleration application passes on the complete data to the requesting TCPIP server

It should be emphasized that the above-described embodiments of the present invention are merely possible examples of implementations, merely set forth for a clear understanding of the principles of the invention. Many variations and modifications may be made to the above-described embodiments of the invention without departing substantially from the spirit and principles of the invention. All such modifications and variations are intended to be included herein within the scope of this disclosure and the present invention and protected by the following claims.

CLAIMS

We claim:

1. A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server;

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

2. The network of claim 1, wherein each of the client communication device, peer communication device, and agent communication device contain therein a client module, a peer module, and an agent module, thereby allowing the client communication device, peer

communication device, and agent communication device to serve as any of a client communication device, a peer communication device, and an agent communication device.

3. The network of claim 1, wherein the acceleration server assigns a list of Internet protocol addresses to each agent communication device.

4. The network of claim 1, wherein the acceleration server has stored therein a list of online communication devices, including client communication devices, agent communication devices, and peer communication devices.

5. The network of claim 1, wherein each client communication device, agent communication device, and peer communication device maintain a list of data requests and data responses that the communication device, agent communication device, and peer communication device, respectively are respectively aware of, as well as in which communication device associated data is stored.

6. The network of claim 1, wherein the data request from the client communication device is an HTTP request, and wherein the server is a Web server.

7. The network of claim 6, wherein each client communication device contains a storage device therein that stores a list of Uniform Resource Locators (URLs) that the client communication device is aware of, each agent communication device contains a storage device

therein that stores a list of URLs that the agent communication device is aware of, and wherein each peer communication device contains a storage device therein that stores a list of URLs that the peer communication device is aware of.

8. The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

9. The network of claim 1, wherein each client communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized.

10. The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of peers that most likely have the data for this chuck.

11. The network of claim 1, wherein the network contains multiple peer communication devices, wherein the at least one agent communication device further keeps track of which peer communication devices have at least a portion of the requested data stored therein.

12. The network of claim 1, wherein the at least one acceleration server prepares a list of agent communication devices that may be suitable to handle the data request.

13. The network of claim 12, wherein the list of agent communication devices that may be suitable includes agent communication devices having an IP address that is numerically close to the IP address of the data server.

14. The network of claim 12, wherein the client communication device selects an agent communication device, notifies the selected agent communication device that it is being used for the data request, and notifies any unselected agent communication devices that they are not being used for the data request.

15. The network of claim 1, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if there is a portion of data necessary to fulfill the original data request, yet the agent is not aware of any peer having the portion of data stored therein, the agent itself queries the server for the missing portion of data and transmits the missing portion of data to the requesting client communication device.

16. The network of claim 1, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if the at least one agent knows of a specific peer that has a portion of data necessary to fulfill the original data request stored therein, the agent provides the specific peer as the peer to use for the portion of data necessary for fulfilling the original data request.

17. A communication device within a network, comprising:

a memory; and

a processor configured by the memory to perform the steps of:

originating a data request for obtaining data from a data server;

being assigned to a data server, referred to as an assigned data server;

receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and

storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

18. The communication device of claim 17, wherein the communication device further comprises a storage device that stores a list of Uniform Resource Locators (URLs) that the communication device is aware of.

19. The communication device of claim 18, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

20. The communication device of claim 17, wherein the communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized, wherein the chunks are equally sized.

21. The communication device of claim 18, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of other communication devices that most likely have the data for this chuck.

22. The communication device of claim 17, wherein the data request is an HTTP request, and wherein the data server is a Web server.

23. The communication device of claim 17, wherein the processor is further configured by the memory to perform the step of keeping track of which other communication devices have at least a portion of the requested data stored therein.

24. A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

25. A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which

client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device.

26. A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response, wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices;

the requesting client communication device retrieving the requested response in one or more parts from the one or more peer communication devices in the list;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage.

27. The method of claim 26, where after receiving the message intended for the data server, from the requesting client communication device, the agent communication device checking if it has in the agent cache storage a response received to an identical message sent by the client communication device to the data server in the past, and if the agent communication device does not know of any client communication devices that have received a response to this message in the past, the following steps being performed:

the agent communication device sending the requesting client communication device message to the data server;

the data server sending the response message back to the agent communication device;

the agent communication device storing the requesting client communication device message and the data server response message in the agent cache storage;

the agent communication device sending the data server response back to the requesting client communication device; and

the requesting client communication device storing the request and the response in the client cache storage.

28. The method of claim 26, where the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past.

29. The method of claim 26, wherein the list of one or more peer communication devices includes only the peer communication devices that are the most beneficial to the requesting client communication device in terms of speed of receiving information from the peer communication devices.

30. The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that are closest to the requesting client communication device.

31. The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that have the best connection to the requesting network element.

32. The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

upon receiving the identifier of the data server from the requesting client communication device, the acceleration server choosing one or more client communication device out of all online client communication devices, that are optimal to be used as the agent communication device or devices for communicating with the data server.

33. The method of claim 32, wherein the client communication device chosen by the acceleration server as the optimal agent is the client communication device out of all online client communication devices whose Internet Protocol (IP) address is closest to the IP address of the data server.

34. The method of claim 32, where the number of agent communication devices returned by the acceleration server to the client communication device is increased as the acceleration device senses that the load on these agent communication devices increases.

35. The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing the steps of:

when the client communication device receives the agent communication device list, the client communication device sends the request to all agent communication devices; and

if the client communication device does not get a response from one or more agent communication devices, the client communication device provides that information to the acceleration server.

36. The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing a periodic load check on each potential agent communication device.

37. The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

the acceleration server choosing one or more client communication devices that can be used as the agent for communicating with the data server, prioritized geographically by a geographical location of the requesting client, such that each of the client communication devices in the list of client communication devices is a higher priority for a certain geography from which requests from the requesting client communication device may be received.

38. The method of claim 26, wherein the requesting client communication device chooses the most suitable agent communication device out of the list of client communication devices received from the acceleration server by testing which of the client communication devices is the quickest to respond to queries from the requesting client communication device.

39. The method of claim 27, wherein when the agent communication device makes the request to the data server, the agent communication device sends to the data server all of the parameters that it received from the requesting client communication device for this request from the requesting client communication device.

40. The method of claim 26, wherein the method that the agent communication device uses to test if there are other client communication devices that received responses to the same message is performed by the steps of:

when receiving and caching responses from the data server, the agent communication device receiving and caching a validity variable that indicates in which situations the response is valid for the same type of request; and

the agent communication device checking the agent cache storage by looking up message of the requesting client communication device,

wherein, if such a message exists and a response is cached, or information about client communication devices that have received the response is cached, then the agent communication device checks the validity variable of the entry of the request in the agent cache storage, and

wherein, if the entry does not exist or the data is no longer valid, the agent communication device assumes that it does not have a response stored for that request

41. The method of claim 26, wherein when the requesting client communication device provides to the agent communication device a request with additional parameters, the agent communication device stores these additional parameters in the agent cache storage in the entry of the data request, and uses that information together with the request as a key when looking up the data in future lookups.

42. The method of claim 26, wherein the client communication device, agent communication device, and peer communication device are referred to as network elements, and wherein each network element contains therein a client module, a peer module, and an agent module, thereby allowing each network element to serve as any of a client communication device, a peer communication device, and an agent communication device.

43. The method of claim 40, where the request from the requesting client communication device is an HTTP request for a URL, the data server is a Web server, and the additional data that the agent communication device sends to the Web server are the parameters of the URL and cookies of the requesting client communication device and the validity variable is the HTTP expiry time.

44. The method of claim 26, wherein requests are selected from the group consisting of UDP, DNS, TCP, FTP, POP3, SMTP, and SQL.

45. A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server,

wherein the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending to the requesting client communication device a list of checksums of the chunks that comprise the data server response where for each such checksum, the agent communication device sends identifiers of client communication devices that have received such checksums from the agent communication device in the past, wherein these client communication devices that have received such checksums from the agent communication device in the past are referred to as peers;

the requesting client communication device retrieving the response or portions thereof by requesting the chunks in the list from one or more peers in the list received from the agent communication device;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the chunks that the requesting client communication device received.

ABSTRACT

A system designed for increasing network communication speed for users, while lowering network congestion for content owners and ISPs. The system employs network elements including an acceleration server, clients, agents, and peers, where communication requests generated by applications are intercepted by the client on the same machine. The IP address of the server in the communication request is transmitted to the acceleration server, which provides a list of agents to use for this IP address. The communication request is sent to the agents. One or more of the agents respond with a list of peers that have previously seen some or all of the content which is the response to this request (after checking whether this data is still valid). The client then downloads the data from these peers in parts and in parallel, thereby speeding up the Web transfer, releasing congestion from the Web by fetching the information from multiple sources, and relieving traffic from Web servers by offloading the data transfers from them to nearby peers.

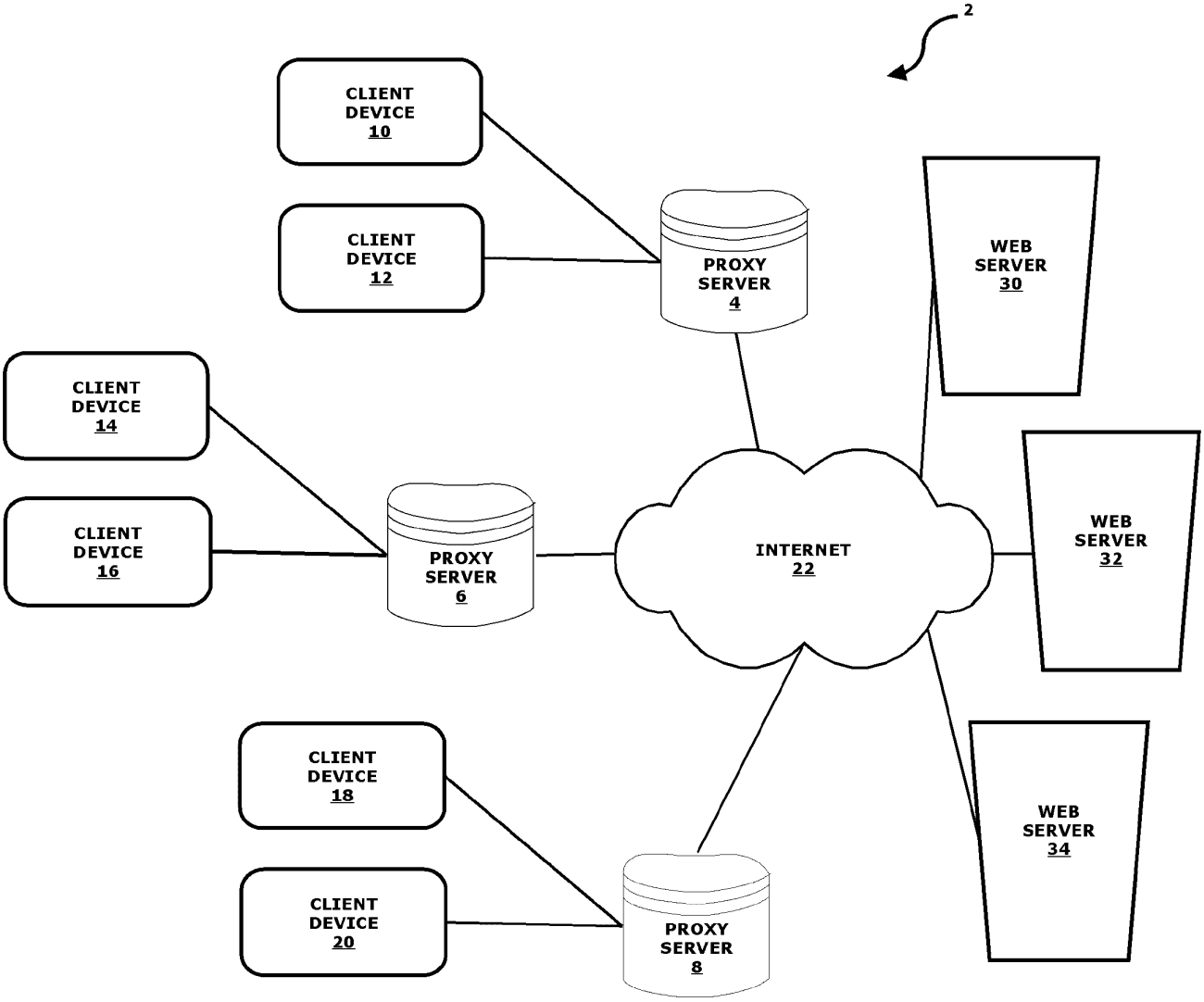


FIG. 1

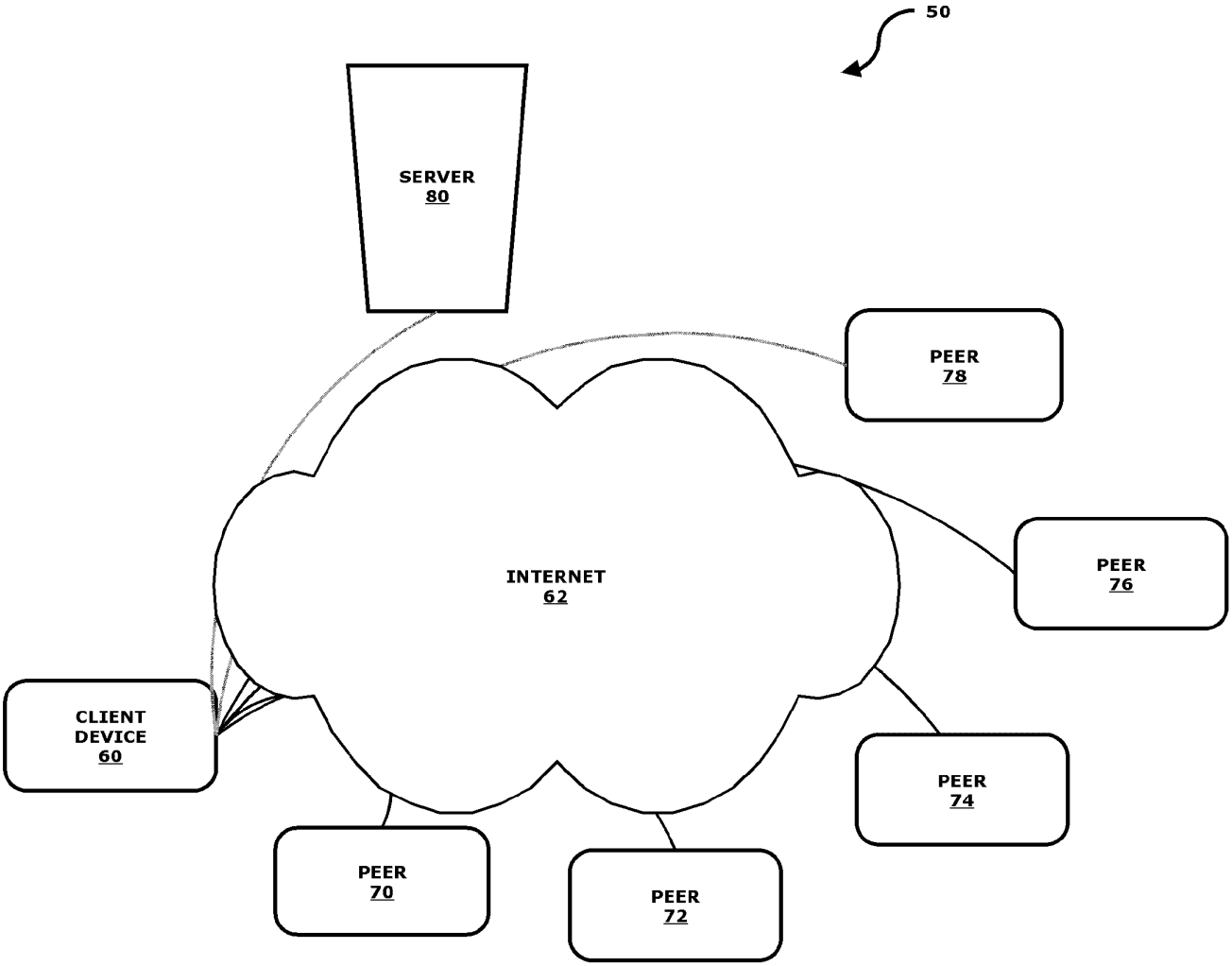


FIG. 2

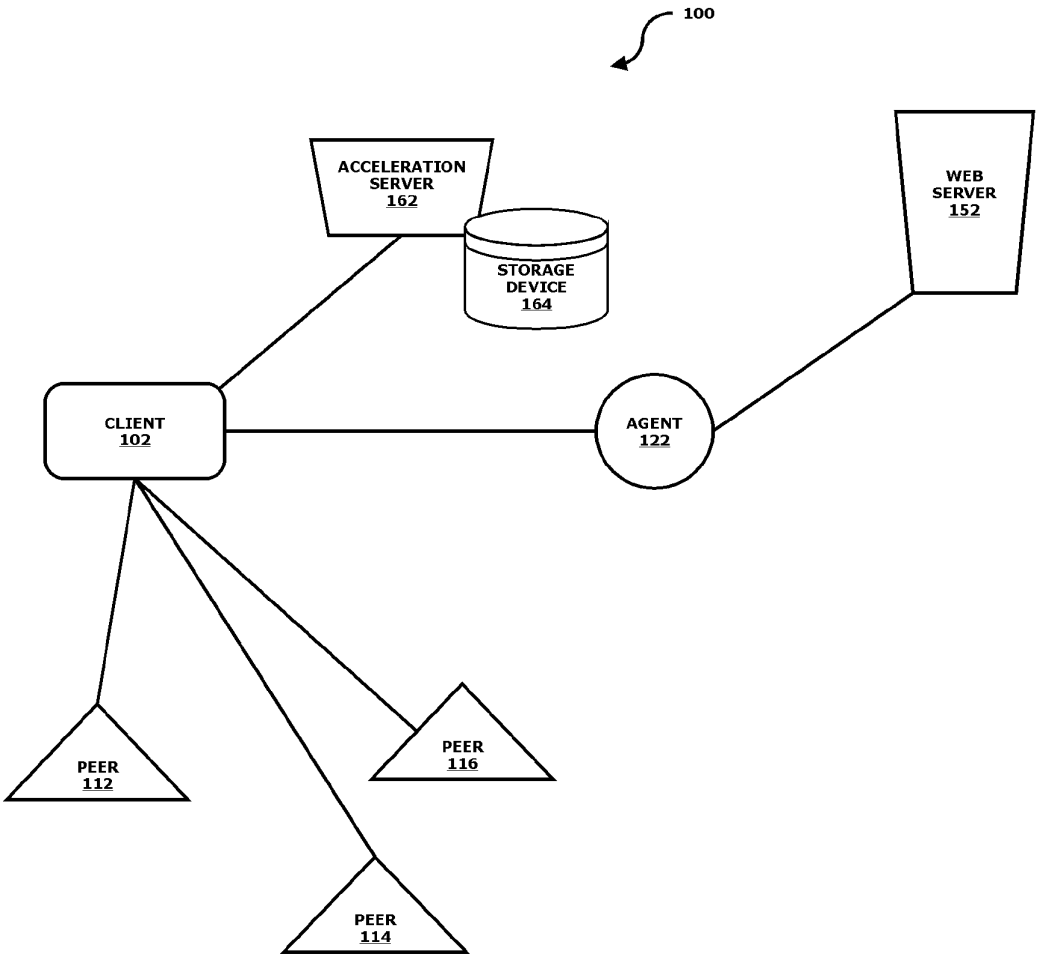


FIG. 3

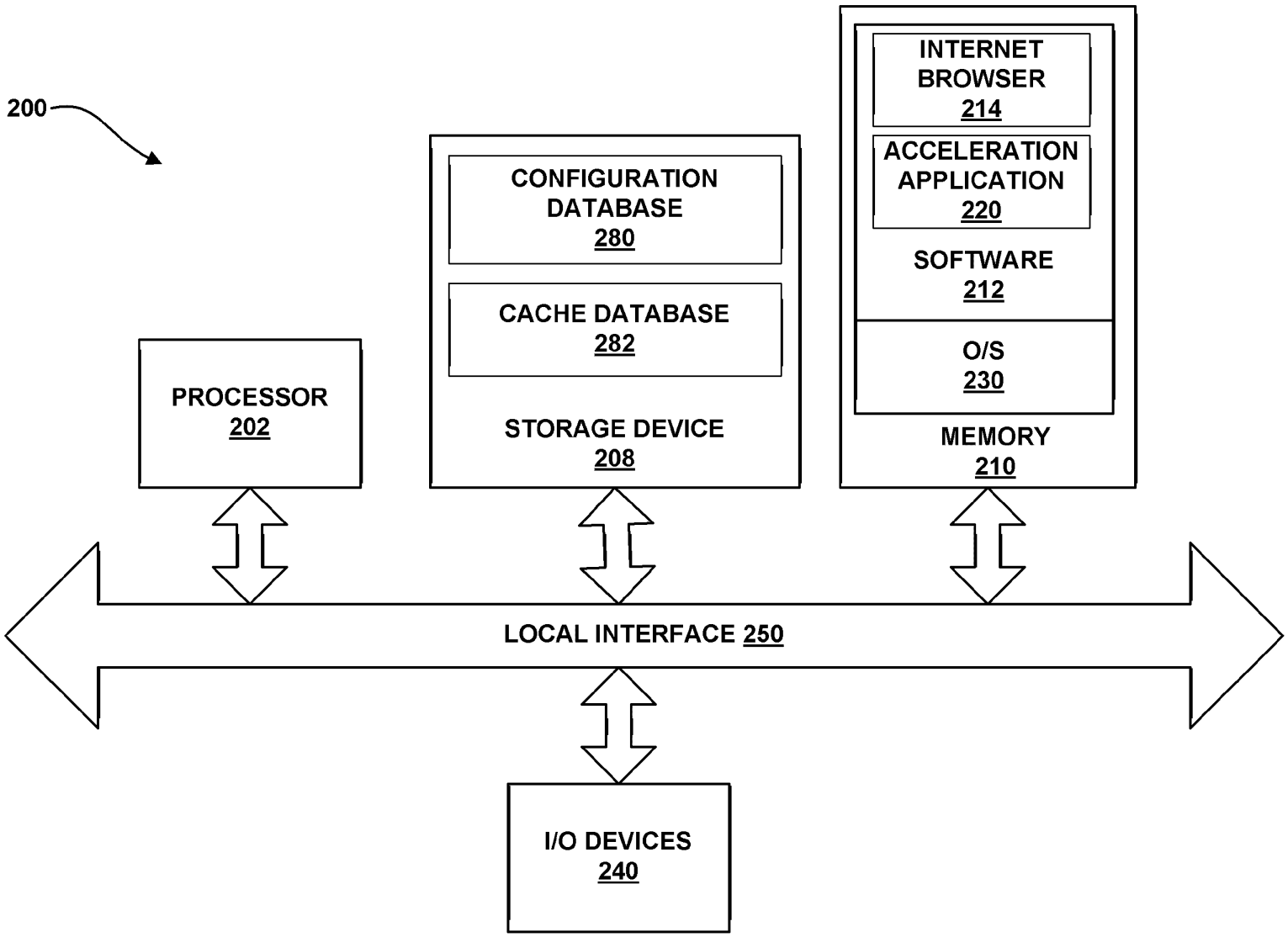


FIG. 4

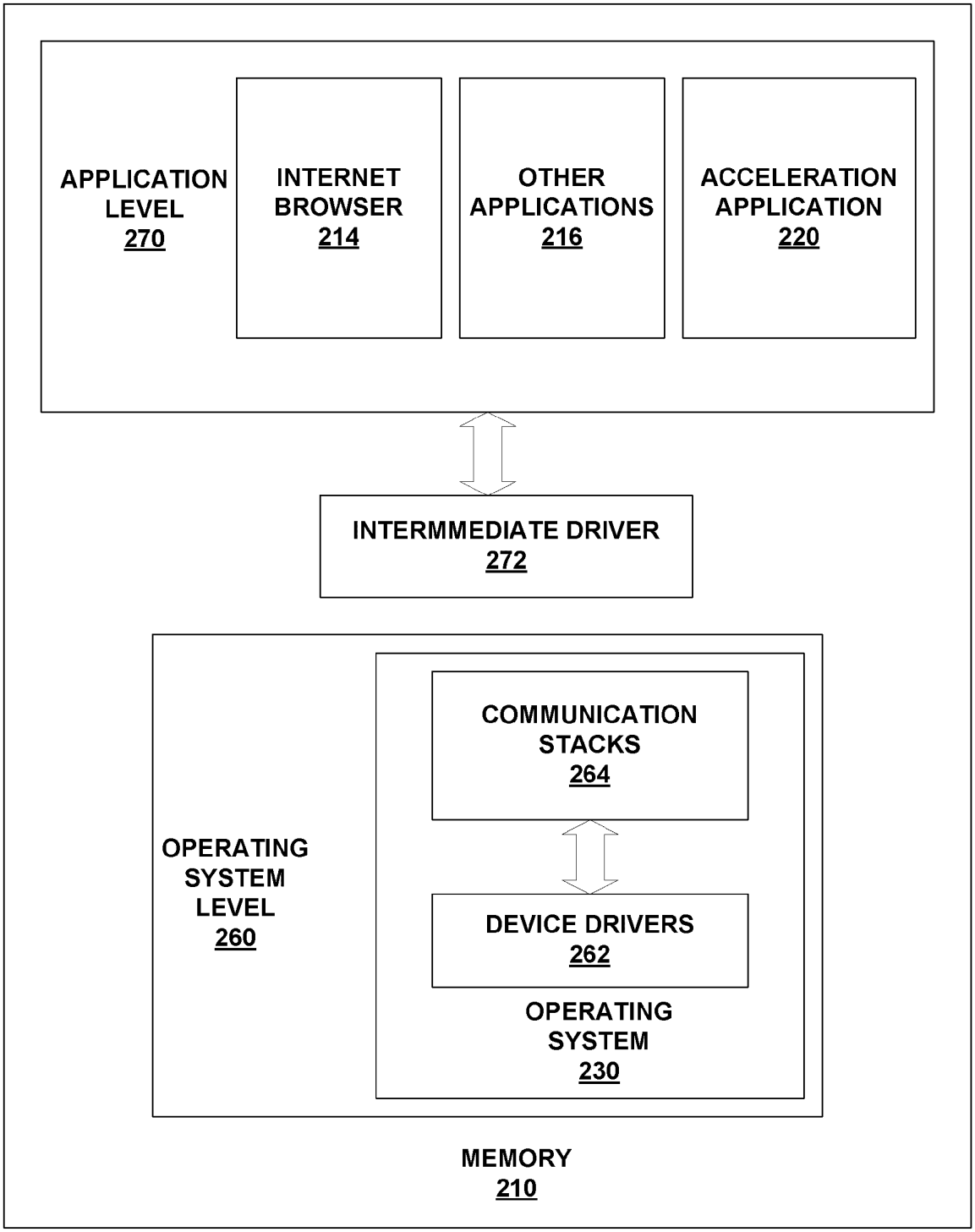


FIG. 5

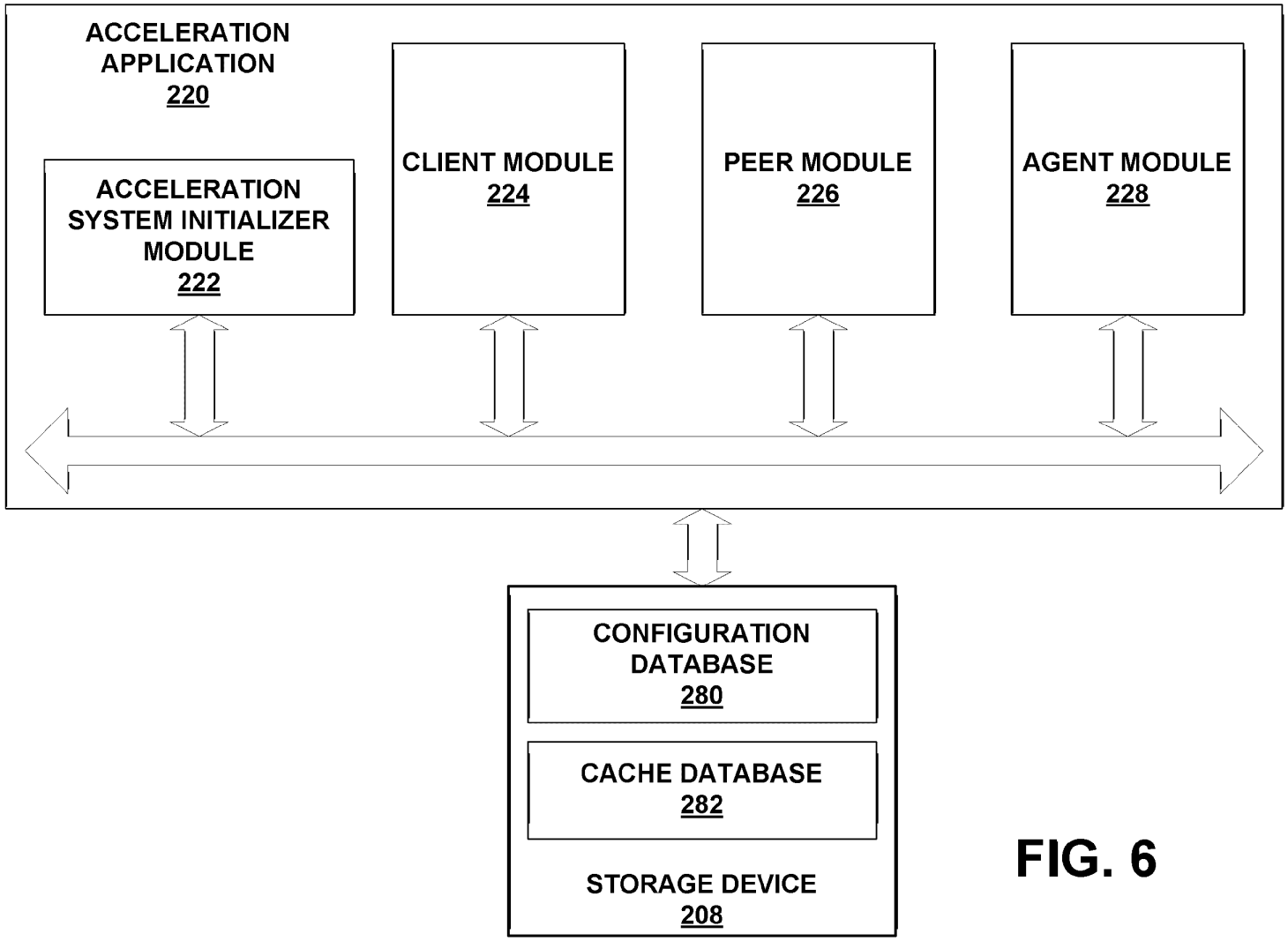


FIG. 6

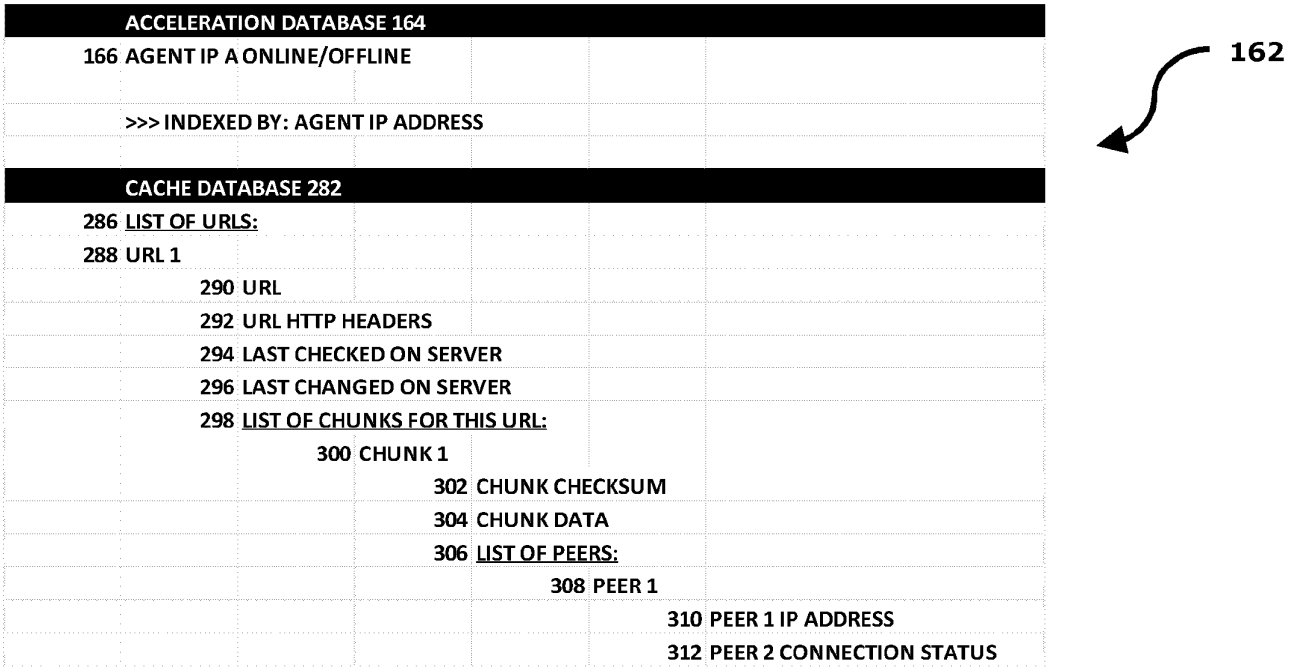


FIG. 7

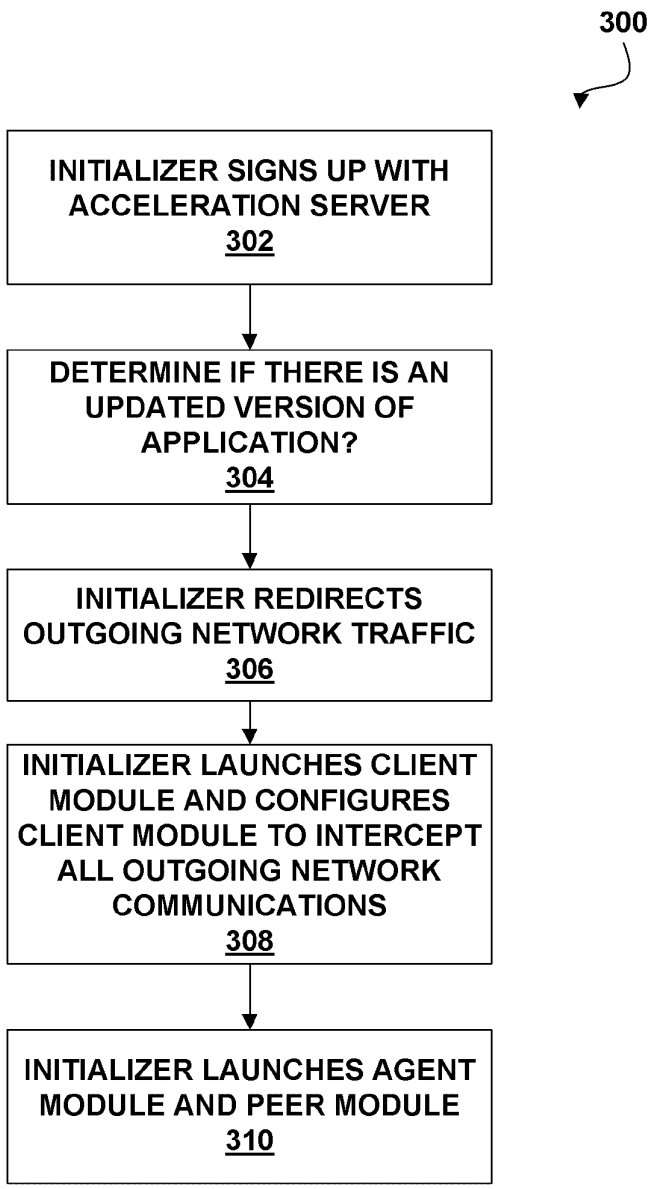


FIG. 8

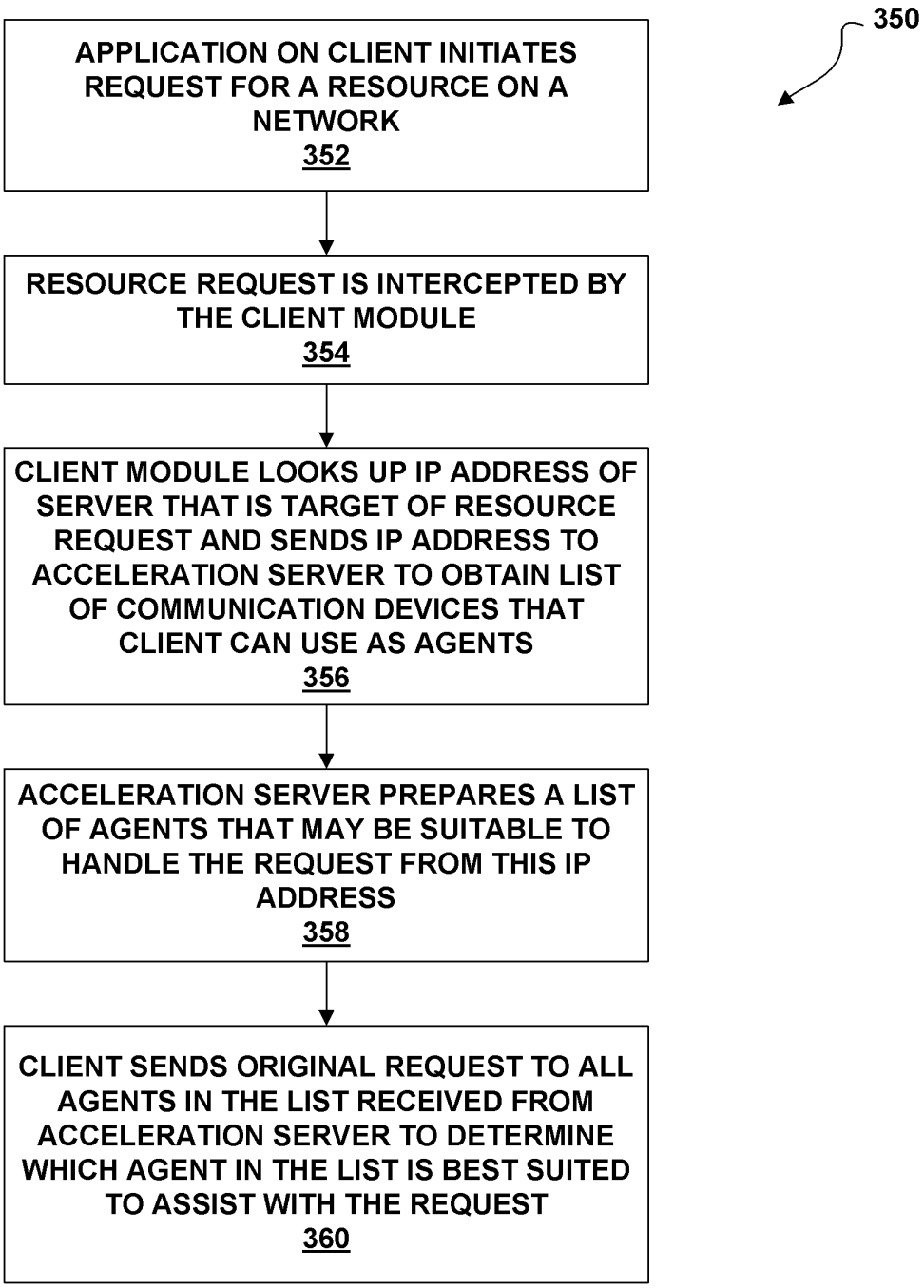


FIG. 9

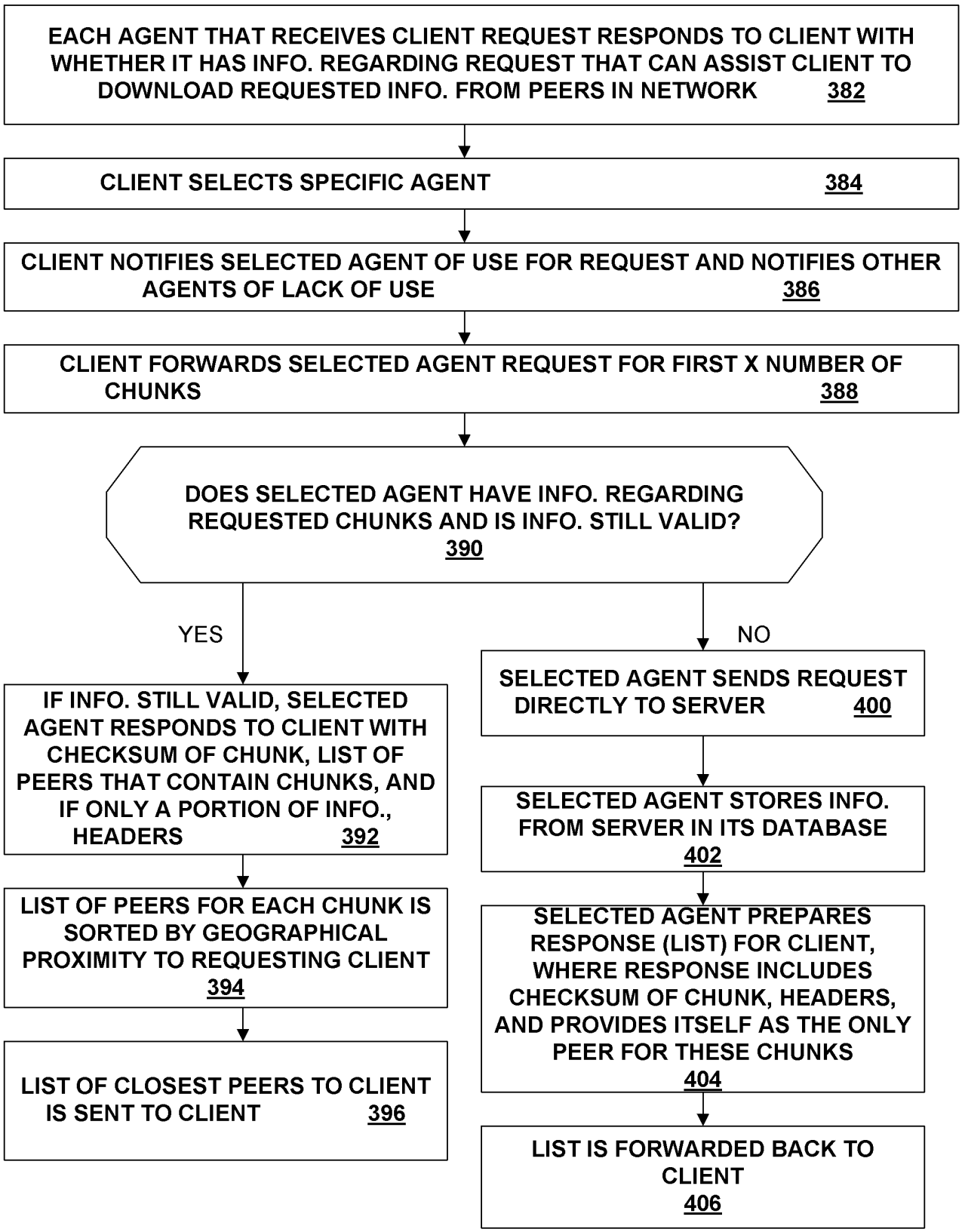


FIG. 10

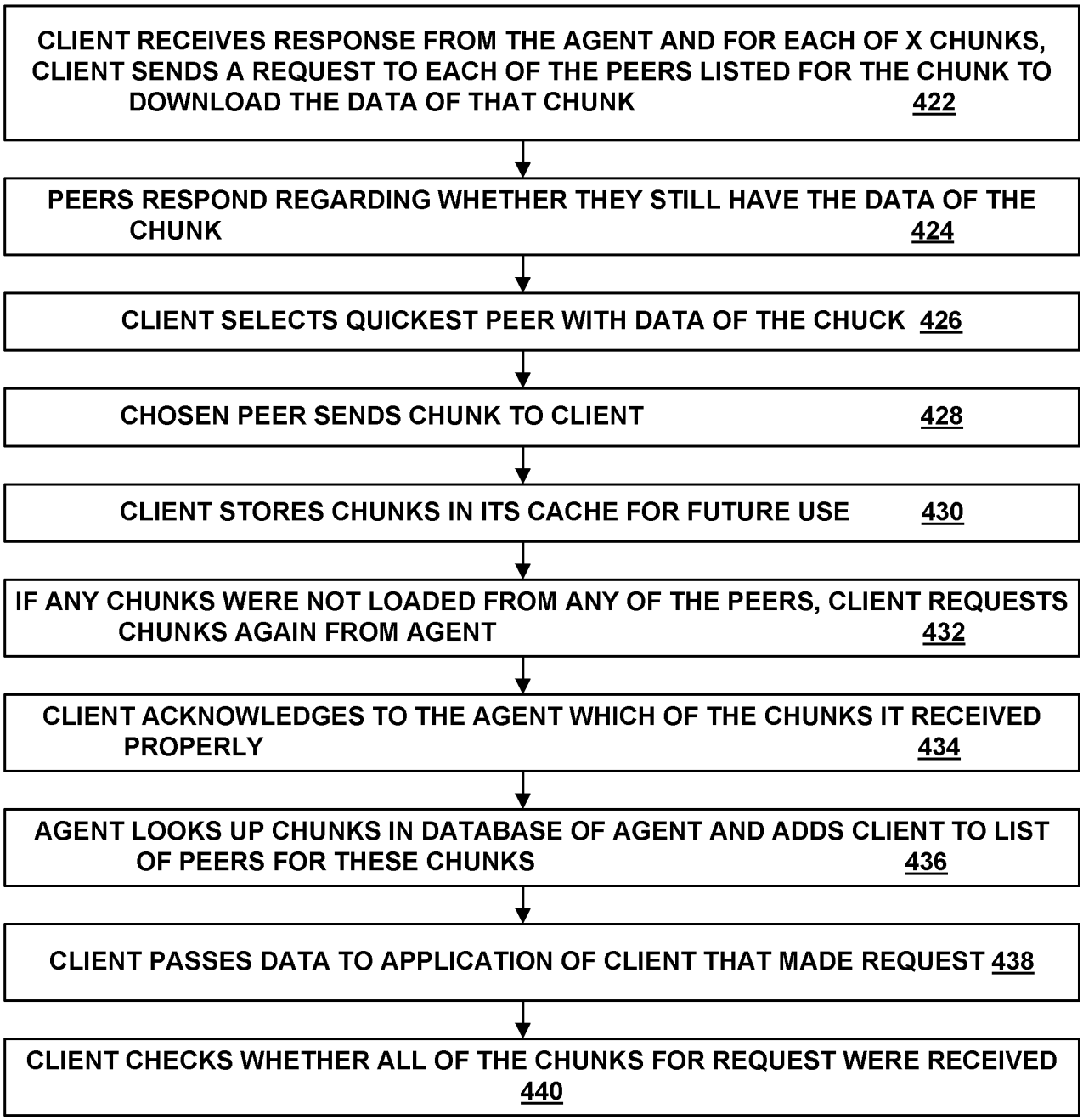


FIG. 11

420

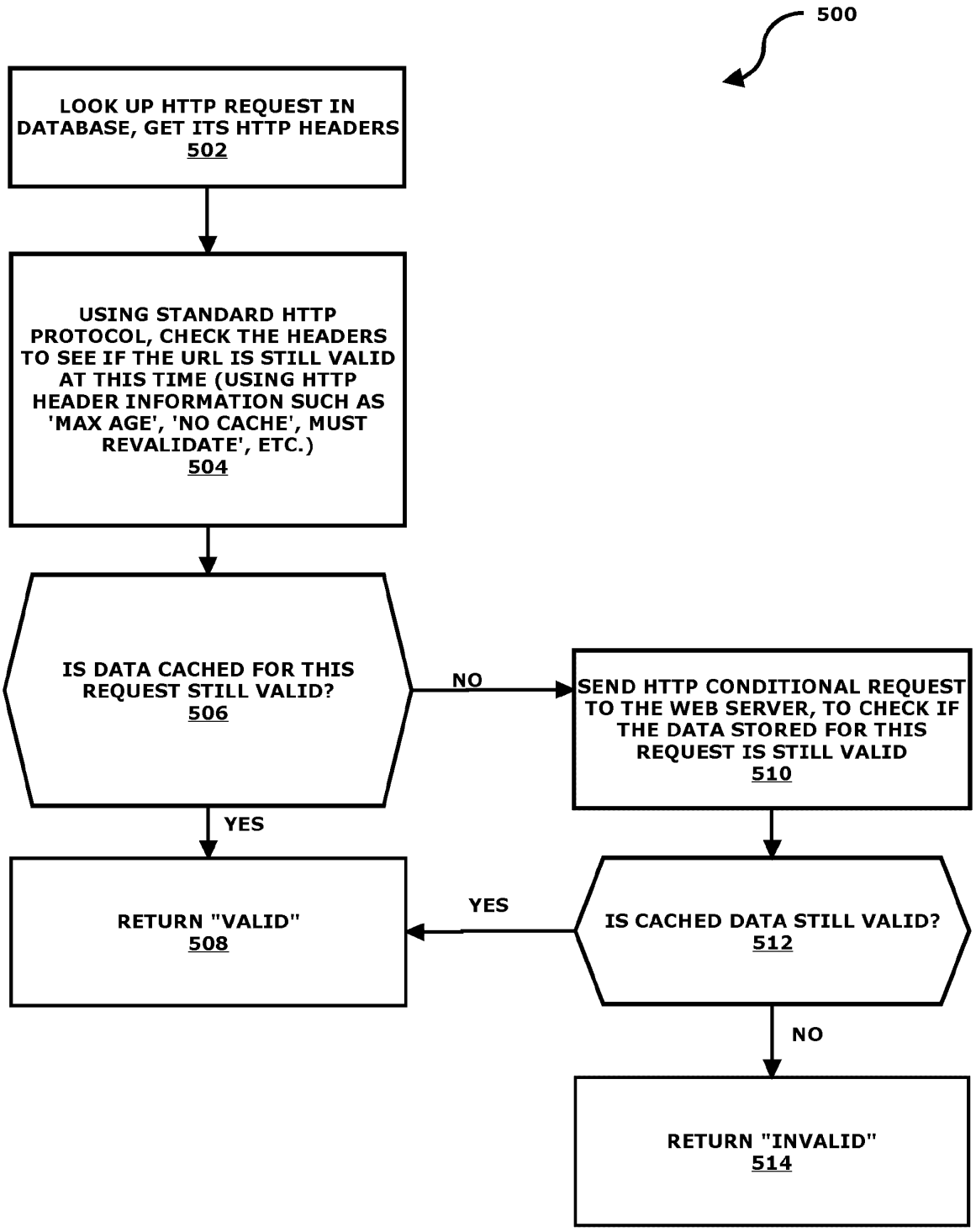


FIG. 12

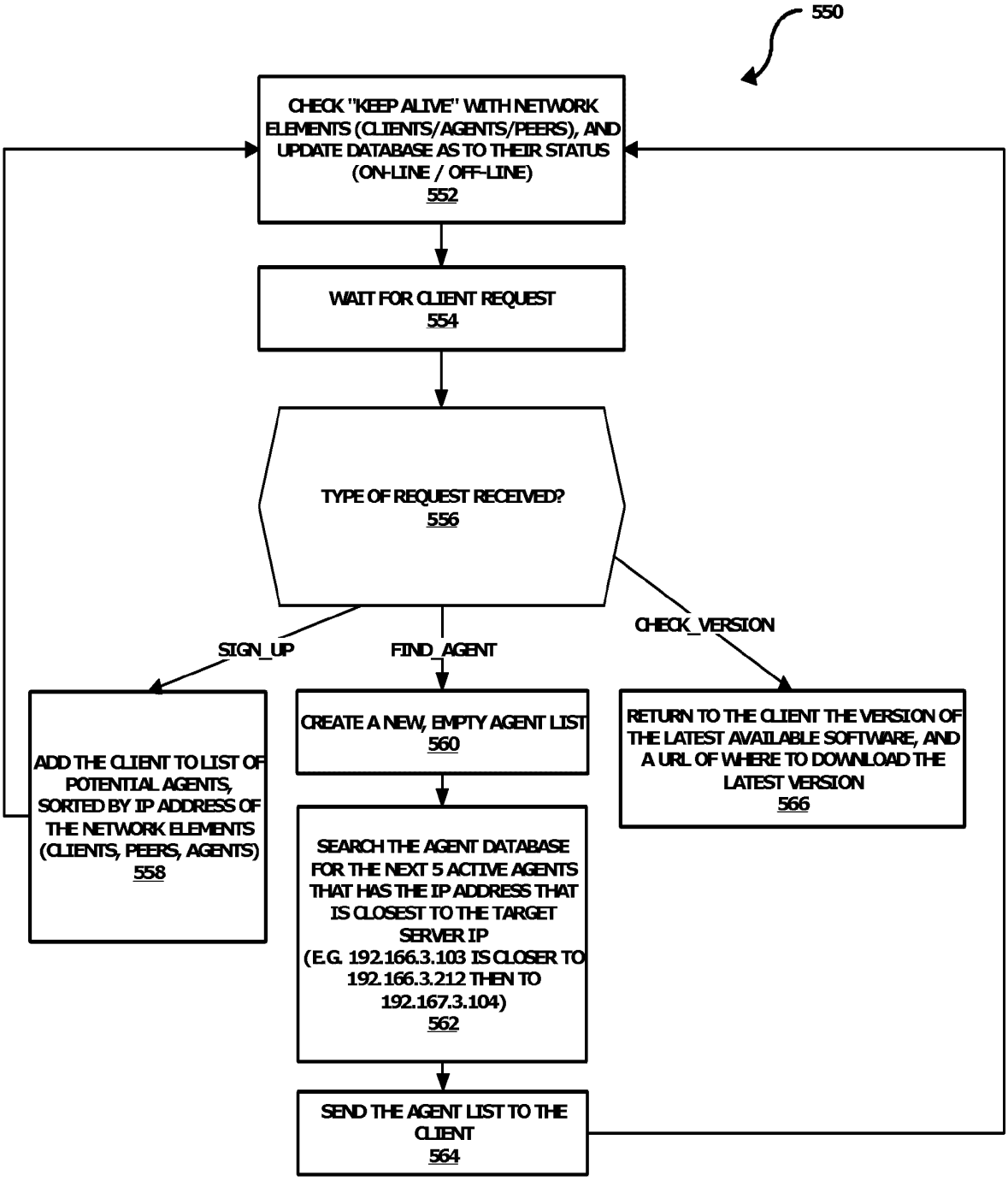


FIG. 13

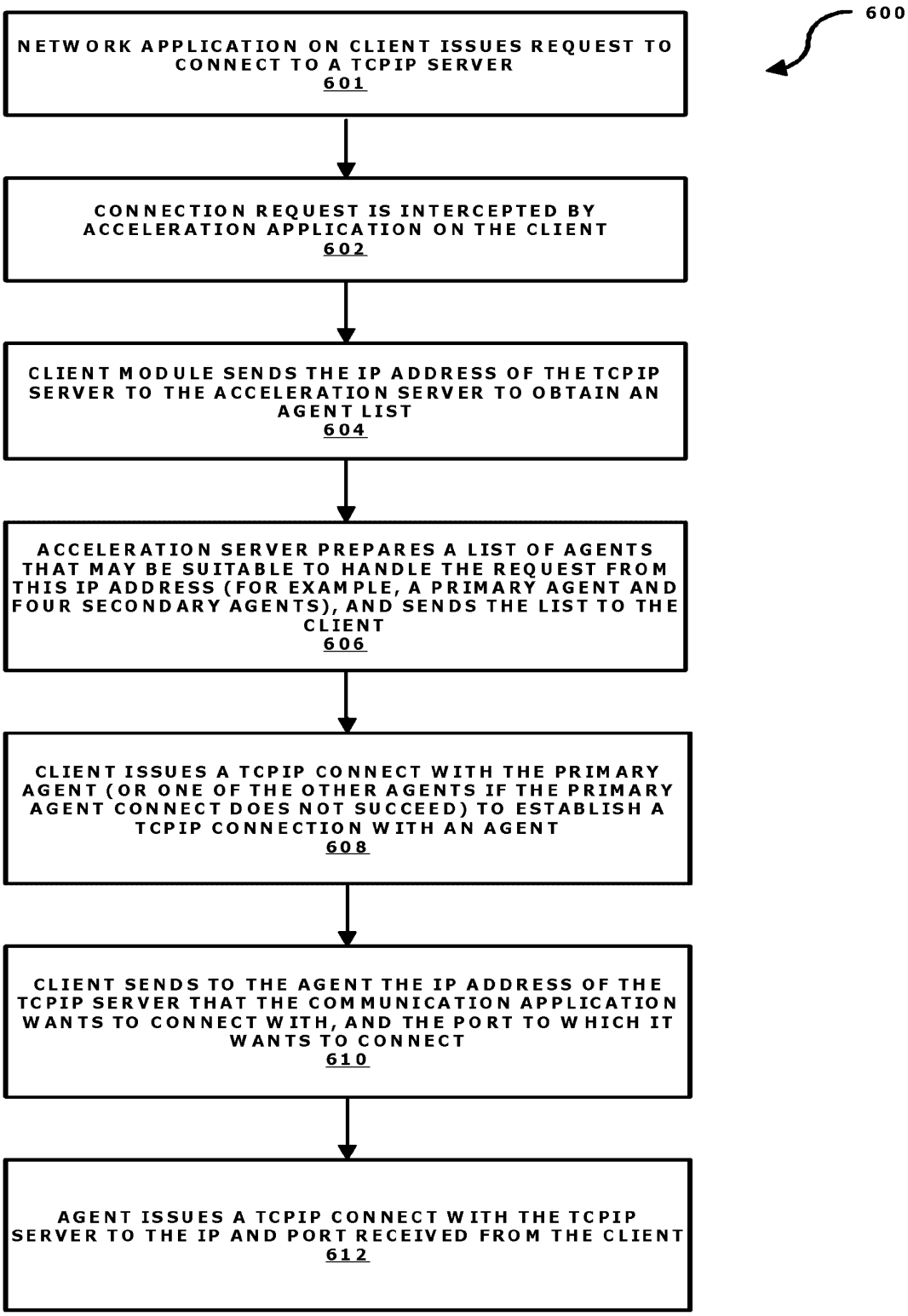


FIG. 14

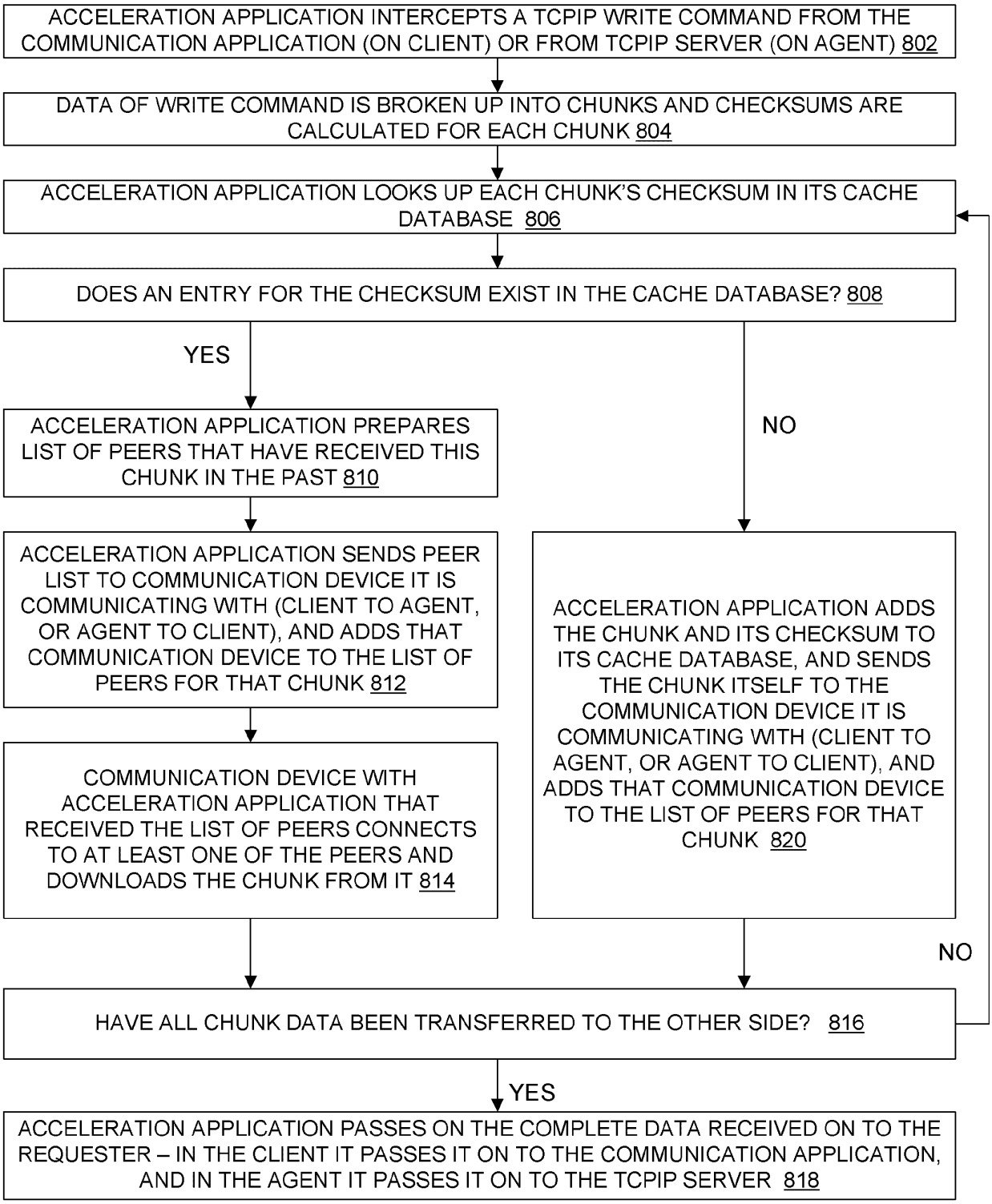


FIG. 15

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Filer:	Peter Anthony Nieves/Donna LeBlanc
Attorney Docket Number:	19459-6102

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Claims in excess of 20	2202	25	26	650
Independent claims in excess of 3	2201	3	110	330
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1442**

Electronic Acknowledgement Receipt

EFS ID:	8014029
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Donna LeBlanc
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	14-JUL-2010
Filing Date:	
Time Stamp:	14:56:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1442
RAM confirmation Number	1140
Deposit Account	501304
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Application Data Sheet	ADStofile.pdf	210576 335041b048261ffbb382eaa458d0239e752dd268	no	3
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2	Specification	SPECtofile.pdf	1764987 8bb70b144c8bc751c7493ee7a1a6e6b2128a7a1d	no	33
Warnings:					
Information:					
3	Claims	CLAIMStofile.pdf	661963 eb3b2bc8d62ce45b1f6632813cb12b80270ac300	no	16
Warnings:					
Information:					
4	Abstract	ABSTRACTtofile.pdf	33094 0888edfee7e74a985c90f09d17a8eebdb2856532	no	1
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5	Drawings-only black and white line drawings	FINALFIGSTOFILE.pdf	259577 569f9d75fc2b9ce253b015f191526eeb87fbda8d	no	15
Warnings:					
Information:					
6	Fee Worksheet (PTO-875)	fee-info.pdf	38229 46789570dd43cfc84eaf82739c2186850aae4568	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2968426		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Filing Date: **07/14/10**

Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 12/836,059

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	45	25	x$26	650	OR	x$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	6 minus 3 =	* 3	x$110	330		x$220	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195			390	
			TOTAL	1442		TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	19459-6102

CONFIRMATION NO. 1421

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

FORMALITIES LETTER

OC000000042707993

Date Mailed: 07/26/2010

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
  Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings have a line quality that is too light to be reproduced (weight of all lines and letters must be heavy enough to permit adequate reproduction) or text that is illegible (reference characters, sheet numbers, and view numbers must be plain and legible) see 37 CFR 1.84(l) and (p)(1)); See Figure(s) 7 .

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $**65** for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is $**65** for a small entity
- $**65** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/mkanno/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/836,059	07/14/2010	2447	1442	19459-6102	45	6

CONFIRMATION NO. 1421

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

FILING RECEIPT

Date Mailed: 07/26/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Derry Shribman, Netanya, ISRAEL;
Ofer Vilenski, Netanya, ISRAEL;

Assignment For Published Patent Application

hola, Inc., Natanya, ISRAEL

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/249,624 10/08/2009

Foreign Applications

If Required, Foreign Filing License Granted: 07/22/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/836,059**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
** **SMALL ENTITY** **

Title

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 12/836,059

Applicant(s): Derry Shribman

Filing Date: July 14, 2010

Art Unit: 2447 Confirmation No.: 1421

Docket No.: 19459-6102

Title: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

Mail Stop MISSING PARTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NON-PROVISIONAL APPLICATION

Enclosed herewith in response to the Notice to File Missing Parts of Non-provisional Application mailed April 2, 2010 is the following document:

1. The Notice states that an Oath or Declaration is missing.

   Enclosed please find an Executed Declaration (3 pages).

2. The Notice states that a new drawing sheet for Figure 7 is required. Attached please find one (1) sheet, Figure 7.

3. The Notice states that a late Oath or Declaration Surcharge Fee in the amount of $65.00 must be submitted.

Payment of Fee(s)

The fee of **$65.00** is to be paid as follows:

[X] The Director is hereby authorized to charge all fees, or credit an overpayment, to Deposit Account No. 50-1304.

As this Response is electronically-filed, a copy of the Notice to File Missing Parts is not attached.

Respectfully submitted,
SHEEHAN, PHINNEY, BASS + GREEN, P.A.

Dated: September 27, 2010

Peter A. Nieves
Attorney for Applicant
Registration No.: 48,173

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) AND POWER OF ATTORNEY		
☐ Declaration Submitted With Initial Filing *OR* ☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Attorney Docket No.	19459-6102
	First Named Inventor	Derry Shribman
	COMPLETE IF KNOWN	
	Application No.	12/836,059
	Filing Date	July 14, 2010
	Confirmation No.	1421
	Art Unit	2447
	Examiner Name	Not yet assigned

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on July 14, 2010 as United States Application Number or PCT International Application Number 12/836,059 and was amended on (MM/DD/YYYY) _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

DECLARATION – Utility or Design Patent Application

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYY)	Priority Not Claimed	Certified Copy Attached? YES	NO

☐ Additional foreign application numbers are listed on a supplementary priority data sheet attached hereto.

POWER OF ATTORNEY

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

☒ The practioners/address associated with Customer Number: **57449**.
Please direct all telephone calls to: Peter A. Nieves, Esq.
Telephone: 603-627-8134 Facsimile: 603-641-2353
Email: pnieves@sheehan.com

OR

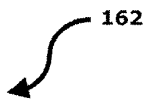
☐ Correspondence address below:

Name		
Address		
City	State	Zip
Country	Telephone	Email

DECLARATION – Utility or Design Patent Application

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR:			
Given Name (first and middle (if any) Derry		Family Name or Surname Shribman	
Inventor's Signature x		Date 29-Aug-2010	
Residence: City Netanya	State	Country IL	Citizenship IL
Mailing Address 1 Gad Manela Street			
City ~~Netanya~~ Tel Aviv	State	Zip	Country IL
NAME OF ADDITIONAL JOINT INVENTOR, IF ANY:			
Given Name (first and middle (if any) Ofer		Family Name or Surname Vilenski	
Inventor's Signature Ofer Vilenski		Date 29-Aug-2010	
Residence: City Netanya	State	Country IL	Citizenship US and IL
Mailing Address 1 Gad Manela Street			
City Netanyaq	State	Zip 42935	Country IL



ACCELERATION DATABASE 164

166 AGENT IP ADDRESS ONLINE/OFFLINE

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CACHE DATABASE 282

286 LIST OF URLS:
288 URL 1
290 URL
292 URL HTTP HEADERS
294 LAST CHECKED ON SERVER
296 LAST CHANGED ON SERVER
298 LIST OF CHUNKS FOR THIS URL:
300 CHUNK 1
302 CHUNK CHECKSUM
304 CHUNK DATA
306 LIST OF PEERS:
308 PEER 1
310 PEER 1 IP ADDRESS
312 PEER 2 CONNECTION STATUS

FIG. 7

Electronic Patent Application Fee Transmittal

Application Number:	12836059
Filing Date:	14-Jul-2010
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Filer:	Peter Anthony Nieves/Donna LeBlanc
Attorney Docket Number:	19459-6102

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**130**

Electronic Acknowledgement Receipt	
EFS ID:	8507166
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Donna LeBlanc
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	27-SEP-2010
Filing Date:	14-JUL-2010
Time Stamp:	17:02:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$130
RAM confirmation Number	4016
Deposit Account	501304
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Miscellaneous Incoming Letter	RESPtofile.pdf	49850 8f599a6133534c0c91d986cf1bb95b4b55accab3	no	2
Warnings:					
Information:					
2	Oath or Declaration filed	DECtofile.pdf	205152 4bdc869efdd519df807c3886f4a240a001621839	no	3
Warnings:					
Information:					
3	Drawings-only black and white line drawings	ReplacementSheetFIG_7.pdf	23074 999a45e2f804b16b6ab6533a38847eb571828a94	no	1
Warnings:					
Information:					
4	Fee Worksheet (PTO-875)	fee-info.pdf	30420 9bd7164ea0300c1f2afc5b67f471c085926dca15	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	308496		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	8507166
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Donna LeBlanc
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	27-SEP-2010
Filing Date:	14-JUL-2010
Time Stamp:	17:02:55
Application Type:	Utility under 35 USC 111(a)

Adjustment date: 10/05/2010 MTEKLEMI
09/28/2010 INTEFSW 00004016 501304 12836059
01 FC:1051 130.00 CR

10/05/2010 MTEKLEMI 00000002 501304 12836059
01 FC:2051 65.00 DA

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$130
RAM confirmation Number	4016
Deposit Account	501304
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/836,059	07/14/2010	2447	1507	19459-6102	45	6

CONFIRMATION NO. 1421

UPDATED FILING RECEIPT

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

OC000000043861440

Date Mailed: 10/12/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Derry Shribman, Netanya, ISRAEL;
Ofer Vilenski, Netanya, ISRAEL;

Assignment For Published Patent Application

hola, Inc., Natanya, ISRAEL

Power of Attorney: The patent practitioners associated with Customer Number 57449

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/249,624 10/08/2009

Foreign Applications

If Required, Foreign Filing License Granted: 07/22/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/836,059**

Projected Publication Date: 04/14/2011

Non-Publication Request: No

Early Publication Request: No
** **SMALL ENTITY** **

Title

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)		
	Application Number	12836059
	Filing Date	2010-07-14
	First Named Inventor	Shribman, Derry
	Art Unit	2447
	Examiner Name	Joon Hwang
	Attorney Docket Number	19459-6102

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030174648		2003-09-18	Wang, et al	
	2	20080008089		2008-01-10	Bornstein, et al	
	3	20040088646		2004-05-06	Yeager, et al	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

EFS Web 2.1.17

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12836059
	Filing Date	2010-07-14
	First Named Inventor	Shribman, Derry
	Art Unit	2447
	Examiner Name	Joon Hwang
	Attorney Docket Number	19459-6102

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	Examiner Name	Joon Hwang
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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

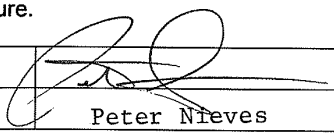
☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature		Date (YYYY-MM-DD)	2011-02-04
Name/Print	Peter Nieves	Registration Number	48173

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	9388684
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Stevens
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	07-FEB-2011
Filing Date:	14-JUL-2010
Time Stamp:	15:01:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed (SB/08)	IDStofile.pdf	246578 e4fcad3799693b9b4b73c2dbf0d3cba6f8675674	no	4
Warnings:					
Information:					

This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	246578

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	19459-6102

CONFIRMATION NO. 1421

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

PUBLICATION NOTICE

OC000000047147999

Title:SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

Publication No.US-2011-0087733-A1
Publication Date:04/14/2011

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

57449 7590 09/13/2012

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER	
NGUYEN, MINH CHAU	
ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
09/13/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/836,059	SHRIBMAN ET AL.	
	Examiner	Art Unit	
	MINH-CHAU NGUYEN	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2010*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-45* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☐ Claim(s) _____ is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☒ Claim(s) *1-45* are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *14 July 2010* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/07/2011*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to application 12/836059, filed on July 14, 2010.

Claims 1-45 are presented for examination.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I. Claims 1-25, drawn to a system for assigning at least one agent communication devices which establishes communication with data server in order to transfer data between a client and the data server, classified in class 709, subclass 202.

Group II. Claims 26-45, drawn to a method for processing data in response to a significance characteristic of data transferred between the devices, classified in class 709, subclass 207.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination II has separate utility such as *the requesting client communication device choosing one of the provided client*

communication devices to be used as agent communication device which determining if one or more of the client communication devices has previously received a response to the received message from the data server and the determined client communication devices that are the most beneficial to the requesting client communication device in terms of speed or best connection of receiving information, which is lacked in subcombination I; and subcombination I has separate utility such as *at least one agent communication device which is assigned by the at least one acceleration server to the data server for receiving the data request from the client communication device*, which is lacked in subcombination II. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the invention require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of an invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

In accordance with U.S.C 133, a shortened statutory period on one month (not less than 30 days) is hereby set forth to this Office Action. See also MPEP 710.02(b).

Corresponding Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-CHAU NGUYEN whose telephone number is (571)272-4242. The examiner can normally be reached on 7AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLENTON BURGESS can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MINH-CHAU NGUYEN/
Primary Examiner, Art Unit 2442

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

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	Art Unit	~~2447~~ 2442
	Examiner Name	~~Joon Hwang~~ MINH-CHAU NGUYEN
	Attorney Docket Number	19459-6102

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	Examiner Name	~~doan thang~~ MINH-CHAU NGUYEN
	Attorney Docket Number	19459-6102

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/Minh Chau Nguyen/	Date Considered	09/10/2012

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2012								
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CLAIM		DATE								
Final	Original	09/10/2012								
	37	÷								
	38	÷								
	39	÷								
	40	÷								
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BIB DATA SHEET

CONFIRMATION NO. 1421

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/836,059	07/14/2010 RULE	709	2442	19459-6102

APPLICANTS

Derry Shribman, Netanya, ISRAEL;
Ofer Vilenski, Netanya, ISRAEL;

**** CONTINUING DATA **************************

This appln claims benefit of 61/249,624 10/08/2009

**** FOREIGN APPLICATIONS **************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
07/22/2010

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		ISRAEL	15	45	6
Verified and Acknowledged	/MINH-CHAU NGUYEN/ Examiner's Signature	Initials				

ADDRESS

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701
UNITED STATES

TITLE

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

FILING FEE RECEIVED		
1507	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	12/836,059		
Applicant:	Derry Shribman		
Filed:	July 14, 2010	Examiner:	Minh Chau Nguyen
TC/Art Unit:	2442	Confirmation No.:	1421
Docket No.:	19459-6102		
Title:			

RESPONSE AND AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner Nguyen:

This amendment is being filed in response to the Restriction Requirement mailed September 13, 2012. In response thereto, please enter the following election and consider the following remarks.

Amendments to the Claims are reflected in the listing of claims, which begins on page 2 of this paper.

Remarks/Arguments begin on page 18 of this paper.

AUTHORIZATION TO DEBIT ACCOUNT

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this response. However, in the event that additional extensions of time are necessary to allow consideration of this response, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a) and any fee required therefore are hereby authorized to be charged to deposit account No. 501304.

AMENDMENTS TO THE CLAIMS

Please substitute the following clean copy text for the pending claims of the same number. Claims 1-25 have been withdrawn without prejudice.

1. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server;

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

2. (Withdrawn) The network of claim 1, wherein each of the client communication device, peer communication device, and agent communication device contain therein a client

module, a peer module, and an agent module, thereby allowing the client communication device, peer communication device, and agent communication device to serve as any of a client communication device, a peer communication device, and an agent communication device.

3. (Withdrawn) The network of claim 1, wherein the acceleration server assigns a list of Internet protocol addresses to each agent communication device.

4. (Withdrawn) The network of claim 1, wherein the acceleration server has stored therein a list of online communication devices, including client communication devices, agent communication devices, and peer communication devices.

5. (Withdrawn) The network of claim 1, wherein each client communication device, agent communication device, and peer communication device maintain a list of data requests and data responses that the communication device, agent communication device, and peer communication device, respectively are respectively aware of, as well as in which communication device associated data is stored.

6. (Withdrawn) The network of claim 1, wherein the data request from the client communication device is an HTTP request, and wherein the server is a Web server.

7. (Withdrawn) The network of claim 6, wherein each client communication device contains a storage device therein that stores a list of Uniform Resource Locators (URLs) that the client communication device is aware of, each agent communication device contains a storage

device therein that stores a list of URLs that the agent communication device is aware of, and wherein each peer communication device contains a storage device therein that stores a list of URLs that the peer communication device is aware of.

8. (Withdrawn) The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

9. (Withdrawn) The network of claim 1, wherein each client communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized.

10. (Withdrawn) The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of peers that most likely have the data for this chuck.

11. (Withdrawn) The network of claim 1, wherein the network contains multiple peer communication devices, wherein the at least one agent communication device further keeps track of which peer communication devices have at least a portion of the requested data stored therein.

12. (Withdrawn) The network of claim 1, wherein the at least one acceleration server prepares a list of agent communication devices that may be suitable to handle the data request.

13. (Withdrawn) The network of claim 12, wherein the list of agent communication devices that may be suitable includes agent communication devices having an IP address that is numerically close to the IP address of the data server.

14. (Withdrawn) The network of claim 12, wherein the client communication device selects an agent communication device, notifies the selected agent communication device that it is being used for the data request, and notifies any unselected agent communication devices that they are not being used for the data request.

15. (Withdrawn) The network of claim 1, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if there is a portion of data necessary to fulfill the original data request, yet the agent is not aware of any peer having the portion of data stored therein, the agent itself queries the server for the missing portion of data and transmits the missing portion of data to the requesting client communication device.

16. (Withdrawn) The network of claim 1, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if the at least one agent knows of a specific peer that has a portion of data necessary to fulfill the original data request stored therein, the agent provides the specific peer as the peer to use for the portion of data necessary for fulfilling the original data request.

17. (Withdrawn) A communication device within a network, comprising:

a memory; and

a processor configured by the memory to perform the steps of:

originating a data request for obtaining data from a data server;

being assigned to a data server, referred to as an assigned data server;

receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and

storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

18. (Withdrawn) The communication device of claim 17, wherein the communication device further comprises a storage device that stores a list of Uniform Resource Locators (URLs) that the communication device is aware of.

19. (Withdrawn) The communication device of claim 18, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

20. (Withdrawn) The communication device of claim 17, wherein the communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized, wherein the chunks are equally sized.

21. (Withdrawn) The communication device of claim 18, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of other communication devices that most likely have the data for this chuck.

22. (Withdrawn) The communication device of claim 17, wherein the data request is an HTTP request, and wherein the data server is a Web server.

23. (Withdrawn) The communication device of claim 17, wherein the processor is further configured by the memory to perform the step of keeping track of which other communication devices have at least a portion of the requested data stored therein.

24. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

25. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track

of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device.

26. (Original) A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response, wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices;

the requesting client communication device retrieving the requested response in one or more parts from the one or more peer communication devices in the list;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage.

27. (Original) The method of claim 26, where after receiving the message intended for the data server, from the requesting client communication device, the agent communication device checking if it has in the agent cache storage a response received to an identical message sent by the client communication device to the data server in the past, and if the agent communication device does not know of any client communication devices that have received a response to this message in the past, the following steps being performed:

the agent communication device sending the requesting client communication device message to the data server;

the data server sending the response message back to the agent communication device;

the agent communication device storing the requesting client communication device message and the data server response message in the agent cache storage;

the agent communication device sending the data server response back to the requesting client communication device; and

the requesting client communication device storing the request and the response in the client cache storage.

28. (Original) The method of claim 26, where the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past.

29. (Original) The method of claim 26, wherein the list of one or more peer communication devices includes only the peer communication devices that are the most beneficial to the requesting client communication device in terms of speed of receiving information from the peer communication devices.

30. (Original) The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that are closest to the requesting client communication device.

31. (Original) The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that have the best connection to the requesting network element.

32. (Original) The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

upon receiving the identifier of the data server from the requesting client communication device, the acceleration server choosing one or more client communication device out of all online client communication devices, that are optimal to be used as the agent communication device or devices for communicating with the data server.

33. (Original) The method of claim 32, wherein the client communication device chosen by the acceleration server as the optimal agent is the client communication device out of all online client communication devices whose Internet Protocol (IP) address is closest to the IP address of the data server.

34. (Original) The method of claim 32, where the number of agent communication devices returned by the acceleration server to the client communication device is increased as the acceleration device senses that the load on these agent communication devices increases.

35. (Original) The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing the steps of:

when the client communication device receives the agent communication device list, the client communication device sends the request to all agent communication devices; and

if the client communication device does not get a response from one or more agent communication devices, the client communication device provides that information to the acceleration server.

36. (Original) The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing a periodic load check on each potential agent communication device.

37. (Original) The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

the acceleration server choosing one or more client communication devices that can be used as the agent for communicating with the data server, prioritized geographically by a geographical location of the requesting client, such that each of the client communication devices in the list of client communication devices is a higher priority for a certain geography from which requests from the requesting client communication device may be received.

38. (Original) The method of claim 26, wherein the requesting client communication device chooses the most suitable agent communication device out of the list of client communication devices received from the acceleration server by testing which of the client communication devices is the quickest to respond to queries from the requesting client communication device.

39. (Original) The method of claim 27, wherein when the agent communication device makes the request to the data server, the agent communication device sends to the data server all of the parameters that it received from the requesting client communication device for this request from the requesting client communication device.

40. (Original) The method of claim 26, wherein the method that the agent communication device uses to test if there are other client communication devices that received responses to the same message is performed by the steps of:

when receiving and caching responses from the data server, the agent communication device receiving and caching a validity variable that indicates in which situations the response is valid for the same type of request; and

the agent communication device checking the agent cache storage by looking up message of the requesting client communication device,

wherein, if such a message exists and a response is cached, or information about client communication devices that have received the response is cached, then the agent communication device checks the validity variable of the entry of the request in the agent cache storage, and

wherein, if the entry does not exist or the data is no longer valid, the agent communication device assumes that it does not have a response stored for that request

41. (Original) The method of claim 26, wherein when the requesting client communication device provides to the agent communication device a request with additional parameters, the agent communication device stores these additional parameters in the agent cache storage in the entry of the data request, and uses that information together with the request as a key when looking up the data in future lookups.

42. (Original) The method of claim 26, wherein the client communication device, agent communication device, and peer communication device are referred to as network elements, and wherein each network element contains therein a client module, a peer module, and an agent module, thereby allowing each network element to serve as any of a client communication device, a peer communication device, and an agent communication device.

43. (Original) The method of claim 40, where the request from the requesting client communication device is an HTTP request for a URL, the data server is a Web server, and the additional data that the agent communication device sends to the Web server are the parameters of the URL and cookies of the requesting client communication device and the validity variable is the HTTP expiry time.

44. (Original) The method of claim 26, wherein requests are selected from the group consisting of UDP, DNS, TCP, FTP, POP3, SMTP, and SQL.

45. (Original) A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server,

wherein the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending to the requesting client communication device a list of checksums of the chunks that comprise the data server response where for each such checksum, the agent communication device sends identifiers of client communication devices that have received such checksums from the agent communication device in the past, wherein these client communication devices that have received such checksums from the agent communication device in the past are referred to as peers;

the requesting client communication device retrieving the response or portions thereof by requesting the chunks in the list from one or more peers in the list received from the agent communication device;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the chunks that the requesting client communication device received.

REMARKS

This is a full and timely response to the outstanding Restriction Requirement mailed September 13, 2012. In the Restriction Requirement claims 1-45 were subject to restriction. Specifically, the Office Action alleges that there are two inventions, namely:

Group I: claims 1-25; and

Group II: claims 26-45.

Applicants respond by electing, with traverse, the Group II designated invention, namely, claims 26-45. Since claims 26-45 have been selected, the Applicants have withdrawn claims 1-25, without prejudice, thereby evidencing the Applicants' intent to preserve the right to pursue the subject matter of the withdrawn claims in the future. The Applicants have taken this action merely to reduce the number of issues in the presently pending application and to facilitate early allowance and issuance of the present application. An action on the merits is hereby respectfully requested.

Traverse Argument

Applicants traverse the above Restriction Requirement. Groups I and II are not distinct because they do not claim separate utility and overlap in scope. In particular, even in the instances cited by the Office Action, both groups clearly disclose overlapping scope. The Office Action states the inventions are distinct because related subcombinations I and II do not overlap in scope and are not obvious variants, and at least one subcombination is separately usable. Applicants respectfully disagree.

The Office Action cites the following utility from subcombination II as having separate utility:

> The requesting client communication device choosing one of the provided client communication devices to be used as agent communication device which determining if one or more of the client communication devices has previously received a response to the received message from the data server and the determined client communication devices that are the most beneficial to the requesting client communication device in terms of speed or best connection of receiving information.

Applicants note the above utility is paraphrased from claims 26, 29 and 31. The first corresponding part of part, claim 26 reads:

> the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server.

The utility of selecting an agent communication device for communication with the data server is also disclosed in group I, claim 1 in particular. Further, the following portion of the above cited utility from claim 26:

> the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server

is also in claim 24:

wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server.

The remaining portions of the above cited utility from claims 29 and 31 do not disclose a separate utility from group I, but merely a narrowing of the overlapping scope. Claim 29 reads:

> The method of claim 26, wherein the list of one or more peer communication devices includes only the peer communication devices that are the most beneficial to the requesting client communication device in terms of speed of receiving information from the peer communication devices.

and claim 31 reads:

> 31. The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are

> the client communication devices that have the best connection to the requesting network element.

No new utility is disclosed here. Claims 29 and 31 but merely add limitations to utility disclosed in both Group I and Group II. Thus the utility is the same in both groups across these claims, but these claims have a narrower scope, where the scope is still overlapping. Therefore, the Group II utility cited by the Office Action as having separate utility does not disclose separate utility from Group I, but rather common utility with overlapping scope.

The Office Action further states subcombination I has separate utility lacking from subcombination II, summarizing the supposedly separate group I utility as:

> At least one agent communication device which is **assigned by the at least one acceleration server** to the data server for receiving the data request from the client communication device.

Applicants note that this summary drawn from claim 1 is inaccurate, as claim 1 does not claim an agent communication device which is assigned **by** the acceleration server, but instead claims the acceleration server deciding which agent communication device is to be assigned, and **providing this information to the communication device.**

The cited utility is consistent across the identified subgroups, as per claim 1 (Group I)

> at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device,

and claim 26 (Group II):

> the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device.

The differences in language are due to framing the utility in the context of apparatus claims (Group I) and process claims (Group II). However, as demonstrated above, the

description of the utility from device and process perspectives does not distinguish the two groups as distinct inventions, and therefore, no burden is placed on the Examiner by examining the two groups together. Therefore, Applicants traverse the restriction requirement because Group I and Group II overlap in scope and do not have separate utility. Withdrawal of the restriction requirement is respectfully requested.

CONCLUSION

In light of the foregoing and for at least the reasons set forth above, the Applicants respectfully requests favorable reconsideration and allowance of the present application and the presently pending claims. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 627-8114.

Respectfully submitted,

/Jonathan B. Whitcomb/
Jonathan B. Whitcomb
Attorney for Applicants
Reg. No. 65,184

Electronic Acknowledgement Receipt

EFS ID:	13985570
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Jonathan B. Whitcomb/Karen Morin
Filer Authorized By:	Jonathan B. Whitcomb
Attorney Docket Number:	19459-6102
Receipt Date:	15-OCT-2012
Filing Date:	14-JUL-2010
Time Stamp:	15:21:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Election / Restriction Filed	S0112034.pdf	182257 fdef443775f2c646b91c7cf1c2bd7fb5e500f863	no	21
Warnings:					
Information:					

Total Files Size (in bytes):	182257

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/836,059	07/14/2010	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 10/15/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 45	Minus	** 45	= 0	X $31 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 6	Minus	***6	= 0	X $125 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/RAMONA WILSON/

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

57449 7590 02/28/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER	
NGUYEN, MINH CHAU	
ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
02/28/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/836,059	SHRIBMAN ET AL.	
	Examiner	Art Unit	
	MINH-CHAU NGUYEN	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *26-45* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *26-45* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *14 July 2010* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

This action is response to the Applicant's response to Election/Restriction dated October 15, 2012; wherein claims 1-25 have been withdrawn; and claims 26-45 have been elected. **Claims 26-45** remain pending in the application for further examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuels et al. (US 7,865,585), hereinafter "**Samuels**", and in view of Marco et al. (US 7,203,741), hereinafter "**Marco**".

Claim 26

Samuels teaches a method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server (Samuels, col. 9, lines 25-40);

the acceleration server [i.e. appliance 200] associating one or more client communication devices [i.e. clients 102a-102n] with the data server [i.e. server 106] and providing a list of the one or more client communication devices to the requesting client communication device (Samuels, col. 7, lines 1-10; col. 8, lines 1-63; col. 41, lines 5-29);

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server (Samuels, col. 6, lines 42-44; col. 17, lines 1-17; col. 42, lines 25-61);

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server (Samuels, abstract; col. 6, lines 42-52; col. 23, lines 1-26; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59); and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response (Samuels, col. 23, lines 1-26; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59);

the requesting client communication device retrieving the requested response in one or more parts from the one or more communication devices in the list (Samuels, col. 1, lines 15-30; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59);

the requesting client communication device storing the request and the response in the client cache storage (Samuels, col. 23, lines 1-26); and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage (Samuels, col. 23, lines 1-26; col. 42, lines 25-61).

Samuels fails to teach wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices.

However, in an analogous art, **Marco** teaches wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices (Marco, abstract; col. 1, lines 14-36).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the features of the one or more client communication devices that have previously received the response are referred to as peer communication devices, as disclosed by Marco, into the teachings of Samuels. One would be motivated to provide an advantage for accelerating receipt of data in a peer-to-peer network.

Claim 27

Samuels in combination with Marco teach the method of claim 26, where after receiving the message intended for the data server, from the requesting client communication device, the agent communication device checking if it has in the agent cache storage a response received to an identical message sent by the client communication device to the data server in the past, and if the agent communication device does not know of any client communication devices that have received a response to this message in the past, the following steps being performed:

the agent communication device sending the requesting client communication device message to the data server (Samuels, col. 10, line 50-col. 11, line 5; col. 42, lines 25-61);

the data server sending the response message back to the agent communication device (Samuels, col. 10, line 50-col. 11, line 5; col. 42, lines 25-61);

the agent communication device storing the requesting client communication device message and the data server response message in the agent cache storage (Samuels, col. 23, lines 1-26; col. 42, lines 25-61);

the agent communication device sending the data server response back to the requesting client communication device (Samuels, col. 42, lines 25-61); and

the requesting client communication device storing the request and the response in the client cache storage (Samuels, col. 23, lines 1-26; col. 42, lines 25-61).

Claim 28

Samuels in combination with Marco teach the method of claim 26, where the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list

of network elements that have been known to have received this portion of data in the past (Samuels, col. 11, line 50-col. 12, line 5; col. 50, line 51-col. 52, line 30).

Claim 29

Samuels in combination with Marco teach the method of claim 26, wherein the list of one or more peer communication devices includes only the peer communication devices that are the most beneficial to the requesting client communication device in terms of speed of receiving information from the peer communication devices (Marco, abstract; col. 1, lines 14-36).

Claim 30

Samuels in combination with Marco teach the method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that are closest to the requesting client communication device (Samuels, col. 23, lines 1-26; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59).

Claim 31

Samuels in combination with Marco teach the method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that have the best connection to the requesting network element (Samuels, col. 23, lines 1-26; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59).

Claim 32

Samuels in combination with Marco teach the method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps
of:

the acceleration server keeping track of all of the client communication devices that are online (Samuels, col. 82, lines 19-38); and

upon receiving the identifier of the data server from the requesting client communication device, the acceleration server choosing one or more client communication device out of all online client communication devices, that are optimal to be used as the agent communication device or devices for communicating with the data server (Samuels, col. 6, lines 42-44; col. 17, lines 1-17; col. 42, lines 25-61).

Claim 33

Samuels in combination with Marco teach the method of claim 32, wherein the client communication device chosen by the acceleration server as the optimal agent is the client communication device out of all online client communication devices whose Internet Protocol (IP) address is closest to the IP address of the data server (Samuels, col. 10, line 50-col. 11, line 5; col. 34, lines 2-20; col. 42, lines 25-61).

Claim 34

Samuels in combination with Marco teach the method of claim 32, where the number of agent communication devices returned by the acceleration server to the client communication device is increased as the acceleration device senses that the load on these agent communication devices increases (Samuels, col. 8, lines 1-54; col. 42, lines 25-61).

Claim 35

Samuels in combination with Marco teach the method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing the steps of:

when the client communication device receives the agent communication device list, the client communication device sends the request to all agent communication devices (Samuels, col. 7, lines 1-10; col. 8, lines 1-63; col. 41, lines 5-29); and

if the client communication device does not get a response from one or more agent communication devices, the client communication device provides that information to the acceleration server (Samuels, col. 7, lines 1-10; col. 8, lines 1-63; col. 41, lines 5-29).

Claim 36

Samuels in combination with Marco teach the method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing a periodic load check on each potential agent communication device (Samuels, col. 83, lines 38-51).

Claim 37

Samuels in combination with Marco teach the method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps
of:

the acceleration server keeping track of all of the client communication devices that are online (Samuels, col. 82, lines 19-38); and

the acceleration server choosing one or more client communication devices that can be used as the agent for communicating with the data server, prioritized geographically by a geographical location of the requesting client, such that each of the client communication devices in the list of client communication devices is a higher priority for a certain geography from which requests from the requesting client communication device may be received (Samuels, col. 6, lines 42-44; col. 8, lines 1-63; col. 17, lines 1-17; col. 39, lines 15-62; col. 42, lines 25-61).

Claim 38

Samuels in combination with Marco teach the method of claim 26, wherein the requesting client communication device chooses the most suitable agent communication device out of the list of client communication devices received from the acceleration server by testing which of the client communication devices is the quickest

to respond to queries from the requesting client communication device (Samuels, col. 6, lines 42-44; col. 17, lines 1-17; col. 42, lines 25-61).

Claim 39

Samuels in combination with Marco teach the method of claim 27, wherein when the agent communication device makes the request to the data server, the agent communication device sends to the data server all of the parameters that it received from the requesting client communication device for this request from the requesting client communication device (Samuels, col. 42, lines 25-61).

Claim 40

Samuels in combination with Marco teach the method of claim 26, wherein the method that the agent communication device uses to test if there are other client communication devices that received responses to the same message is performed by the steps of:

when receiving and caching responses from the data server, the agent communication device receiving and caching a validity variable that indicates in which situations the response is valid for the same type of request (Samuels, col. 23, lines 1-26; col. 42, lines 25-61); and

the agent communication device checking the agent cache storage by looking up message of the requesting client communication device (Samuels, col. 23, lines 1-26; col. 42, lines 25-61),

wherein, if such a message exists and a response is cached, or information about client communication devices that have received the response is cached, then the agent communication device checks the validity variable of the entry of the request in the agent cache storage (Samuels, col. 23, lines 1-26; col. 42, lines 25-61), and

wherein, if the entry does not exist or the data is no longer valid, the agent communication device assumes that it does not have a response stored for that request (Samuels, col. 23, lines 1-26; col. 42, lines 25-61).

Claim 41

Samuels in combination with Marco teach the method of claim 26, wherein when the requesting client communication device provides to the agent communication device a request with additional parameters, the agent communication device stores these additional parameters in the agent cache storage in the entry of the data request, and uses that information together with the request as a key when looking up the data in future lookups (Samuels, col. 23, lines 1-26; col. 42, lines 25-61).

Claim 42

Samuels in combination with Marco teach the method of claim 26, wherein the client communication device, agent communication device, and peer communication device are referred to as network elements, and wherein each network element contains therein a client module, a peer module, and an agent module, thereby allowing each network element to serve as any of a client communication device, a peer communication device, and an agent communication device (Marco, abstract; col. 1, lines 14-36).

Claim 43

Samuels in combination with Marco teach the method of claim 40, where the request from the requesting client communication device is an HTTP request for a URL, the data server is a Web server, and the additional data that the agent communication device sends to the Web server are the parameters of the URL and cookies of the requesting client communication device and the validity variable is the HTTP expiry time (Samuels, col. 9, lines 42-46; col. 18, line 56-col. 19, line 11).

Claim 44

Samuels in combination with Marco teach the method of claim 26, wherein requests are selected from the group consisting of UDP, DNS, TCP, FTP, POP3, SMTP, and SQL (Samuels, col. 12, lines 24-55; col. 21, lines 3-20; col. 24, lines 46-49).

Claim 45

Samuels teaches a method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server (Samuels, col. 9, lines 25-40);

the acceleration server [i.e. appliance 200] associating one or more client communication devices [i.e. clients 102a-102n] with the data server [i.e. server 106] and providing a list of the one or more client communication devices to the requesting client communication device (Samuels, col. 7, lines 1-10; col. 8, lines 1-63; col. 41, lines 5-29);

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for

communication with the data server, and sending the agent communication device a message intended for the data server (Samuels, col. 6, lines 42-44; col. 17, lines 1-17; col. 42, lines 25-61);

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server (Samuels, abstract; col. 6, lines 42-52; col. 23, lines 1-26; col. 42, lines 25-61; col. 48, line 10-col. 50, line 59), wherein the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past (Samuels, col. 11, line 50-col. 12, line 5; col. 50, line 51-col. 52, line 30); and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending to the requesting client communication device a list of checksums of the chunks that comprise the data server response where for each such checksum, the agent communication device sends identifiers of client communication devices that have received such

checksums from the agent communication device in the past, wherein these client communication devices that have received such checksums from the agent communication device in the past (Samuels, col. 11, line 50-col. 12, line 5; col. 50, line 51-col. 52, line 30);

the requesting client communication device retrieving the response or portions thereof by requesting the chunks in the list from one or more devices in the list received from the agent communication device (Samuels, col. 11, line 50-col. 12, line 5; col. 50, line 51-col. 52, line 30);

the requesting client communication device storing the request and the response in the client cache storage (Samuels, col. 23, lines 1-26); and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the chunks that the requesting client communication device received (Samuels, col. 23, lines 1-26; col. 42, lines 25-61; col. 50, line 51-col. 52, line 30).

Samuels fails to teach wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices.

However, in an analogous art, **Marco** teaches wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices (Marco, abstract; col. 1, lines 14-36).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the features of the one or more client communication devices that have previously received the response are referred to as peer communication devices, as disclosed by Marco, into the teachings of Samuels. One would be motivated to provide an advantage for accelerating receipt of data in a peer-to-peer network.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-CHAU NGUYEN whose telephone number is (571)272-4242. The examiner can normally be reached on 7AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLENTON BURGESS can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MINH-CHAU NGUYEN/
Primary Examiner, Art Unit 2442

Notice of References Cited	Application/Control No. 12/836,059	Applicant(s)/Patent Under Reexamination SHRIBMAN ET AL.	
	Examiner MINH-CHAU NGUYEN	Art Unit 2442	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0009583	01-2003	Chan et al.	709/236
*	B	US-7,865,585	01-2011	Samuels et al.	709/223
*	C	US-7,120,666	10-2006	McCanne et al.	709/203
*	D	US-7,203,741	04-2007	Marco et al.	709/223
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2012	01/27/2013							
	1	÷	N							
	2	÷	N							
	3	÷	N							
	4	÷	N							
	5	÷	N							
	6	÷	N							
	7	÷	N							
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	25	÷	N							
	26	÷	✓							
	27	÷	✓							
	28	÷	✓							
	29	÷	✓							
	30	÷	✓							
	31	÷	✓							
	32	÷	✓							
	33	÷	✓							
	34	÷	✓							
	35	÷	✓							
	36	÷	✓							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2012	01/27/2013							
	37	÷	✓							
	38	÷	✓							
	39	÷	✓							
	40	÷	✓							
	41	÷	✓							
	42	÷	✓							
	43	÷	✓							
	44	÷	✓							
	45	÷	✓							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	35	(accelerat$4 near server$1) and (communication$1 same between same client$1 same server$ same agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:10
L2	24	1 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:10
L3	0	2 and ((accelerat$4 near server$1) same (list near3 client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:11
L4	0	2 and ((accelerat$4 near server$1) same (list with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:11
L5	0	2 and ((accelerat$4 near server$1) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:12
L6	0	2 and (client$1 near1 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:12
L7	1	2 and (client$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:13
L8	0	7 and (agent$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:13
L9	24	2 and (list$4 with client$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:13
L10	0	7 and (list$4 near3 client$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:13
L11	0	7 and (peer$1 near3 agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:14
L12	56	(acceleration near server) and (communication$1 same client$1 same server$ same agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:15

L13	41	12 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:15
L14	10	13 and (client$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:15
L15	5	14 and (agent$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:15
L16	0	15 and (peer$1 near3 agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:15
L17	0	15 and ((acceleration near server) same (list with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:16
L18	0	15 and (peer$1 with agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:16
L19	2	15 and (client$1 with "as" with agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:17
L20	97	(acceleration near server) and (client$1 and server$ and agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:21
L21	79	20 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L22	0	21 and ((acceleration near server) same (list with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L23	0	21 and ((acceleration near server) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L24	253	(acceleration near server)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L25	3	24 and ((acceleration near server) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L26	2	25 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:22
L27	0	26 and (client$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2013/01/24 21:23

			IBM_TDB			
L28	0	26 and (agent$1 peer$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:23
L29	3	21 and (peer$1 with (prox$3 agent$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:26
L30	3	29 and (client$1 with (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:26
L31	3	30 and ((agent$1 prox$4) with (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:26
L32	2	26 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:31
L33	2	("20030009583").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:33
L34	1	33 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:33
L35	3	30 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:34
L36	2	("7120666").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:36
L37	1	36 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:36
L38	0	36 and (checksum1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:39
L39	0	33 and (checksum1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:39
L40	29	21 and (checksum1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:39
L41	29	40 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:39
L42	0	41 and (peer$1 with (prox$3	US-PGPUB; USPAT;	OR	OFF	2013/01/24

		agent$1))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			21:40
L43	2	41 and (peer$1 and (prox$3 agent$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:40
L44	26	40 and ((histor$4 previous$4) with (request$1 respon$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/01/24 21:43

EAST Search History (Interference)

< This search history is empty>

1/24/2013 9:57:36 PM

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

SEARCHED			
Class	Subclass	Date	Examiner
709	203-204, 217-219, 223, 236	1/27/2013	MN

SEARCH NOTES		
Search Notes	Date	Examiner
Search on EAST	1/27/2013	MN
Reviewed for 101, double patenting	1/27/2013	MN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of:	Derry Shribman, et al.	Group Art Unit: 2442
Serial No.:	12/836,059	Examiner: NGUYEN, MINH CHAU
Filed:	July 14, 2010	DOCKET: 19459-6102

For: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

This is being filed in response to the non-final Office Action mailed February 28, 2013.

AUTHORIZATION TO DEBIT ACCOUNT

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this response. However, in the event that additional extensions of time are necessary to allow consideration of this response, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a) and any fee required therefore are hereby authorized to be charged to deposit account No. 501304.

Listing of Claims

This listing of claims is provided for ease of reference only. No claim is being amended.

1. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server;

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

2. (Withdrawn) The network of claim 26, wherein each of the client communication device, peer communication device, and agent communication device contain therein a client module, a peer module, and an agent module, thereby allowing the client communication device, peer communication device, and agent communication device to serve as any of a client communication device, a peer communication device, and an agent communication device.

3. (Withdrawn) The network of claim 26, wherein the acceleration server assigns a list of Internet protocol addresses to each agent communication device.

4. (Withdrawn) The network of claim 26, wherein the acceleration server has stored therein a list of online communication devices, including client communication devices, agent communication devices, and peer communication devices.

5. (Withdrawn) The network of claim 26, wherein each client communication device, agent communication device, and peer communication device maintain a list of data requests and data responses that the communication device, agent communication device, and peer communication device, respectively are respectively aware of, as well as in which communication device associated data is stored.

6. (Withdrawn) The network of claim 26, wherein the data request from the client communication device is an HTTP request, and wherein the server is a Web server.

7. (Withdrawn) The network of claim 6, wherein each client communication device contains a storage device therein that stores a list of Uniform Resource Locators (URLs) that the client communication device is aware of, each agent communication device contains a storage device therein that stores a list of URLs that the agent communication device is aware of, and wherein each peer communication device contains a storage device therein that stores a list of URLs that the peer communication device is aware of.

8. (Withdrawn) The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

9. (Withdrawn) The network of claim 26, wherein each client communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized.

10. (Withdrawn) The network of claim 7, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of peers that most likely have the data for this chuck.

11. (Withdrawn) The network of claim 26, wherein the network contains multiple peer communication devices, wherein the at least one agent communication device further keeps track of which peer communication devices have at least a portion of the requested data stored therein.

12. (Withdrawn) The network of claim 26, wherein the at least one acceleration server prepares a list of agent communication devices that may be suitable to handle the data request.

13. (Withdrawn) The network of claim 262, wherein the list of agent communication devices that may be suitable includes agent communication devices having an IP address that is numerically close to the IP address of the data server.

14. (Withdrawn) The network of claim 262, wherein the client communication device selects an agent communication device, notifies the selected agent communication

device that it is being used for the data request, and notifies any unselected agent communication devices that they are not being used for the data request.

15. (Withdrawn) The network of claim 26, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if there is a portion of data necessary to fulfill the original data request, yet the agent is not aware of any peer having the portion of data stored therein, the agent itself queries the server for the missing portion of data and transmits the missing portion of data to the requesting client communication device.

16. (Withdrawn) The network of claim 26, wherein the agent keeps track of peers and portions of data stored within the peers, and wherein if the at least one agent knows of a specific peer that has a portion of data necessary to fulfill the original data request stored therein, the agent provides the specific peer as the peer to use for the portion of data necessary for fulfilling the original data request.

17. (Withdrawn) A communication device within a network, comprising:

a memory; and

a processor configured by the memory to perform the steps of:

originating a data request for obtaining data from a data server;

being assigned to a data server, referred to as an assigned data server;

receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and

storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

18. (Withdrawn) The communication device of claim 267, wherein the communication device further comprises a storage device that stores a list of Uniform Resource Locators (URLs) that the communication device is aware of.

19. (Withdrawn) The communication device of claim 268, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein at least one of the group consisting of HTTP headers returned by the data server for this URL, a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and the content of the chunk.

20. (Withdrawn) The communication device of claim 267, wherein the communication device contains a storage device, wherein the storage device has stored therein at least one of the group consisting of a list of chunks that contain contents associated with the data request, wherein chunks are pieces of data that together form the entire content associated with the data request, and the content of the chunk, wherein the chunks are equally sized, wherein the chunks are equally sized.

21. (Withdrawn) The communication device of claim 268, wherein within the storage device storing URLs, with each URL, the storage device also has stored therein a list of chunks that contain the contents of the URL, wherein chunks are pieces of data that together form the entire content of the URL, and with each chunk, the data of the chunk itself, a checksum of the chunk, and a list of other communication devices that most likely have the data for this chuck.

22. (Withdrawn) The communication device of claim 267, wherein the data request is an HTTP request, and wherein the data server is a Web server.

23. (Withdrawn) The communication device of claim 267, wherein the processor is further configured by the memory to perform the step of keeping track of

which other communication devices have at least a portion of the requested data stored therein.

24. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

25. (Withdrawn) A network for accelerating and making more efficient data communication; comprising:

at least one client communication device for originating an original data request for obtaining data from a data server;

at least one agent communication device which is assigned to the data server for receiving the data request from the client communication device, wherein the agent keeps track of which client communication devices within the network have received responses to data requests or portions thereof from the assigned data server; and

at least one peer communication device having stored therein at least a portion of data received in response to a prior data request by a client communication device, wherein the prior data request was for the same data as requested during the originating data request, and wherein the portion of data may be transmitted from the peer communication device to the at least one client communication device upon request by the client communication device.

26. (Original) A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response, wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices;

the requesting client communication device retrieving the requested response in one or more parts from the one or more peer communication devices in the list;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage.

27. (Original) The method of claim 26, where after receiving the message intended for the data server, from the requesting client communication device, the agent communication device checking if it has in the agent cache storage a response received to an identical message sent by the client communication device to the data server in the past, and if the agent communication device does not know of any client communication devices that have received a response to this message in the past, the following steps being performed:

the agent communication device sending the requesting client communication device message to the data server;

the data server sending the response message back to the agent communication device;

the agent communication device storing the requesting client communication device message and the data server response message in the agent cache storage;

the agent communication device sending the data server response back to the requesting client communication device; and

the requesting client communication device storing the request and the response in the client cache storage.

28. (Original) The method of claim 26, where the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past.

29. (Original) The method of claim 26, wherein the list of one or more peer communication devices includes only the peer communication devices that are the most beneficial to the requesting client communication device in terms of speed of receiving information from the peer communication devices.

30. (Original) The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that are closest to the requesting client communication device.

31. (Original) The method of claim 29, wherein the client communication devices that are determined by the agent communication device to be most beneficial are the client communication devices that have the best connection to the requesting network element.

32. (Original) The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

upon receiving the identifier of the data server from the requesting client communication device, the acceleration server choosing one or more client communication device out of all online client communication devices, that are optimal to be used as the agent communication device or devices for communicating with the data server.

33. (Original) The method of claim 32, wherein the client communication device chosen by the acceleration server as the optimal agent is the client communication

device out of all online client communication devices whose Internet Protocol (IP) address is closest to the IP address of the data server.

34. (Original) The method of claim 32, where the number of agent communication devices returned by the acceleration server to the client communication device is increased as the acceleration device senses that the load on these agent communication devices increases.

35. (Original) The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing the steps of:

when the client communication device receives the agent communication device list, the client communication device sends the request to all agent communication devices; and

if the client communication device does not get a response from one or more agent communication devices, the client communication device provides that information to the acceleration server.

36. (Original) The method of claim 34, where the acceleration server senses the load on the various potential agent communication devices by performing a periodic load check on each potential agent communication device.

37. (Original) The method of claim 26, wherein the data server performs the association between the agent communication device and the data server by performing the steps of:

the acceleration server keeping track of all of the client communication devices that are online; and

the acceleration server choosing one or more client communication devices that can be used as the agent for communicating with the data server, prioritized

geographically by a geographical location of the requesting client, such that each of the client communication devices in the list of client communication devices is a higher priority for a certain geography from which requests from the requesting client communication device may be received.

38. (Original) The method of claim 26, wherein the requesting client communication device chooses the most suitable agent communication device out of the list of client communication devices received from the acceleration server by testing which of the client communication devices is the quickest to respond to queries from the requesting client communication device.

39. (Original) The method of claim 27, wherein when the agent communication device makes the request to the data server, the agent communication device sends to the data server all of the parameters that it received from the requesting client communication device for this request from the requesting client communication device.

40. (Original) The method of claim 26, wherein the method that the agent communication device uses to test if there are other client communication devices that received responses to the same message is performed by the steps of:

when receiving and caching responses from the data server, the agent communication device receiving and caching a validity variable that indicates in which situations the response is valid for the same type of request; and

the agent communication device checking the agent cache storage by looking up message of the requesting client communication device,

wherein, if such a message exists and a response is cached, or information about client communication devices that have received the response is cached, then the agent communication device checks the validity variable of the entry of the request in the agent cache storage, and

wherein, if the entry does not exist or the data is no longer valid, the agent communication device assumes that it does not have a response stored for that request

41. (Original) The method of claim 26, wherein when the requesting client communication device provides to the agent communication device a request with additional parameters, the agent communication device stores these additional parameters in the agent cache storage in the entry of the data request, and uses that information together with the request as a key when looking up the data in future lookups.

42. (Original) The method of claim 26, wherein the client communication device, agent communication device, and peer communication device are referred to as network elements, and wherein each network element contains therein a client module, a peer module, and an agent module, thereby allowing each network element to serve as any of a client communication device, a peer communication device, and an agent communication device.

43. (Original) The method of claim 40, where the request from the requesting client communication device is an HTTP request for a URL, the data server is a Web server, and the additional data that the agent communication device sends to the Web server are the parameters of the URL and cookies of the requesting client communication device and the validity variable is the HTTP expiry time.

44. (Original) The method of claim 26, wherein requests are selected from the group consisting of UDP, DNS, TCP, FTP, POP3, SMTP, and SQL.

45. (Original) A method for use within a system for sending messages between a requesting client communication device having a client cache storage and a data server, via an agent communication device having an agent cache storage, and

utilizing an acceleration server that maintains a list of client communication devices in the system, the method comprising the steps of:

the requesting client communication device sending an identifier of the data server to the acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data server,

wherein the agent communication device separates the reply it receives from the data server into one or more smaller chunks of data and stores those chunks in the agent cache storage, where the data is stored as a list of chunks that it comprises of, and for each chunk a checksum of that chunk is stored in conjunction with the chunk, as well as a list of network elements that have been known to have received this portion of data in the past; and

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending to the requesting client communication device a list of checksums of the chunks that comprise the data server response where for each such checksum, the agent communication device sends identifiers of client communication devices that have received such checksums from the agent communication device in the past, wherein these client communication devices that have received such checksums from the agent communication device in the past are referred to as peers;

the requesting client communication device retrieving the response or portions thereof by requesting the chunks in the list from one or more peers in the list received from the agent communication device;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the chunks that the requesting client communication device received.

REMARKS/ARGUMENTS

This is a full and timely response to the outstanding non-final Office Action mailed February 28, 2013.

Claims 1-45 are pending. Of those, claims 1-25 previously were withdrawn from consideration. No claim is being amended.

In the office action, claims 26-45 were rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 7,865,585 ("Samuels") in view of U.S. Patent No. 7,203,741 ("Marco").

The applicant respectfully disagrees with these rejections.

Claim 26 recites, a method that includes:

[a] requesting client communication device sending an identifier of [a] data server to [an] acceleration server;

the acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device;

the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server;

the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data serve;

if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:

the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response, wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices;

the requesting client communication device retrieving the requested response in one or more parts from the one or more peer communication devices in the list;

the requesting client communication device storing the request and the response in the client cache storage; and

the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage.

The foregoing subject matter from claim 26 can be understood by referring to the exemplary communication network 100 shown in FIG. 3 of the present application, which is reproduced below for ease of reference.

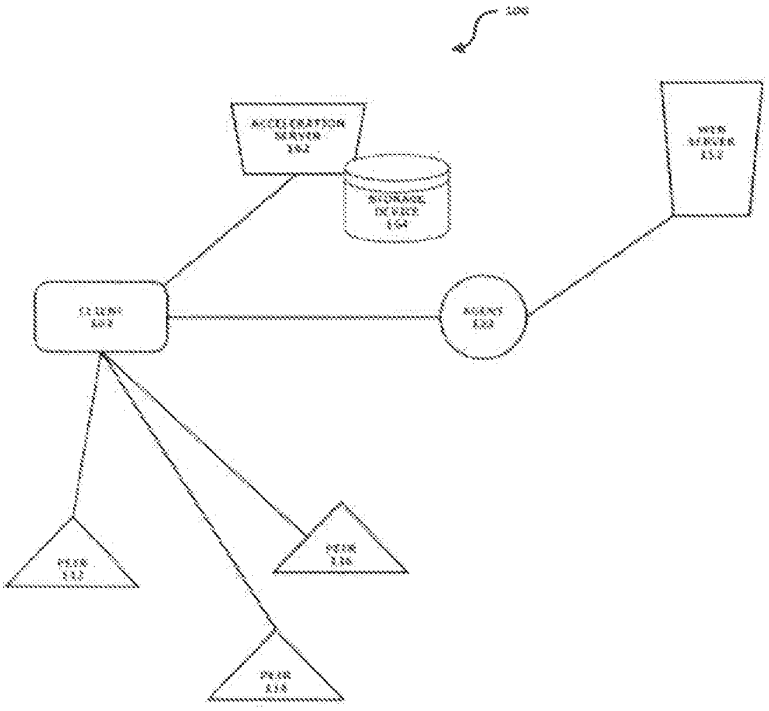

FIG. 3

The illustrated communication network 100 has multiple communication devices, each of which may be designated as a client 102, a peer 112, 114, 116 or an agent 122. The communication network 100 also has an acceleration server 162, with a storage device 164, and a web server 152.

According to the method recited in claim 26, one of the communication devices (*e.g.*, client communication device 102) sends an identifier of a data server (*e.g.*, web server 152) to the acceleration server 162. The acceleration server 162 then provides a list of one or more client communication devices (including perhaps 102 and other communication devices in the network) that are associated with the web server 152 to the requesting client communication device 102.

The client communication device 102 chooses one of the listed devices (*e.g.*, device 122) to be an agent communication device for communications with the web server 152. The client communication device 102 then sends the agent communication device 122 a message intended for the web server 152. The agent communication device 122 then determines if any of the client communication devices in the network previously received a response from the data server 152 to the message, to which the client communication device 102 is seeking a response.

If the agent communication device 122 determines that any of the client communication devices did previously receive a response to the message, then it sends a list of the client communication devices that previously received the response to the requesting client communication device 102. The requesting client communication device 102 then retrieves the requested response in one or more parts from the listed "peer" communication devices.

The requesting client communication device 102 then stores the request and the response in its cache storage. The agent communication device 122 stores an identifier of the requesting client communication device 102 in conjunction with the request and the response in its cache storage.

In a typical implementation, the claimed subject matter provides for fast data transfers in a network environment, that are relatively cheap for content distributors, and

that do not require significant infrastructure upgrades or investment by internet service providers (ISPs) to facilitate.

As discussed below, Samuels and Marco, alone or in any reasonable combination, do not disclose or render obvious the claimed subject matter. Certainly, as discussed in detail below, the sections of Samuels and Marco cited in support of these claim rejections do not disclose or render obvious the claimed subject matter.

Samuels discloses systems and methods for providing dynamic ad hoc proxy-cache hierarchies. *See* Title. In this regard, Samuels describes a network environment (*see, e.g.,* FIG. 1B, reproduced below) that includes clients 102a-102n, servers 106a-106n and appliance optimization devices 200, 200'.

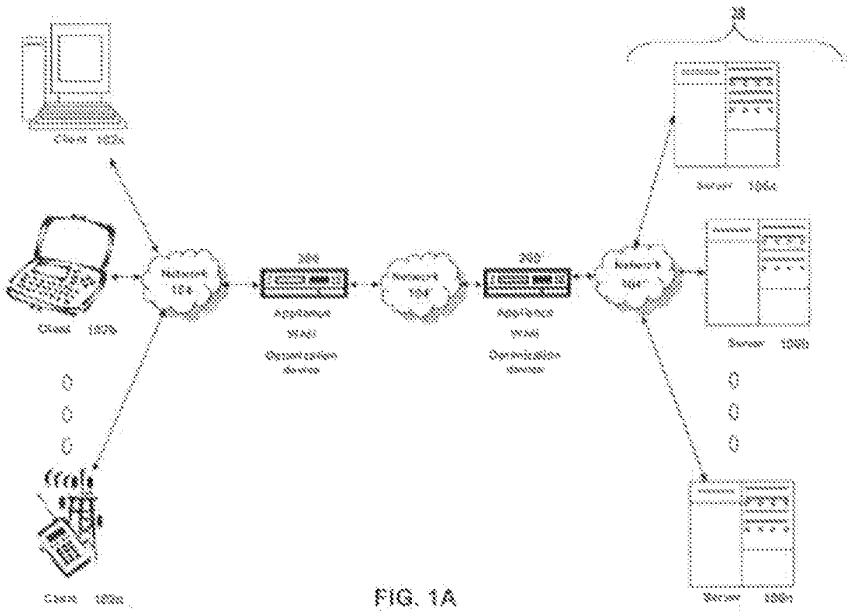

FIG. 1A

Samuel explains that the appliance optimization devices 200, 200' are for "accelerating, optimizing or otherwise improving the performance, operation, or quality of service of any type and form of network traffic." Col. 8, lines 1-4.

The office action asserts (at page 3) that Samuels' appliance optimization devices 200, 200' correspond to the "acceleration server" of claim 26.

However, Samuels' appliance optimization devices 200, 200' do not "associate[e] one or more client communication devices with [a] data server and providing a list of the one or more client communication devices to [a] requesting client communication device" as recited in claim 26.

The office action (at page 3) asserts that Samuels discloses this functionality at "col. 7, lines 1-10; col. 8, lines 1-63; [and] col. 41, lines 5-29." As discussed below, this is not correct.

Col. 7, lines 1-10 of Samuels states:

> *Referring now to FIG. 1A, an embodiment of a network environment is depicted. In brief overview, the network environment has one or more clients 102a-102n (also generally referred to as local machine(s) 102, or client(s) 102) in communication with one or more servers 106a-106n (also generally referred to as server(s) 106, or remote machine(s) 106) via one or more networks 104, 104', 104". In some embodiments, a client 102 communicates with a server 106 via one or more network optimization appliances 200, 200' (generally referred to as appliance 200). In one embodiment, the network optimization appliance 200 is designed, configured or adapted to optimize Wide Area Network (WAN) network traffic.*

This passage explains that, in some embodiments, a client 102 in Samuels' system communicates with a server 106 via one of the appliance optimization devices 200, 200'. Moreover, the passage explains that the appliance optimization devices 200, 200' may optimize WAN network traffic.

Clearly, however, the passage does not disclose that the appliance optimization devices 200, 200' "associate[e] one or more client communication devices with [a] data

server and providing a list of the one or more client communication devices to [a] requesting client communication device" as recited in claim 26.

Col. 8, lines 1-63 of Samuels states:

> *In one embodiment, the appliance 200 is a device for accelerating, optimizing or otherwise improving the performance, operation, or quality of service of any type and form of network traffic. In some embodiments, the appliance 200 is a performance enhancing proxy. In other embodiments, the appliance 200 is any type and form of WAN optimization or acceleration device, sometimes also referred to as a WAN optimization controller. In one embodiment, the appliance 200 is any of the product embodiments referred to as WANScaler manufactured by Citrix Systems, Inc. of Ft. Lauderdale, Fla. In other embodiments, the appliance 200 includes any of the product embodiments referred to as BIG-IP link controller and WANjet manufactured by F5 Networks, Inc. of Seattle, Wash. In another embodiment, the appliance 200 includes any of the WX and WXC WAN acceleration device platforms manufactured by Juniper Networks, Inc. of Sunnyvale, Calif. In some embodiments, the appliance 200 includes any of the steelhead line of WAN optimization appliances manufactured by Riverbed Technology of San Francisco, Calif. In other embodiments, the appliance 200 includes any of the WAN related devices manufactured by Expand Networks Inc. of Roseland, N.J. In one embodiment, the appliance 200 includes any of the WAN related appliances manufactured by Packeteer Inc. of Cupertino, Calif., such as the PacketShaper, iShared, and SkyX product embodiments provided by Packeteer. In yet another embodiment, the appliance 200 includes any WAN related appliances and/or software manufactured by Cisco Systems, Inc. of San Jose, Calif., such as the Cisco Wide Area Network Application Services software and network modules, and Wide Area Network engine appliances.*
>
> *In some embodiments, the appliance 200 provides application and data acceleration services for branch-office or remote offices. In one embodiment, the appliance 200 includes optimization of Wide Area File Services (WAFS). In another embodiment, the appliance 200 accelerates the delivery of files, such as via the Common Internet File System (CIFS) protocol. In other embodiments, the appliance 200 provides caching in memory and/or storage to accelerate delivery of applications and data. In one embodiment, the appliance 205 provides compression of network traffic at any level of the network stack or at any protocol or network layer. In another embodiment, the appliance 200 provides transport layer protocol optimizations, flow control, performance enhancements or*

modifications and/or management to accelerate delivery of applications and data over a WAN connection. For example, in one embodiment, the appliance 200 provides Transport Control Protocol (TCP) optimizations. In other embodiments, the appliance 200 provides optimizations, flow control, performance enhancements or modifications and/or management for any session or application layer protocol. Further details of the optimization techniques, operations and architecture of the appliance 200 are discussed below in Section B.

Still referring to FIG. 1A, the network environment may include multiple, logically-grouped servers 106. In these embodiments, the logical group of servers may be referred to as a server farm 38. In some of these embodiments, the servers 106 may be geographically dispersed. In some cases, a farm 38 may be administered as a single entity. In other embodiments, the server farm 38 comprises a plurality of server farms 38. In one embodiment, the server farm executes one or more applications on behalf of one or more clients 102.

This passage has three paragraphs.

The first paragraph of this passage explains, rather generically, that the appliance optimization device 200 is for accelerating, optimizing or otherwise improving the performance, operation, or quality of service of any type and form of network traffic. It then goes on to identify numerous examples of how the appliance optimization device may be embodied in a product.

Certainly, the first paragraph does not disclose that the appliance optimization devices 200, 200' "associat[e] one or more client communication devices with [a] data server and providing a list of the one or more client communication devices to [a] requesting client communication device" as recited in claim 26.

The second paragraph of this passage explains that the appliance optimization device 200 may provide application and data acceleration services for branch-office or remote offices. The second paragraph also provides more specific examples of optimization and acceleration techniques that may be implemented by the appliance optimization device 200.

However, none of the specific examples of optimization and acceleration described in the second paragraph of this passage amount to the appliance optimization

devices 200, 200' "associat[ing] one or more client communication devices with [a] data server and providing a list of the one or more client communication devices to [a] requesting client communication device" as recited in claim 26.

The third paragraph of this passage merely describes an arrangement of servers 106 that execute one or more applications on behalf of the clients 102.

Col. 41, lines 5-29 of Samuels states:

> *In the embodiment of in-line, the appliance 200 is deployed inline with a WAN link of a router. In this way, all traffic from the WAN passes through the appliance before arriving at a destination of a LAN.*
>
> *In the embodiment of a proxy mode, the appliance 200 is deployed as a proxy device between a client and a server. In some embodiments, the appliance 200 allows clients to make indirect connections to a resource on a network. For example, a client connects to a resource via the appliance 200, and the appliance provides the resource either by connecting to the resource, a different resource, or by serving the resource from a cache. In some cases, the appliance may alter the client's request or the server's response for various purposes, such as for any of the optimization techniques discussed herein. In one embodiment, the client 102 send requests addressed to the proxy. In one case, the proxy responds to the client in place of or acting as a server 106. In other embodiments, the appliance 200 behaves as a transparent proxy, by intercepting and forwarding requests and responses transparently to a client and/or server. Without client-side configuration, the appliance 200 may redirect client requests to different servers or networks. In some embodiments, the appliance 200 may perform any type and form of network address translation, referred to as NAT, on any network traffic traversing the appliance.*

This passage relates to an arrangement whereby an appliance optimization device 200 is deployed such that all traffic from a WAN passes through the device before arriving at a LAN. Moreover, this passage describes various functionalities of the appliance optimization device 200 when acting in a proxy mode.

However, none of the various functionalities disclosed include the appliance optimization device 200 "associat[ing] one or more client communication devices with [a] data server and providing a list of the one or more client communication devices to [a] requesting client communication device" as recited in claim 26.

Therefore, none of the passages from Samuels specifically cited in the office action actually disclose "[an] acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device, as recited in claim 26.

Nor do any other sections of Samuels or Marco remedy the shortcomings discussed above.

Claim 26 is allowable for at least the foregoing reasons.

Claim 26 is allowable for additional reasons as well.

As discussed above, Samuels does not disclose "[an] acceleration server associating one or more client communication devices with the data server and providing a list of the one or more client communication devices to the requesting client communication device," as recited in claim 26.

Since Samuels does not disclose an acceleration server that provides the list of client communication devices to the requesting communication device, it certainly does not disclose "the requesting client communication device choosing one of the provided client communication devices to be used as the agent communication device for communication with the data server, and sending the agent communication device a message intended for the data server," as recited in claim 26, since this requires that the acceleration server provide the list.

Moreover, when read critically, it becomes apparent that none of the sections of Samuels that were identified in the office action (at page 3) as supposedly disclosing this subject matter (*i.e.*, "Samuels, col. 6, lines 42-44; col. 17, lines 1-17; col. 42, lines 25-61") actually discloses anything similar to the claimed subject matter.

Nor do any other sections of Samuels or Marco remedy the shortcomings discussed above.

Claim 26 is allowable for the foregoing additional reasons.

Likewise, contrary to the opinions expressed in the office action in this regard, Samuels does not disclose the following subject from claim 26:

> *the agent communication device determining if one or more of the client communication devices have previously received a response to the received message from the data serve;*
>
> *if there are one or more client communication devices that have previously received a response to the received message from the data server, performing the steps of:*
>
> *the agent communication device sending the requesting client communication device a list of the one or more client communication devices that have previously received the response, wherein the one or more client communication devices that have previously received the response are referred to as peer communication devices;*
>
> *the requesting client communication device retrieving the requested response in one or more parts from the one or more peer communication devices in the list;*
>
> *the requesting client communication device storing the request and the response in the client cache storage; and*
>
> *the agent communication device storing the identifier of the requesting client communication device in conjunction with the request and the response in the agent cache storage.*

Nor do any other sections of Samuels or Marco remedy the shortcomings discussed above.

Claim 26 is allowable for the foregoing additional reasons as well.

Claims 27-44 depend from claim 26 and, therefore, are allowable for at least the same reasons as claim 26.

Claim 45 recites subject matter that is similar to the subject matter recited in claim 26, discussed above.

Claim 45, therefore, is allowable for reasons similar to those discussed above with reference to claim 26.

CONCLUSION

In light of the foregoing and for at least the reasons set forth above, the Applicants respectfully requests favorable reconsideration and allowance of the present application and the presently pending claims. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 627-8186.

Respectfully submitted,

William P. O'Sullivan
Attorney for Applicants
Reg. No. 59,005

Electronic Acknowledgement Receipt

EFS ID:	15875979
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	William P. Osullivan/Karen Morin
Filer Authorized By:	William P. Osullivan
Attorney Docket Number:	19459-6102
Receipt Date:	28-MAY-2013
Filing Date:	14-JUL-2010
Time Stamp:	11:18:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	S0210915.pdf	1383575 dbb72674794b37714aea0b01746366a0775bcb28	no	26

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National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/836,059	07/14/2010	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	05/28/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 45	Minus	** 45	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	* 6	Minus	***6	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/KATRINA . TURNER/

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12836059
Filing Date	2010-07-14
First Named Inventor	Derry Shribman
Art Unit	2442
Examiner Name	NGUYEN, MINH CHAU
Attorney Docket Number	19459-6102

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20080109446	A1	2008-05-08	Wang Matrix XIN	
	2	20070156855	A1	2007-07-05	Johnson Moses	
	3	20080235391	A1	2008-09-25	Painter, Christopher et al	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12836059
	Filing Date	2010-07-14
	First Named Inventor	Derry Shribman
	Art Unit	2442
	Examiner Name	NGUYEN, MINH CHAU
	Attorney Docket Number	19459-6102

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12836059
Filing Date	2010-07-14
First Named Inventor	Derry Shribman
Art Unit	2442
Examiner Name	NGUYEN, MINH CHAU
Attorney Docket Number	19459-6102

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Peter A. Nieves/	Date (YYYY-MM-DD)	2013-05-30
Name/Print	Peter A. Nieves	Registration Number	48173

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	15944119
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	04-JUN-2013
Filing Date:	14-JUL-2010
Time Stamp:	14:48:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	S0213984.pdf	304016 8e0cf99b9dc6fd16d02d8421a24a0f111233ada4	no	4

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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

57449 7590 06/17/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER
NGUYEN, MINH CHAU

ART UNIT	PAPER NUMBER
2442	

DATE MAILED: 06/17/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$890	$300	$0	$1190	09/17/2013

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

57449 7590 06/17/2013
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$890	$300	$0	$1190	09/17/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, MINH CHAU	2442	709-204000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1_____
2_____
3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

57449 7590 06/17/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER	
NGUYEN, MINH CHAU	

ART UNIT	PAPER NUMBER
2442	

DATE MAILED: 06/17/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 371 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 371 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 12/836,059	Applicant(s) SHRIBMAN ET AL.	
	Examiner MINH-CHAU NGUYEN	Art Unit 2442	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment, filed 05/28/2013*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *26-45*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

   Interim copies:

   a) ☐ All b) ☐ Some c) ☐ None of the: Interim copies of the priority documents have been received.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 06/04/2013
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/MINH-CHAU NGUYEN/
Primary Examiner, Art Unit 2442

DETAILED ACTION

REMARKS

1. Applicant's amendment dated May 28, 2013 responding to February 28, 2013 the Office Action. **Claims 26-45** remain pending in the application and which have been fully considered by the Examiner.

REASONS FOR ALLOWANCE

1. The following is an Examiner's statement of reasons for allowance:

Claims 26-45 are considered allowable since when reading the claims in light of the specification, as per MPEP §2111.01 or Toro Co. v. White Consolidated Industries Inc., 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999), none of the references of record alone or in combination disclose or suggest the combination of limitations specified in **independent claims 26 and 45**.

Because **claims 27-44** depend directly or indirectly on claim 26, these claims are considered allowable for at least the same reasons noted above with respect to **claim 26**.

To the extent that these features are not found in the prior art cited by Examiner, the present case is held allowable over the art of record.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany

the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-CHAU NGUYEN whose telephone number is (571)272-4242. The examiner can normally be reached on 7AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLENTON BURGESS can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MINH-CHAU NGUYEN/
Primary Examiner, Art Unit 2442

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	12836059
Filing Date	2010-07-14
First Named Inventor	Derry Shribman
Art Unit	2442
Examiner Name	NGUYEN, MINH CHAU
Attorney Docket Number	19459-6102

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/M.N./	1	20080109446	A1	2008-05-08	Wang Matrix XIN	
/M.N./	2	20070156855	A1	2007-07-05	Johnson Moses	
/M.N./	3	20080235391	A1	2008-09-25	Painter, Christopher et al	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12836059
	Filing Date	2010-07-14
	First Named Inventor	Derry Shribman
	Art Unit	2442
	Examiner Name	NGUYEN, MINH CHAU
	Attorney Docket Number	19459-6102

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/Minh Chau Nguyen/	Date Considered	06/13/2013

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12836059
	Filing Date	2010-07-14
	First Named Inventor	Derry Shribman
	Art Unit	2442
	Examiner Name	NGUYEN, MINH CHAU
	Attorney Docket Number	19459-6102

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Peter A. Nieves/	Date (YYYY-MM-DD)	2013-05-30
Name/Print	Peter A. Nieves	Registration Number	48173

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	6	(("20080109446") or ("20070156855") or ("20080235391")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:37
L2	0	1 and ((accelerat$4 near server$1) and (communication$1 same between same client$1 same server$ same agent$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:38
L3	0	1 and ((accelerat$4 near server$1) and (communication$1 same between same client$1 same server$))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:38
L4	0	1 and (accelerat$4 near server$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:38
L5	6	1 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:38
L6	2	1 and (list$4 with client$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:38
L7	0	6 and (agent$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:39
L8	112	(accelerat$4 near1 server$1) and (communication$1 same between same client$1 same server$ same (agent$1 manager$1 prox$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:39
L9	90	8 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:40
L10	0	9 and ((accelerat$4 near1 server$1) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:40

L11	26	9 and (server$1 same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:40
L12	9	11 and (client$1 near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:41
L13	9	12 and ((agent$1 prox$4 manager$1) near3 (cache storage))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:41
L14	9	13 and (histor$4 previous$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:42
L15	9	14 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:42
L16	8	15 and (peer$1 same (prox$3 manager$1 agent$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:43
L17	8	16 and ((histor$4 previous$4) with (request$1 respon$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:43
L18	0	17 and ((accelerat$4 near3 server$1) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:43
L19	0	17 and ((accelerat$4 with server$1) same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:44
L20	57	(acceleration near1 server) and (communication$1 same client$1 same server$ same agent$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:46
L21	2	20 and (server$1 same (list$4 with client$1))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:46
L22	1	21 and @ad<"20091008"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/14 16:46

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L23	1	((accelerat$4 near1 server$1) and (communication$1 same between same client$1 same server$ same (agent$1 manager$1 prox$4)) and ((accelerat$4 near1 server$1) same (list$4 with client$1)) and (client$1 near3 (cache storage)) and ((agent$1 prox$4 manager$1) near3 (cache storage)) and (peer$1 same (prox$3 manager$1 agent$1)) and ((histor$4 previous$4) with (request$1 respon$5))).clm.	US-PGPUB; USPAT; UPAD	OR	OFF	2013/06/14 16:48
L24	0	23 and @ad<"20091008"	US-PGPUB; USPAT; UPAD	OR	OFF	2013/06/14 16:49
L25	1	(((accelerat$4 near1 server$1) same client$1 same server$1 same (agent$1 manager$1 prox$4)) and ((accelerat$4 near1 server$1) same (list$4 with client$1)) and (client$1 with (cache storage)) and ((agent$1 prox$4 manager$1) with (cache storage)) and (peer$1 same (prox$3 manager$1 agent$1)) and ((histor$4 previous$4) with (request$1 respon$5))).clm.	US-PGPUB; USPAT; UPAD	OR	OFF	2013/06/14 16:50
L26	0	25 and @ad<"20091008"	US-PGPUB; USPAT; UPAD	OR	OFF	2013/06/14 16:50

6/ 14/ 2013 4:50:59 PM
C:\ Users\ mnguyen2\ Documents\ EAST\ Workspaces\ 12836059.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

CPC		
Symbol	Type	Version

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
709	204	G	0	6	F	15 / 16 (2006.01.01)					
CROSS REFERENCE(S)											
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)										
709	203	228									

(Assistant Examiner)	(Date)	Total Claims Allowed: 20	
/MINH-CHAU NGUYEN/ Primary Examiner.Art Unit 2442	06/14/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	26	1

U.S. Patent and Trademark Office

Part of Paper No. 20130614

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	**Art Unit**
	MINH-CHAU NGUYEN	2442

(Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/MINH-CHAU NGUYEN/ Primary Examiner.Art Unit 2442	06/14/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	26	1

U.S. Patent and Trademark Office

Part of Paper No. 20130614

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	**Art Unit**
	MINH-CHAU NGUYEN	2442

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1	-	17	6	33										
-	2	-	18	3	34										
-	3	-	19	4	35										
-	4	-	20	5	36										
-	5	-	21	15	37										
-	6	-	22	16	38										
-	7	-	23	8	39										
-	8	-	24	12	40										
-	9	-	25	17	41										
-	10	1	26	18	42										
-	11	7	27	13	43										
-	12	14	28	19	44										
-	13	9	29	20	45										
-	14	10	30												
-	15	11	31												
-	16	2	32												

(Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/MINH-CHAU NGUYEN/ Primary Examiner.Art Unit 2442	06/14/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	26	1

U.S. Patent and Trademark Office

Part of Paper No. 20130614

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2012	01/27/2013	06/14/2013						
-	1	÷	N	N						
-	2	÷	N	N						
-	3	÷	N	N						
-	4	÷	N	N						
-	5	÷	N	N						
-	6	÷	N	N						
-	7	÷	N	N						
-	8	÷	N	N						
-	9	÷	N	N						
-	10	÷	N	N						
-	11	÷	N	N						
-	12	÷	N	N						
-	13	÷	N	N						
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-	15	÷	N	N						
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-	25	÷	N	N						
1	26	÷	✓	=						
7	27	÷	✓	=						
14	28	÷	✓	=						
9	29	÷	✓	=						
10	30	÷	✓	=						
11	31	÷	✓	=						
2	32	÷	✓	=						
6	33	÷	✓	=						
3	34	÷	✓	=						
4	35	÷	✓	=						
5	36	÷	✓	=						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/10/2012	01/27/2013	06/14/2013						
15	37	÷	✓	=						
16	38	÷	✓	=						
8	39	÷	✓	=						
12	40	÷	✓	=						
17	41	÷	✓	=						
18	42	÷	✓	=						
13	43	÷	✓	=						
19	44	÷	✓	=						
20	45	÷	✓	=						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12836059	SHRIBMAN ET AL.
	Examiner	Art Unit
	MINH-CHAU NGUYEN	2442

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	203-204, 217-219, 223, 236	1/27/2013	MN

SEARCH NOTES		
Search Notes	Date	Examiner
Search on EAST	1/27/2013	MN
Reviewed for 101, double patenting	1/27/2013	MN
Update search on EAST	6/14/2013	MN
Search on google, google scholar	6/14/2013	MN
Review for 101	6/14/2013	MN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
USPAT, USPG-Pub text search	Independent claims search	6/14/2013	MN

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

57449 7590 07/02/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER	
NGUYEN, MINH CHAU	
ART UNIT	**PAPER NUMBER**
2442	

MAIL DATE	DELIVERY MODE
07/02/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 12836059
Applicant : Shribman
Filing Date : 07/14/2010
Date Mailed : 07/02/2013

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given 2 month(s) from the mail date of this Notice, or the time remaining from the Notice of Allowance and Fee(s) Due, whichever is longer, within which to respond.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED. **This period for reply is NOT extendable under 37 CFR 1.136(a).**

See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Shirley Winslow/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 12836059

NON-COMPLIANT ILLUSTRATIONS IN SPECIFICATION OR CLAIMS

The illustration(s) on Page(s) p. 30 of 33 (FIG. 49) or in Claim(s) _____ do not come within the exceptions of 37 CFR 1.58(a). Please delete the illustration(s) from the specification or claims, provide the illustration(s) as part of the formal drawing(s) in accordance with 37 CFR 1.84, and amend the specification to provide a brief description of the drawings in accordance with 37 CFR 1.74.

Application No. 12836059

SPECIFICATION NOT IN COMPLIANCE WITH 37 CFR 1.52(b)(5)

The pages of the specification have not been numbered. Per 37 CFR 1.52(b)(5), "the pages of the specification including claims and abstract must be numbered consecutively, beginning with 1, the numbers being centrally located above or preferably below, the text." In response to this notice, the applicant must submit a substitute specification in which the pages are so numbered.

NOTE: Although 37 CFR 1.52(b)(5) refers to page numbering for "the specification including claims and abstract," any abstract or claims submitted in response to this notice will not be entered. Only the substitute specification, and any amendment thereto entered during prosecution, will be entered.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	12/836,059		
Applicant:	Derry Shribman		
Filed:	July 14, 2010	Examiner:	Minh Chau Nguyen
TC/Art Unit:	2442	Confirmation No.:	1421
Docket No.:	19459-6102		
Title:			

RESPONSE AND AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner Nguyen:

This amendment is being filed in response to the Notice To File Corrected Papers mailed July 2, 2013. In response thereto, please enter the following amendments and consider the following remarks. This substitute specification contains no new matter.

Amendments to the Specification are reflected in the substitute specification attached to this paper.

Remarks/Arguments begin on page 2 of this paper.

AUTHORIZATION TO DEBIT ACCOUNT

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this response. However, in the event that additional extensions of time are necessary to allow consideration of this response, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a) and any fee required therefore are hereby authorized to be charged to deposit account No. 501304.

{S0110362.1}

REMARKS

This is a full and timely response to the outstanding Notice to File Corrected Application Papers mailed July 2, 2013.

Applicants are grateful for allowance of the application.

Non-Compliant Illustrations in Specifications or Claims

The Notice stated the illustration of page 30 of 33 did not come within the exceptions of 37 CFR 1.58(a). As a result, Applicants have deleted the illustration from the specification, since this figure is included in FIG. 3 of the pending patent application.

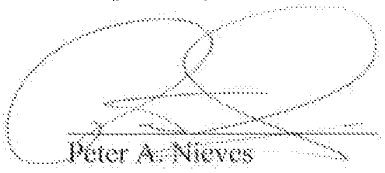
Specification Not In Compliance with 37 CFR 1.52(b)(5)

The Notice stated the specification omitted consecutively numbered page numbers. Applicants have inserted page numbers into the specification.

CONCLUSION

In light of the foregoing and for at least the reasons set forth above, the Applicants respectfully believe the issues identified in the Notice have been resolved. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 627-8134.

Respectfully submitted,



Peter A. Nieves
Attorney for Applicants
Reg. No. 48173

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to copending U.S. provisional patent application entitled "FASTER AND MORE EFFICIENT DATA COMMUNICATION SYSTEM," having serial number 61/249,624, filed October 8, 2009, which is hereby incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

The present invention is related to Internet communication, and more particularly, to improving data communication speed and bandwidth efficiency on the Internet.

BACKGROUND OF THE INVENTION

There are several trends in network and Internet usage, which tremendously increase the bandwidth that is being used on the Internet. One such trend is that more and more video is being viewed on demand on the Internet. Such viewing includes the viewing of both large and short video clips. In addition, regular shows and full-featured films may be viewed on the Internet. Another trend that is increasing the traffic on the Internet is that Web sites (such as shopping portals, news portals, and social networks) are becoming global, meaning that the Web sites are serving people in many diverse places on the globe, and thus the data is traversing over longer stretches of the Internet, increasing the congestion.

The increase in bandwidth consumption has created several major problems, a few of which are described below:

The problem for users – the current Internet bandwidth is not sufficient, and thus the effective 'speed' experienced by users is slow;

The problem for content owners – the tremendous amount of data being viewed by users is costing large amounts of money in hosting and bandwidth costs; and

The problem for Internet Service Providers (ISPs) – the growth in Internet traffic is requiring the ISPs to increase the infrastructure costs (communication lines, routers, etc.) at tremendous financial expense.

The need for a new method of data transfer that is fast for the consumer, cheap for the content distributor and does not require infrastructure investment for ISPs, has become a major issue which is yet unsolved.

There have been many attempts at making the Internet faster for the consumer and cheaper for the broadcaster. Each such attempt is lacking in some aspect to become a widespread, practical solution, or is a partial solution in that it solves only a subset of the major problems associated with the increase in Internet traffic. Most of the previous solutions require billions of dollars in capital investment for a comprehensive solution. Many of these attempts are lacking in that much of the content on the Internet has become dynamically created per the user and the session of the user (this is what used to be called the "Web2.0" trend). This may be seen on the Amazon Web site and the Salesforce Web site, for example, where most of the page views on these Web sites is tailored to the viewer, and is thus different for any two viewers. This dynamic information makes it impossible for most of the solutions offered to date to store the content and provide it to others seeking similar content.

One solution that has been in use is called a "proxy". FIG. 1 is a schematic diagram providing an example of use of a proxy within a network 2. A proxy, or proxy server 4, 6, 8 is a device that is placed between one or more clients, illustrated in FIG. 1 as client devices 10, 12,

14, 16, 18, 20, that request data, via the Internet 22, and a Web server or Web servers 30, 32, 34 from which they are requesting the data. The proxy server 4, 6, 8 requests the data from the Web servers 30, 32, 34 on their behalf, and caches the responses from the Web servers 30, 32, 34, to provide to other client devices that make similar requests. If the proxy server 4, 6, 8 is geographically close enough to the client devices 10, 12, 14, 16, 18, 20, and if the storage and bandwidth of the proxy server 4, 6, 8 are large enough, the proxy server 4, 6, 8 will speed up the requests for the client devices 10, 12, 14, 16, 18, 20 that it is serving.

It should be noted, however, that to provide a comprehensive solution for Internet surfing, the proxy servers of FIG. 1 would need to be deployed at every point around the world where the Internet is being consumed, and the storage size of the proxy servers at each location would need to be near the size of all the data stored anywhere on the Internet. The abovementioned would lead to massive costs that are impractical. In addition, these proxy solutions cannot deal well with dynamic data that is prevalent now on the Web.

There have been commercial companies, such as Akamai, that have deployed such proxies locally around the world, and that are serving a select small group of sites on the Internet. If all sites on the Web were to be solved with such a solution, the capital investment would be in the range of billions of dollars. In addition, this type of solution does not handle dynamic content.

To create large distribution systems without the large hardware costs involved with a proxy solution, "peer-to-peer file sharing" solutions have been introduced, such as, for example, BitTorrent. FIG. 2 is a schematic diagram providing an example of a peer-to-peer file transfer network 50. In the network 50, files are stored on computers of consumers, referred to herein as client devices 60. Each consumer can serve up data to other consumers, via the Internet 62, thus taking the load of serving off of the distributors and saving them the associated costs, and providing the consumer multiple points from which to download the data, referred to herein as

peers 70, 72, 74, 76, 78, thus increasing the speed of the download. However, each such peer-to-peer solution must have some sort of index by which to find the required data. In typical peer-to-peer file sharing systems, because the index is on a server 80, or distributed among several servers, the number of files available in the system is not very large (otherwise, the server costs would be very large, or the lookup time would be very long).

The peer-to-peer file sharing solution is acceptable in file sharing systems, because there are not that many media files that are of interest to the mass (probably in the order of magnitude of millions of movies and songs that are of interest). Storing and maintaining an index of millions of entries is practical technically and economically. However, if this system were to be used to serve the hundreds of billions of files that are available on the Internet of today, the cost of storing and maintaining such an index would be again in the billions of dollars. In addition, these types of peer-to-peer file sharing systems are not able to deal with dynamic HTTP data.

In conclusion, there does not exist a system that enables fast transmission of most of the data on the Internet, that does not incur tremendous costs, and/or that provides only a very partial solution to the problem of Internet traffic congestion. Thus, a heretofore unaddressed need exists in the industry to address the aforementioned deficiencies and inadequacies.

SUMMARY OF THE INVENTION

The present system and method provides for faster and more efficient data communication within a communication network. Briefly described, in architecture, one embodiment of the system, among others, can be implemented as follows. A network is provided for accelerating data communication, wherein the network contains: at least one client communication device for originating a data request for obtaining the data from a data server; at least one agent communication device which is assigned to the data server for receiving the data

request from the client communication device, wherein the agent keeps track of which client communication devices have received responses to data requests from the assigned data server; at least one peer communication device for storing portions of data received in response to the data request by the at least one client communication device, wherein the portions of data may be transmitted to the at least one client communication device upon request by the client communication device; and at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

The present system and method also provides a communication device within a network, wherein the communication device contains: a memory; and a processor configured by the memory to perform the steps of: originating a data request for obtaining data from a data server; being assigned to a data server, referred to as an assigned data server; receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

Other systems, methods, features, and advantages of the present invention will be or become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional systems, methods, features, and advantages be included within this description, be within the scope of the present invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the invention can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a schematic diagram providing a prior art example of use of a proxy within a network.

FIG. 2 is a schematic diagram providing a prior art example of a peer-to-peer file transfer network.

FIG. 3 is a schematic diagram providing an example of a communication network in accordance with the present invention.

FIG. 4 is a schematic diagram further illustrating a communication device of the communication network of FIG. 3.

FIG. 5 is a schematic diagram further illustrating the memory of FIG. 4.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application of FIG. 5, as well as communication paths of the acceleration application.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network.

FIG. 8 is a flowchart illustrating operation of the acceleration system initializer module.

FIG. 9 is a flowchart further illustrating communication between different elements of the communication network.

FIG. 10 is a flowchart continuing the flowchart of FIG. 9 and focused on agent response to the HTTP request.

FIG. 11 is a flowchart continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent.

FIG. 12 is a flowchart illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid.

FIG. 13 is a flowchart outlining operation of the acceleration server.

FIG. 14 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention.

FIG. 15 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

DETAILED DESCRIPTION

The present system and method provides for faster and more efficient data communication within a communication network. An example of such a communication network 100 is provided by the schematic diagram of FIG. 3. The network 100 of FIG. 3 contains multiple communication devices. Due to functionality provided by software stored within each communication device, which may be the same in each communication device, each communication device may serve as a client, peer, or agent, depending upon requirements of the network 100, as is described in detail herein. It should be noted that a detailed description of a communication device is provided with regard to the description of FIG. 4.

Returning to FIG. 3, the exemplary embodiment of the network 100 illustrates that one of the communication devices is functioning as a client 102. The client 102 is capable of communication with one or more peers 112, 114, 116 and one or more agents 122. For exemplary purposes, the network contains three peers and one agent, although it is noted that a client can communicate with any number of agents and peers.

The communication network 100 also contains a Web server 152. The Web server 152 is the server from which the client 102 is requesting information and may be, for example, a typical HTTP server, such as those being used to deliver content on any of the many such servers on the Internet. It should be noted that the server 152 is not limited to being an HTTP server . In fact, if a different communication protocol is used within the communication network, the server may be a server capable of handling a different protocol. It should also be noted that while the present description refers to the use of HTTP, the present invention may relate to any other communication protocol and HTTP is not intended to be a limitation to the present invention.

The communication network 100 further contains an acceleration server 162 having an acceleration server storage device 164. As is described in more detail herein, the acceleration server storage device 164 has contained therein an acceleration server database. The acceleration server database stores Internet protocol (IP) addresses of communication devices within the communication network 100 having acceleration software stored therein. Specifically, the acceleration server database contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. For each such agent, the acceleration server assigns a list of IP addresses.

In the communication network 100 of FIG. 3, the application in the client 102 is requesting information from the Web server 152, which is why the software within the communication device designated this communication device to work as a client. In addition, since the agent 122 receives the request from the client 102 as the communication device closest

to the Web server 152, functionality of the agent 122, as provided by the software of the agent 122, designates this communication device to work as an agent. It should be noted, that in accordance with an alternative embodiment of the invention, the agent need not be the communication device that is closest to the Web server. Instead, a different communication device may be selected to be the agent.

Since the peers 112, 114, 116 contain at least portions of the information sought by the client 102 from the Web server 152, functionality of the peers 112, 114, 116, as provided by the software of the peers 112, 114, 116, designates these communication devices to work as peers. It should be noted that the process of designating clients, agents, and peers is described in detail herein. It should also be noted that the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 may differ from the number illustrated by FIG. 3. In fact, the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 are not intended to be limited by the current description.

Prior to describing functionality performed within a communication network 100, the following further describes a communication device 200, in accordance with a first exemplary embodiment of the invention. FIG. 4 is a schematic diagram further illustrating a communication device 200 of the communication network 100, which contains general components of a computer. As previously mentioned, it should be noted that the communication device 200 of FIG. 4 may serve as a client, agent, or peer.

Generally, in terms of hardware architecture, as shown in FIG. 4, the communication device 200 includes a processor 202, memory 210, at least one storage device 208, and one or more input and/or output (I/O) devices 240 (or peripherals) that are communicatively coupled via a local interface 250. The local interface 250 can be, for example but not limited to, one or more buses or other wired or wireless connections, as is known in the art. The local interface 250 may

have additional elements, which are omitted for simplicity, such as controllers, buffers (caches), drivers, repeaters, and receivers, to enable communications. Further, the local interface 250 may include address, control, and/or data connections to enable appropriate communications among the aforementioned components.

The processor 202 is a hardware device for executing software, particularly that stored in the memory 210. The processor 52 can be any custom made or commercially available processor, a central processing unit (CPU), an auxiliary processor among several processors associated with the communication device 200, a semiconductor based microprocessor (in the form of a microchip or chip set), a macroprocessor, or generally any device for executing software instructions.

The memory 210, which is further illustrated and described by the description of FIG. 5, can include any one or combination of volatile memory elements (*e.g.*, random access memory (RAM, such as DRAM, SRAM, SDRAM, *etc.*)) and nonvolatile memory elements (*e.g.*, ROM, hard drive, tape, CDROM, *etc.*). Moreover, the memory 210 may incorporate electronic, magnetic, optical, and/or other types of storage media. Note that the memory 210 can have a distributed architecture, where various components are situated remote from one another, but can be accessed by the processor 202.

The software 212 located within the memory 210 may include one or more separate programs, each of which contains an ordered listing of executable instructions for implementing logical functions of the communication device 200, as described below. In the example of FIG. 4, the software 212 in the memory 210 at least contains an acceleration application 220 and an Internet browser 214. In addition, the memory 210 may contain an operating system (O/S) 230. The operating system 230 essentially controls the execution of computer programs and provides scheduling, input-output control, file and data management, memory management, and communication control and related services. It should be noted that, in addition to the

acceleration application 220, Internet browser 214, and operating system 230, the memory 210 may contain other software applications.

While the present description refers to a request from the client originating from an Internet browser, the present invention is not limited to requests originating from Internet browsers. Instead, a request may originate from an email program or any other program that would be used to request data that is stored on a Web server, or other server holding data that is requested by the client device.

Functionality of the communication device 200 may be provided by a source program, executable program (object code), script, or any other entity containing a set of instructions to be performed. When a source program, then the program needs to be translated via a compiler, assembler, interpreter, or the like, which may or may not be included within the memory 210, so as to operate properly in connection with the operating system 230. Furthermore, functionality of the communication device 200 can be written as (a) an object oriented programming language, which has classes of data and methods, or (b) a procedure programming language, which has routines, subroutines, and/or functions.

The I/O devices 240 may include input devices, for example but not limited to, a keyboard, mouse, scanner, microphone, *etc.* Furthermore, the I/O devices 240 may also include output devices, for example but not limited to, a printer, display, *etc.* Finally, the I/O devices 240 may further include devices that communicate via both inputs and outputs, for instance but not limited to, a modulator/demodulator (modem; for accessing another device, system, or network), a radio frequency (RF) or other transceiver, a telephonic interface, a bridge, a router, *etc.*

When the communication device 200 is in operation, the processor 202 is configured to execute the software 212 stored within the memory 210, to communicate data to and from the memory 210, and to generally control operations of the communication device 200 pursuant to

the software 212. The software 212 and the O/S 230, in whole or in part, but typically the latter, are read by the processor 202, perhaps buffered within the processor 202, and then executed.

When functionality of the communication device 200 is implemented in software, as is shown in FIG. 4, it should be noted that the functionality can be stored on any computer readable medium for use by or in connection with any computer related system or method. In the context of this document, a computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer related system or method. The functionality of the communication device 200 can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any means that can store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (electronic), a read-only memory (ROM) (electronic), an erasable programmable read-only memory (EPROM, EEPROM, or Flash memory) (electronic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM) (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then

compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

In an alternative embodiment, where the functionality of the communication device 200 is implemented in hardware, the functionality can be implemented with any or a combination of the following technologies, which are each well known in the art: a discrete logic circuit(s) having logic gates for implementing logic functions upon data signals, an application specific integrated circuit (ASIC) having appropriate combinational logic gates, a programmable gate array(s) (PGA), a field programmable gate array (FPGA), *etc.*

The at least one storage device 208 of the communication device 200 may be one of many different categories of storage device. As is described in more detail herein, the storage device 208 may include a configuration database 280 and a cache database 282. Alternatively, the configuration database 280 and cache database 282 may be located on different storage devices that are in communication with the communication device 200. The description that follows assumes that the configuration database 280 and cache database 282 are located on the same storage device, however, it should be noted that the present invention is not intended to be limited to this configuration.

The configuration database 280 stores configuration data that is common to all elements of the communication network 100 and is used to provide set up and synchronization information to different modules of the acceleration application 220 stored within the memory 210, as is described in further detail herein. The cache database 282 stores responses to HTTP requests that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. As is explained in additional detail herein, the responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the communication

network 100 that need to retrieve this information and will use this communication device as either a peer or an agent.

In addition to the abovementioned, as is explained in further detail herein, the cache database 282 has stored therein a list of URLs that the communication device is aware of (i.e., has seen requests for). For each URL, the cache database 282 has stored therein the URL itself, HTTP headers returned by the Web Server for this URL, when the last time was that the contents of this URL was loaded directly from the Web Server, when the contents of the URL had last changed on the Web Server, as well as a list of chunks that contain the contents of this URL, and the chunks of data themselves. Chunks in the present description are defined as equally sized pieces of data that together form the whole content of the URL. It should be noted that while the present description provides for chunks being equally sized pieces of data, in accordance with an alternative embodiment of the invention, the chunks may instead be of different size.

FIG. 5 is a schematic diagram further illustrating the memory 210 of FIG. 4. As shown by FIG. 5, the memory 210 may be separated into two basic levels, namely, an operating system level 260 and an application level 270. The operating system level 260 contains the operating system 230, wherein the operating system 230 further contains at least one device driver 262 and at least one communication stack 264. The device drivers 262 are software modules that are responsible for the basic operating commands for various hardware devices of the communication device 200, such as the processor 202, the storage device 208 and the I/O devices 240. In addition, the communication stacks 264 provide applications of the communication device 200 with a means of communicating within the network 100 by implementing various standard communication protocols.

The application level 270 includes any application that is running on the communication device 200. As a result, the application level 270 includes the Internet browser 214, which is used to view information that is located on remote Web servers, the acceleration application 220,

as described in more detail below, and any other applications 216 stored on the communication device 200.

As is explained in additional detail below, the acceleration application 220 intercepts the requests being made by applications of the communication device (client) that use the Internet, in order to modify the requests and route the requests through the communication network. There are various methods that may be used to intercept such requests. One such method is to create an intermediate driver 272, which is also located within the memory 210, that attaches itself to all communication applications, intercepts outgoing requests of the communication applications of the communication device 200, such as the Internet browser 214, and routes the requests to the acceleration application 220. Once the acceleration application 220 modifies the requests, routes the requests to other system elements on the communication network 100, and receives replies from other system elements of the communication network 100, the acceleration application 220 returns the replies to the intermediate driver 272, which provides the replies back to the requesting communication application.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application 220, as well as communication paths of the acceleration application 220. The acceleration application 220 contains an acceleration system initializer module 222, which is called when the acceleration application 220 is started. The acceleration system initializer module 222 is capable of initializing all elements of the communication device 200 The acceleration application 220 also contains three separate modules that run in parallel, namely, a client module 224, a peer module 226, and an agent module 228, each of which comes into play according to the specific role that the communication device 200 is partaking in the communication network 100 at a given time. The role of each module is further described herein.

The client module 224 provides functionality required when the communication device 200 is requesting information from the Web server 152, such as, for example, but not limited to,

Web pages, data, video, or audio. The client module 224 causes the communication device 200 having the client module 224 therein to intercept the information request and pass the information request on to other elements of the communication network 100, such as, servers, agents or peers. This process is further described in detail herein.

The peer module 226 provides functionality required by the communication device 200 when answering other clients within the communication network 100 and providing the other clients with information that they request, which this communication device 200, having this peer module 226 therein, has already downloaded at a separate time. This process is further described in detail herein.

The agent module 228 provides functionality required when other communication devices of the communication network 100 acting as clients query this communication device 200, having this agent module 228 therein, as an agent, to obtain a list of peers within the communication network 100 that contain requested information. This process is further described in detail herein.

The acceleration application 220 interacts with both the configuration database 280 and the cache database 282 of the storage device 208. As previously mentioned herein, the configuration database 280 stores configuration data that may be common to all communication devices of the communication network 100 and is used to provide setup and synchronization information to different modules 222, 224, 226, 228 of the acceleration application 220 stored within the memory 210.

The cache database 282 stores responses to information requests, such as, for example, HTTP requests, that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. The responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the communication network 100 that need

to retrieve this same information and will use this communication device 200 as either a peer or an agent. This process is described in detail herein.

Information stored within the cache database 282 may include any information associated with a request sent by the client. As an example, such information may include, Meta data and actual requested data. For example, for an HTTP request for a video, the Meta data may include the version of the Web server answering the request from the client and the data would be the requested video itself. In a situation where there is no more room for storage in the cache database, the software of the associated communication device may cause the communication device to erase previous data stored in order to clear room for the new data to store in the cache database. As an example, such previous data may include data that is most likely not to be used again. Such data may be old data or data that is known to no longer be valid. The communication device may choose to erase the least relevant data, according to any of several methods that are well known in the art.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network 100, namely, the acceleration server database 164 and the cache database 282. As previously mentioned, the acceleration server database 164 stores IP addresses of communication devices located within the communication network 100, which have acceleration software stored therein. Specifically, the acceleration server database 164 contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. The acceleration server assigns a list of IP addresses to each communication device functioning as an agent. Each communication device will be the agent for any Web servers whose IP address is in the range 'owned' by that communication device. As an example, when a first ever communication device goes online, namely, the first communication device as described herein having the acceleration application 220 therein, the acceleration server assigns all IP addresses in the world to this communication device, and this communication device will be the agent for any Web server. When a second

communication device goes online it will share the IP address list with the first communication device, so that each of the communication devices will be responsible for a different part of the world wide web servers.

The cache database 282 of the communication device 200 has stored therein a list of URLs 286 of which the communication device 200 is aware. The communication device 200 becomes aware of a URL each time that the communication device 200 receives a request for information located at a specific URL. As shown by FIG. 7, for each URL 288 within the list of URLs 286, the cache database 282 stores: the URL itself 290; HTTP headers 292 returned by the Web Server 152 for this URL; when the last time 294 was that the contents of this URL were loaded directly from the Web Server 152; when the contents of the URL last changed 296 on the Web Server 152; and a list of chunks 298 that contain the contents of this URL, and the content of the chunk. As previously mentioned, chunks, in the present description, are defined as equally sized pieces of data, that together form the entire content of the URL, namely, the entire content whose location is described by the URL. As a non-limiting example, a chunk size of, for example, 16KB can be used, so that any HTTP response will be split up into chunks of 16KB. In accordance with an alternative embodiment of the invention, if the last chunk of the response is not large enough to fill the designated chunk size, such as 16KB for the present example, the remaining portion of the chunk will be left empty.

For each such chunk 300, the cache database 282 includes the checksum of the chunk 302, the data of the chunk 304 itself, and a list of peers 306 that most likely have the data for this chunk. As is described in additional detail herein, the data for the chunk may be used by other clients within the communication network 100 when other communication devices of the communication network 100 serve as peers to the clients, from which to download the chunk data.

For each chunk, a checksum is calculated and stored along side of the chunk itself. The checksum may be calculated in any of numerous ways known to those in the art. The purpose of having the checksum is to be able to identify data uniquely, whereas the checksum is the "key" to the data, where the data is the chunk. As an example, a client may want to load the contents of a URL, resulting in the agent that is servicing this request sending the checksums of the chunks to the client, along with the peers that store these chunks. It is to be noted that there could be a different peer for every different chunk. The client then communicates with each such peer, and provides the checksum of the chunk that it would like the peer to transmit back to the client. The peer looks up the checksum (the key) in its cache database, and provides back the chunk (data) that corresponds to this checksum (the key). As shown by FIG. 7, for each peer 308 within the list of peers 306, the cache database 282 includes the peer IP address 310, as well as the connection status 312 of the peer, which represents whether the peer 308 is online or not.

In accordance with one embodiment of the invention, the cache database 282 may be indexed by URL and by Checksum. Having the cache database indexed in this manner is beneficial due to the following reason. When the agent is using the cache database, the agent receives a request from a client for the URL that the client is looking for. In such a case the agent needs the cache database to be indexed by the URL, to assist in finding a list of corresponding peers that have the chunks of this URL. When the peers are using this cache database, the peers obtain a request from the client for a particular checksum, and the peers need the database to be indexed by the checksum so that they can quickly find the correct chunk. Of course, as would be understood by one having ordinary skill in the art, the cache database may instead be indexed in any other manner.

Having described components of the communication network 100, the following further describes how such components interact and individually function. FIG. 8 is a flowchart 300 illustrating operation of the acceleration system initializer module 222 (hereafter referred to as the initializer 222 for purposes of brevity). It should be noted that any process descriptions or

blocks in flowcharts should be understood as representing modules, segments, portions of code, or steps that include one or more instructions for implementing specific logical functions in the process, and alternative implementations are included within the scope of the present invention in which functions may be executed out of order from that shown or discussed, including substantially concurrently or in reverse order, depending on the functionality involved, as would be understood by those reasonably skilled in the art of the present invention.

The initializer 222 is the first element of the communication device 200 to operate as the communication device 200 starts up (block 302). As the initializer 222 starts, it first communicates with the acceleration server 162 to sign up with the acceleration server 162. This is performed by providing the acceleration server 162 with the hostname, and all IP addresses and media access control (MAC) addresses of the interfaces on the communication device 200 having the initializer 222 thereon.

In accordance with an alternative embodiment of the invention, as shown by block 304, the initializer 222 checks with the acceleration server 162 whether a more updated version of the acceleration application software is available. This may be performed by any one of many known methods, such as, but not limited to, by providing the version number of the acceleration application software to the acceleration server 162. The message received back from the acceleration server 162 indicates whether there is a newer version of the acceleration application software or not. If a newer version of the acceleration application software exists, the initializer 222 downloads the latest version of the acceleration application software from the acceleration server 162, or from a different location, and installs the latest version on the communication device 200. In addition to the abovementioned, the initializer 222 may also schedule additional version checks for every set period of time thereafter. As an example, the initializer 222 may check for system updates every two days.

As shown by block 306, the initializer 222 then redirects outgoing network traffic from the communication device 200 to flow through the acceleration application 162. As previously mentioned, one way to redirect the outgoing network traffic is to insert an intermediate driver 212 that intercepts and redirects the traffic. It should be noted that there are many other ways to implement this redirection, which are well known to those having ordinary skill in the art.

As shown by block 308, the initializer 222 then launches the client module 224 of the communication device 200, and configures the client module 224 of the communication device 200 to intercept to all outgoing network communications of the communication device 200 and route the outgoing network communications to the client module 224, from the intermediate driver 272 or other routing method implemented. This is performed so that the client module 224 is able to receive all network traffic coming from the network applications, modify the network traffic if necessary, and re-route the traffic. As is known by those having ordinary skill in the art, in order to re-route the traffic, the traffic needs to be modified, as an example, to change the destination of requests.

As shown by block 310, the initializer 222 then launches the agent module 228 and the peer module 226 to run on the communication device 200. The agent module 228 and peer module 226 listen on pre-determined ports of the communication device 200, so that incoming network traffic on these ports gets routed to the agent module 228 and peer module 226. As is explained in further detail herein, the abovementioned enables the communication device 200 to function as an agent and as a peer for other communication devices within the communication network 100, as needed.

FIG. 9 is a flowchart 350 further illustrating communication between different elements of the communication network 100, in accordance with the present system and method for providing faster and more efficient data communication.

As shown by block 352, an application running on the client 200 initiates a request for a resource on a network. Such a request may be, for example, "GET http://www.aol.com/index.html HTTP/1.1". The request may come from an Internet browser 214 located on the client 200, where the Internet browser 214 is loading a page from the Internet, an application that wants to download information from the Internet, fetch or send email, or any other network communication request.

Through the intermediate driver 272, or other such mechanism as may be implemented that is re-routing the communication to the client module 224 of the client 200, the resource request is intercepted by the client module 224 that is running on the client 200 (block 354). The client module 224 then looks up the IP address of the server 152 that is the target of the resource request (e.g., the IP address of the Web server that is the host of www.aol.com in the example above), and sends this IP address to the acceleration server 162 (block 356) in order to obtain a list of communication devices that the client 200 can use as agents (hereafter referred to as agents). It should be noted that the process of performing an IP lookup for a server is known by one having ordinary skill in the art, and therefore is not described further herein.

In response to receiving the IP address of the server 152, the acceleration server 162 prepares a list of agents that may be suitable to handle the request from this IP address (block 358). The size of the list can differ based on implementation. For exemplary purposes, the following provides an example where a list of five agents is prepared by the acceleration server 162. The list of agents is created by the acceleration server 162 by finding the communication devices of the communication network 100 that are currently online, and whose IP address is numerically close to the IP of the destination Web server 152. A further description of the abovementioned process is described here in.

As shown by block 360, the client module 224 then sends the original request (e.g., "GET http://www.aol.com/index.html HTTP/1.1") to all the agents in the list received from the

acceleration server 162 in order to find out which of the agents in the list is best suited to be the one agent that will assist with this request.

It should be noted that, in accordance with an alternative embodiment of the invention, the communication device 200 may be connected to a device that is actually requesting data. In such an alternative embodiment, the communication device would be a modular device connected to a requesting device, where the requesting device, such as, for example, a personal data assistant (PDA) or other device, would request data, and the communication device connected thereto, either through a physical connection, wireless connection, or any other connection, would receive the data request and function as described herein. In addition, as previously mentioned, it should be noted that the HTTP request may be replaced by any request for resources on the Web.

FIG. 10 is a flowchart continuing the flowchart 380 of FIG. 9 and focused on agent response to the request. As shown by block 382, upon receiving the request from the client 200, each agent that received the request from the client responds to the client 200 with whether it has information regarding the request, which can help the client to download the requested information from peers in the network. Specifically, each agent responds with whether the agent has seen a previous request for this resource that has been fulfilled. In such a case, the agent may then provide the client with the list of peers and checksums of the chunks that each of them have.

As shown by block 384, the client then decides which of the agents in the list to use as its agent for this particular information request. To determine which agent in the list to use as its agent for the particular information request, the client may consider multiple factors, such as, for example, factoring the speed of the reply by each agent and whether that agent does or does not have the information required. There are multiple ways to implement this agent selection, one practical way being to start a timer of a small window of time, such as, for example, 5ms, after receiving the first response from the agents, and after the small window, choosing from the list of

agents that responded, the agent that has the information about the request, or in the case that none of the agents responded, to choose the first agent from the list received from the acceleration server 162.

As shown by block 386, after selecting an agent, the client notifies the selected agent that it is going to use it for this request, and notifies the other agents that they will not be used for this request. The client then sends the selected agent a request for the first five chunks of data of the original information request (block 388). By specifying to the selected agent the requested chunks by their order in the full response, the client receives the peer list and checksums of the requested chunks from the selected agent. As an example, for the first five chunks the client will ask the selected agent for chunks one through five, and for the fourth batch of five chunks the client will ask the agent for chunks sixteen through twenty. As previously mentioned, additional or fewer chunks may be requested at a single time.

As shown by block 390, after receiving the request from the client, the selected agent determines whether it has information regarding the requested chunks of data by looking up the request in its cache database and determining if the selected agent has stored therein information regarding peers of the communication network that have stored the requested data of the request, or whether the selected agent itself has the requested data of the request stored in its memory. In addition to determining if the selected agent contains an entry for this request in its database, the selected agent may also determine if this information is still valid. Specifically, the selected agent determines whether the data that is stored within the memory of the selected agent or the memory of the peers, still mirrors the information that would have been received from the server itself for this request. A further description of the process utilized by the selected agent to determine if the information is still valid, is described in detail herein.

As shown by block 392, if the information (requested data of the request) exists and is still valid, then the agent prepares a response to the client, which includes for each of the chunks;

(i) the checksum of the chunk; (ii) a list of peers that according to the database of the selected agent contains these chunks; and (iii) if these are the first five chunks of the information, then the selected agent also provides the specific protocol's headers that would have been received from the server, had the initial request from the client been made directly to the server.

As shown by block 394, the list of peers for each chunk is sorted by geographical proximity to the requesting client. In accordance with the present example, only the five closest peers are kept in the list for every chunk, and the rest of the peers are discarded from this list. As shown by block 396, the prepared response, namely, the list of closest peers, is sent back to the client. It should be noted that, if this were the last set of chunks to be provided for this request, then it would be beneficial to include information about this to the client.

If the selected agent discovers that it does not have information about this request, or if the selected agent discovers that the information it has is no longer valid, the selected agent needs to load the information directly from the server in order to be able to provide an answer to the requesting client. As shown by block 400, the selected agent then sends the request directly to the server. The selected agent then stores the information it receives from the server (both the headers of the request, as well as chunks of the response itself) in its database, for this particular response to the client, as well as for future use to other clients that may request this data (block 402). The selected agent then prepares a response (list) for the client, where the response includes the protocol headers (if these are the first five chunks), and the checksums of the five chunks, and provides itself as the only peer for these chunks (block 404). This list is then sent back to the client (block 406).

FIG. 11 is a flowchart 420 continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent. As shown by block 422, the client receives the response from the agent (including the list of chunks and their corresponding data, including peers and other information previously mentioned) and, for each of

the five chunks, the client sends a request to each of the peers listed for the chunk to download the chunk. The chunk request that the client sends to each of the peers is the checksum of the data that the client seeks to receive, which is the key (identifier) of the chunk.

As shown by block 424, the peers then respond regarding whether they still have the data of the chunk. As an example, some of the peers may not currently be online, some may be online but may have discarded the relevant information, and some may still have the relevant information, namely, the chunk. As shown by block 426, the client then selects the quickest peer that responds with a positive answer regarding the requested information, the client lets that peer know that it is chosen to provide the client with the chunk, and the client notifies the other peers that they are not chosen.

As shown by block 428, the chosen peer then sends the chunk to the client. It should be noted that if no peers answer the request of the client, the client goes back to the agent noting that the peers were all negative, and the agent either provides a list of 5 other agents, if they exist, or the agent goes on to download the information directly from the Web server as happens in the case where no peers exist as described above.

The client then stores the chunks in its cache for future use (block 430), when the client may need to provide the chunks to a requesting communication device when acting as a peer for another client that is looking for the same information. As shown by block 432, if some of the chunks were not loaded from any of the peers, the client requests the chunks again from the agent in a next round of requests, flagging these chunks as chunks that were not loadable from the client list of peers. In this situation, the agent will load the data directly from the server and provide it back to the client.

The client then acknowledges to the agent which of the chunks it received properly (block 434). The agent then looks up these chunks in the database of the agent, and adds the client to

the list of peers for these chunks, specifically, since this client is now storing these chunks, and can provide these chunks to other clients that turn to it as a peer (block 436).

As shown by block 438, the client then passes the data on to the Web browser or other application of the client that made the original request, for it to use as it had originally intended. The client then checks whether all of the chunks for this request were received (block 440), by checking the flag set by the agent. Specifically, when the agent is providing the list of the last 5 chunks, the agent includes that information as part of its reply to the client, which is referred to herein as a flag. This information is what enables the client to know that all information has been received for a particular resource request.

If the last received chunks were not the last chunks for this request, the processing flow of the client continues by returning to the functionality of block 384 of FIG. 10, but instead sending the chosen agent a request for the next five chunks of data of the original information request. Alternatively, if all chunks for this request were received, the request is complete, and the flow starts again at block 352 of FIG. 9.

FIG. 12 is a flowchart 500 illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid. Specifically, the following provides an example of how the agent, client, or peer can determine whether particular data that is stored within the memory of the agent, or the memory of a peer or client, still mirrors the information that is currently on the Web server. As shown by block 502, the HTTP request is looked up in the cache database of the agent, client or peer that is checking the validity of the HTTP request. As an example, the HTTP protocol, defined by RFC 2616, outlines specific methods that Web servers can define within the HTTP headers signifying the validity of certain data, such as, but not limited to, by using HTTP header information such as "max age" to indicate how long this data may be cached before becoming invalid, "no cache" to indicate that the data may never be cached, and using other information.

As shown by block 504, these standard methods of validation are tested on the HTTP request information in question. As shown by block 506, a determination is made whether the requested information that is stored is valid or not. If the requested information is valid, a "VALID" response is returned (block 508). Alternatively, if the requested information is not valid, an HTTP conditional request is sent to the relevant Web server, to determine if the data stored for this request is still valid (block 510). If the data stored for this request is still valid, a "VALID" response is returned (block 508). Alternatively, if the data stored for this request is not valid, an "INVALID" response is returned (block 514). It should be noted, that the abovementioned description with regard to FIG. 12 is an explanation of how to check if HTTP information is still valid. There are similar methods of determining validity for any other protocol, which may be utilized, and which those having ordinary skill in the art would appreciate and understand.

FIG. 13 is a flowchart 550 outlining operation of the acceleration server, whose main responsibility in the present system and method is to provide clients with information regarding which agents serve which requests, and to keep the network elements all up to date with the latest software updates. As shown by block 552, the acceleration server sends "keep alive" signals to the network elements, and keeps track within its database as to which network elements are online. As shown by block 554, the acceleration server continues to wait for a client request and continues to determine if one is received.

Once a request is received, the acceleration server tests the type of request received (block 556). If the client request is to sign up the client within the network, an event that happens every time that the client starts running on its host machine, then that client is added to the list of agents stored on the acceleration server, sorted by the IP address of the client (block 558).

If the request is to find an agent to use for a particular request, the acceleration server creates a new agent list, which is empty (block 560). The acceleration server then searches the

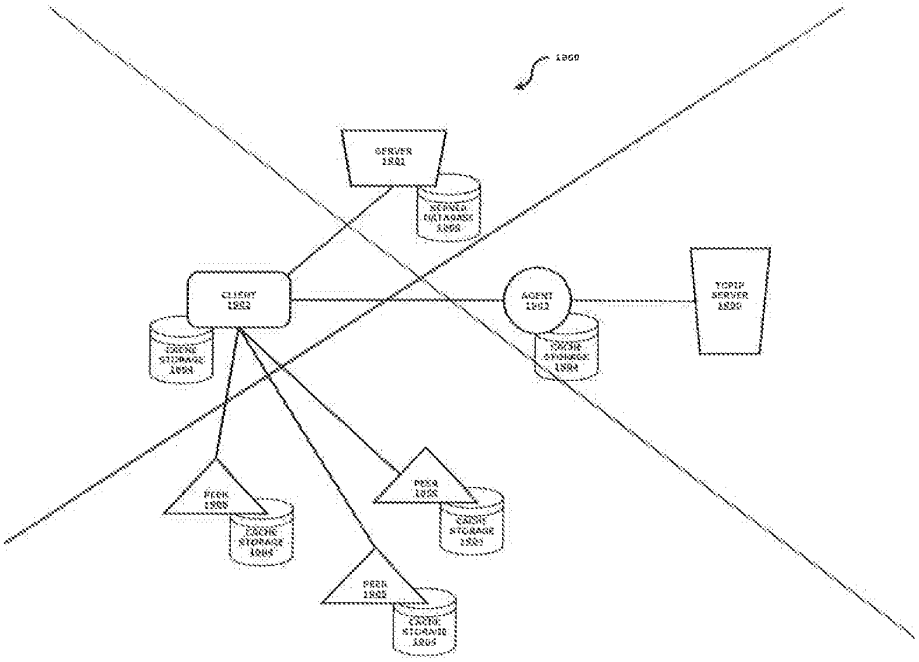
agent database for the next 5 active agents whose IP address is closest to the IP address of the server who is targeted in the request (block 562). In this context, 192.166.3.103 is closer to 192.166.3.212 than to 192.167.3.104. The acceleration server then sends this agent list to the client (block 564).

If instead, the request is to check the version of the latest acceleration software then the acceleration server sends that network element (client, peer or agent) the version number of the latest existing acceleration software version, and a URL from where to download the new version, for the case that the element needs to upgrade to the new version (block 566).

While the abovementioned example is focused on HTTP requests for data, as previously mentioned, other protocol requests are equally capable of being handled by the present system and method. As an example, in separate embodiments the acceleration method described may accelerate any communication protocol at any OSI layer (SMTP, DNS, UDP, ETHERNET, etc.). In the following alternative embodiment, it is illustrated how the acceleration method may accelerate TCPIP. As is known by those having ordinary skill in the art, TCPIP is a relatively low-level protocol, as opposed to HTTP, which is a high level protocol. For purposes of illustration of TCPIP communication, reference may be made to FIG. 3, wherein the Web server is a TCPIP server.

In TCPIP there are three communication commands that are of particular interest, namely, connect, write, and read. Connect is a command issued by an application in the communication device that is initiating the communication to instruct the TCPIP stack to connect to a remote

FIG. 49 – TCPIP ACCELERATION SYSTEM SETUP



communication device. The connect message includes the IP address of the communication device, and the port number to connect to. An application uses the write command to instruct the TCPIP stack to send a message (i.e., data) to a communication device to which it is connected. In addition, an application uses the read command to ask the TCPIP stack to provide the message that was sent from the remote communication device to which it is connected. A communication session typically exists of a connect, followed by a read and write on both sides.

FIG. 14 is a flowchart 600 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention. As shown by blocks 601 and 602 when an application

of the communication device makes a request to the communications stack to connect with the TCPIP server, that communication is intercepted by the acceleration application.

To find an agent, upon receiving that connect message from the communication device application, which includes the IP address of the TCPIP server and the port to connect to, the acceleration application in the client makes a request to the acceleration server to find out who the agent for the communication with the TCPIP server is. This step is performed in a similar manner to that described with regard to the main HTTP embodiment of the invention (block 604). As shown by block 606, the server then provides the client with a list of agents, for example, a primary agent and four others.

To establish a connection, as shown by block 608, the client issues a TCPIP connect with the primary agent or one of the other agents if the primary agent does not succeed, to create a connection with the agent. The client then sends to the agent the IP address of the TCPIP server and connection port that were provided by the communication device application (block 610). As shown by block 612, that agent in turn issues a TCPIP connect to the TCPIP server to the port it received from the client, to create a connection with the agent.

FIG. 15 is a flowchart 800 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

As shown by block 802, if the network application within the client wants to send a message to the TCPIP server, the network application within the client writes the message to the TCPIP stack in the operating system of the client. This WRITE command is received by the

acceleration application of the client and handled in the manner described below. If the TCPIP server wants to send a message to the client, the TCPIP server writes the message to the TCPIP stack of TCPIP operating system, on the connection to the agent, since this agent is where the server received the original connection. This WRITE command is received by the acceleration application of the agent and handled in the manner described below.

When the acceleration application of the client receives a message from the network application of the client to be sent to the agent, or when the acceleration application of the agent receives a message from the connection to the TCPIP server that is to be sent to the client, the acceleration application proceeds to send the message to the communication device on the other side. For instance, if the client has intercepted the message from the communication application, the client sends the message to the agent, and if it is the agent that intercepted the message from the connection to the TCPIP server, such as the TCPIP server sending a message that is intended for the communication with client, the agent sends the message to the client in the following manner:

As shown by block 804, the acceleration application breaks up the content of the message to chunks and calculates the corresponding checksums, in the same manner as in the main embodiment described herein. The acceleration application then looks up each checksum in its cache database (block 806). As shown by block 808, the acceleration application checks if the checksum exists in the cache database,. If it does, then, as shown by block 810, the acceleration application prepares a list of peers that have already received the chunk of the checksum in the past (if any), and adds the communication device of the other side to the list of communication devices that have received this chunk (adds it to the peer list of the checksum in its database), to

be provided to other communication devices requesting this information in the future. As shown by block 812, the list of peers is sent to the receiving communication device, which, as shown by block 814 retrieves the chunks from the peers in the list received, in the same manner as in the main embodiment.

If the checksum does not exist within the cache database of the sending communication device then, as shown by block 820, the acceleration application adds the checksum and chunk to its cache database, sends the chunk to the communication device on the other side, and adds the other communication device to the list of peers for that checksum in its database.

As shown by block 816, a determination is then made as to whether all chunks have been received. If all chunks have not been received, the process continues on again from block 806.

Once all data has been received, as shown by block 818, the acceleration application passes the data on to the requester. Specifically, in the client, the acceleration application passes on the complete data to the communication application, and in the agent, the acceleration application passes on the complete data to the requesting TCPIP server

It should be emphasized that the above-described embodiments of the present invention are merely possible examples of implementations, merely set forth for a clear understanding of the principles of the invention. Many variations and modifications may be made to the above-described embodiments of the invention without departing substantially from the spirit and principles of the invention. All such modifications and variations are intended to be included herein within the scope of this disclosure and the present invention and protected by the following claims.

SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application claims priority to copending U.S. provisional patent application entitled "FASTER AND MORE EFFICIENT DATA COMMUNICATION SYSTEM," having serial number 61/249,624, filed October 8, 2009, which is hereby incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

The present invention is related to Internet communication, and more particularly, to improving data communication speed and bandwidth efficiency on the Internet.

BACKGROUND OF THE INVENTION

There are several trends in network and Internet usage, which tremendously increase the bandwidth that is being used on the Internet. One such trend is that more and more video is being viewed on demand on the Internet. Such viewing includes the viewing of both large and short video clips. In addition, regular shows and full-featured films may be viewed on the Internet. Another trend that is increasing the traffic on the Internet is that Web sites (such as shopping portals, news portals, and social networks) are becoming global, meaning that the Web sites are serving people in many diverse places on the globe, and thus the data is traversing over longer stretches of the Internet, increasing the congestion.

The increase in bandwidth consumption has created several major problems, a few of which are described below:

The problem for users – the current Internet bandwidth is not sufficient, and thus the effective 'speed' experienced by users is slow;

The problem for content owners – the tremendous amount of data being viewed by users is costing large amounts of money in hosting and bandwidth costs; and

The problem for Internet Service Providers (ISPs) – the growth in Internet traffic is requiring the ISPs to increase the infrastructure costs (communication lines, routers, etc.) at tremendous financial expense.

The need for a new method of data transfer that is fast for the consumer, cheap for the content distributor and does not require infrastructure investment for ISPs, has become a major issue which is yet unsolved.

There have been many attempts at making the Internet faster for the consumer and cheaper for the broadcaster. Each such attempt is lacking in some aspect to become a widespread, practical solution, or is a partial solution in that it solves only a subset of the major problems associated with the increase in Internet traffic. Most of the previous solutions require billions of dollars in capital investment for a comprehensive solution. Many of these attempts are lacking in that much of the content on the Internet has become dynamically created per the user and the session of the user (this is what used to be called the "Web2.0" trend). This may be seen on the Amazon Web site and the Salesforce Web site, for example, where most of the page views on these Web sites is tailored to the viewer, and is thus different for any two viewers. This dynamic information makes it impossible for most of the solutions offered to date to store the content and provide it to others seeking similar content.

One solution that has been in use is called a "proxy". FIG. 1 is a schematic diagram providing an example of use of a proxy within a network 2. A proxy, or proxy server 4, 6, 8 is a device that is placed between one or more clients, illustrated in FIG. 1 as client devices 10, 12,

14, 16, 18, 20, that request data, via the Internet 22, and a Web server or Web servers 30, 32, 34 from which they are requesting the data. The proxy server 4, 6, 8 requests the data from the Web servers 30, 32, 34 on their behalf, and caches the responses from the Web servers 30, 32, 34, to provide to other client devices that make similar requests. If the proxy server 4, 6, 8 is geographically close enough to the client devices 10, 12, 14, 16, 18, 20, and if the storage and bandwidth of the proxy server 4, 6, 8 are large enough, the proxy server 4, 6, 8 will speed up the requests for the client devices 10, 12, 14, 16, 18, 20 that it is serving.

It should be noted, however, that to provide a comprehensive solution for Internet surfing, the proxy servers of FIG. 1 would need to be deployed at every point around the world where the Internet is being consumed, and the storage size of the proxy servers at each location would need to be near the size of all the data stored anywhere on the Internet. The abovementioned would lead to massive costs that are impractical. In addition, these proxy solutions cannot deal well with dynamic data that is prevalent now on the Web.

There have been commercial companies, such as Akamai, that have deployed such proxies locally around the world, and that are serving a select small group of sites on the Internet. If all sites on the Web were to be solved with such a solution, the capital investment would be in the range of billions of dollars. In addition, this type of solution does not handle dynamic content.

To create large distribution systems without the large hardware costs involved with a proxy solution, "peer-to-peer file sharing" solutions have been introduced, such as, for example, BitTorrent. FIG. 2 is a schematic diagram providing an example of a peer-to-peer file transfer network 50. In the network 50, files are stored on computers of consumers, referred to herein as client devices 60. Each consumer can serve up data to other consumers, via the Internet 62, thus taking the load of serving off of the distributors and saving them the associated costs, and providing the consumer multiple points from which to download the data, referred to herein as

peers 70, 72, 74, 76, 78, thus increasing the speed of the download. However, each such peer-to-peer solution must have some sort of index by which to find the required data. In typical peer-to-peer file sharing systems, because the index is on a server 80, or distributed among several servers, the number of files available in the system is not very large (otherwise, the server costs would be very large, or the lookup time would be very long).

The peer-to-peer file sharing solution is acceptable in file sharing systems, because there are not that many media files that are of interest to the mass (probably in the order of magnitude of millions of movies and songs that are of interest). Storing and maintaining an index of millions of entries is practical technically and economically. However, if this system were to be used to serve the hundreds of billions of files that are available on the Internet of today, the cost of storing and maintaining such an index would be again in the billions of dollars. In addition, these types of peer-to-peer file sharing systems are not able to deal with dynamic HTTP data.

In conclusion, there does not exist a system that enables fast transmission of most of the data on the Internet, that does not incur tremendous costs, and/or that provides only a very partial solution to the problem of Internet traffic congestion. Thus, a heretofore unaddressed need exists in the industry to address the aforementioned deficiencies and inadequacies.

SUMMARY OF THE INVENTION

The present system and method provides for faster and more efficient data communication within a communication network. Briefly described, in architecture, one embodiment of the system, among others, can be implemented as follows. A network is provided for accelerating data communication, wherein the network contains: at least one client communication device for originating a data request for obtaining the data from a data server; at least one agent communication device which is assigned to the data server for receiving the data

request from the client communication device, wherein the agent keeps track of which client communication devices have received responses to data requests from the assigned data server; at least one peer communication device for storing portions of data received in response to the data request by the at least one client communication device, wherein the portions of data may be transmitted to the at least one client communication device upon request by the client communication device; and at least one acceleration server for deciding which agent communication device is to be assigned to which data server and providing this information to the at least one client communication device.

The present system and method also provides a communication device within a network, wherein the communication device contains: a memory; and a processor configured by the memory to perform the steps of: originating a data request for obtaining data from a data server; being assigned to a data server, referred to as an assigned data server; receiving a data request from a separate device within the network, and keeping track of which client communication devices within the network have received responses to data requests from the assigned data server; and storing portions of data received in response to the originated data request, wherein the portions of data may be transmitted to communication device upon request by the communication device.

Other systems, methods, features, and advantages of the present invention will be or become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional systems, methods, features, and advantages be included within this description, be within the scope of the present invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the invention can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the present invention. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a schematic diagram providing a prior art example of use of a proxy within a network.

FIG. 2 is a schematic diagram providing a prior art example of a peer-to-peer file transfer network.

FIG. 3 is a schematic diagram providing an example of a communication network in accordance with the present invention.

FIG. 4 is a schematic diagram further illustrating a communication device of the communication network of FIG. 3.

FIG. 5 is a schematic diagram further illustrating the memory of FIG. 4.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application of FIG. 5, as well as communication paths of the acceleration application.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network.

FIG. 8 is a flowchart illustrating operation of the acceleration system initializer module.

FIG. 9 is a flowchart further illustrating communication between different elements of the communication network.

FIG. 10 is a flowchart continuing the flowchart of FIG. 9 and focused on agent response to the HTTP request.

FIG. 11 is a flowchart continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent.

FIG. 12 is a flowchart illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid.

FIG. 13 is a flowchart outlining operation of the acceleration server.

FIG. 14 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention.

FIG. 15 is a flowchart further illustrating TCPIP acceleration in accordance with an alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

DETAILED DESCRIPTION

The present system and method provides for faster and more efficient data communication within a communication network. An example of such a communication network 100 is provided by the schematic diagram of FIG. 3. The network 100 of FIG. 3 contains multiple communication devices. Due to functionality provided by software stored within each communication device, which may be the same in each communication device, each communication device may serve as a client, peer, or agent, depending upon requirements of the network 100, as is described in detail herein. It should be noted that a detailed description of a communication device is provided with regard to the description of FIG. 4.

Returning to FIG. 3, the exemplary embodiment of the network 100 illustrates that one of the communication devices is functioning as a client 102. The client 102 is capable of communication with one or more peers 112, 114, 116 and one or more agents 122. For exemplary purposes, the network contains three peers and one agent, although it is noted that a client can communicate with any number of agents and peers.

The communication network 100 also contains a Web server 152. The Web server 152 is the server from which the client 102 is requesting information and may be, for example, a typical HTTP server, such as those being used to deliver content on any of the many such servers on the Internet. It should be noted that the server 152 is not limited to being an HTTP server . In fact, if a different communication protocol is used within the communication network, the server may be a server capable of handling a different protocol. It should also be noted that while the present description refers to the use of HTTP, the present invention may relate to any other communication protocol and HTTP is not intended to be a limitation to the present invention.

The communication network 100 further contains an acceleration server 162 having an acceleration server storage device 164. As is described in more detail herein, the acceleration server storage device 164 has contained therein an acceleration server database. The acceleration server database stores Internet protocol (IP) addresses of communication devices within the communication network 100 having acceleration software stored therein. Specifically, the acceleration server database contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. For each such agent, the acceleration server assigns a list of IP addresses.

In the communication network 100 of FIG. 3, the application in the client 102 is requesting information from the Web server 152, which is why the software within the communication device designated this communication device to work as a client. In addition,

since the agent 122 receives the request from the client 102 as the communication device closest to the Web server 152, functionality of the agent 122, as provided by the software of the agent 122, designates this communication device to work as an agent. It should be noted, that in accordance with an alternative embodiment of the invention, the agent need not be the communication device that is closest to the Web server. Instead, a different communication device may be selected to be the agent.

Since the peers 112, 114, 116 contain at least portions of the information sought by the client 102 from the Web server 152, functionality of the peers 112, 114, 116, as provided by the software of the peers 112, 114, 116, designates these communication devices to work as peers. It should be noted that the process of designating clients, agents, and peers is described in detail herein. It should also be noted that the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 may differ from the number illustrated by FIG. 3. In fact, the number of clients, agents, peers, acceleration servers, Web servers, and other components of the communication network 100 are not intended to be limited by the current description.

Prior to describing functionality performed within a communication network 100, the following further describes a communication device 200, in accordance with a first exemplary embodiment of the invention. FIG. 4 is a schematic diagram further illustrating a communication device 200 of the communication network 100, which contains general components of a computer. As previously mentioned, it should be noted that the communication device 200 of FIG. 4 may serve as a client, agent, or peer.

Generally, in terms of hardware architecture, as shown in FIG. 4, the communication device 200 includes a processor 202, memory 210, at least one storage device 208, and one or more input and/or output (I/O) devices 240 (or peripherals) that are communicatively coupled via a local interface 250. The local interface 250 can be, for example but not limited to, one or

more buses or other wired or wireless connections, as is known in the art. The local interface 250 may have additional elements, which are omitted for simplicity, such as controllers, buffers (caches), drivers, repeaters, and receivers, to enable communications. Further, the local interface 250 may include address, control, and/or data connections to enable appropriate communications among the aforementioned components.

The processor 202 is a hardware device for executing software, particularly that stored in the memory 210. The processor 52 can be any custom made or commercially available processor, a central processing unit (CPU), an auxiliary processor among several processors associated with the communication device 200, a semiconductor based microprocessor (in the form of a microchip or chip set), a macroprocessor, or generally any device for executing software instructions.

The memory 210, which is further illustrated and described by the description of FIG. 5, can include any one or combination of volatile memory elements (*e.g.*, random access memory (RAM, such as DRAM, SRAM, SDRAM, *etc.*)) and nonvolatile memory elements (*e.g.*, ROM, hard drive, tape, CDROM, *etc.*). Moreover, the memory 210 may incorporate electronic, magnetic, optical, and/or other types of storage media. Note that the memory 210 can have a distributed architecture, where various components are situated remote from one another, but can be accessed by the processor 202.

The software 212 located within the memory 210 may include one or more separate programs, each of which contains an ordered listing of executable instructions for implementing logical functions of the communication device 200, as described below. In the example of FIG. 4, the software 212 in the memory 210 at least contains an acceleration application 220 and an Internet browser 214. In addition, the memory 210 may contain an operating system (O/S) 230. The operating system 230 essentially controls the execution of computer programs and provides scheduling, input-output control, file and data management, memory management, and communication control and related services. It should be noted that, in addition to the

acceleration application 220, Internet browser 214, and operating system 230, the memory 210 may contain other software applications.

While the present description refers to a request from the client originating from an Internet browser, the present invention is not limited to requests originating from Internet browsers. Instead, a request may originate from an email program or any other program that would be used to request data that is stored on a Web server, or other server holding data that is requested by the client device.

Functionality of the communication device 200 may be provided by a source program, executable program (object code), script, or any other entity containing a set of instructions to be performed. When a source program, then the program needs to be translated via a compiler, assembler, interpreter, or the like, which may or may not be included within the memory 210, so as to operate properly in connection with the operating system 230. Furthermore, functionality of the communication device 200 can be written as (a) an object oriented programming language, which has classes of data and methods, or (b) a procedure programming language, which has routines, subroutines, and/or functions.

The I/O devices 240 may include input devices, for example but not limited to, a keyboard, mouse, scanner, microphone, *etc.* Furthermore, the I/O devices 240 may also include output devices, for example but not limited to, a printer, display, *etc.* Finally, the I/O devices 240 may further include devices that communicate via both inputs and outputs, for instance but not limited to, a modulator/demodulator (modem; for accessing another device, system, or network), a radio frequency (RF) or other transceiver, a telephonic interface, a bridge, a router, *etc.*

When the communication device 200 is in operation, the processor 202 is configured to execute the software 212 stored within the memory 210, to communicate data to and from the memory 210, and to generally control operations of the communication device 200 pursuant to

the software 212. The software 212 and the O/S 230, in whole or in part, but typically the latter, are read by the processor 202, perhaps buffered within the processor 202, and then executed.

When functionality of the communication device 200 is implemented in software, as is shown in FIG. 4, it should be noted that the functionality can be stored on any computer readable medium for use by or in connection with any computer related system or method. In the context of this document, a computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer related system or method. The functionality of the communication device 200 can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "computer-readable medium" can be any means that can store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (electronic), a read-only memory (ROM) (electronic), an erasable programmable read-only memory (EPROM, EEPROM, or Flash memory) (electronic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM) (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then

compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

In an alternative embodiment, where the functionality of the communication device 200 is implemented in hardware, the functionality can be implemented with any or a combination of the following technologies, which are each well known in the art: a discrete logic circuit(s) having logic gates for implementing logic functions upon data signals, an application specific integrated circuit (ASIC) having appropriate combinational logic gates, a programmable gate array(s) (PGA), a field programmable gate array (FPGA), *etc.*

The at least one storage device 208 of the communication device 200 may be one of many different categories of storage device. As is described in more detail herein, the storage device 208 may include a configuration database 280 and a cache database 282. Alternatively, the configuration database 280 and cache database 282 may be located on different storage devices that are in communication with the communication device 200. The description that follows assumes that the configuration database 280 and cache database 282 are located on the same storage device, however, it should be noted that the present invention is not intended to be limited to this configuration.

The configuration database 280 stores configuration data that is common to all elements of the communication network 100 and is used to provide set up and synchronization information to different modules of the acceleration application 220 stored within the memory 210, as is described in further detail herein. The cache database 282 stores responses to HTTP requests that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. As is explained in additional detail herein, the responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the

communication network 100 that need to retrieve this information and will use this communication device as either a peer or an agent.

In addition to the abovementioned, as is explained in further detail herein, the cache database 282 has stored therein a list of URLs that the communication device is aware of (i.e., has seen requests for). For each URL, the cache database 282 has stored therein the URL itself, HTTP headers returned by the Web Server for this URL, when the last time was that the contents of this URL was loaded directly from the Web Server, when the contents of the URL had last changed on the Web Server, as well as a list of chunks that contain the contents of this URL, and the chunks of data themselves. Chunks in the present description are defined as equally sized pieces of data that together form the whole content of the URL. It should be noted that while the present description provides for chunks being equally sized pieces of data, in accordance with an alternative embodiment of the invention, the chunks may instead be of different size.

FIG. 5 is a schematic diagram further illustrating the memory 210 of FIG. 4. As shown by FIG. 5, the memory 210 may be separated into two basic levels, namely, an operating system level 260 and an application level 270. The operating system level 260 contains the operating system 230, wherein the operating system 230 further contains at least one device driver 262 and at least one communication stack 264. The device drivers 262 are software modules that are responsible for the basic operating commands for various hardware devices of the communication device 200, such as the processor 202, the storage device 208 and the I/O devices 240. In addition, the communication stacks 264 provide applications of the communication device 200 with a means of communicating within the network 100 by implementing various standard communication protocols.

The application level 270 includes any application that is running on the communication device 200. As a result, the application level 270 includes the Internet browser 214, which is used to view information that is located on remote Web servers, the acceleration application 220,

as described in more detail below, and any other applications 216 stored on the communication device 200.

As is explained in additional detail below, the acceleration application 220 intercepts the requests being made by applications of the communication device (client) that use the Internet, in order to modify the requests and route the requests through the communication network. There are various methods that may be used to intercept such requests. One such method is to create an intermediate driver 272, which is also located within the memory 210, that attaches itself to all communication applications, intercepts outgoing requests of the communication applications of the communication device 200, such as the Internet browser 214, and routes the requests to the acceleration application 220. Once the acceleration application 220 modifies the requests, routes the requests to other system elements on the communication network 100, and receives replies from other system elements of the communication network 100, the acceleration application 220 returns the replies to the intermediate driver 272, which provides the replies back to the requesting communication application.

FIG. 6 is a schematic diagram further illustrating elements of the acceleration application 220, as well as communication paths of the acceleration application 220. The acceleration application 220 contains an acceleration system initializer module 222, which is called when the acceleration application 220 is started. The acceleration system initializer module 222 is capable of initializing all elements of the communication device 200 The acceleration application 220 also contains three separate modules that run in parallel, namely, a client module 224, a peer module 226, and an agent module 228, each of which comes into play according to the specific role that the communication device 200 is partaking in the communication network 100 at a given time. The role of each module is further described herein.

The client module 224 provides functionality required when the communication device 200 is requesting information from the Web server 152, such as, for example, but not limited to,

Web pages, data, video, or audio. The client module 224 causes the communication device 200 having the client module 224 therein to intercept the information request and pass the information request on to other elements of the communication network 100, such as, servers, agents or peers. This process is further described in detail herein.

The peer module 226 provides functionality required by the communication device 200 when answering other clients within the communication network 100 and providing the other clients with information that they request, which this communication device 200, having this peer module 226 therein, has already downloaded at a separate time. This process is further described in detail herein.

The agent module 228 provides functionality required when other communication devices of the communication network 100 acting as clients query this communication device 200, having this agent module 228 therein, as an agent, to obtain a list of peers within the communication network 100 that contain requested information. This process is further described in detail herein.

The acceleration application 220 interacts with both the configuration database 280 and the cache database 282 of the storage device 208. As previously mentioned herein, the configuration database 280 stores configuration data that may be common to all communication devices of the communication network 100 and is used to provide setup and synchronization information to different modules 222, 224, 226, 228 of the acceleration application 220 stored within the memory 210.

The cache database 282 stores responses to information requests, such as, for example, HTTP requests, that the communication device 200 has dispatched, either for its own consumption or on behalf of other elements of the communication network 100. The responses to HTTP requests are stored within the cache database 282 for future use by this communication device 200, or for other communication devices within the communication network 100 that

need to retrieve this same information and will use this communication device 200 as either a peer or an agent. This process is described in detail herein.

Information stored within the cache database 282 may include any information associated with a request sent by the client. As an example, such information may include, Meta data and actual requested data. For example, for an HTTP request for a video, the Meta data may include the version of the Web server answering the request from the client and the data would be the requested video itself. In a situation where there is no more room for storage in the cache database, the software of the associated communication device may cause the communication device to erase previous data stored in order to clear room for the new data to store in the cache database. As an example, such previous data may include data that is most likely not to be used again. Such data may be old data or data that is known to no longer be valid. The communication device may choose to erase the least relevant data, according to any of several methods that are well known in the art.

FIG. 7 is a chart further illustrating two of the main databases utilized within the communication network 100, namely, the acceleration server database 164 and the cache database 282. As previously mentioned, the acceleration server database 164 stores IP addresses of communication devices located within the communication network 100, which have acceleration software stored therein. Specifically, the acceleration server database 164 contains stored therein a list of communication devices having acceleration software stored therein that are currently online within the communication network 100. The acceleration server assigns a list of IP addresses to each communication device functioning as an agent. Each communication device will be the agent for any Web servers whose IP address is in the range 'owned' by that communication device. As an example, when a first ever communication device goes online, namely, the first communication device as described herein having the acceleration application 220 therein, the acceleration server assigns all IP addresses in the world to this communication device, and this communication device will be the agent for any Web server. When a second

communication device goes online it will share the IP address list with the first communication device, so that each of the communication devices will be responsible for a different part of the world wide web servers.

The cache database 282 of the communication device 200 has stored therein a list of URLs 286 of which the communication device 200 is aware. The communication device 200 becomes aware of a URL each time that the communication device 200 receives a request for information located at a specific URL. As shown by FIG. 7, for each URL 288 within the list of URLs 286, the cache database 282 stores: the URL itself 290; HTTP headers 292 returned by the Web Server 152 for this URL; when the last time 294 was that the contents of this URL were loaded directly from the Web Server 152; when the contents of the URL last changed 296 on the Web Server 152; and a list of chunks 298 that contain the contents of this URL, and the content of the chunk. As previously mentioned, chunks, in the present description, are defined as equally sized pieces of data, that together form the entire content of the URL, namely, the entire content whose location is described by the URL. As a non-limiting example, a chunk size of, for example, 16KB can be used, so that any HTTP response will be split up into chunks of 16KB. In accordance with an alternative embodiment of the invention, if the last chunk of the response is not large enough to fill the designated chunk size, such as 16KB for the present example, the remaining portion of the chunk will be left empty.

For each such chunk 300, the cache database 282 includes the checksum of the chunk 302, the data of the chunk 304 itself, and a list of peers 306 that most likely have the data for this chunk. As is described in additional detail herein, the data for the chunk may be used by other clients within the communication network 100 when other communication devices of the communication network 100 serve as peers to the clients, from which to download the chunk data.

For each chunk, a checksum is calculated and stored along side of the chunk itself. The checksum may be calculated in any of numerous ways known to those in the art. The purpose of having the checksum is to be able to identify data uniquely, whereas the checksum is the "key" to the data, where the data is the chunk. As an example, a client may want to load the contents of a URL, resulting in the agent that is servicing this request sending the checksums of the chunks to the client, along with the peers that store these chunks. It is to be noted that there could be a different peer for every different chunk. The client then communicates with each such peer, and provides the checksum of the chunk that it would like the peer to transmit back to the client. The peer looks up the checksum (the key) in its cache database, and provides back the chunk (data) that corresponds to this checksum (the key). As shown by FIG. 7, for each peer 308 within the list of peers 306, the cache database 282 includes the peer IP address 310, as well as the connection status 312 of the peer, which represents whether the peer 308 is online or not.

In accordance with one embodiment of the invention, the cache database 282 may be indexed by URL and by Checksum. Having the cache database indexed in this manner is beneficial due to the following reason. When the agent is using the cache database, the agent receives a request from a client for the URL that the client is looking for. In such a case the agent needs the cache database to be indexed by the URL, to assist in finding a list of corresponding peers that have the chunks of this URL. When the peers are using this cache database, the peers obtain a request from the client for a particular checksum, and the peers need the database to be indexed by the checksum so that they can quickly find the correct chunk. Of course, as would be understood by one having ordinary skill in the art, the cache database may instead be indexed in any other manner.

Having described components of the communication network 100, the following further describes how such components interact and individually function. FIG. 8 is a flowchart 300 illustrating operation of the acceleration system initializer module 222 (hereafter referred to as the initializer 222 for purposes of brevity). It should be noted that any process descriptions or

blocks in flowcharts should be understood as representing modules, segments, portions of code, or steps that include one or more instructions for implementing specific logical functions in the process, and alternative implementations are included within the scope of the present invention in which functions may be executed out of order from that shown or discussed, including substantially concurrently or in reverse order, depending on the functionality involved, as would be understood by those reasonably skilled in the art of the present invention.

The initializer 222 is the first element of the communication device 200 to operate as the communication device 200 starts up (block 302). As the initializer 222 starts, it first communicates with the acceleration server 162 to sign up with the acceleration server 162. This is performed by providing the acceleration server 162 with the hostname, and all IP addresses and media access control (MAC) addresses of the interfaces on the communication device 200 having the initializer 222 thereon.

In accordance with an alternative embodiment of the invention, as shown by block 304, the initializer 222 checks with the acceleration server 162 whether a more updated version of the acceleration application software is available. This may be performed by any one of many known methods, such as, but not limited to, by providing the version number of the acceleration application software to the acceleration server 162. The message received back from the acceleration server 162 indicates whether there is a newer version of the acceleration application software or not. If a newer version of the acceleration application software exists, the initializer 222 downloads the latest version of the acceleration application software from the acceleration server 162, or from a different location, and installs the latest version on the communication device 200. In addition to the abovementioned, the initializer 222 may also schedule additional version checks for every set period of time thereafter. As an example, the initializer 222 may check for system updates every two days.

As shown by block 306, the initializer 222 then redirects outgoing network traffic from the communication device 200 to flow through the acceleration application 162. As previously mentioned, one way to redirect the outgoing network traffic is to insert an intermediate driver 212 that intercepts and redirects the traffic. It should be noted that there are many other ways to implement this redirection, which are well known to those having ordinary skill in the art.

As shown by block 308, the initializer 222 then launches the client module 224 of the communication device 200, and configures the client module 224 of the communication device 200 to intercept to all outgoing network communications of the communication device 200 and route the outgoing network communications to the client module 224, from the intermediate driver 272 or other routing method implemented. This is performed so that the client module 224 is able to receive all network traffic coming from the network applications, modify the network traffic if necessary, and re-route the traffic. As is known by those having ordinary skill in the art, in order to re-route the traffic, the traffic needs to be modified, as an example, to change the destination of requests.

As shown by block 310, the initializer 222 then launches the agent module 228 and the peer module 226 to run on the communication device 200. The agent module 228 and peer module 226 listen on pre-determined ports of the communication device 200, so that incoming network traffic on these ports gets routed to the agent module 228 and peer module 226. As is explained in further detail herein, the abovementioned enables the communication device 200 to function as an agent and as a peer for other communication devices within the communication network 100, as needed.

FIG. 9 is a flowchart 350 further illustrating communication between different elements of the communication network 100, in accordance with the present system and method for providing faster and more efficient data communication.

As shown by block 352, an application running on the client 200 initiates a request for a resource on a network. Such a request may be, for example, "GET http://www.aol.com/index.html HTTP/1.1". The request may come from an Internet browser 214 located on the client 200, where the Internet browser 214 is loading a page from the Internet, an application that wants to download information from the Internet, fetch or send email, or any other network communication request.

Through the intermediate driver 272, or other such mechanism as may be implemented that is re-routing the communication to the client module 224 of the client 200, the resource request is intercepted by the client module 224 that is running on the client 200 (block 354). The client module 224 then looks up the IP address of the server 152 that is the target of the resource request (e.g., the IP address of the Web server that is the host of www.aol.com in the example above), and sends this IP address to the acceleration server 162 (block 356) in order to obtain a list of communication devices that the client 200 can use as agents (hereafter referred to as agents). It should be noted that the process of performing an IP lookup for a server is known by one having ordinary skill in the art, and therefore is not described further herein.

In response to receiving the IP address of the server 152, the acceleration server 162 prepares a list of agents that may be suitable to handle the request from this IP address (block 358). The size of the list can differ based on implementation. For exemplary purposes, the following provides an example where a list of five agents is prepared by the acceleration server 162. The list of agents is created by the acceleration server 162 by finding the communication devices of the communication network 100 that are currently online, and whose IP address is numerically close to the IP of the destination Web server 152. A further description of the abovementioned process is described here in.

As shown by block 360, the client module 224 then sends the original request (e.g., "GET http://www.aol.com/index.html HTTP/1.1") to all the agents in the list received from the

acceleration server 162 in order to find out which of the agents in the list is best suited to be the one agent that will assist with this request.

It should be noted that, in accordance with an alternative embodiment of the invention, the communication device 200 may be connected to a device that is actually requesting data. In such an alternative embodiment, the communication device would be a modular device connected to a requesting device, where the requesting device, such as, for example, a personal data assistant (PDA) or other device, would request data, and the communication device connected thereto, either through a physical connection, wireless connection, or any other connection, would receive the data request and function as described herein. In addition, as previously mentioned, it should be noted that the HTTP request may be replaced by any request for resources on the Web.

FIG. 10 is a flowchart continuing the flowchart 380 of FIG. 9 and focused on agent response to the request. As shown by block 382, upon receiving the request from the client 200, each agent that received the request from the client responds to the client 200 with whether it has information regarding the request, which can help the client to download the requested information from peers in the network. Specifically, each agent responds with whether the agent has seen a previous request for this resource that has been fulfilled. In such a case, the agent may then provide the client with the list of peers and checksums of the chunks that each of them have.

As shown by block 384, the client then decides which of the agents in the list to use as its agent for this particular information request. To determine which agent in the list to use as its agent for the particular information request, the client may consider multiple factors, such as, for example, factoring the speed of the reply by each agent and whether that agent does or does not have the information required. There are multiple ways to implement this agent selection, one practical way being to start a timer of a small window of time, such as, for example, 5ms, after

receiving the first response from the agents, and after the small window, choosing from the list of agents that responded, the agent that has the information about the request, or in the case that none of the agents responded, to choose the first agent from the list received from the acceleration server 162.

As shown by block 386, after selecting an agent, the client notifies the selected agent that it is going to use it for this request, and notifies the other agents that they will not be used for this request. The client then sends the selected agent a request for the first five chunks of data of the original information request (block 388). By specifying to the selected agent the requested chunks by their order in the full response, the client receives the peer list and checksums of the requested chunks from the selected agent. As an example, for the first five chunks the client will ask the selected agent for chunks one through five, and for the fourth batch of five chunks the client will ask the agent for chunks sixteen through twenty. As previously mentioned, additional or fewer chunks may be requested at a single time.

As shown by block 390, after receiving the request from the client, the selected agent determines whether it has information regarding the requested chunks of data by looking up the request in its cache database and determining if the selected agent has stored therein information regarding peers of the communication network that have stored the requested data of the request, or whether the selected agent itself has the requested data of the request stored in its memory. In addition to determining if the selected agent contains an entry for this request in its database, the selected agent may also determine if this information is still valid. Specifically, the selected agent determines whether the data that is stored within the memory of the selected agent or the memory of the peers, still mirrors the information that would have been received from the server itself for this request. A further description of the process utilized by the selected agent to determine if the information is still valid, is described in detail herein.

As shown by block 392, if the information (requested data of the request) exists and is still valid, then the agent prepares a response to the client, which includes for each of the chunks: (i) the checksum of the chunk; (ii) a list of peers that according to the database of the selected agent contains these chunks; and (iii) if these are the first five chunks of the information, then the selected agent also provides the specific protocol's headers that would have been received from the server, had the initial request from the client been made directly to the server.

As shown by block 394, the list of peers for each chunk is sorted by geographical proximity to the requesting client. In accordance with the present example, only the five closest peers are kept in the list for every chunk, and the rest of the peers are discarded from this list. As shown by block 396, the prepared response, namely, the list of closest peers, is sent back to the client. It should be noted that, if this were the last set of chunks to be provided for this request, then it would be beneficial to include information about this to the client.

If the selected agent discovers that it does not have information about this request, or if the selected agent discovers that the information it has is no longer valid, the selected agent

needs to load the information directly from the server in order to be able to provide an answer to the requesting client. As shown by block 400, the selected agent then sends the request directly to the server. The selected agent then stores the information it receives from the server (both the headers of the request, as well as chunks of the response itself) in its database, for this particular response to the client, as well as for future use to other clients that may request this data (block 402). The selected agent then prepares a response (list) for the client, where the response includes the protocol headers (if these are the first five chunks), and the checksums of the five chunks, and provides itself as the only peer for these chunks (block 404). This list is then sent back to the client (block 406).

FIG. 11 is a flowchart 420 continuing the flowchart of FIG. 10, which illustrates actions taken upon receipt of the list of peers, or single peer listing, from the agent. As shown by block 422, the client receives the response from the agent (including the list of chunks and their corresponding data, including peers and other information previously mentioned) and, for each of the five chunks, the client sends a request to each of the peers listed for the chunk to download the chunk. The chunk request that the client sends to each of the peers is the checksum of the data that the client seeks to receive, which is the key (identifier) of the chunk.

As shown by block 424, the peers then respond regarding whether they still have the data of the chunk. As an example, some of the peers may not currently be online, some may be online but may have discarded the relevant information, and some may still have the relevant information, namely, the chunk. As shown by block 426, the client then selects the quickest peer that responds with a positive answer regarding the requested information, the client lets that peer know that it is chosen to provide the client with the chunk, and the client notifies the other peers that they are not chosen.

As shown by block 428, the chosen peer then sends the chunk to the client. It should be noted that if no peers answer the request of the client, the client goes back to the agent noting

that the peers were all negative, and the agent either provides a list of 5 other agents, if they exist, or the agent goes on to download the information directly from the Web server as happens in the case where no peers exist as described above.

The client then stores the chunks in its cache for future use (block 430), when the client may need to provide the chunks to a requesting communication device when acting as a peer for another client that is looking for the same information. As shown by block 432, if some of the chunks were not loaded from any of the peers, the client requests the chunks again from the agent in a next round of requests, flagging these chunks as chunks that were not loadable from the client list of peers. In this situation, the agent will load the data directly from the server and provide it back to the client.

The client then acknowledges to the agent which of the chunks it received properly (block 434). The agent then looks up these chunks in the database of the agent, and adds the client to the list of peers for these chunks, specifically, since this client is now storing these chunks, and can provide these chunks to other clients that turn to it as a peer (block 436).

As shown by block 438, the client then passes the data on to the Web browser or other application of the client that made the original request, for it to use as it had originally intended. The client then checks whether all of the chunks for this request were received (block 440), by checking the flag set by the agent. Specifically, when the agent is providing the list of the last 5 chunks, the agent includes that information as part of its reply to the client, which is referred to herein as a flag. This information is what enables the client to know that all information has been received for a particular resource request.

If the last received chunks were not the last chunks for this request, the processing flow of the client continues by returning to the functionality of block 384 of FIG. 10, but instead sending the chosen agent a request for the next five chunks of data of the original information

request. Alternatively, if all chunks for this request were received, the request is complete, and the flow starts again at block 352 of FIG. 9.

FIG. 12 is a flowchart 500 illustrating steps taken by an agent, client, or peer to determine whether a certain HTTP request is still valid. Specifically, the following provides an example of how the agent, client, or peer can determine whether particular data that is stored within the memory of the agent, or the memory of a peer or client, still mirrors the information that is currently on the Web server. As shown by block 502, the HTTP request is looked up in the cache database of the agent, client or peer that is checking the validity of the HTTP request. As an example, the HTTP protocol, defined by RFC 2616, outlines specific methods that Web servers can define within the HTTP headers signifying the validity of certain data, such as, but not limited to, by using HTTP header information such as "max age" to indicate how long this data may be cached before becoming invalid, "no cache" to indicate that the data may never be cached, and using other information.

As shown by block 504, these standard methods of validation are tested on the HTTP request information in question. As shown by block 506, a determination is made whether the requested information that is stored is valid or not. If the requested information is valid, a "VALID" response is returned (block 508). Alternatively, if the requested information is not valid, an HTTP conditional request is sent to the relevant Web server, to determine if the data stored for this request is still valid (block 510). If the data stored for this request is still valid, a "VALID" response is returned (block 508). Alternatively, if the data stored for this request is not valid, an "INVALID" response is returned (block 514). It should be noted, that the abovementioned description with regard to FIG. 12 is an explanation of how to check if HTTP information is still valid. There are similar methods of determining validity for any other protocol, which may be utilized, and which those having ordinary skill in the art would appreciate and understand.

FIG. 13 is a flowchart 550 outlining operation of the acceleration server, whose main responsibility in the present system and method is to provide clients with information regarding which agents serve which requests, and to keep the network elements all up to date with the latest software updates. As shown by block 552, the acceleration server sends "keep alive" signals to the network elements, and keeps track within its database as to which network elements are online. As shown by block 554, the acceleration server continues to wait for a client request and continues to determine if one is received.

Once a request is received, the acceleration server tests the type of request received (block 556). If the client request is to sign up the client within the network, an event that happens every time that the client starts running on its host machine, then that client is added to the list of agents stored on the acceleration server, sorted by the IP address of the client (block 558).

If the request is to find an agent to use for a particular request, the acceleration server creates a new agent list, which is empty (block 560). The acceleration server then searches the agent database for the next 5 active agents whose IP address is closest to the IP address of the server who is targeted in the request (block 562). In this context, 192.166.3.103 is closer to 192.166.3.212 than to 192.167.3.104. The acceleration server then sends this agent list to the client (block 564).

If instead, the request is to check the version of the latest acceleration software then the acceleration server sends that network element (client, peer or agent) the version number of the latest existing acceleration software version, and a URL from where to download the new version, for the case that the element needs to upgrade to the new version (block 566).

While the abovementioned example is focused on HTTP requests for data, as previously mentioned, other protocol requests are equally capable of being handled by the present system and method. As an example, in separate embodiments the acceleration method described may

accelerate any communication protocol at any OSI layer (SMTP, DNS, UDP, ETHERNET, etc.). In the following alternative embodiment, it is illustrated how the acceleration method may accelerate TCPIP. As is known by those having ordinary skill in the art, TCPIP is a relatively low-level protocol, as opposed to HTTP, which is a high level protocol. For purposes of illustration of TCPIP communication, reference may be made to FIG. 3, wherein the Web server is a TCPIP server.

In TCPIP there are three communication commands that are of particular interest, namely, connect, write, and read. Connect is a command issued by an application in the communication device that is initiating the communication to instruct the TCPIP stack to connect to a remote communication device. The connect message includes the IP address of the communication device, and the port number to connect to. An application uses the write command to instruct the TCPIP stack to send a message (i.e., data) to a communication device to which it is connected. In addition, an application uses the read command to ask the TCPIP stack to provide the message that was sent from the remote communication device to which it is connected. A communication session typically exists of a connect, followed by a read and write on both sides.

FIG. 14 is a flowchart 600 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention. As shown by blocks 601 and 602 when an application of the communication device makes a request to the communications stack to connect with the TCPIP server, that communication is intercepted by the acceleration application.

To find an agent, upon receiving that connect message from the communication device application, which includes the IP address of the TCPIP server and the port to connect to, the acceleration application in the client makes a request to the acceleration server to find out who

the agent for the communication with the TCPIP server is. This step is performed in a similar manner to that described with regard to the main HTTP embodiment of the invention (block 604). As shown by block 606, the server then provides the client with a list of agents, for example, a primary agent and four others.

To establish a connection, as shown by block 608, the client issues a TCPIP connect with the primary agent or one of the other agents if the primary agent does not succeed, to create a connection with the agent. The client then sends to the agent the IP address of the TCPIP server and connection port that were provided by the communication device application (block 610). As shown by block 612, that agent in turn issues a TCPIP connect to the TCPIP server to the port it received from the client, to create a connection with the agent.

FIG. 15 is a flowchart 800 further illustrating TCPIP acceleration in accordance with this alternative embodiment of the invention, detailing the communication between the client and the TCPIP server (read and write commands) after the connect phase has completed successfully.

As shown by block 802, if the network application within the client wants to send a message to the TCPIP server, the network application within the client writes the message to the TCPIP stack in the operating system of the client. This WRITE command is received by the acceleration application of the client and handled in the manner described below. If the TCPIP server wants to send a message to the client, the TCPIP server writes the message to the TCPIP stack of TCPIP operating system, on the connection to the agent, since this agent is where the server received the original connection. This WRITE command is received by the acceleration application of the agent and handled in the manner described below.

When the acceleration application of the client receives a message from the network application of the client to be sent to the agent, or when the acceleration application of the agent receives a message from the connection to the TCPIP server that is to be sent to the client, the acceleration application proceeds to send the message to the communication device on the other side. For instance, if the client has intercepted the message from the communication application, the client sends the message to the agent, and if it is the agent that intercepted the message from the connection to the TCPIP server, such as the TCPIP server sending a message that is intended for the communication with client, the agent sends the message to the client in the following manner:

As shown by block 804, the acceleration application breaks up the content of the message to chunks and calculates the corresponding checksums, in the same manner as in the main embodiment described herein. The acceleration application then looks up each checksum in its cache database (block 806). As shown by block 808, the acceleration application checks if the checksum exists in the cache database,. If it does, then, as shown by block 810, the acceleration application prepares a list of peers that have already received the chunk of the checksum in the past (if any), and adds the communication device of the other side to the list of communication devices that have received this chunk (adds it to the peer list of the checksum in its database), to be provided to other communication devices requesting this information in the future. As shown by block 812, the list of peers is sent to the receiving communication device, which, as shown by block 814 retrieves the chunks from the peers in the list received, in the same manner as in the main embodiment.

If the checksum does not exist within the cache database of the sending communication device then, as shown by block 820, the acceleration application adds the checksum and chunk to its cache database, sends the chunk to the communication device on the other side, and adds the other communication device to the list of peers for that checksum in its database.

As shown by block 816, a determination is then made as to whether all chunks have been received. If all chunks have not been received, the process continues on again from block 806.

Once all data has been received, as shown by block 818, the acceleration application passes the data on to the requester. Specifically, in the client, the acceleration application passes on the complete data to the communication application, and in the agent, the acceleration application passes on the complete data to the requesting TCPIP server

It should be emphasized that the above-described embodiments of the present invention are merely possible examples of implementations, merely set forth for a clear understanding of the principles of the invention. Many variations and modifications may be made to the above-described embodiments of the invention without departing substantially from the spirit and principles of the invention. All such modifications and variations are intended to be included herein within the scope of this disclosure and the present invention and protected by the following claims.

Electronic Acknowledgement Receipt

EFS ID:	16587727
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	14-AUG-2013
Filing Date:	14-JUL-2010
Time Stamp:	14:32:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Post Allowance Communication - Incoming	S0245374.pdf	85608 2366943b95c50f18813bc62567a1de9fcfcc d229	no	2

Warnings:	
Information:	

2	Post Allowance Communication - Incoming	S0245373.pdf	1882445 d4087089deedda31bcb94529d3fb2cb4be310bcc	no	33
Warnings:					
Information:					
3	Specification	S0244914.pdf	181764 27665879d228657ebb9337fd6b8d5953c1abbb55	no	33
Warnings:					
Information:					
		Total Files Size (in bytes):	2149817		

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New Applications Under 35 U.S.C. 111
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National Stage of an International Application under 35 U.S.C. 371
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New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

57449 7590 08/26/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

EXAMINER	
NGUYEN, MINH CHAU	

ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
08/26/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Rule 312 Communication	Application No. 12/836,059	Applicant(s)
	Examiner	Art Unit

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ The amendment filed on *14 August 2013* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

L.HILL

Publishing Division

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

57649 7590 06/17/2013
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	07/14/2010	Derry Shribman	19459-6102	1421

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$890	$300	$0	$1190	09/17/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, MINH CHAU	2442	709-204000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Peter A. Nieves
2 Sheehan Phinney Bass +
3 Green PA

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Hola Networks Ltd.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Netanya, Israel

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies .....

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 501304 (enclose an extra copy of this form).

PTOL-85 (Rev. 02/11)

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature: /Peter A. Nieves/ Date 9/16/2013

Typed or printed name Peter A. Nieves Registration No. 48173

Electronic Patent Application Fee Transmittal

Application Number:	12836059
Filing Date:	14-Jul-2010
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Filer:	Peter Anthony Nieves/Karen Morin
Attorney Docket Number:	19459-6102

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	890	890
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1190**

Electronic Acknowledgement Receipt

EFS ID:	16861083
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Peter Anthony Nieves/Karen Morin
Filer Authorized By:	Peter Anthony Nieves
Attorney Docket Number:	19459-6102
Receipt Date:	16-SEP-2013
Filing Date:	14-JUL-2010
Time Stamp:	13:58:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1190
RAM confirmation Number	238
Deposit Account	501304
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	S0262436.pdf	154973 89cb4e20531fcb84f5631bcb3bb5b449f275532d	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31818 128da69e75b3e40758c35ee875817865839b469c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	186791		

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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/836,059	10/15/2013	8560604	19459-6102	1421

57449 7590 09/25/2013

SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 451 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Derry Shribman, Netanya, ISRAEL;
Ofer Vilenski, Netanya, ISRAEL;

PTO/AIA/81A (02-15)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	8,560,604
Issue Date	10-15-2013
First Named Inventor	Derry Shribman
Title	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
Attorney Docket No.	HOLA-005-US1

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 131926

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

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Address					
City		State		Zip	
Country					
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I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on 09/03/2010.

SIGNATURE of Applicant or Patent Owner

Signature	הולה נטוורקס בע"מ 51-411484-2 ח.פ. Hola Networks Ltd.	Date	February 17, 2016
Name	Oter Vilenski	Telephone	
Title and Company	CEO of HOLA NETWORKS LTD		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	24958853
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Yehuda Binder
Filer Authorized By:	
Attorney Docket Number:	19459-6102
Receipt Date:	19-FEB-2016
Filing Date:	14-JUL-2010
Time Stamp:	04:16:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Signed-POA.pdf	65230 e30040fe64e0e6ead6e0b6cfeb062e4c7fd2ebf1	no	1

Warnings:	
Information:	

Total Files Size (in bytes):	65230

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New Applications Under 35 U.S.C. 111
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National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	19459-6102

CONFIRMATION NO. 1421

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

MISCELLANEOUS NOTICE

OC000000081144083

Date Mailed: 03/03/2016

A communication which cannot be delivered in electronic form has been mailed to the applicant.

Doc Code: N572

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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	19459-6102

CONFIRMATION NO. 1421

OC000000081144083

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

Cc: MAY PATENTS LTD. C/O DORIT SHEM-TOV
P.O.B 7230
RAMAT-GAN, ISRAEL 52171-02

Date Mailed: 03/03/2016

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 02/19/16 is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- ☐ The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- ☐ The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- ☑ The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73 has not been received.
- ☐ The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- ☐ The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- ☐ The signature(s) of _____ , a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- ☐ The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.
- ☐ Only one Customer Number can be designated for the Power of Attorney in an application. The Customer Number that was captured is the first Customer Number provided on the Power of Attorney document.

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- ☐ A request under 37 CFR 1.48 to add an inventor was granted in this application, however, no power of attorney consistent with the power of attorney granted by the originally named inventive entity has been received. Thus, the addition of the inventor has resulted in the loss of power of attorney in the application. See 37 CFR 1.32(e).

- ☐ The power of attorney has not been accepted because the party who is giving power of attorney has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A patent owner who was not the applicant must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).

- ☐ The power of attorney from the inventors has not been accepted because it is a copy from a prior national application for which benefit is claimed and the continuing application names an inventor who was not named as an inventor in the prior application.

- ☐ The power of attorney from the inventors has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).

- ☐ Any request to correct or update the name of the applicant must include an application data sheet (ADS) in compliance with 37 CFR 1.76 specifying the correct or updated name of the applicant in the applicant information section. Any request to change the applicant after an original applicant has been specified under 37 CFR 1.46(b) must include a new ADS in compliance with 37 CFR 1.76 specifying the applicant in the applicant information section and comply with 37 CFR 3.71 and 3.73. See 37 CFR 1.46(c).

Any inquiries regarding this notice should be directed to the Application Assistance Unit at 571-272-4200.

Application Assistance Unit
571-272-4200

PTO/AIA/81A (02-15)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	8,560,604
Issue Date	10-15-2013
First Named Inventor	Derry Shribman
Title	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
Attorney Docket No.	HOLA-005-US1

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 131926

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.

OR

☐ The address associated with the Customer Number identified in the box at right:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on 09/03/2010.

SIGNATURE of Applicant or Patent Owner

Signature	הולה נטוורקס בע"מ 51-411484-2 ח.פ. Hola Networks Ltd.	Date	February 17, 2016
Name	Oter Vilenski	Telephone	
Title and Company	CEO of HOLA NETWORKS LTD		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Derry Shribman

Application No./Patent No.: 8,560,604 Filed/Issue Date: 10-15-2013

Titled: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

HOLA NETWORKS LTD., a Limited Company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 024938, Frame 0864, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Yehuda Binder/	February 17, 2016
Signature	Date
Yehuda BINDER	73612
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	25248649
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	57449
Filer:	Yehuda Binder
Filer Authorized By:	
Attorney Docket Number:	19459-6102
Receipt Date:	20-MAR-2016
Filing Date:	14-JUL-2010
Time Stamp:	07:21:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	Signed-POA.pdf	65230 e30040fe64e0e6ead6e0b6cfeb062e4c7fd2ebf1	no	1

Warnings:	
Information:	

2	Assignee showing of ownership per 37 CFR 3.73	aia0096.pdf	117891 7b0e359f7e7528aac9981e54df9501443de9c9f4	no	3

Warnings:	
Information:	
Total Files Size (in bytes):	183121

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	19459-6102

CONFIRMATION NO. 1421

POWER OF ATTORNEY NOTICE

57449
SHEEHAN PHINNEY BASS & GREEN, PA
c/o PETER NIEVES
1000 ELM STREET
MANCHESTER, NH 03105-3701

OC000000081825619

Date Mailed: 03/30/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/20/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zmoguss/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	HOLA-005-US1

CONFIRMATION NO. 1421

131926
May Patents Ltd. c/o Dorit Shem-Tov
P.O.B 7230
Ramat-Gan, 5217102
ISRAEL

POA ACCEPTANCE LETTER

OC000000081825708

Date Mailed: 03/30/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/20/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zmoguss/

Electronic Acknowledgement Receipt

EFS ID:	30978454
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	131926
Filer:	Yehuda Binder
Filer Authorized By:	
Attorney Docket Number:	HOLA-005-US1
Receipt Date:	17-NOV-2017
Filing Date:	14-JUL-2010
Time Stamp:	04:07:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	sb0096-005-US1.pdf	700707 a13030544b5fad7887879b0ec28c15a8ee7c648e	no	2

Warnings:

Information:					
2	Power of Attorney	signed_uspto_poa_hola_newco.pdf	802990 5731a23b64e3aa397cad68ca1fa83cbb1544987a	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1503697	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Derry Shribman, Ofer Vilenski

Application No./Patent No.: 8,560,604 Filed/Issue Date: 10-15-2013

Titled: SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION

HOLA NEWCO LTD , a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;

2. ☐ an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Derry Shribman, Ofer Vilenski To: HOLA NETWORKS, LTD

The document was recorded in the United States Patent and Trademark Office at
Reel 024938 , Frame 0864 , or for which a copy thereof is attached.

2. From: HOLA NETWORKS, LTD To: HOLA NEWCO LTD

The document was recorded in the United States Patent and Trademark Office at
Reel 043977 , Frame 0335 , or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____ , Frame _____ , or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Yehuda Binder/ November 15, 2017

Signature Date

Yehuda Binder US Patent Agent 73,612

Printed or Typed Name Title

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/80 (07-17)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[X] Practitioners associated with Customer Number: 131926

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[x] The address associated with Customer Number: 131926

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: HOLA NEWCO LTD
3 Hamahshev St.,
Netanya 42507,
Israel

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature	Date
Name Derry Shribman	Telephone
Title CEO of HOLA NEWCO LTD.	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/836,059	07/14/2010	Derry Shribman	HOLA-005-US1

CONFIRMATION NO. 1421

131926
May Patents Ltd. c/o Dorit Shem-Tov
P.O.B 7230
Ramat-Gan, 5217102
ISRAEL

POA ACCEPTANCE LETTER

OC000000095718634

Date Mailed: 11/28/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/17/2017.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ewodaje/

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Derry		Shribman	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Tel Aviv	Country of Residence [i]	IL

Mailing Address of Inventor:

Address 1	9/6 Beylinson St.,		
Address 2			
City	Tel Aviv	State/Province	
Postal Code	6356709	Country [i]	IL

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ofer		Vilenski	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Moshav Hadar Am	Country of Residence [i]	IL

Mailing Address of Inventor:

Address 1	8 Hahollandim Street		
Address 2			
City	Moshav Hadar Am	State/Province	
Postal Code	42935	Country [i]	IL

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ **An Address is being provided for the correspondence Information of this application.**			
Customer Number	131926		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION		
Attorney Docket Number	HOLA-005-US1	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	15	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	131926		

EFS Web 2.2.12

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
12/836059	Claims benefit of provisional	61/249624	2009-10-08

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

PTO/AIA/14 (11-15)
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name ~~HOLA NETWORKS LTD.~~ WEB SPARK LTD.

Mailing Address Information For Applicant:

Address 1	3 Hamahshev St.,		
Address 2			
City	Netanya	**State/Province**	
Country	IL	Postal Code	42507
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Yehuda Binder/			Date (YYYY-MM-DD)	2019-01-27 ~~2019-01-28~~
First Name	Yehuda	Last Name	BINDER	Registration Number	73612

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	HOLA-005-US1
	Application Number	12/836,059
Title of Invention	SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	34971314
Application Number:	12836059
International Application Number:	
Confirmation Number:	1421
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION
First Named Inventor/Applicant Name:	Derry Shribman
Customer Number:	131926
Filer:	Yehuda Binder/Dorit Binder
Filer Authorized By:	Yehuda Binder
Attorney Docket Number:	HOLA-005-US1
Receipt Date:	28-JAN-2019
Filing Date:	14-JUL-2010
Time Stamp:	03:31:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS-005-12836059.pdf	325504 45e0bc7c405694355060382 9ef79b38ec1e4470d	no	8

Warnings:

Information:	
This is not an USPTO supplied ADS fillable form	
Total Files Size (in bytes):	325504

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.