

WHAT IS CLAIMED IS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(New)* A wireless device access to a storage space, comprising:

at least one cache storage, and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

program instructions for establishing a wireless link for remotely access to the storage space, the storage space allocated exclusively by a server to a user of the wireless device for remote access;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remotely access to the storage space comprises storing data therein or retrieving data therefrom,

the storing data including to download a file from a remote server across a network into the storage space through utilizing download information for the file cached in the cache storage in response to the user from the wireless device performing the operation for the downloading.

32. *(New)* The wireless device of claim 31, wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music, a digital picture.

33. *(New)* The wireless device of claim 31, wherein said downloading a file from a remote server comprises:

obtaining, by the wireless device, downloading information for the file from the remote server;

transmitting the downloading information cached in the wireless device to the server; and causing the server in accordance with the downloading information to download the file into the remote storage space.

34. *(New)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:
creating, from the wireless device, a folder structure in the storage space.
35. *(New)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:
deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space.
36. *(New)* The wireless device of claim 31, wherein said downloading information for the file comprises name of the file and internet protocol (“IP”) address of the remote server
37. *(New)* The wireless device of claim 31, wherein the wireless device comprises one of a cell phone or a personal data assistant and management device (“PDA”).
38. *(New)* The wireless device of claim 31, further comprising: the wireless device executing a web browser for the user access to the Internet, including access to the remote storage space.
39. *(New)* A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise:
program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space allocated exclusively by the server to a user of the wireless device for remote access;
program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,
the storing data including to downloading a file from a remote server across a network into the remote storage space through utilizing download information for the file cached in a cache storage of the wireless device in response to the user from the wireless device performing the downloading of the file.

40. *(New)* The computer-readable medium of claim 39, wherein said downloading a file from a remote server comprises:
obtaining downloading information for the file from the remote server;
transmitting the downloading information cached in the wireless device to the server to cause the server in accordance with the downloading information to download the file into the remote storage space.
41. *(New)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:
creating, from the wireless device, a folder structure in the remote storage space.
42. *(New)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:
deleting or moving or rename or copying, from the wireless device, a file or folder in the remote storage space.
43. *(New)* The computer-readable medium of claim 31, wherein said downloading information for the file comprises name of the file and internet protocol (“IP”) address of the remote server

44. *(New)* The computer-readable medium of claim 31, wherein the wireless device further executes a web browser for the user access to the internet including access to the remote storage space.
45. *(New)* A server for delivering storage service, comprising:
a plurality of storage spaces; and
a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for allocating exclusively a first one of the storage spaces to a user of a first wireless device;
program instructions for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;
program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and
program instructions for coupling with the first wireless device to carryout a requested operation for remotely access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,
wherein said operation for remotely access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,
the storing data including to download a file from a remote server across a network into the first one of the storage spaces through utilizing download information for the file cached in the first wireless device in response to the user from the first wireless device performing the downloading of the file.
46. *(New)* The server of claim 45, wherein said downloading a file from a remote server further comprises:
the first wireless device obtaining downloading information for the file from the remote server, transmitting the cached downloading information to the server to cause the server in

accordance with the downloading information to download the file into the first one of the storage spaces.

47. *(New)* The server of claim 45, wherein the data being stored into or retrieved from the first one of the storage spaces further is a message or multimedia data of video, digital music, or digital picture.

48. *(New)* The server of claim 45, wherein said operation further comprises:
from the first wireless device remotely deleting, moving, copying or renaming a file or folder in the first one of the storage spaces, or remotely creating a folder or a folder structure in the first one of the storage spaces.

49. *(New)* The server of claim 45, wherein the server to allocate exclusively a second one of the storage spaces to a user of a second wireless device for facilitating the user remotely access to the second one of the storage spaces.

50. *(New)* The server of claim 45, wherein the download information for the file further includes at least the name of the file and the internet protocol ("IP") address of the remote server.

<<<<The markup version of the amended specification>>>>

The Use of System and Method For Wireless Device Access To Devices' External Storage

**By: — Sheng (Ted) Tai Tsao
11/19/2003**

Field of the Invention

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 had referenced ~~is the continuation of the previous invention, a~~ prior application number 60/401, 238 of “Concurrent Web Based Multi-task Support for Control Management System” filed on 08/06/2002 and converted to US patent application No. 10/713,904 filed on 07/22/2003 and now is an US patent No. 7418702, ~~where the claim 20 item a), b), d), claim 30 item b), and together with claim 36 represent an invention of using storage of a server system as the external storage for wireless devices. This invention focuses on how can a wireless device user actually use external storage. Specially it focus on how can a wireless device to download data to its external storage, which its principle has preliminary described in claim 19) of the previous invention, and had also referenced an prior application number 60/402,626 of “IP Based Distributed Virtual SAN” filed on 08/12/2002 and converted to application 10/713,905 file on 07/22/2003 and now is an US patent No. 7379990. All mentioned prior applications are herein incorporated by reference in their entirety for all purpose, to transmit data in wireless environment.~~

Field of the Invention

[002] This invention relates to wireless devices access and use external storage space provided by a server.

Background Information

a)

1 System and Method For Wireless Device Access to External Storage

[003] **Terminology:**

Storage system always is a critical part of a computing system regardless of the computing system is a server, a laptop or desktop computer, or a wireless device such as cell phone or personal data assistant device (“PDA”). The storage system can be categorized as internal storage or external storage system. The terminologies described in next few sections reflect the scope and are a part of present invention.

[004] **The Internal Storage of a System:**

The internal storages of a computing system include, but not limited to, those storage media such as hard disk drives, memory sticks, and memory [[etc.]] that are internally [[is]] connected [[to a]] in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal is a components of [[a]] the computing system in a same enclosure.

[005] **The External Storage of a System:**

The external storages of a computing system are those storage media that are [[is]] not the internal [[a]] components of [[a]] the computing system in a same enclosure. Therefore, they it has the storage media of the computing system have to be accessed connected through [[a]] longer cable, such as, but not limited to, through Ethernet controller with longer cable for IP based storage, Fiber channel controller with longer cable for fiber channel storage, or wireless communication media [[etc.]] The storage media of the external storage could be, but not limited to, magnetic hard disk drives, solid state disk, optical storage drives, memory card, etc. and could be in any form such as Raid[[,]] which usually consists of a group of hard disk drives.

[006] **The Storage Partition, its Volumes, and the Corresponding File System:**

To effectively use ~~the~~ a storage system, the storage devices of the storage system usually need[[s]] to be partitioned into ~~small~~ storage volumes. After the partition, each of the volumes can be used [[to]] for establishing a file system[[s]] on top of it. To simplify the discussion, herein, the term of the storage volume[[,]] and its corresponding file system, and the term of the storage partition of a storage are often used without differentiation ~~in this invention.~~

[007] ~~CCDSVM:~~

~~CCDSVM~~ It is an abbreviation for To satisfy the needs for external storage for a larger number of wireless devices, a central controlled distributed scalable virtual machine system (“The CCDSVM”) can be deployed. The CCDSVM allows a control management ~~station~~ system to control a group of computing systems for providing and provide distributed services, including storage service, to client system over the ~~[[in]]~~ Internet, Intranet, and LAN environment.

[008] ~~ISP & ASP:~~

As matter of the fact, today major Internet service provider (ISP) and application service provider (ASP) are all in business of providing various type of storage services to their clients.

⇒ [009] **Brief Description Of Figures:**

[010] Fig. 1 ~~This~~ illustrates an embodiment of this invention. The Fig. 1 is the same figure as the Fig. 1 of a prior application of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception in which ~~of~~ ~~renaming~~ a console host as being replaced by a wireless device.

[011] Fig. 2 ~~This~~ is the same figure as the Fig. 1 of this invention except that it ~~shows the~~ ~~illustrates an embodiment of a more detailed details of~~ storage system controlled by ~~the~~ a server. In addition, multiple wireless devices are presented for access to the storage system.

[012] Fig. 3 ~~This figure~~ shows the a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to ~~the~~ an external storage ~~of this~~ allocated to a user of the wireless device.

[013] Fig. 4 ~~This~~ is the same figure as the Fig. 1 of the prior application of “IP Based Distributed Virtual SAN” with an exception that each IP storage server

~~provide~~ provides file system [[as]] on an external storage [[for]] assigned to a user of the wireless device[[s]] instead of ~~provide~~ providing IP based virtual SAN service. Also, each host in the Fig. 1 now actually is a wireless device in the Fig. 4.

e) Assumptions:

[014] Unless specified, the programming languages[[,]] and the protocols used by the ~~each~~ software modules, and the computing systems used ~~described in this~~ in present invention are assumed to be the same as described in the previous prior patent[[s]] submission applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element [[will]] may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, ~~the wireless~~ users commonly face ~~the a~~ problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users ~~own~~ possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage spaces ~~on~~ provided by a server can be used as the external storage for the wireless devices. This technology has been ~~claimed~~ briefly introduced in the previous two prior patent[[s]] applications ~~submission by the same author.~~

[018] Now ~~we can~~ let us examine how ~~does~~ can the external storage actually be used by the wireless devices. First, We can let each server unit (e.g. the server 3 of the Fig. 2) partition[[s]] its storage system into ~~such way that each~~ volumes, such that each of the volumes will have multiple[[-]]GB in size. Therefore, ~~each a user from a web browser of each any of the wireless devices can be exclusively be assigned and exclusively~~ for access to a specific storage volume of a the server unit. For example, if we need to provide each user a 4GB ~~of~~ storage space, then a 160GB disk drive can support 40 users[[']]. Therefore, [[A]] a 4096GB storage system on a the server unit can support a total of 1024 users. Further, any

data on the wireless device of the user can be transmitted to the assigned storage volumes ~~on~~ a of the server unit. In addition, the user ~~on~~ of the wireless device also can download ~~the~~ multimedia data from ~~any~~ an ISP or ASP to the assigned storage volume[[s]] of the a designated server unit through out-band approach ~~(shown in Fig. 3)~~. Finally, in one embodiment, the user can use ~~their~~ a web-browser, which has a functionality of invoking embedded video or music, to enjoy ~~their~~ his/her stored multimedia contents.

[019] These and other futures, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures ~~where~~.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1[[:]], ~~This figure~~ it demonstrates an example of a ~~the~~ network infrastructure ~~connection between~~ which includes a wireless device and a server, where

~~a)~~ In the Fig. 1, Net (2) represents a communication link, which may be combined with wireless and ~~non-wireless~~ wired connection media and guarantee that the communication packets can be sent[[/]] or received between the wireless device and the server. It is also assumed that the net (2) in the network infrastructure is built up in such way that ~~the~~ a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] ~~b) As described in previous patents submission~~ In the Fig. 1, the console support software (5) ~~on~~ of the server (3) can be configured to support web-based multi[[-]]tasking ~~for~~ while a user[[s]] ~~on~~ web browser (8) ~~of~~ a wireless device (1) using a web browser (8). Further, the user ~~on the web browser (8)~~ of the wireless device is facilitated able to perform creating structured layered files/~~directory~~ directories or folders, and perform data management operations, such as, but not limited to, delete, move, copy, rename for data files or folders[[/]] or directories ~~etc.~~ on the an assigned storage volume [[of]] controlled by the server (3).

~~e) As described in previous patents submission~~ In addition, the other software modules (9) of the wireless device (1) is also configured capable of to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data ~~file~~ being sent or received could be, but not limited to, a digital photo picture, a message [[etc.]].

[023] ~~d) As described in previous patents submission~~ Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, ~~etc.~~ and so on without limiting to the languages mentioned.

[024] ~~e) As described in previous patents submission~~ Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which, is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] ~~The Fig. 2: This figure has demonstrated how can does the storage of a server 3 can be assigned to a user of each of multiple wireless devices for used as their external storage at followings[.]]:~~

~~a) As described in the previous patents submission.~~ First, the storage system (10) of the server (3) can be partitioned into multiple storage volumes (11), for example, by administration staff through a web-console (13) of a ~~web~~ console host (12).

[027] ~~b) Second,~~ the storage system (10) of the server (3) can be partitioned in such way that a user of each of the wireless devices can be assigned with a storage volume ~~of having a~~ desired size, ~~which can be best supported by~~ so that the server 3 can support for maximum numbers of the wireless devices.

[028] ~~e) As described in previous patents submission~~ In addition, the storage connection media could be any kind[[s]] such as, but not limited to, SCSI cable, IP cable, Fiber cable ~~etc.~~ or could be wireless communication media. The storage system itself could be various types.

[029] ~~d) It~~ Finally, it assumes that the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] ~~The Fig. 3. This figure has demonstrated how that~~ a user from a web-browser (8) on a wireless devices device (1) can download data from a known web-site (1512) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication channel link between the wireless device (1) and ~~any a remote download web-site (1512), which that provides the downloading contents for web download.~~ The dash-lined path (b) represents a communication channel link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link channel between the server 3 wireless devices (1) and the remote web-server (1512), ~~which provides download contents.~~

[031] **The Detailed Description of the Invention**

[032] ~~4-The Use of the External Storage of by the Wireless Device:~~

The Fig. 2 shows a simplified diagram of the wireless devices (1 ~~of Fig. 2~~) using the external storage system (10 ~~of Fig. 2~~) of [[a]] the server (3 ~~of Fig. 2~~), ~~which will for effectively resolve-resolving~~ the storage limitation problem ~~of for the~~ wireless devices (1 ~~of Fig. 2~~).

[033] **Partition storage volumes (Fig. 2):**

With this invention, the entire storage (10 ~~of Fig. 2~~) on [[a]] the server (3 ~~of Fig. 2~~) needs to be partitioned into suitable size of volumes (11 ~~of Fig. 2~~) such as 4GB for each[[,]] which volume. This will allow the server 3 to serve maximum number of the wireless devices (1 ~~of Fig. 2~~). With the web console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~), ~~the tasks~~ of partitioning the storage system (10) can be done through a web-console (13 ~~of Fig. 2~~) on a console host (12 ~~of Fig. 2~~) by an administrative staff.

[034] In order to support ~~such~~ storage partition, first the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) must send storage information of the server (3 ~~of Fig. 2~~) to

the web-console (13 of Fig. 2) of the console host (12 of Fig. 2). ~~This~~ The storage information ~~including the~~ includes each storage device's name, ~~storage and~~ total size ~~etc. and~~ so on without limitations. Second, based on the received storage information the administration staff on the console host (12 of Fig. 2), for example, can use a web-console (13 of Fig. 2) to partition each storage device ~~fill~~ and [[to]] send the storage partition information for the storage device to the console support software (5 of Fig. 2) of the server (3 of Fig. 2). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13 of Fig. 2) of the console host (12 of Fig. 2), the console support software (5 of Fig. 2) of the server (3 of Fig. 2) performs the actual storage partition ~~by, which divides~~ dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (~~11 of Fig. 2~~) [[of]] on the storage system (10 of Fig. 2) [[on]] of the server (3 of Fig. 2) needs to be exclusively assigned ~~and exported~~ to a user of a given specific wireless device (1 of Fig. 2) by the console support software (5 of Fig. 2) [[on]] of the server (3 of Fig. 2).

[036] Data and storage volume management (Fig. 2)

4) With the support of the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2), ~~the~~ a user on web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can use a web-browser 8 illustrated in Fig. 2 to setup the folder[[/]] or directory structure on the file system of his/her an assigned external storage volume (11 of Fig. 2). In addition, the user on web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can use the web-browser 8 performing all data management operations such as, ~~but not limited to,~~ delete, copy, move, or rename ~~etc.~~ for file or folder on that file system.

[037] In order to support such data management [[on]] over the external storage (10 of Fig. 2) ~~from web-browser (8 of Fig. 2) of~~ assigned to the user of the wireless device (1 of Fig. 2) by using the web-browser 8, first the console support software modules (5 of Fig. 2) of the

server system (3 of Fig. 2) must communicate with the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) to present the assigned storage to a user that is similar to said partitioning storage. Therefore, the user from the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can choose a desired data management operation and perform the operation to cause the send operation information to be sent to the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2). These The mentioned operation includes, but not limited to, establishing folder or directory; copying, moving, or reaming data file etc. for the folder directory. Second, upon receiving the data management operation, the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2) actually performs these requested operations over the assigned file system of an assigned external storage volume (11 of Fig. 2) of the server system (3 of Fig. 2).

[038] Store data from wireless device into external storage (Fig. 2):

To store the data such as digital photo pictures or messages into the assigned file system on the assigned external storage volume (11 of Fig. 2) of the server (3 of Fig. 2), the other software modules (9 of Fig. 2) of the wireless device (1 of Fig. 2) need to send these data to the other service modules (7 of Fig. 2) of the server (3 of Fig. 2) via communication link between them. Upon receiving the data, the other service modules (7 of Fig. 2) of the server (3 of Fig. 2) write these data to the assigned file system on the assigned storage volume (11 of Fig. 2) of the server (3 of Fig. 2) for the wireless device (1). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into assigned external storage volume (Fig. 3):

[040] Referring now, to the Fig. 3, If a user of the wireless device (1 of Fig. 3) user wants to download a data from a remote web server (1512 of Fig. 3) into the assigned file system on the assigned storage volume (11 of Fig. 3) in the external storage system (10 of Fig. 3) of the server (3 of Fig. 3), the following steps are required:

[041] 1) The user ~~from web-browser (8 of Fig. 3)~~ of ~~the a specific~~ wireless device (1 of Fig. 3) ~~via a web-browser (8 of Fig. 3)~~ ~~accesses access to~~ a remote ~~download~~ web server site (1512 of Fig. 3) ~~and to~~ obtain ~~the information of the data for the~~ downloading via ~~the~~ path (a) of ~~the~~ Fig. 3. For example, ~~[[to]]~~ the user ~~get access to~~ a web-page, which contains the data name for ~~the~~ downloading and also contains IP address of the remote web site.

[042] 2) The other software modules (9 of Fig. 3) of ~~a specific the~~ wireless device (1 of Fig. 3) ~~obtains obtain the~~ downloading information ~~for the data~~, which becomes available in the cached web-pages on ~~the~~ wireless device (1 of Fig. 3) after the web-browser (8 of Fig. 3) ~~accessing access to~~ the ~~download web~~ site (1512 of Fig. 3).

[043] 3) The other software modules (9 of Fig. 3) of ~~a specific the~~ wireless device (1 of Fig. 3) send the obtained downloading information to other service modules (7 of Fig. 3) of ~~the~~ storage server (3 of Fig. 3) via ~~the~~ path (b) of ~~the~~ Fig. 3.

[044] 4) Upon receiving the downloading information from ~~a specific the~~ wireless device (1), the other service modules (7 of Fig. 3) of the storage server (3 of Fig. 3) send a web download request to ~~download~~ the web-site (1512 of Fig. 3) via ~~the~~ path (c) of ~~the~~ Fig. 3 based on download information obtained. ~~It then and then~~ receives the downloading ~~information~~ data from ~~the~~ web server of ~~download the~~ web-site (1512 of Fig. 3).

[045] 5) Upon receiving downloading~~[[ed]]~~ data ~~stream~~, the other service modules (7 of Fig. 3) of the storage server (3 of Fig. 3) write ~~these the~~ data for ~~the specific wireless device~~ (1 of Fig. 3) into the ~~assigned~~ file system on ~~the assigned storage volume~~ (11 of Fig. 3) ~~[[on]]~~ of the server (3 of Fig. 3) ~~for the wireless device~~ (1).

[046] **Retrieve data from assigned external storage volume ~~of~~ for the user of the wireless device;**

[047] 1) If a web-browser (8) on a wireless device 1 has embedded video or music functionality, ~~the web-browser (8 of Fig. 2)~~ a user of ~~[[a]]~~ ~~the~~ wireless device (1 of Fig. 2) can ~~be used~~ use the browser to retrieve and play ~~these~~ multimedia data file such as video or

music stored in the wireless device's assigned external storage volume (11 ~~of Fig. 2~~), which actually located on ~~[[a]]~~ the server (3 ~~of Fig. 2~~).

[048] 2) In another embodiment, ~~if there is,~~ in respect to the user's needs, the other software module (9 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) also can retrieve data file from the ~~assigned~~ file system ~~[[of]]~~ on the assigned storage volume (11 ~~of Fig. 2~~) ~~[[on]]~~ of the server (3 ~~of Fig. 2~~).

[049] **Support external storage for a large number of the wireless devices:**

[050] Referring now to the Fig. 4. If ~~[[we]]~~ there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on ~~[[a]]~~ the server unit can support 204 user. Therefore, a ~~Each~~ server unit only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, ~~with external storage~~ such as for supporting 500,000 of them wireless devices, a larger number of the servers ~~are~~ is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in ~~previous~~ the prior patent~~[[s]]~~ applications ~~submission~~. With the CCDSVM the control management system ~~station~~ can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

<<<<The markup version of the amended specification>>>>

System and Method For Wireless Device Access To External Storage

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 had referenced a prior application number 60/401, 238 of “Concurrent Web Based Multi-task Support for Control Management System” filed on 08/06/2002 and converted to US patent application No. 10/713,904 filed on 07/22/2003 and now is an US patent No. 7418702, and had also referenced an prior application number 60/402,626 of “IP Based Distributed Virtual SAN” filed on 08/12/2002 and converted to application 10/713,905 file on 07/22/2003 and now is an US patent No. 7379990. All mentioned prior applications are herein incorporated by reference in their entirety for all purpose.

Field of the Invention

[002] This invention relates to wireless devices access and use external storage space provided by a server.

Background Information

[003] Storage system always is a critical part of a computing system regardless of the computing system is a server, a laptop or desktop computer, or a wireless device such as cell phone or personal data assistant device (“PDA”). The storage system can be categorized as internal storage or external storage system.

[004] The internal storages of a computing system include, but not limited to, those storage media such as hard disk drives, memory sticks, and memory that are internally connected in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal components of the computing system in a same enclosure.

1 System and Method For Wireless Device Access To External Storage

[005] The external storages of a computing system are those storage media that are not the internal components of the computing system in a same enclosure. Therefore, the storage media of the computing system have to be accessed through longer cable, such as, but not limited to, through Ethernet controller with longer cable for IP based storage, Fiber channel controller with longer cable for fiber channel storage, or wireless communication media. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical storage drives, memory card. and could be in any form such as Raid which usually consists of a group of hard disk drives.

[006] To effectively use a storage system, the storage devices of the storage system usually need to be partitioned into storage volumes. After the partition, each of the volumes can be used for establishing a file system on top of it. To simplify the discussion, herein, the term of the storage volume and its corresponding file system, and the storage partition are often used without differentiation.

[007] To satisfy the needs for using external storages by a larger number of wireless devices, a central controlled distributed scalable virtual machine (“CCDSVM”) can be deployed. The CCDSVM allows a control management system to control a group of computing systems for providing distributed services, including storage service, to client system across the Internet, Intranet, and LAN environment.

[008] As matter of the fact, today major Internet service provider (ISP) and application service provider (ASP) are all in business of providing various type of storage services to their clients.

[009] **Brief Description Of Figures:**

[010] Fig. 1 illustrates an embodiment of this invention. The Fig. 1 is the same as the Fig. 1 of a prior application of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception in which a console host being replaced by a wireless device.

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[011] Fig. 2 is the same as the Fig. 1 of this invention except that it illustrates an embodiment of a more detailed storage system controlled by a server. In addition, multiple wireless devices are presented for access to the storage system.

[012] Fig. 3 shows a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to an external storage allocated to a user of the wireless device.

[013] Fig. 4 is the same figure as the Fig. 1 of the prior application of "IP Based Distributed Virtual SAN" with an exception that each IP storage server provides file system on an external storage assigned to a user of the wireless device instead of providing IP based virtual SAN service. Also, each host in the Fig. 1 now actually is a wireless device in the Fig. 4.

[014] Unless specified, the programming languages and the protocols used by the software modules, and the computing systems used in present invention are assumed to be the same as described in the prior patent applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, users commonly face a problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage spaces provided by a server can be used as the external storage for the wireless devices. This technology has been briefly introduced in the prior patent applications.

[018] Now let us examine how can the external storage actually be used by the wireless devices. First, let each server unit (e.g. the server 3 of the Fig. 2) partition its storage system

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into volumes, such that each of the volumes will have multiple GB in size. Therefore, a user of each of the wireless devices can be exclusively assigned for access to a specific storage volume of the server unit. For example, if we need to provide each user a 4GB storage space, then a 160GB disk drive can support 40 users. Therefore, a 4096GB storage system on the server unit can support a total of 1024 users. Further, any data on the wireless device of the user can be transmitted to the assigned storage volume of the server unit. In addition, the user of the wireless device also can download multimedia data from an ISP or ASP to the assigned storage volume of the server unit through out-band approach shown in Fig. 3. Finally, in one embodiment, the user can use a web-browser, which has a functionality of invoking embedded video or music, to enjoy his/her stored multimedia contents.

[019] These and other features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, it demonstrates an example of a network infrastructure which includes a wireless device and a server. In the Fig. 1, Net (2) represents a communication link, which may be combined with wireless and wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) in the network infrastructure is built up in such way that a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] In the Fig. 1, the console support software (5) of the server (3) can be configured to support web-based multitasking while a user on a wireless device (1) using a web browser (8). Further, the user of the wireless device is facilitated to perform creating structured layered file directories or folders, and perform data management operations, such as, but not limited to, delete, move, copy, rename for data files or folders or directories on said assigned storage volume controlled by the server (3).

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In addition, the other software modules (9) of the wireless device (1) is also configured capable of to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data being sent or received could be, but not limited to, a digital photo picture, a message.

[023] Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java and so on without limiting to the languages mentioned.

[024] Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] The, Fig. 2 has demonstrated how can the storage of a server 3, be assigned to user of each of multiple wireless devices for used as external storage at followings:

First, the storage system (10) of the server (3) can be partitioned into multiple storage volumes (11), for example, by administration staff through a web-console (13) of a console host (12).

[027] Second, the storage system (10) of the server (3) can be partitioned in such way that a user of each of the wireless devices can be assigned with a storage volume having a desired size, so that the server 3 can support maximum numbers of the wireless devices.

[028] In addition, the storage connection media could be any kind, such as, but not limited to, SCSI cable, IP cable, Fiber cable or could be wireless communication media. The storage system itself could be various types.

[029] Finally, the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

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[030] The Fig. 3 has demonstrated that a user from a web-browser (8) on a wireless device (1) can download data from a known web-site (15) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication link between the wireless device (1) and a remote web-site (15) that provides download contents. The dash-lined path (b) represents a communication link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link between the server 3 and the remote web-server (15).

[031] **The Detailed Description of the Invention**

[032] **The Use of the External Storage by the Wireless Device:**

The Fig. 2 shows a simplified diagram of the wireless devices (1) using the external storage system (10) of the server (3) for effectively resolving the storage limitation problem for the wireless devices (1).

[033] **Partition storage volumes (Fig. 2):**

With this invention, the entire storage (10) on the server (3) needs to be partitioned into suitable size of volumes (11) such as 4GB for each volume. This will allow the server 3 to serve maximum number of the wireless devices (1). With the web console support software (5) of the server (3), tasks of partitioning the storage system (10) can be done through a web-console (13) on a console host (12) by an administrative staff.

[034] In order to support storage partition, first the console support software (5) of the server (3) must send storage information of the server (3) to the web-console (13) of the console host (12). The storage information includes, but not limited to, each storage device's name and total size. Second, based on the received storage information, the administration staff on the console host (12), for example, can use a web-console (13) to partition each storage device and send the storage partition information for the storage devices to the console support software (5) of the server (3). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13) of the console host (12), the console

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support software (5) of the server (3) performs the actual storage partition by dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11) on the storage system (10) of the server (3) needs to be exclusively assigned to a user of a specific wireless device (1) by the console support software (5) of the server (3).

[036] Data and storage volume management (Fig. 2)

With the support of the console support software modules (5) of the server (3), a user of the wireless device (1) can use a web-browser 8 illustrated in Fig. 2 to setup folder or directory structure on the file system of his/her an assigned external storage volume (11). In addition, the user of the wireless device (1) can use the web-browser 8 performing all data management operations such as, but not limited to, delete, copy, move, or rename for file or folder on that file system.

[037] In order to support such data management over the external storage (10) assigned to the user of the wireless device (1) by using the web-browser 8, first the console support software modules (5) of the server 3 must communicate with the web-browser (8) of the wireless device (1) to present the assigned storage to a user that is similar to said partitioning storage. Therefore, the user from the web-browser (8) of the wireless device (1) can choose a desired data management operation and perform the operation to cause the operation information to be sent to the console support software modules (5) of the server 3. The mentioned operation includes establishing folder or directory; copying, moving, or reaming data file for the folder directory. Second, upon receiving the data management operation, the console support software modules (5) of the server 3 actually performs these requested operations over the file system on an assigned external storage volume (11) of the server 3.

[038] Store data from wireless device into external storage (Fig. 2):

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To store the data such as digital photo pictures or messages into the file system on the assigned storage volume (11) of the server (3), the other software modules (9) of the wireless device (1) need to send these data to the other service modules (7) of the server (3) via communication link between them. Upon receiving the data, the other service modules (7) of the server (3) write these data to the file system on the assigned storage volume (11) of the server (3) for the wireless device (1). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into assigned external storage volume:

[040] Referring now to the Fig. 3, If a user of the wireless device (1) wants to download a data from a remote web server (15) into the file system on the assigned storage volume (11) in the external storage system (10) of the server (3), the following steps are required:

[041] 1) The user of the wireless device (1) via a web-browser (8) access to a remote web server site (15) to obtain information of the data for the downloading via the path (a) of the Fig. 3. For example, the user access to a web-page, which contains the data name for the downloading and also contains IP address of the remote web site.

[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information for the data, which becomes available in the cached web-pages on the wireless device (1) after the web-browser (8) access to the web site (15).

[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server (3) via the path (b) of the Fig. 3.

[044] 4) Upon receiving the downloading information from the wireless device (1), the other service modules (7) of the storage server (3) send a web download request to the web-site (15) via the path (c) of the Fig. 3 based on download information obtained and then receives the downloading data from the web server of the web-site (15).

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[045] 5) Upon receiving downloading data stream, the other service modules (7) of the storage server (3) write the data into the file system on the assigned storage volume (11) of the server (3) for the wireless device (1).

[046] Retrieve data from assigned external storage volume for the user of the wireless device:

[047] 1) If a web-browser (8) on a wireless device 1 has embedded video or music functionality, a user of [[a]] the wireless device (1) can use the browser to retrieve and play multimedia data file such as video or music stored in the wireless device's assigned external storage volume (11) , which actually located on the server (3).

[048] 2) In another embodiment, in respect to the user's needs, the other software module (9) of the wireless device (1) also can retrieve data file from the file system on the assigned storage volume (11) of the server (3).

[049] Support external storage for a large number of the wireless devices:

[050] Referring now to the Fig. 4. If there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on a server unit can support 2048 user. Therefore, a server unit only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, such as for supporting 500,000 wireless devices, a larger number of the servers is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in the-prior patent applications. With the CCDSVM the control management system can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

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Abstract

Traditionally, wireless device, such as cell phone or personal data assistant device (PDA), has relatively smaller storage capacity. Therefore, it is quite often that a user of the wireless device has difficulty to find more storage space for storing ever increased personal data, such as storing message, and multiple Gig bytes of multimedia data including digital video, music, or photo picture etc.. Instant application disclosed a system and method for a storage system providing storage service to the wireless device for the wireless device remotely storing personal data into an external storage space allocated exclusively to a user of the wireless device by the storage system.

Wireless out-band download

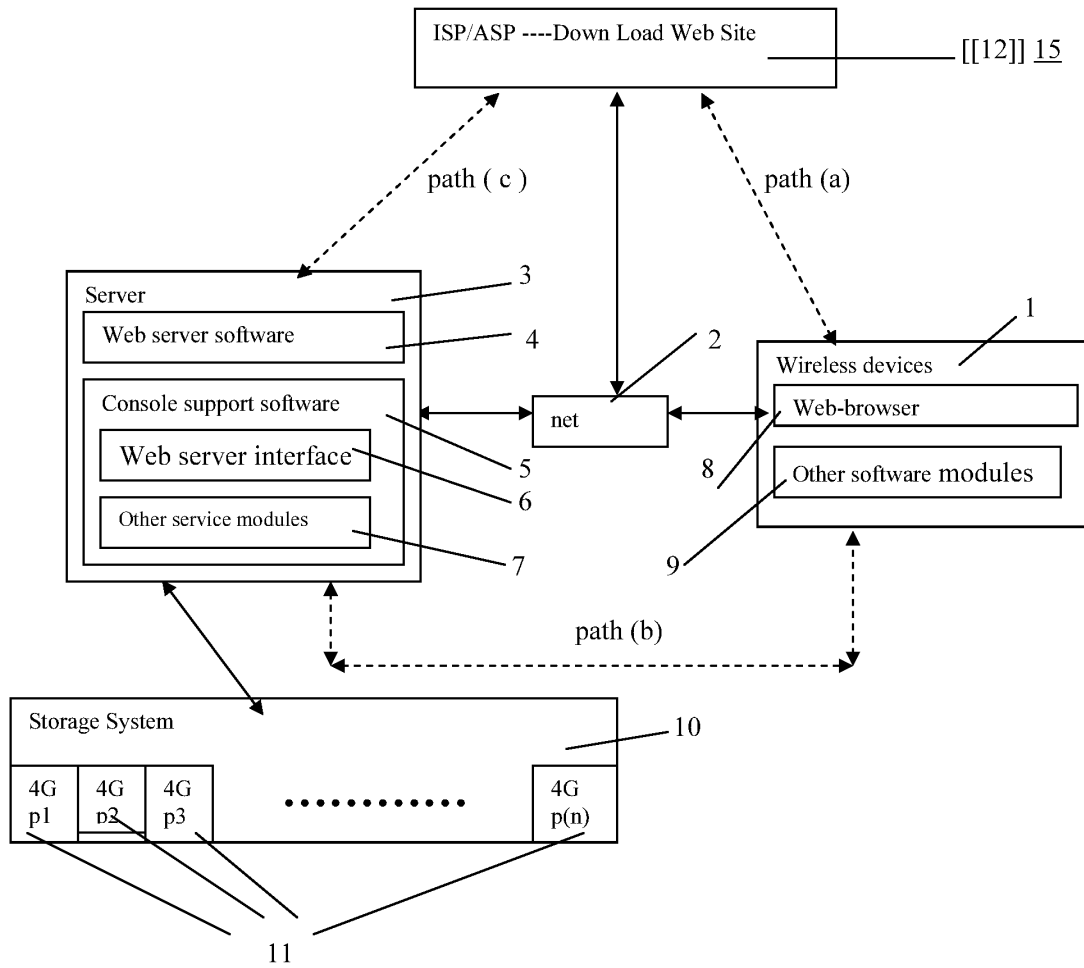


Fig. 3

(Replacement Sheet)

Wireless devices supports in a simple environment

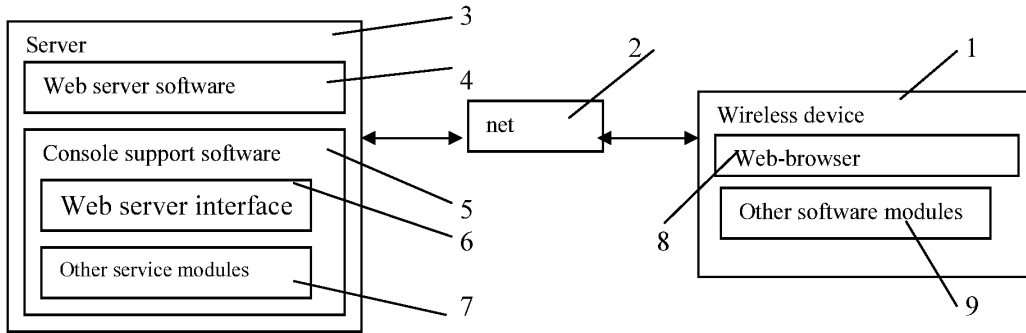


Fig. 1

(Replacement Sheet)

Wireless devices access external storage through web browser

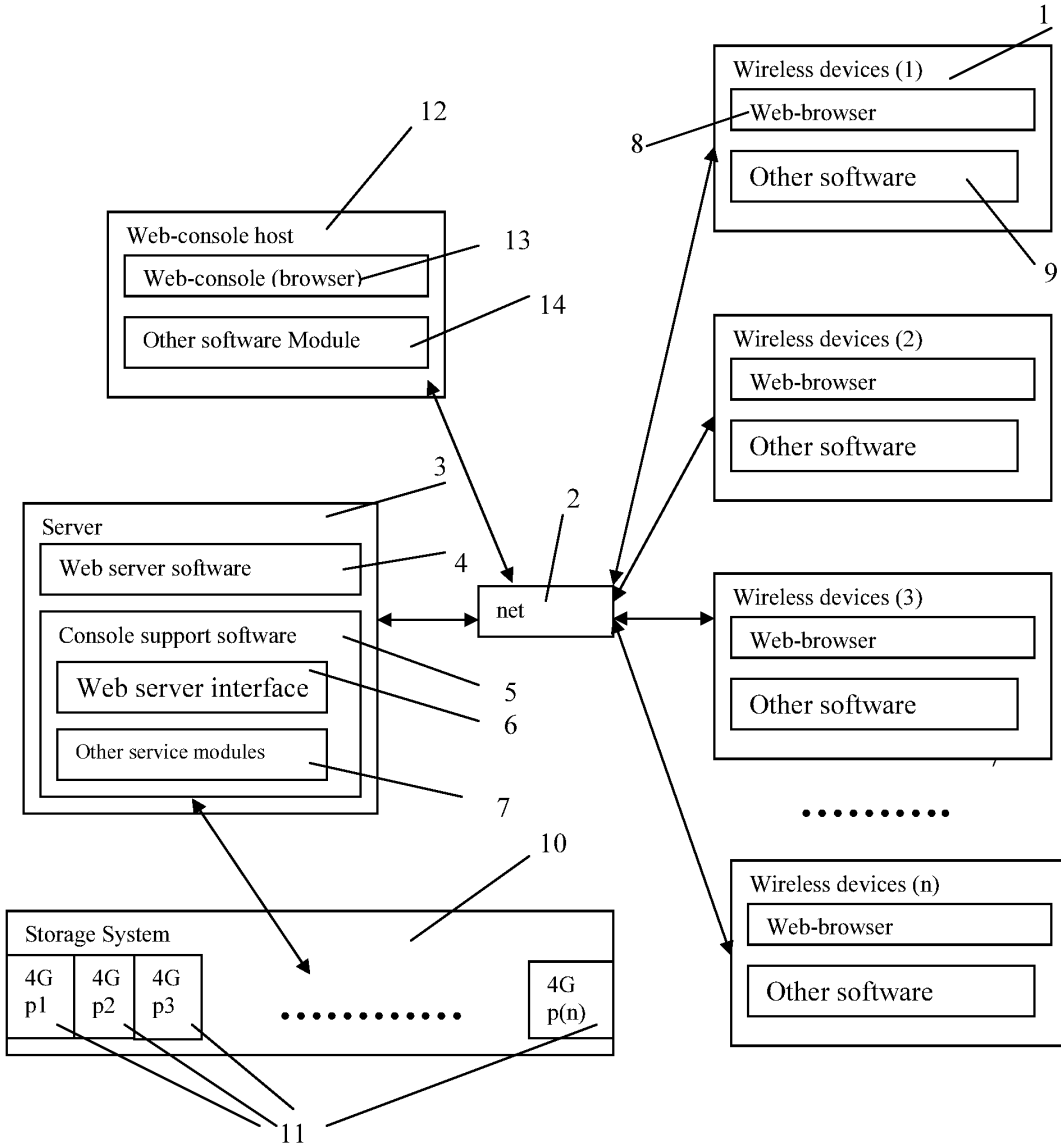


Fig. 2

(Replacement Sheet)

Wireless out-band download

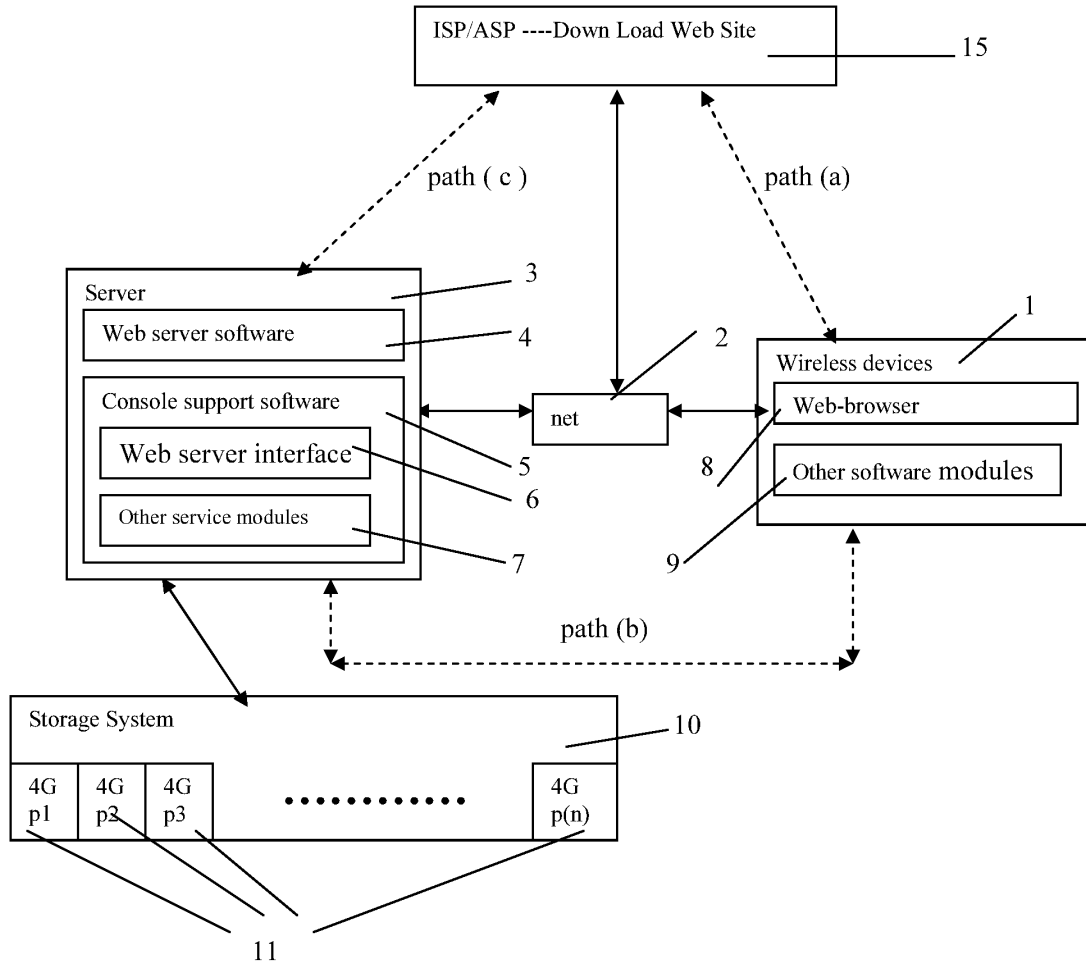


Fig. 3

(Replacement Sheet)

The CCDSVM Support External Device for Huge Number of Wireless Device

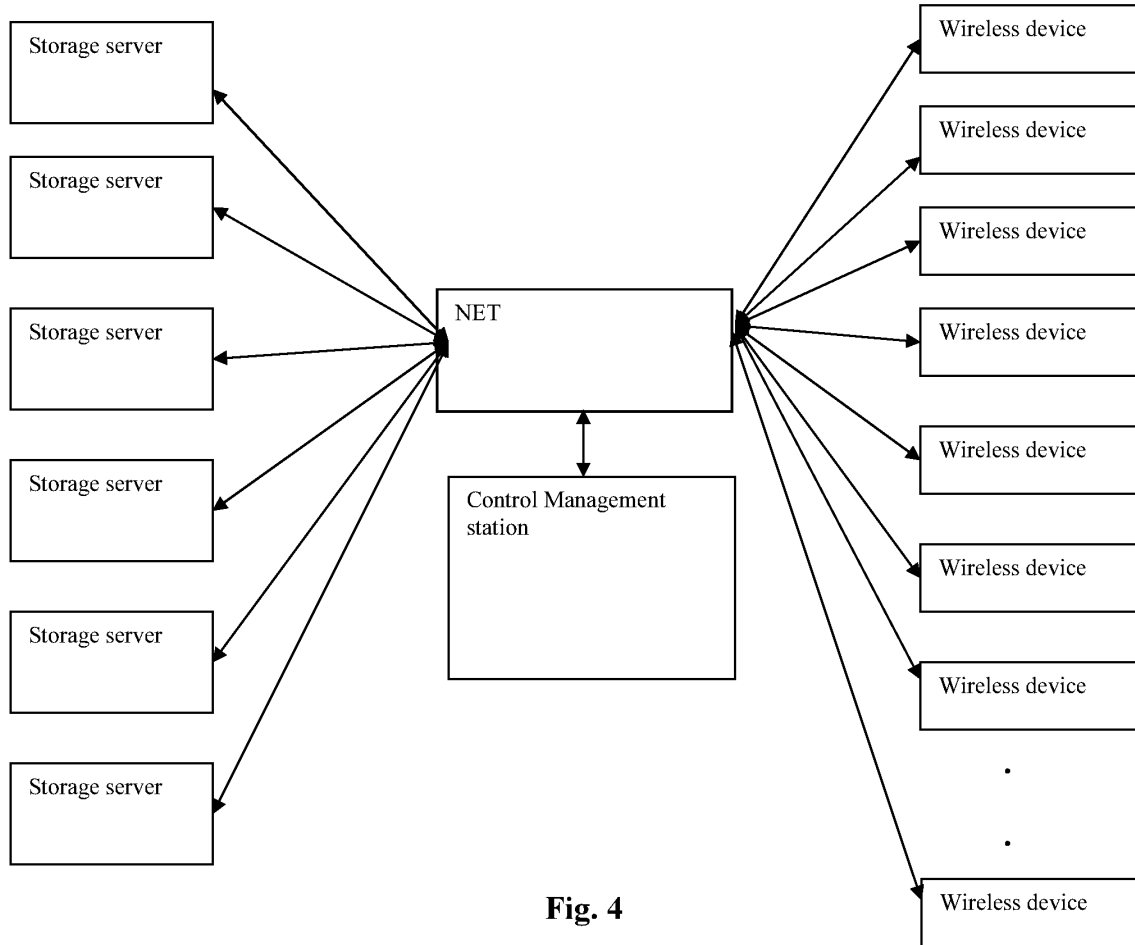


Fig. 4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Preliminary Amendment

Dear Commissioner:

This communication directs to file preliminary amendments within a first month filing period for the claims files on 12/21/2015 for instant application. The claims amendments start on page 4 of this paper.

Thanks helps from the USPTO to enter the amended claims
Respectively Submitted,
01/20/2016

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EXEMPLARY SUPPORT INFORMATION:

<u>Claim No.</u>	<u>Limitation</u>	<u>Disclosed in parent 10/726,897</u>
31 & 39	A wireless device comprising: at least one cache storage	a) Page 6, lines 5 – 8, page; b) Page 3 lines 14-16, and
	establish a wireless link for the wireless device access to a storage space	a) page 1, line 23, b) Page 3 lines 14-16
	a storage space assigned exclusively to a user of the wireless device by a storage server	a) page 4 lines 23 – 29 b) page 5 lines 3 - 7
	Present the assigned storage space to a user of the wireless device	Page 4, lines 30 – 38; also in claim 6
	the wireless device coupling with the storage server across the wireless link to carry out the requested operation for the remote access to the assigned storage space,	Page 5, lines 24 – 27; Page 5, lines 33 – 36; Page 6, lines 17 – 20; and Page 4, lines 37 – 40.
	wherein the remote access to the assigned storage space comprises storing a data object therein or retrieving a data object therefrom,	Page 5, lines 28 – 36; and Page 6, lines 21 -28.
	to download a file from a remote server on a network into the assigned storage space through utilizing download information for the file stored in said cache storage	Page 5, line 37 – page 6, line 20;
32 & 47	data object being stored in or retrieved from the assigned storage space is one of a message or multimedia data of video, digital music or digital picture.	a) page 3, lines 2 – 5; b) page 5, lines 28–30; c) page 6, lines 21 – 25;
37	the wireless device further is one of a cell phone or a personal data assistant and management device (“PDA”).	Page 2, line 23 – 25;
34	from the wireless device creating a folder structure in the assigned storage space	Page 5, lines 11 - 12

35 & 42, 48	from the wireless device deleting or moving or copying or renaming a folder in the assigned storage space.	a) Page 3, lines 22-25; b) page 5, lines 8-12; c) page 5, lines 23 – 26.
36, 43, & 50	Download information include name of the file and IP address of a remote server	Claim 8
33 & 40, 46	said downloading a file from a remote server further comprises: obtaining downloading information for the file; transmitting the downloading information cached in the wireless device to the storage server; and causing the storage server in accordance with the downloading information to download the file into the assigned storage space.	Page 5, line 37 – page 6, line 20;

WHAT IS CLAIMED IS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device access to a storage space, comprising:

at least one cache storage, and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

program instructions for establishing a wireless link for remotely access to the storage space, the storage space ~~allocated~~ ~~assigned~~ exclusively by a server to a user of the wireless device for remote access;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remotely access to the storage space comprises storing data therein or retrieving data therefrom, the storing data ~~including to download~~ ~~further comprising to store~~ a file from a remote server across a network into the storage space through utilizing ~~download information data~~ for the file ~~cached~~ in the cache storage in response to the user from the wireless device performing the operation for the ~~storing of the file~~ ~~downloading~~.

32. *(Previously Presented)* The wireless device of claim 31, wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music, a digital picture.

33. *(Currently Amended)* The wireless device of claim 31, wherein said ~~storing~~ ~~downloading~~ a file from a remote server comprises:

obtaining, by the wireless device, ~~downloading~~ information for the file from the remote server;

transmitting the ~~downloading~~ information for the file cached in the wireless device to the server; and

causing the server in accordance with the ~~downloading~~ information for the file to store ~~download~~ the file into the remote storage space.

34. *(Previously Presented)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:

creating, from the wireless device, a folder structure in the storage space.

35. *(Previously Presented)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:

deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space.

36. *(Currently Amended)* The wireless device of claim 31, wherein said ~~downloading~~ ~~information data~~ for the file in the cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server

37. *(Currently Amended)* The wireless device of claim 31, wherein the wireless device comprises at least one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Previously Presented)* The wireless device of claim 31, further comprising: the wireless device executing a web browser for the user access to the Internet, including access to the remote storage space.

39. *(Currently Amended)* A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise: program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space ~~assigned~~ ~~located~~ exclusively by the server to a user of the wireless device for remote access;

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,

~~the storing data including to downloading further comprising to store~~ a file from a remote server across a network into the remote storage space through utilizing ~~download information data~~ for the file ~~cached~~ in a cache storage of the wireless device in response to the user from the wireless device performing the ~~storing~~ downloading of the file.

40. *(Currently Amended)* The computer-readable medium of claim 39, wherein said ~~storing~~ downloading a file from a remote server comprises:
obtaining ~~downloading~~ information for the file from the remote server;
transmitting the ~~downloading~~ information ~~for the file~~ cached in the wireless device to the server to cause the server in accordance with the ~~downloading~~ information ~~for the file~~ to ~~store~~ download the file into the remote storage space.
41. *(Previously Presented)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:
creating, from the wireless device, a folder structure in the remote storage space.
42. *(Previously Presented)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:
deleting or moving or rename or copying, from the wireless device, a file or folder in the remote storage space.

43. *(Currently Amended)* The computer-readable medium of claim 31, wherein said ~~downloading~~ ~~information data~~ for the file in said cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server
44. *(Previously Presented)* The computer-readable medium of claim 31, wherein the wireless device further executes a web browser for the user access to the internet including access to the remote storage space.
45. *(Currently Amended)* A server for delivering storage service, comprising:
 a plurality of storage spaces; and
 a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service; wherein the program instructions comprise:
 program instructions for ~~assigning/allocating~~ exclusively a first one of the storage spaces to a user of a first wireless device;
 program instructions for establishing a communication link for the first wireless device ~~remote~~ access to the first one of the storage spaces;
 program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and
 program instructions for ~~updating the first one of the storage spaces in accordance to coupling with the first wireless device to carry out~~ a requested operation for ~~remote~~ access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,
 wherein said operation for ~~remote~~ access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,
 the storing data ~~including further comprising to store/download~~ a file from a remote server across a network into the first one of the storage spaces through utilizing ~~download information data~~ for the file cached in the first wireless device in response to the user from the first wireless device performing the ~~storing/downloading~~ of the file.

46. *(Currently Amended)* The server of claim 45, wherein said ~~downloading-storing~~ a file from a remote server further comprises:
the first wireless device obtaining ~~downloading~~ information for the file from the remote server, transmitting the cached ~~downloading~~ information ~~for the file~~ to the server to cause the server in accordance with the ~~downloading~~ information ~~for the file~~ to ~~store~~ ~~download~~ the file into the first one of the storage spaces.
47. *(Previously Presented)* The server of claim 45, wherein the data being stored into or retrieved from the first one of the storage spaces further is a message or multimedia data of video, digital music, or digital picture.
48. *(Previously Presented)* The server of claim 45, wherein said operation further comprises:
from the first wireless device remotely deleting, moving, copying or renaming a file or folder in the first one of the storage spaces, or remotely creating a folder or a folder structure in the first one of the storage spaces.
49. *(Currently Amended)* The server of claim 45, wherein the server to ~~assign~~ ~~allocate~~ exclusively a second one of the storage spaces to a user of a second wireless device for facilitating the user remotely access to the second one of the storage spaces.
50. *(Currently Amended)* The server of claim 45, wherein the ~~download information~~ ~~cached data~~ for the file further ~~comprises~~ ~~includes~~ at least the name of the file and the internet protocol (“IP”) address of the remote server.



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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO., EXAMINER, ART UNIT, PAPER NUMBER, NOTIFICATION DATE, DELIVERY MODE. Includes details for Sheng Tai Tsao and examiner Elmore, Reba I.

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ted.tsao@sttwebos.com
ted.tsao@yahoo.com
ted.tsao@comcast.net

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31-50 have been presented for examination.

SPECIFICATION

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

DOUBLE PATENTING

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).
4. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

5. The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

6. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,239,686. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,239,686

31. A wireless device access to a storage space, comprising:

1. A server for delivering storage service, comprising:

at least one cache storage, and

a plurality of storage spaces; and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server delivering the storage service; wherein the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a serve to a user of the wireless device for remote

program instructions for allocating exclusively a first one of the storage spaces for establishing a communication link for the first wireless device remotely access to the first one of the storage

access;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

45. A server for delivering storage service, comprising:

a plurality of storage spaces; and

a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service;

wherein the program instructions comprise:

program instructions for assigning

spaces;

program instructions for presenting the first one of the storage spaces to the user on the first wireless device through communication with the first wireless device; and

program instruction for updating the first one of the storage spaces according to a requested operation for remotely access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation comprises storing data into the first one of the storage spaces or retrieving data therefrom, the storing of said data including to download a file from a remote server across a network into the first one of the storage spaces through utilizing download information for the file cached in the first wireless device in response to the user from the first wireless device performing the operation for downloading the file.

12. A server for delivering storage service, comprising:

a plurality of storage space, and

a non-transitory compute-readable medium comprising program instructions that, executed by the server, causes the server to deliver the storage service;

wherein the program instructions comprises:

program instructions for the server

exclusively a first one of the storage spaces to a user of a first wireless device;

allocating exclusively a first one of the storage spaces of a predefined capacity to a user of a first wireless device;

program instructions for establishing a communication link for the first wireless device remote access to the first one of the storage spaces;

program instructions for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;

program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and

program instruction for sending information of the first one of the storage spaces to the first wireless device for presenting the first one of the storage spaces to the user; and

program instructions for updating the first one of the storage spaces in accordance to a request operation for remote access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

program instructions for updating the first one of the storage spaces according to a requested operation for remotely access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation for remote access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

wherein said operation comprises creating from the first wireless device a folder structure of a plurality of folders in the first one of the storage spaces, and comprises to delete or move or copy or rename a first one of the folders in the folder structure,

the storing data further comprising to store a file from a remote server across a network into the first one of the storage spaces through utilizing data for the file cached in the first wireless device in response to the user from the first wireless device performing the storing of the file.

wherein each of the folders being used by the first wireless device for storing data therein or retrieving data therefrom.

13. wherein said storing data includes to download a file from a remote server across a network into the first one of the storage spaces through utilizing download information for the file cached in the first wireless device in response to the user from the first

wireless device performing the
operation for downloading the file.

7. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,219,780. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,219,780

31. A wireless device access to a storage space, comprising:

1. A wireless device access to a remote storage space, the wireless device comprising:

at least one cache storage, and

at least one cache storage, and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions include:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a serve to a user of the wireless device for remote access;

program instructions for establishing a wireless link for remotely access to the storage space, the storage space allocated exclusively by a storage server to a user of the wireless device;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for presenting the storage space to the user on the wireless device through communication with the storage server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

program instructions for coupling with the storage server across the wireless link to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performed the operation,

wherein the operation for remote

wherein the program instructions for

access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

carrying out operation for the access to the storage space comprises program instructions for storing data therein or retrieving data therefrom, the program instructions for storing data including program instructions for downloading a file from a remote server across the Internet into the storage space through utilizing download information for the file, including name of the file and internet protocol (“IP”) address of the remote server, cached in the cache storage in response to the user from the wireless device performed the operation for the downloading.

39. A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise:

9. A system comprising:
a pool of a plurality of storage spaces, and non-transitory computer-readable storage medium comprising program instructions which, being executed by by the server, causes the server delivering storage service, the program instructions include:

program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space assigned exclusively by the server to a user of the wireless device for remote access;

program instructions for allocating exclusively, via the storage pool, a first one of the storage spaces to a user of a first wireless device;

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and

program instructions for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device

program instructions for sending information of the first one of the storage spaces to the first wireless device for presenting the first one of the storage spaces to the user on the

performing the operation,

wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,

the storing data further comprising a store a file from a remote server across a network into the remote storage space through utilizing data for the file in a cache storage of the wireless device in response to the user from the wireless device performing the storing of the file.

45. A server for delivering storage service, comprising:

a plurality of storage spaces; and

a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service;

wherein the program instructions comprise:

program instructions for assigning exclusively a first one of the storage spaces to a user of a first wireless device;

program instructions for establishing a communication link for the first wireless device remote access to the

wireless device; and

program instructions for updating the the first one of the storage spaces in response to the user from the first wireless device performed an operation for said remotely access to the first one of the storage spaces,

the storing of a data object including to download a file from a remote server into the first one of the storage spaces through utilizing download information for the file, including name of the file and internet protocol ("IP") address of the remote server, cached in a cache storage of the first wireless device in response to the user from the first wireless device performed the operation for the downloading.

16. A system comprising:

at least one storage server and one wireless device;

wherein the storage server comprises a plurality of storage spaces,

a first one of which being allocated to a user of the wireless device for exclusive access,

and causes presenting the first one of the storage spaces to the user on the wireless device, and

first one of the storage spaces;

program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and

program instructions for updating the first one of the storage spaces in accordance to a request operation for remote access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

updates the first one of the storage spaces in responsive to the user from the wireless device performed an operation for remotely access to the first one of the storage spaces; and

wherein the wireless device couples with the storage server across a wireless link to carry out a requested operation for remotely access to the first one of the storage spaces in responsive to the user from the wireless device performed the operation for the access,

wherein said operation for remote access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

wherein the operation for remotely access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

the storing data further comprising to store a file from a remote server across a network into the first one of the storage spaces through utilizing data for the file cached in the first wireless device in response to the user from the first wireless device performing the storing of the file.

storing of said data including to download a file from a remote server into the first one of the storage spaces through utilizing download information for the file cached in a cache storage in the wireless device in response to the user from the wireless device performed the operation for the downloading.

8. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being

unpatentable over claims 1-20 of U.S. Patent No. 9,098,526. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,098,526

31. A wireless device access to a storage space, comprising:

1. A wireless device comprising:

at least one cache storage, and

at least one cache storage, one wireless interface, and program code configured to cause the wireless device to:

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

establish a wireless link for the wireless device access to a storage space of a predefined capacity assigned exclusively to a user of the wireless device by a storage server, and

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a serve to a user of the wireless device for remote access;

couple with the storage server across the wireless link to carry out a requested operation for remote access to the assigned storage space in response to the user from the wireless device performed the operation,

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for the remote access to the assigned storage space comprises storing a data object therein or retrieving a data object therefrom,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data

further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

the storage of a data object including to download a file from a remote server across a network into the assigned storage space through utilizing download information for the file stored in said cache storage in response to the user from the wireless device performed the operation for downloading the file from the remote server into the assigned storage space.

39. A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise:

11. A non-transitory compute-readable medium comprising program code that, being executed by a wireless device, causes the wireless device to:

program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space assigned exclusively by the server to a user of the wireless device for remote access;

establish a wireless link for the wireless device access to a storage space of predefined capacity assigned exclusively by a storage server to a user of the wireless device;

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and

couple with the storage server through the wireless link to carry out a requested operation for remote access to the assigned storage space in response to the user from the wireless device performed the operation,

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein the operation for the remote access to the assigned storage space comprises storing a data object therein

wherein said operation for access to the remote storage space comprises storing data therein or retrieving

or retrieving a data object therefrom, the storing of the data object including to download a file from a remote server

data therefrom,

the storing data further comprising a store a file from a remote server across a network into the remote storage space through utilizing data for the file in a cache storage of the wireless device in response to the user from the wireless device performing the storing of the file.

on a network into the assigned storage space through utilizing download information for the file stored in a cache storage of the wireless device in response to the user from the wireless device performed the operation for downloading the file from the remote server into the assigned storage space.

9. "A latter patent claim is not patentably distinct from an earlier patent claim if the latter claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obvious-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obvious-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

10. Humans are a species of the animal genus. Our case law firmly establishes that a later genus claim limitation is anticipated by, and therefore not patentably distinct from, an earlier species claim. *In re Berg*, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 1053, 29 USPQ2d 2010, 2016(Fed. Cir. 1993); *In re Gosteli*, 872 F.2d 1008, 1010, 10 USPQ2d 1614, 1616(Fed. Cir. 1989); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d at 944, 214 USPQ at 767 (C.C.P.A. 1982)." ELI LILLY AND COMPANY v BARB LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC

(DECIDED: May 30, 2001).

35 USC 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

12. Claims 31-50 are rejected under 35 U.S.C. 102(a) as being anticipated by Bhide (US 2003/0194998).

13. Bhide teaches the claimed invention (claims 31, 39 and 45) as claimed including a wireless device and server used to access a storage space, the wireless device and server comprising:

at least one cache storage (e.g. see Figure 1, element 150);

one non-transitory computer-readable comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, with data and/or programs stored in nonvolatile memory (e.g. see paragraph 0014), the storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user;

the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access (e.g. see paragraph 0015);

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server as program instructions including a configuration program that allows the user remote access via a remote wireless device (e.g. see paragraph 0015);

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation (e.g. see Figure 1); and,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user form the wireless device performing the operation for the storing of the file as downloading data or files from network elements to the personal cache (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 32, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claims 33, 40 and 46, Bhide teaches the present invention wherein the file from the remote server including obtaining, by the wireless device, data for the file from the remote server transmitting the data for the file cached in the wireless device to the server and causing the server in accordance with data for the file to store the file into the remote storage space (e.g. see paragraphs 0027-0029).

As to claim 34, 41 and 47, Bhide teaches the present invention wherein the operation for remotely access to the storage space comprises creating, from the wireless device, a folder

structure in the storage space as downloading data to the wireless device or using the wireless device for access to the other parts of the network (e.g. see paragraphs 0027-0029).

As to claim 35, 42 and 48, Bhide teaches the present invention wherein the operation for remotely access to the storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space (e.g. see paragraphs 0030-0032).

As to claim 36, 43 and 50, Bhide teaches the present invention wherein the data for the file in the cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server as it being inherent that “IP” addresses are used since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claims 38 and 44, Bhide teaches the present invention further comprising the wireless device executing a web browser for the user access to the Internet, including access to the remote storage space (e.g. see paragraph 0004).

CONCLUSION

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reba I. Elmore, whose telephone number is (571) 272-4192. The examiner can normally be reached on Monday and Thursday from 7:30am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the art unit supervisor for AU 2131, Christian Chace, can be reached for general questions concerning this application at (571) 272-4190. Additionally, the official fax phone number for the art unit is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center central telephone number is (571) 272-2100.

/Reba I. Elmore/
Primary Patent Examiner
Art Unit 2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Non-Final Office Action

Dear Commissioner:

This communication responds to the non-final office action mailed on 03/24/2016. In the response, please find:

- 1) Claim amendments for the claims submitted on 1/20/2016.
- 2) A remark made for overcome the office rejections.
- 3) A terminal disclaimer filed in response to the double patenting rejections.

Thanks helps from the USPTO to enter the amended claims and the specification

Respectively Submitted,

05/10/2016

/Shanegtai Tsao/
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3906 Borgo Common,
Fremont, CA 94538
408-813-0536 or 510-580-8592

AMENDMENT TO THE CLAIMS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device access to a storage space, comprising:

at least one cache storage, and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage

~~space assigned exclusively controlled by a server to a user of the wireless device for remote access;~~

program instructions for presenting the storage space to ~~a~~ the user ~~upon~~ on the wireless device ~~upon~~ receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remote access to the storage space comprises storing data

therein or retrieving data therefrom, the storing data further comprising to ~~store~~

~~download~~ a file from a remote server across a network into the storage space through utilizing ~~information data~~ for the file in the cache storage in response to the user from

the wireless device performing the operation for the ~~downloading storing~~ of the file.

32. *(Previously Presented)* The wireless device of claim 31, wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music, a digital picture.

33. *(Currently Amended)* The wireless device of claim 31, wherein said ~~downloading storing~~ a file from a remote server comprises:

obtaining, by the wireless device, ~~the~~ information for the file from the remote server;

transmitting the information for the file cached in the wireless device to the server; and

causing the server in accordance with the information for the file to ~~download~~store the file ~~directly from the server~~ into the remote storage space.

34. *(Previously Presented)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:
creating, from the wireless device, a folder structure in the storage space.

35. *(Previously Presented)* The wireless device of claim 31, wherein said operation for remotely access to the storage space comprises:
deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space.

36. *(Currently Amended)* The wireless device of claim 31, wherein said ~~information data~~ for the file in the cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server

37. *(Currently Amended)* The wireless device of claim 31, wherein the wireless device ~~comprises~~ ~~at least is~~ one of a cell phone, ~~or~~ a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 31, further comprising: the wireless device executing a web browser for the user access to the Internet, ~~including or~~ access to the remote storage space.

39. *(Currently Amended)* A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise: program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space ~~assigned exclusively controlled~~ by the server ~~to a user of the wireless device for remote access;~~

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to ~~a the user on the wireless device~~; and

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,

the storing data further comprising to ~~store download~~ a file from a remote server across a network into the remote storage space through utilizing ~~information data~~ for the file in a cache storage of the wireless device in response to the user from the wireless device performing the ~~downloading~~ storing of the file.

40. *(Currently Amended)* The computer-readable medium of claim 39, wherein said ~~downloading~~ storing a file from a remote server comprises:

obtaining ~~the~~ information for the file from the remote server;

transmitting the information for the file cached in the wireless device to the server to cause the server in accordance with the information for the file to ~~store download~~ the file directly from the server into the remote storage space.

41. *(Previously Presented)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:

creating, from the wireless device, a folder structure in the remote storage space.

42. *(Previously Presented)* The computer-readable medium of claim 39, wherein said operation for access to the remote storage space comprises:

deleting or moving or rename or copying, from the wireless device, a file or folder in the remote storage space.

43. *(Currently Amended)* The computer-readable medium of claim 31, wherein said information data for the file in said cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server

44. *(Currently Amended)* The computer-readable medium of claim 31, wherein the wireless device further executes a web browser for the user access to the Internet or including access to the remote storage space.

45. *(Currently Amended)* A server for delivering storage service, comprising:

a plurality of storage spaces; and

a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service ; wherein the program instructions comprise:

~~program instructions for assigning exclusively a first one of the storage spaces to a user of a first wireless device;~~

program instructions for establishing a communication link for the a first wireless device remote access to a the first one of the storage spaces;

program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the a user on the first wireless device; and

program instructions for updating the first one of the storage spaces in accordance to a requested operation for remote access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation for remote access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

the storing data further comprising to download store a file from a remote server across a network into the first one of the storage spaces through utilizing information data for the file cached in the first wireless device in response to the user from the first wireless device performing the downloading storing of the file.

46. *(Currently Amended)* The server of claim 45, wherein said ~~downloading~~ ~~storing~~ a file from a remote server further comprises:
the first wireless device obtaining information for the file from the remote server,
transmitting the cached information for the file to the server to cause the server in accordance with the information for the file to ~~download~~ ~~store~~ the file ~~directly from the server~~ into the first one of the storage spaces.
47. *(Previously Presented)* The server of claim 45, wherein the data being stored into or retrieved from the first one of the storage spaces further is a message or multimedia data of video, digital music, or digital picture.
48. *(Previously Presented)* The server of claim 45, wherein said operation further comprises:
from the first wireless device remotely deleting, moving, copying or renaming a file or folder in the first one of the storage spaces, or remotely creating a folder or a folder structure in the first one of the storage spaces.
49. *(Currently Amended)* The server of claim 45, wherein the server ~~presents to assign~~ ~~exclusively~~ a second one of the storage spaces to a user ~~on~~ ~~of~~ a second wireless device for facilitating the user remotely access to the second one of the storage spaces.
50. *(Currently Amended)* The server of claim 45, wherein the cached ~~information~~ ~~data~~ for the file further comprises at least the name of the file and the internet protocol (“IP”) address of the remote server.

Remark

The Office Action mailed on 03/24/2016 has been carefully considered. Claims 31-50 are previously pending and all pending claims stand rejected. The claims 31-50 are amended in response to the office action and are currently pending. Applicant respectfully requests reconsideration of the instant application in light of the amendments above and the remarks made below:

1: Regarding the Specification:

The specification is amended based on the specification filed on 12/04/2003 without adding any new matters such as without adding languages of “but not limited to”.

The language of “for presenting the external storage to the user” added in [0037] and the language of “IP address of the remote web site” added in [0041] are based on the original claim 6 and claim 8 of parent application 10/726,897 filed on the 12/04/2003.

Thus, the current amendments only correct the informalities found in the original specification of the parent 10/726,897 filed on 12/04/2003. Therefore, a request for acceptance of the amended specification is respectively submitted.

2: Regarding Double Patenting:

A terminal disclaimer is filed in respect to patent No. 8,606,880, patent No. 8,868,690 and 8,856,195 for correcting the double patenting issue. Thus, a request for withdrawing the non-statutory double patenting rejection is respectively submitted.

3. Regarding The 35 USC §102 Rejections:

The Office Action of 03/24/2016 has rejected claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

After a careful reviewing office action, it is found that the Bhide has failed to teach or suggestion or enable many limitations of instant application. For convenience of discussion, the amended claim 31 is recited bellow:

“31. A wireless device access to a storage space, comprising:
at least one cache storage, and

..... wherein the operation for remotely access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising

to download a file from a remote server across a network into the storage space through utilizing information for the file cached in the cache storage in response to the user from the wireless device performing the operation for the downloading of the file.”

With instant application, a wireless device being implemented by utilizing information for a file cached in a internal cache storage of the wireless device for downloading the file from a remote server into a storage space assigned to a user of the wireless device that is illustrated in Fig. 3 of instant application and resembled in the claim 31 recited above.

On the other hand, the cache storage used by Bhide is the cache storage on a wireless network and is clearly external to a wireless device that is disclosed in Bhide (recited in part & emphasis added):

a) In Abstract such that

“... cache memory is available on a wireless network ... The cache memory may be provided to a user of a wireless device for a fee. ...”

b) In [0015], “... The information in the personal cache 150 may be sent, automatically, e.g., on a time schedule, from the personal cache 150 on the wireless network to a user's wireless device and vice-versa. ...”

c) in Fig. 1, a users “wireless device 135” is remote to the “personal cache 150” across a network that combined with “PSTN 130” and “MSC 115”.

Similar to the [0015], in the [0027]-[0029] of Bhide, the personal cache 250 is also not an internal cache storage of a wireless device in claim 31 recited above. In addition, the wireless cell is a location based wireless network infrastructure and is not a cell phone. Therefore, the limitations in [0027] – [0027] of Bhide also do not teach or enable the limitations in the claims 31 recited above.

In conclusion, in both specification and drawings of Bhide, there is no single place that discloses how a wireless device to utilize information of a remote file in the wireless device’s internal cache storage for the purpose of downloading the remote file on a server into an external storage assigned to a user of the wireless device. For this reason alone, the claim 31 and the claims 39 and 45 similar to the claim 31 are all patentable over the referenced Bhide. In addition, all dependent claims are also patentable over the referenced Bhide as matter of law.

4: Summary:

Applicant invites Examiner to review the remark and the amendment to the claims made above for further reconsidering the allowance of the amended claims. Also, a request for allowing the amended claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor's address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 05/10/2016

/Shengtai tsao/

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<<<<The markup version of the amended specification>>>>

The Use of System and Method For Wireless Device Access To Devices' External Storage

**By: ~~Sheng (Ted) Tai Tsao~~
11/19/2003**

Field of the Invention

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced ~~is the continuation of the previous invention,~~ application number 10/713,904 ~~60/401,238~~ of "Concurrent Web Based Multi-task Support for Control Management System"; ~~where the claim 20 item a), b), d), claim 30 item b), and together with claim 36 represent an invention of using storage of a server system as the external storage for wireless devices. This invention focuses on how can a wireless device user actually use external storage. Specially it focus on how can a wireless device to download data to its external storage, which its principle has preliminary described in claim 19) of the previous invention, and application number 10/713,905~~ 60/402,626 of "IP Based Distributed Virtual SAN" in the name of same inventor, ~~to transmit data in wireless environment.~~

Field of the Invention

[002] This invention relates to wireless devices access to and use of external storage space provided by a server.

Background Information

~~a)~~

[003] **Terminology:**

Storage system can be categorized as internal storage or external storage system.

[004] **The Internal Storage of a System:**

The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory [etc.], and others that are internally [is] connected [to a] in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal is a components of [a] the computing system in a same enclosure.

[005] **The External Storage of a System:**

The external storages of a computing system are those storage media that are [is] not the internal [a] components of [a] the computing system in a same enclosure. Therefore, they ~~it has~~ have to be connected through [a] longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media [etc.], and others. The storage media of the external storage could be magnetic hard disk drives, solid ~~state~~ state disk, optical storage drives, memory card, ~~etc.~~ and could be in any form such as Raid[,], which usually consists of a group of hard disk drives.

[006] **The Storage Partition, its Volumes, and the Corresponding File System:**

To effectively use ~~the a~~ storage system, the storage devices of the storage system usually need[[s]] to be partitioned into small volumes. After the partition, each of the volumes can be used [[to]] for establishing a file system[[s]] on top of it. To simplify the discussion, herein, the term of the storage volume[,], and its corresponding file system, and the term of the storage partition of a storage are often used without differentiation in this invention.

[007] **CCDSVM:**

CCDSVM ~~it~~ is an abbreviation for a central controlled distributed scalable virtual machine system. The CCDSVM allows a control management station system to control a group of computing systems for providing and provide distributed services to client systems over the [[in]] Internet, Intranet, and LAN environment.

[008] **ISP & ASP:**

The ISP refers to Internet service provider and the ASP refers to application service provider.

b) [009]

Brief Description Of Figures:

[010] Fig. 1: ~~This~~ is the same figure as the Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception of renaming a console host as a wireless device.

[011] Fig. 2: ~~This~~ is the same figure as the Fig. 1 of this invention with an exception that ~~it shows the~~ illustrates a more detailed details of storage system controlled by ~~the~~ a server. In addition, multiple wireless devices are presented.

[012] Fig. 3: ~~This figure~~ shows ~~the~~ a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to ~~the~~ an external storage of ~~this~~ the wireless device.

[013] Fig. 4: ~~This~~ is the same figure as the Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server ~~provide~~ provides a file system as external storage for each of wireless device[[s]] instead of ~~provide~~ providing IP based virtual SAN service. Also, each host actually is a wireless device.

e) Assumptions:

[014] Unless specified, the programming languages[[,]] and the protocols used by the ~~each~~ software modules, and the computing systems used ~~described~~ in this invention are assumed to be the same as described in the previous prior patent[[s]] submission applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element [[will]] may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, ~~the wireless~~ users commonly face ~~the a~~ a problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users ~~own~~ possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been claimed briefly introduced in the previous two prior patent[[s]] applications submission by the same author.

[018] Now ~~we can~~ examine how ~~does~~ can the external storage actually be used by the wireless devices. First, ~~We can~~ let each server unit (e.g. the server 3 of the Fig. 2) partition[[s]] its storage system in such way that each of volumes will have multiple~~[-]~~GB in size. Therefore, ~~each a user from a web-browser~~ of any one of the wireless devices can exclusively be assigned ~~and exclusively~~ for access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB ~~of~~ storage space, then a 160GB disk drive can support 40 users[[']]. Therefore, ~~[[A]] a~~ 4096GB storage system on ~~a~~ the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volumes~~on a~~ of the server unit. In addition, the user on the wireless device also can download ~~the~~ multimedia data from ~~any~~ an ISP or ASP to the assigned storage volume[[s]] of the a-designated server unit 3 through out-band approach (~~shown in~~ Fig. 3). Finally, the user can use ~~their~~ a web-browser, which has a functionality of invoking embedded video or music, to enjoy ~~their~~ his/her stored multimedia contents.

[019] These and other futures, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures ~~where~~.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1[:]), ~~this~~ ~~This~~ figure demonstrates ~~a~~ ~~the~~ network connection between a wireless device and a server, where ~~a~~ Net (2) represents a communication link, which may be combined with wireless and ~~non-wireless~~ wired connection media and guarantee that the communication packets can be sent~~[[/]]~~ or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that ~~the~~ a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] ~~b) As described in previous patents submission~~ In the Fig. 1, the console support software (5) on the server (3) can support web-based multi~~[-]~~tasking ~~for~~ while a user~~[[s]]~~ ~~on~~ using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated able to perform creating structured layered files/~~directory~~ directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders~~[[/]]~~ or directories and others ~~etc.~~ on ~~the~~ an assigned storage volume of the server (3).

~~e) As described in previous patents submission~~ In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data (file) being sent or received could be a digital photo picture, a message and others ~~[[etc.]].~~

[023] ~~d) As described in previous patents submission~~ Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others, ~~etc.~~

[024] ~~e) As described in previous patents submission~~ Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] ~~The Fig. 2: This figure has~~ demonstrated how ~~can does~~ the storage of a server 3 ~~can~~ be assigned to multiple wireless devices as their external storage at follow[[.]]:

~~a) As described in the previous patents submission,~~ First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a ~~web~~ console host (12).

[027] ~~b) Second,~~ the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server 3 for maximum numbers of the wireless devices.

[028] ~~e) As described in previous patents submission~~ In addition, the storage connection media could be any kind[[s]] such as SCSI cable, IP cable, Fiber cable and others etc. The storage system itself could be various types.

[029] ~~d) It~~ Finally, ~~assumes that~~ the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] ~~The Fig. 3: This figure has~~ demonstrated ~~how that~~ a user from a web-browser (8) on a wireless device[[s]] (1) can download data from a known web-site (1512) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication ~~channel link~~ between the wireless device (1) and ~~any a remote download~~ web-site (1512), which provides ~~the~~ contents for web download. The dash-lined path (b) represents a communication ~~channel link~~ between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication ~~link channel~~ between the server 3 ~~wireless devices (1)~~ and the remote web-server (1512), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] ~~+-~~ The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram of the wireless devices (1 ~~of Fig. 2~~) using the external storage system (10 ~~of Fig. 2~~) of a server (3 ~~of Fig. 2~~), which will effectively-resolve the storage limitation problem ~~of~~ for the wireless devices (1 ~~of Fig. 2~~).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10 of Fig. 2) on a server (3 of Fig. 2) needs to be partitioned into suitable size of volumes (11 of Fig. 2) such as 4GB for each, which will allow the server 3 to serve maximum number of the wireless devices (1 of Fig. 2). With the web console support software (5 of Fig. 2) of the server (3 of Fig. 2), the task of partitioning the storage system (10) can be done through a web-console (13 of Fig. 2) on a console host (12 of Fig. 2) by an administrative staff.

[034] In order to support ~~such~~ storage partition, first the console support software (5 of Fig. 2) of the server (3 of Fig. 2) must send storage information of the server (3 of Fig. 2) to the web-console (13 of Fig. 2) of the console host (12 of Fig. 2). ~~This~~ The storage information ~~including the~~ includes each storage device name, storage total size ~~etc.~~ and others. Second, based on the storage information received, the administration staff on the console host (12 of Fig. 2) can use the web-console (13 of Fig. 2) to ~~fill partition each storage device~~ and ~~[[to]]~~ send the storage partition information to the console support software (5 of Fig. 2) of the server (3 of Fig. 2). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13 of Fig. 2) of the console host (12 of Fig. 2), the console support software (5 of Fig. 2) of the server (3 of Fig. 2) performs the actual storage partition ~~by, which divides~~ dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11 of Fig. 2) ~~[[of]]~~ on the storage system (10 of Fig. 2) ~~[[on]]~~ of the server (3 of Fig. 2) needs to be exclusively assigned and exported to a given specific wireless device (1 of Fig. 2) by the console support software (5 of Fig. 2) ~~[[on]]~~ of the server (3 of Fig. 2).

[036] Data and storage volume management (refer to Fig. 2)

4) With the support of the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2), the a user on a web-browser (8 of Fig. 2) of the wireless device (1 of

Fig. 2) can setup ~~the~~ folder[[/]] or directory structure on the file system of his/her assigned external storage volume (11 ~~of Fig. 2~~). In addition, the user on the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) can performing all data management operations such as delete, copy, move, or rename etc. and others for file or folder on that file system.

[037] In order to support such data management [[on]] over the external storage (10 ~~of Fig. 2~~) by using ~~the~~ ~~from~~ web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~), first the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~) must communicate with the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) for presenting the external storage to the user. Therefore, the user from the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) can choose desired data management operations and submit each operation for sending the operation information to the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~). These operations include establishing folder[[/]] or directory, and copying, moving, or renaming data file ~~etc. and others for the folder or directory~~. Second, upon receiving the data management operation, the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~) actually performs these requested operations [[on]] over the assigned file system of an assigned external storage volume (11 ~~of Fig. 2~~) on the server system (3 ~~of Fig. 2~~).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures[[,]] or messages into the assigned file system on the external storage (11 ~~10 of Fig. 2~~) of a server (3 ~~of Fig. 2~~), the other software modules (9 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) need to send these data to the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) via communication link between them. Upon receiving the data, the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) write these data to the assigned file system [[of]] on the assigned storage volume (11 ~~of Fig. 2~~) [[on]] of the server (3 ~~of Fig. 2~~). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If ~~a~~ the wireless device (1 ~~of Fig. 3~~) user wants to download data from a remote web server (1512 ~~of Fig. 3~~) into an assigned file system (11 ~~of Fig. 3~~) of the external storage (1110 ~~of Fig. 3~~) on a server (3 ~~of Fig. 3~~), the following steps are required:

[041] 1) The user from a web-browser (8 ~~of Fig. 3~~) of ~~the~~ a ~~specific~~ the wireless device (1 ~~of Fig. 3~~) accesses to a remote ~~download~~ web server site (1512 ~~of Fig. 3~~) and to obtain the information for the downloading via the path (a) of the Fig. 3. For example, ~~[[to]]~~ the user ~~get~~ obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9 ~~of Fig. 3~~) of ~~a~~ specific the wireless device (1 ~~of Fig. 3~~) ~~obtains~~ obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1 ~~of Fig. 3~~) after the web-browser (8 ~~of Fig. 3~~) accessing to the ~~download~~ web site (1512 ~~of Fig. 3~~).

[043] 3) The other software modules (9 ~~of Fig. 3~~) of ~~a~~ specific the wireless device (1 ~~of Fig. 3~~) send the obtained downloading information to other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) via the path (b) ~~of the Fig. 3~~.

[044] 4) Upon receiving the downloading information from ~~a~~ specific the wireless device (1), the other service module (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) sends a web download request to ~~download~~ the web-site (1512 ~~of Fig. 3~~) via the path (c) ~~of Fig. 3~~ based on download information obtained ~~it~~ and then receives the downloading ~~information~~ data from the web server of ~~download~~ the web-site (1512 ~~of Fig. 3~~).

[045] 5) Upon receiving downloading~~[[ed]]~~ data, the other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) write ~~these~~ the data for the ~~specific~~ the wireless device (1 ~~of Fig. 3~~) into the assigned file system (11 ~~of Fig. 3~~) on the server (3 ~~of Fig. 3~~).

[046] Retrieve data from external storage of a wireless device;

[047] 1) If a web-browser (8) has embedded video or music functionality, the web-browser (8 of Fig. 2) of a wireless device (1 of Fig. 2) can be used to retrieve and play ~~those~~ multimedia data file such as video or music stored in the wireless device's external storage volume (11 ~~10~~ of Fig. 2), which actually located on a server (3 of Fig. 2).

[048] 2) If there is needs, the other software module (9 of Fig. 2) of the wireless device (1 of Fig. 2) also can retrieve data file from the assigned file system of the assigned storage volume (11 of Fig. 2) on a server (3 of Fig. 2).

[049] Support external storage for large number of the wireless devices;

[050] Referring now to the Fig. 4. If ~~[[we]]~~ there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on ~~[[a]]~~ the server unit can support 2024 user. Therefore, a Each server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, ~~with external storage~~ such as for supporting 500,000 ~~of them~~ wireless devices, a larger number of the servers ~~are~~ is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in ~~previous~~ the prior patent ~~[[s]] applications~~ submission. With the CCDSVM the control management system ~~station~~ can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

<<<<The Clean version of the amended specification>>>>

System and Method For Wireless Device Access To External Storage

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced application number 10/713,904 of “Concurrent Web Based Multi-task Support for Control Management System” and application number 10/713,905 of “IP Based Distributed Virtual SAN” in the name of same inventor.

Field of the Invention

[002] This invention relates to wireless devices access to and use of external storage space provided by a server.

Background Information

[003] Storage system can be categorized as internal storage or external storage system.

[004] The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory, and others that are internally connected in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal components of the computing system in a same enclosure.

[005] The external storages of a computing system are those storage media that are not the internal components of the computing system in a same enclosure. Therefore, they have to be connected through longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media, and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical

storage drives, memory card and others, and could be in any form such as Raid which usually consists of a group of hard disk drives.

[006] To effectively use a storage system, the storage devices of the storage system usually need to be partitioned into small volumes. After the partition, each of the volumes can be used for establishing a file system on top of it. To simplify the discussion, herein, the term of the storage volume and its corresponding file system, and the term of the storage partition are often used without differentiation in this invention.

[007] CCDSVM is an abbreviation for a central controlled distributed scalable virtual machine. The CCDSVM allows a control management system to control a group of computing systems for providing distributed services to client systems over the Internet, Intranet, and LAN environment.

[008] The ISP refers to Internet service provider and the ASP refers to application service provider.

[009] **Brief Description Of Figures:**

[010] Fig. 1 is the same figure as the Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception of renaming a console host as a wireless device.

[011] Fig. 2 is the same figure as the Fig. 1 of this invention with an exception that illustrates a more detailed storage system controlled by a server. In addition, multiple wireless devices are presented.

[012] Fig. 3 shows a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to an external storage of the wireless device.

[013] Fig. 4 is the same figure as the Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server provides a file system as external storage for each of wireless device instead of providing IP based virtual SAN service. Also, each host actually is a wireless device.

[014] Unless specified, the programming languages and the protocols used by the software modules, and the computing systems used in this invention are assumed to be the same as described in the prior patent applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, users commonly face a problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been briefly introduced in the prior patent applications by the same author.

[018] Now examine how can the external storage actually be used by the wireless devices. First, let each server unit (e.g. the server 3 of the Fig. 2) partition its storage system in such way that each of volumes will have multiple GB in size. Therefore, a user of any one of the wireless devices can exclusively be assigned for access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB storage space, then a 160GB disk drive can support 40 users. Therefore, a 4096GB storage system on the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volume on the server unit. In addition, the user on the wireless device also can download multimedia data from an ISP or ASP to the assigned storage volume of the designated server unit

3 through out-band approach shown in Fig. 3). Finally, the user can use a web-browser, which has a functionality of invoking embedded video or music, to enjoy his/her stored multimedia contents.

[019] These and other features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, this figure demonstrates a network connection between a wireless device and a server, where Net (2) represents a communication link, which may be combined with wireless and wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] In the Fig. 1, the console support software (5) on the server (3) can support web-based multitasking while a user using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated to perform creating structured layered file directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories and others on an assigned storage volume of the server (3).

In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data (file) being sent or received could be a digital photo picture, a message and others.

[023] Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others.

[024] Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] The Fig. 2 has demonstrated how can the storage of a server 3 be assigned to multiple wireless devices as their external storage as follow:

First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a console host (12).

[027] Second, the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server 3 for maximum numbers of the wireless devices.

[028] In addition, the storage connection media could be any kind such as SCSI cable, IP cable, Fiber cable and others. The storage system itself could be various types.

[029] Finally, the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] The Fig. 3 has demonstrated that a user from a web-browser (8) on a wireless device (1) can download data from a known web-site (15) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication link between the wireless device (1) and a remote web-site (15), which provides contents for web download. The dash-lined path (b) represents a communication link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link between the server 3 and the remote web-server (15), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram of the wireless devices (1) using the external storage system (10) of a server (3), which will effectively-resolve the storage limitation problem for the wireless devices (1).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10) on a server (3) needs to be partitioned into suitable size of volumes (11) such as 4GB for each, which will allow the server 3 to serve maximum number of the wireless devices (1). With the web console support software (5) of the server (3), the task of partitioning the storage system (10) can be done through a web-console (13) on a console host (12) by an administrative staff.

[034] In order to support storage partition, first the console support software (5) of the server (3) must send storage information of the server (3) to the web-console (13) of the console host (12). The storage information includes each storage device name, storage total size and others. Second, based on the storage information received, the administration staff on the console host (12) can use the web-console (13) to partition each storage device and send the storage partition information to the console support software (5) of the server (3). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13) of the console host (12), the console support software (5) of the server (3) performs the actual storage partition by dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11) on the storage system (10) of the server (3) needs to be exclusively assigned and exported to a given specific wireless device (1) by the console support software (5) of the server (3).

[036] Data and storage volume management (refer to Fig. 2)

With the support of the console support software modules (5) of the server system-(3), a user on a web-browser (8) of the wireless device (1) can setup folder or directory structure on the file system of his/her assigned external storage volume (11). In addition, the user on the web-browser (8) of the wireless device (1) can performing all data management operations such as delete, copy, move, or rename and others for file or folder on that file system.

[037] In order to support such data management over the external storage (10) by using the web-browser (8) of the wireless device (1), first the console support software modules (5) of the server system (3) must communicate with the web-browser (8) of the wireless device (1) for presenting the external storage to the user. Therefore, the user from the web-browser (8) of the wireless device (1) can choose desired data management operations and submit each operation for sending the operation information to the console support software modules (5) of the server system (3). These operations include establishing folder or directory, and copying, moving, or renaming data file and others for the folder or directory. Second, upon receiving the data management operation, the console support software modules (5) of the server system (3) actually performs these requested operations over the assigned file system of an assigned external storage volume (11) on the server system (3).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures or messages into the assigned file system on the external storage (11) of a server (3), the other software modules (9) of the wireless device (1) need to send these data to the other service modules (7) of the server (3) via communication link between them. Upon receiving the data, the other service modules (7) of the server (3) write these data to the assigned file system on the assigned storage volume (11) of the server (3). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If a wireless device (1) user wants to download data from a remote web server (15) into an assigned file system (11) of the external storage (11) on a server (3), the following steps are required:

[041] 1) The user from a web-browser (8) of the wireless device (1) access to a remote web server site (15) to obtain information for the downloading via the path (a) of the Fig. 3. For example, the user obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1) after the web-browser (8) access to the web site (15).

[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server (3) via the path (b).

[044] 4) Upon receiving the downloading information from the wireless device (1), the other service module (7) of the storage server (3) sends a web download request to the web-site (15) via the path (c) based on download information obtained and then receives the downloading data from the web server of the web-site (15).

[045] 5) Upon receiving downloading data, the other service modules (7) of the storage server (3) write the data for the wireless device (1) into the assigned file system (11) on the server (3).

[046] Retrieve data from external storage of a wireless device:

[047] 1) If a web browser (8) has embedded video or music functionality, the web-browser (8) of a wireless device (1) can be used to retrieve and play multimedia data file such as video or music stored in the wireless device's external storage volume (11), which actually located on a server (3).

[048] 2) If there is needs, the other software module (9) of the wireless device (1) also can retrieve data file from the assigned file system of the assigned storage volume (11) on a server (3).

[049] Support external storage for large number of the wireless devices:

[050] Referring now to the Fig. 4. If there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on the server unit can support 2024 user. Therefore, a server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, such as for supporting 500,000 wireless devices, a larger number of the servers is required, in

this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in the prior patent applications. With the CCDSVM the control management system can control larger number of storage servers to provide external storage for a huge number of the wireless devices.



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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31-50 have been presented for examination.

SPECIFICATION

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

DOUBLE PATENTING

3. The rejection of claims 31-50 for nonstatutory double patenting against patent number 9,239,686 is ***maintained*** and repeated below.
4. The rejection of claims 31-50 for nonstatutory double patenting against patent number 9,219,780 is ***maintained*** and repeated below.
5. The rejection of claims 31-50 for nonstatutory double patenting against patent number 9,098,526 is ***maintained*** and repeated below.
6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d

2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

7. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

8. The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

9. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,239,686. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,239,686

31. A wireless device access to a storage space, comprising:

1. A server for delivering storage service, comprising:

at least one cache storage, and

a plurality of storage spaces; and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless

a non-transitory computer-readable medium comprising program instructions that, being executed by the server,

device, cause the wireless device remotely access to the storage space, the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a serve to a user of the wireless device for remote access;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

45. A server for delivering storage service, comprising:

a plurality of storage spaces; and

a non-transitory computer-readable medium comprising program

causes the server delivering the storage service; wherein the program instructions comprise:

program instructions for allocating exclusively a first one of the storage spaces for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;

program instructions for presenting the first one of the storage spaces to the user on the first wireless device through communication with the first wireless device; and

program instruction for updating the first one of the storage spaces according to a requested operation for remotely access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation comprises storing data into the first one of the storage spaces or retrieving data therefrom, the storing of said data including to download a file from a remote server across a network into the first one of the storage spaces through utilizing download information for the file cached in the first wireless device in response to the user from the first wireless device performing the operation for downloading the file.

12. A server for delivering storage service, comprising:

a plurality of storage space, and

a non-transitory compute-readable medium comprising program

instructions that, being executed by the server, causes the server to control delivering the storage service;

wherein the program instructions comprise:

program instructions for assigning exclusively a first one of the storage spaces to a user of a first wireless device;

program instructions for establishing a communication link for the first wireless device remote access to the first one of the storage spaces;

program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and

program instructions for updating the first one of the storage spaces in accordance to a request operation for remote access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation for remote access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

the storing data further comprising to store a file from a remote server across a network into the first one of the storage spaces through utilizing data for the file cached in

instructions that, executed by the server, causes the server to deliver the storage service;

wherein the program instructions comprises:

program instructions for the server allocating exclusively a first one of the storage spaces of a predefined capacity to a user of a first wireless device;

program instructions for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;

program instruction for sending information of the first one of the storage spaces to the first wireless device for presenting the first one of the storage spaces to the user; and

program instructions for updating the first one of the storage spaces according to a requested operation for remotely access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

wherein said operation comprises creating from the first wireless device a folder structure of a plurality of folders in the first one of the storage spaces, and comprises to delete or move or copy or rename a first one of the folders in the folder structure,

wherein each of the folders being used by the first wireless device for storing data therein or retrieving data therefrom.

the first wireless device in response to the user from the first wireless device performing the storing of the file.

13. wherein said storing data includes to download a file from a remote server across a network into the first one of the storage spaces through utilizing download information for the file cached in the first wireless device in response to the user from the first wireless device performing the operation for downloading the file.

10. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,219,780. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,219,780

31. A wireless device access to a storage space, comprising:

1. A wireless device access to a remote storage space, the wireless device comprising:

at least one cache storage, and

at least one cache storage, and

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions include:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a serve to a user of the wireless device for remote access;

program instructions for establishing a wireless link for remotely access to the storage space, the storage space allocated exclusively by a storage server to a user of the wireless device;

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

program instructions for presenting the storage space to the user on the wireless device through communication with the storage server; and

program instructions for coupling with the server to carry out a requested

program instructions for coupling with the storage server across the wireless

operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

39. A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space assigned exclusively by the server to a user of the wireless device for remote access;

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and

link to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performed the operation,

wherein the program instructions for carrying out operation for the access to the storage space comprises program instructions for storing data therein or retrieving data therefrom, the program instructions for storing data including program instructions for downloading a file from a remote server across the Internet into the storage space through utilizing download information for the file, including name of the file and internet protocol (“IP”) address of the remote server, cached in the cache storage in response to the user from the wireless device performed the operation for the downloading.

9. A system comprising:
a pool of a plurality of storage spaces, and non-transitory computer-readable storage medium comprising program instructions which, being executed by by the server, causes the server delivering storage service, the program instructions include:

program instructions for allocating exclusively, via the storage pool, a first one of the storage spaces to a user of a first wireless device;

program instructions for establishing a communication link for the first wireless device remotely access to the first one of the storage spaces;

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,

the storing data further comprising a store a file from a remote server across a network into the remote storage space through utilizing data for the file in a cache storage of the wireless device in response to the user from the wireless device performing the storing of the file.

45. A server for delivering storage service, comprising:

a plurality of storage spaces; and

a non-transitory computer-readable medium comprising program instructions that, being executed by the server, causes the server to control delivering the storage service;

wherein the program instructions comprise:

program instructions for assigning exclusively a first one of the storage spaces to a user of a first wireless device;

program instructions for sending information of the first one of the storage spaces to the first wireless device for presenting the first one of the storage spaces to the user on the wireless device; and

program instructions for updating the the first one of the storage spaces in response to the user from the first wireless device performed an operation for said remotely access to the first one of the storage spaces,

the storing of a data object including to download a file from a remote server into the first one of the storage spaces through utilizing download information for the file, including name of the file and internet protocol (“IP”) address of the remote server, cached in a cache storage of the first wireless device in response to the user from the first wireless device performed the operation for the downloading.

16. A system comprising:

at least one storage server and one wireless device;

wherein the storage server comprises a plurality of storage spaces,

a first one of which being allocated to a user of the wireless device for exclusive access,

program instructions for establishing a communication link for the first wireless device remote access to the first one of the storage spaces;

and causes presenting the first one of the storage spaces to the user on the wireless device, and

program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to the user on the first wireless device; and

program instructions for updating the first one of the storage spaces in accordance to a request operation for remote access to the first one of the storage spaces in response to the user from the first wireless device performing the operation,

updates the first one of the storage spaces in responsive to the user from the wireless device performed an operation for remotely access to the first one of the storage spaces; and

wherein the wireless device couples with the storage server across a wireless link to carry out a requested operation for remotely access to the first one of the storage spaces in responsive to the user from the wireless device performed the operation for the access,

wherein said operation for remote access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

wherein the operation for remotely access to the first one of the storage spaces comprises storing data therein or retrieving data therefrom,

the storing data further comprising to store a file from a remote server across a network into the first one of the storage spaces through utilizing data for the file cached in the first wireless device in response to the user from the first wireless device performing the storing of the file.

storing of said data including to download a file from a remote server into the first one of the storage spaces through utilizing download information for the file cached in a cache storage in the wireless device in response to the user from the wireless device performed the operation for the downloading.

11. Claims 31-50 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,098,526. Although the claims at issue are not identical, they are not patentably distinct from each other because of the following analysis.

14/977209

9,098,526

31. A wireless device access to a storage space, comprising:

1. A wireless device comprising:

at least one cache storage, and

at least one cache storage, one wireless interface, and program code configured to cause the wireless device to:

one non-transitory computer-readable medium comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access;

establish a wireless link for the wireless device access to a storage space of a predefined capacity assigned exclusively to a user of the wireless device by a storage server, and

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server; and

couple with the storage server across the wireless link to carry out a requested operation for remote access to the assigned storage space in response to the user from the wireless device performed the operation,

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation,

wherein the operation for remote access to the storage space comprises

wherein the operation for the remote access to the assigned storage space

storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user from the wireless device performing the operation for the storing of the file.

39. A non-transitory computer-readable medium, in a wireless device, comprising program instructions which, being executed by the wireless device, cause the wireless device access to a remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a server across a communication link for access to the remote storage space, the remote storage space assigned exclusively by the server to a user of the wireless device for remote access;

program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to the user; and

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation for access to the remote storage space comprises

comprises storing a data object therein or retrieving a data object therefrom, the storage of a data object including to download a file from a remote server across a network into the assigned storage space through utilizing download information for the file stored in said cache storage in response to the user from the wireless device performed the operation for downloading the file from the remote server into the assigned storage space.

11. A non-transitory compute-readable medium comprising program code that, being executed by a wireless device, causes the wireless device to:

establish a wireless link for the wireless device access to a storage space of predefined capacity assigned exclusively by a storage server to a user of the wireless device;

couple with the storage server through the wireless link to carry out a requested operation for remote access to the assigned storage space in response to the user from the wireless device performed the operation,

wherein the operation for the remote access to the assigned storage space comprises storing a data object therein

or retrieving a data object therefrom, the storing of the data object including

storing data therein or retrieving data therefrom,

to download a file from a remote server

the storing data further comprising a store a file from a remote server across a network into the remote storage space through utilizing data for the file in a cache storage of the wireless device in response to the user from the wireless device performing the storing of the file.

on a network into the assigned storage space through utilizing download information for the file stored in a cache storage of the wireless device in response to the user from the wireless device performed the operation for downloading the file from the remote server into the assigned storage space.

12. "A latter patent claim is not patentably distinct from an earlier patent claim if the latter claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obvious-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obvious-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). *ELI LILLY AND COMPANY v BARR LABORATORIES, INC.*, United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

13. Humans are a species of the animal genus. Our case law firmly establishes that a later genus claim limitation is anticipated by, and therefore not patentably distinct from, an earlier species claim. *In re Berg*, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 1053, 29 USPQ2d 2010, 2016 (Fed. Cir. 1993); *In re Gosteli*, 872 F.2d 1008, 1010, 10 USPQ2d 1614, 1616 (Fed. Cir. 1989); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d at 944, 214 USPQ at 767 (C.C.P.A. 1982)." *ELI LILLY AND COMPANY v BARB LABORATORIES, INC.*, United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC

(DECIDED: May 30, 2001).

35 USC 102

14. The rejection of claims 31-50 as being anticipated by Bhide (US 2003/0194998) is ***maintained*** and repeated below.

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

16. Claims 31-50 are rejected under 35 U.S.C. 102(a) as being anticipated by Bhide (US 2003/0194998).

17. Bhide teaches the claimed invention (claims 31, 39 and 45) as claimed including a wireless device and server used to access a storage space, the wireless device and server comprising:

at least one cache storage (e.g. see Figure 1, element 150);

one non-transitory computer-readable comprising program instructions which, being executed by the wireless device, cause the wireless device remotely access to the storage space, with data and/or programs stored in nonvolatile memory (e.g. see paragraph 0014), the storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user;

the program instructions comprise:

program instructions for establishing a wireless link for remote access to the storage

space, the storage space assigned exclusively by a server to a user of the wireless device for remote access (e.g. see paragraph 0015);

program instructions for presenting the storage space to the user upon the wireless device receiving information of the storage space from the server as program instructions including a configuration program that allows the user remote access via a remote wireless device (e.g. see paragraph 0015);

program instructions for coupling with the server to carry out a requested operation for remotely access to the storage space in response to the user from the wireless device performing the operation (e.g. see Figure 1); and,

wherein the operation for remote access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to store a file from a remote server across a network into the storage space through utilizing data for the file in the cache storage in response to the user form the wireless device performing the operation for the storing of the file as downloading data or files from network elements to the personal cache (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 32, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claims 33, 40 and 46, Bhide teaches the present invention wherein the file from the remote server including obtaining, by the wireless device, data for the file from the remote server transmitting the data for the file cached in the wireless device to the server and causing the server in accordance with data for the file to store the file into the remote storage space (e.g. see paragraphs 0027-0029).

As to claim 34, 41 and 47, Bhide teaches the present invention wherein the operation for remotely access to the storage space comprises creating, from the wireless device, a folder structure in the storage space as downloading data to the wireless device or using the wireless device for access to the other parts of the network (e.g. see paragraphs 0027-0029).

As to claim 35, 42 and 48, Bhide teaches the present invention wherein the operation for remotely access to the storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space (e.g. see paragraphs 0030-0032).

As to claim 36, 43 and 50, Bhide teaches the present invention wherein the data for the file in the cache storage comprises at least the name of the file and the internet protocol (“IP”) address of the remote server as it being inherent that “IP” addresses are used since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claims 38 and 44, Bhide teaches the present invention further comprising the wireless device executing a web browser for the user access to the Internet, including access to the remote storage space (e.g. see paragraph 0004).

RESPONSE TO APPLICANT’S REMARKS

18. Applicant's arguments filed May 10, 2016 have been fully considered but they are not persuasive.

19. A terminal disclaimer was filed in this application, however, the patents listed on the terminal disclaimer were not the patents given as the conflicting patents under the double patenting rejection.

20. As to the remarks directed to the usage of a cache storage, the Bhide reference teaches using a cache, with the cache being part of a user wireless device as downloading data to a cache within the user wireless device when it is determined that the user wireless device has sufficient storage capacity for the data to be downloaded. This appears at the cite given in the above rejection, paragraphs 0027-0029 of the Bhide reference.

OFFICE ACTION FINALITY

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

CONCLUSION

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reba I. Elmore, whose telephone number is (571) 272-4192. The examiner can normally be reached on Monday and Thursday from 7:30am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the art unit supervisor for AU 2131, Christian Chace, can be reached for general questions concerning this application

at (571) 272-4190. Additionally, the official fax phone number for the art unit is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center central telephone number is (571) 272-2100.

/Reba I. Elmore/
Primary Patent Examiner
Art Unit 2131

program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation, wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a remote server across a network into the remote storage space through utilizing information for the file in a cache storage of the wireless device in response to the user from the wireless device performing the downloading of the file.”

In the claim 39 of instant application, a wireless device is configured for access across a network to a storage space controlled by a (first) server. Specially, the wireless device controls downloading a file from a second (remote) server designating to the first server’s the storage space by utilizing information for the file cached in the wireless device that are disclosed in of instant application according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent 10/726,897.

On the other hand, Bhide has disclosed a system to facilitate a wireless device 105 accessing across a network to a personal cache storage 150 controlled by an Adjunct server 190. the wireless device of Bhide also controls download a file from the cache storage 150 designating to the wireless device itself according to Fig. 1 and [0015] & [0016] of Bhide.

The above discussions have clearly indicated the major differences between the claim 39 of instant application and the Bhide in respect to the limitation of downloading a file that are also listed in the table below:

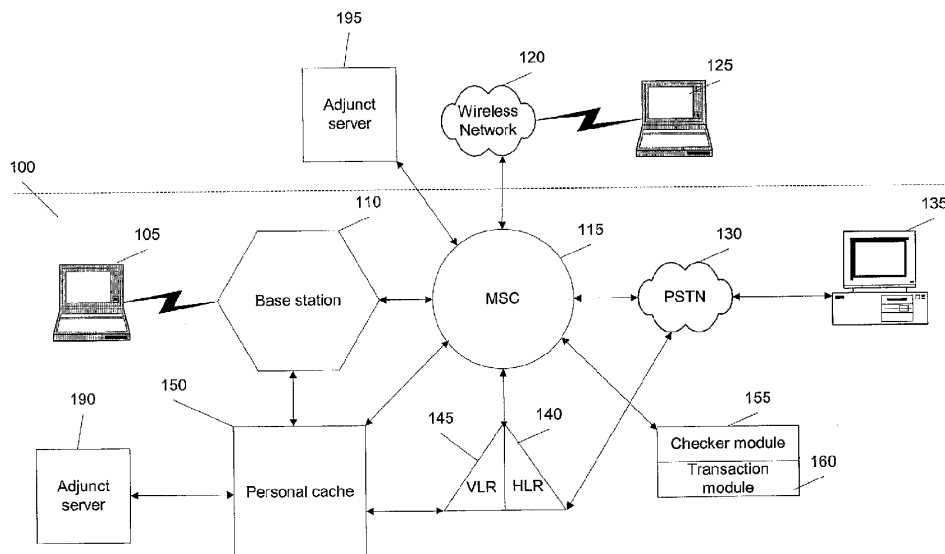
	Claim 39	Bhide
Device controls downloading	A wireless device	A wireless device
Designation of the download	A (first) server’s storage space on a network assigned to a user of the wireless device for exclusive access.	The wireless device itself
Source file of the download	On a remote (second) server.	On a personal cache storage of an Adjunct server on a network subscribed (assigned to) by a user of the wireless device.
The process of the download	The wireless device <u>using the information of the source file</u>	The wireless device directly downloading the source file

	cached in the wireless device to control downloading the source file from the second server to the first server's storage space.	from the subscribed personal cache storage of the Adjunct server to the wireless device
Exemplary Support Information	Fig. 3, claim 8, and page 5, lines 37-page 6 line 20 of parent 10/726,897.	Fig. 1, Fig. 2, [0015], [0027] & [0029].

From above discussion, it is clear that Bhide's wireless device does not comprise limitations in the claim 39 of instant application, specially, it does not comprise the limitation of using the information of a file cached in the wireless device to control downloading the file from a second server into a first server's storage space assigned to a user of the wireless device in the claim 39. Thus, the claim 39 is patentable over the referenced Bhide. Since the claims 31 and 45 are similar to the claim 39, therefore, they are also patentable over the Bhide. Thus, all dependent claims of the claims 31, 39 and 45 are also patentable over the Bhide as matter of law.

3: Regarding Limitations of the referenced Bhide (recited below):

a) Fig. 1 of Bhide:



b) Regarding source and designation of the downloading of Bhide:

The [0015] of Bhide has clearly disclosed (emphasis and labels are added)

“ ... If the user has subscribed to the personal cache 150 feature, a transaction module 160 may download the information in the user's personal cache 150 based on a set of rules (described later). The information in the personal cache 150 may be sent, automatically, e.g., on a time schedule, from the personal cache 150 on the wireless network 100 to a user's wireless device 105 and vice-versa ... The personal cache 150 may contain any information such as audio files, text files, video files and audio-video files or programs.” .

The [0027] of Bhide has clearly disclosed (emphasis and labels are added) :

“whether the wireless device 205 has sufficient memory to store all the information in the user's personal cache 250. If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205”.

The [0029] of Bhide has clearly disclosed (emphasis and labels are added) :

“If the wireless device 205 has sufficient memory, then at 345, the information in the new personal cache 265 is downloaded to the wireless device 205. However, if the wireless device 205 does not have sufficient memory, the information is maintained in the new personal cache 265, and parts of the information may be downloaded to the wireless device 205 on an as-needed basis”.

c) Regarding Subscription of The Personal Cache Storage From ISP”:

1) Applicant would like to explain that although Bhide teaches using a personal cache, yet the personal cache of Bhide is not a part of a wireless device, but rather is a subscribe-able external storage space from an ISP assigned (allocated) to a user of the wireless device. This fact can be found in paragraphs [0015], [0018], and Fig. 1 & 2 of Bhide, for example:

a) [0015] “ ... If the user has subscribed to the personal cache 150 feature ... , the user may log on, e.g., using a URL and a password to the wireless adjunct servers 190 or 195 that includes the personal cache 150”

b) [0018] “...the subscribed features of the user may include at least the amount of personal cache 150 allocated to a particular user”;

c) In the Fig. 1 recited above, a wireless device 105 must go across a wireless network 100 in order for access the personal cache storage 150 controlled by a Adjunct server 190.

Because the personal cache storage of Bhide needs to be subscribed, therefore, the personal cache storage is actually a storage space provided to a user by an ISP, for e.g. now days provided by Google Drive, or Dropbox etc. Therefore, the personal cache storage of Bhide is not part of

the wireless device, but is the storage space such as provided by Google Drive or other cloud vendors.

Also because the wireless device of Bhide has to go across a network for accessing the personal cache storage assigned to a user of the wireless device, therefore, the personal cache storage of Bhide is not a part of the wireless device. At time of Bhide's disclosure, there were lots of ISP providing such cache storage space to users and named as "cache" storage, and each ISP has huge amount of cache server farms.

d) Regarding Using Information of File Cached in a Wireless Device:

Even if the wireless device illustrated in Fig. 4 and [0031] – [0034] of Bhide can have a cache storage that may be cached with information of a file. However, the entire specification of Bhide does not disclose the limitations of how to utilize the information of a file in a cache storage of a wireless device for controlling download the file from a remote (second) server into a (first) server's storage space of the claim 39.

4: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor's address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 08/012016

/Shengtai tsao/

Sheng Tai (Ted) Tsao
3906 Borgo Common,
Fremont, CA 94538
408-813-0536
510-580-8592

Remark

1: Regarding Double Patenting:

A terminal disclaimer is filed in respect to the double patenting rejections related to patent No. 9,098,526, patent No. 9,219,780, and patent No. 9,239,686. Thus, a request for withdrawing the non-statutory double patenting rejection is respectively submitted.

2. Regarding The 35 USC §102 Rejections:

The Office Action of 03/24/2016 has rejected claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

After a careful reviewing office action, it is found that the Bhide has failed to teach or suggestion many limitations of instant application. For convenience of discussion, the rejected claim 39 is recited bellow (recited in part and emphasis added):

“39. A wireless device access to a remote storage space, the wireless device connecting to a server across a communication link for access to the remote storage space controlled by the server;
program instructions for the wireless device receiving information of the remote storage space from the server and presenting the remote storage space to a user on the wireless device; and
program instructions for the wireless device coupling with the server to carryout an operation for access to the remote storage space in response to the user from the wireless device performing the operation,
wherein said operation for access to the remote storage space comprises storing data therein or retrieving data therefrom,
the storing data further comprising to download a file from a remote server across a network into the remote storage space through utilizing information for the file in a cache storage of the wireless device in response to the user from the wireless device performing the downloading of the file.”

In the claim 39 of instant application, a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading a file from a second server into the remote storage space controlled by the first server by utilizing information for the file stored in the wireless device that are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent 10/726,897.

On the other hand, Bhide has disclosed a system to facilitate a wireless device 105 accessing, across a network, a personal cache storage 150 controlled by an Adjunct server 190.

The wireless device of Bhide facilitates downloading a file from the cache storage 150 into the wireless device itself according to Fig. 1 and [0015] & [0016] of Bhide.

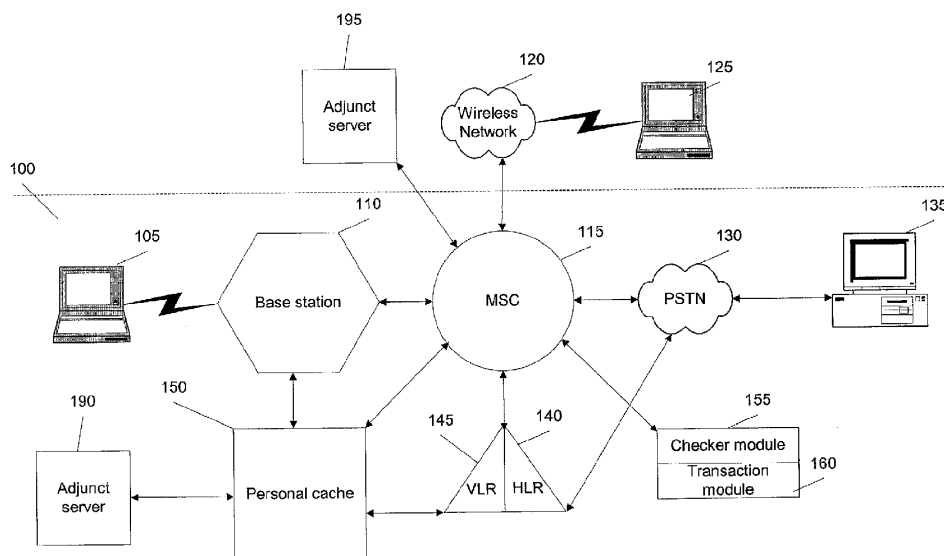
The above discussions have clearly indicated the major differences between the claim 39 of instant application and the Bhide for the limitation of downloading a file that are also listed in the table below:

	Claim 39	Bhide
Device controls downloading	A wireless device	A wireless device
Designation of the download	A remote storage space controlled by a first server on a network that is accessible to the wireless device.	The wireless device itself
Source file of the download	Residing on a second server on a network.	On a personal cache storage of an Adjunct server on a network subscribed (assigned to) by a user of the wireless device.
The process of the download	downloading the source file from the second server to the remote storage space controlled by the first server through <u>using the information of the source file stored in the wireless device</u> .	The wireless device directly downloading the source file from the subscribed personal cache storage of the Adjunct server to the wireless device itself.
Exemplary Support Information	Fig. 3, claim 8, and page 5, lines 37-page 6 line 20 of parent 10/726,897.	Fig. 1, Fig. 2, [0015], [0027] & [0029].

From above discussion, it is clear that Bhide’s wireless device does not comprise limitations in the claim 39 of instant application, specially, it does not comprise the limitation of downloading the file from a second server into a remote storage space controlled by a first server through using information of the file stored in the wireless device that resembled in the claim 39. Thus, the claim 39 is patentable over the referenced Bhide.

3: Regarding Limitations of the referenced Bhide:

a) Fig. 1 of Bhide:



b) Regarding source and designation of the downloading of Bhide:

The [0015] of Bhide has clearly disclosed (emphasis and labels are added)

“... If the user has subscribed to the personal cache 150 feature, a transaction module 160 may download the information in the user's personal cache 150 based on a set of rules (described later). The information in the personal cache 150 may be sent, automatically, e.g., on a time schedule, from the personal cache 150 on the wireless network 100 to a user's wireless device 105 and vice-versa ... The personal cache 150 may contain any information such as audio files, text files, video files and audio-video files or programs.”

The [0027] of Bhide has clearly disclosed (emphasis and labels are added) :

“whether the wireless device 205 has sufficient memory to store all the information in the user's personal cache 250. If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205.”

The [0029] of Bhide has clearly disclosed (emphasis and labels are added) :

“If the wireless device 205 has sufficient memory, then at 345, the information in the new personal cache 265 is downloaded to the wireless device 205. However, if the wireless device 205 does not have sufficient memory, the information is maintained in the new personal cache 265, and parts of the information may be downloaded to the wireless device 205 on an as-needed basis.”

c) Regarding Subscription of The Personal Cache Storage From ISP”:

1) Applicant would like to explain that although Bhide teaches using a personal cache, yet the personal cache of Bhide is not a part of a wireless device, but rather is a subscribe-able external storage space from an ISP assigned (allocated) to a user of the wireless device. This fact can be found in paragraphs [0015], [0018], and Fig. 1 & 2 of Bhide, for example:

a) [0015] “ ... If the user has subscribed to the personal cache 150 feature ... , the user may log on, e.g., using a URL and a password to the wireless adjunct servers 190 or 195 that includes the personal cache 150”

b) [0018] “...the subscribed features of the user may include at least the amount of personal cache 150 allocated to a particular user”;

c) In the Fig. 1 recited above, a wireless device 105 must go across a wireless network 100 in order for access the personal cache storage 150 controlled by a Adjunct server 190.

Because the personal cache storage of Bhide needs to be subscribed, therefore, the personal cache storage is actually a storage space provided to a user by an ISP, for e.g. now days provided by Google Drive, or Dropbox etc. Therefore, the personal cache storage of Bhide is not part of the wireless device, but is the storage space such as provided by Google Drive or other cloud vendors.

Also because the wireless device of Bhide has to go across a network for accessing the personal cache storage assigned to a user of the wireless device, therefore, the personal cache storage of Bhide is not a part of the wireless device. At time of Bhide’s disclosure, there were lots of ISP providing such cache storage space to users and named as “cache” storage, and each ISP has huge amount of cache server farms.

d) Regarding Using Information of File Cached in a Wireless Device:

Even if the wireless device illustrated in Fig. 4 and [0031] – [0034] of Bhide can have a cache storage that may be cached with information of a file. However, the entire specification of Bhide does not disclose the limitations of how to utilize the information of a file in a cache storage of a wireless device for controlling download the file from a remote (second) server into a (first) server’s storage space of the claim 39.

4: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor's address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 09/26/2016

/Shengtai tsao/

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408-813-0536
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AMENDMENT TO THE CLAIMS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device access to a remote storage space, ~~the wireless device~~ comprising:
at least one cache storage, and
one ~~non-transitory-computer-readable storage device medium~~ comprising program instructions which, ~~being executed by the wireless device, cause~~ configure the wireless device ~~remotely access to the remote storage space, wherein~~ the program instructions comprise:
program instructions for ~~the wireless device~~ establishing a wireless link for remote access to the remote storage space controlled served by a first server;
program instructions for ~~the wireless device~~ presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server; and
program instructions for ~~the wireless device~~ coupling with the first server to carry out a requested operation for remote access to the remote storage space in response to the user, through the remote storage space presented on, from the wireless device, performing the operation,
wherein the operation being carried out for remote access to the remote storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a ~~remote second~~ server across a network into the remote storage space through utilizing information for the file cached in the cache storage in response to the user from the wireless device performing the operation for the downloading of the file.
32. *(Previously Presented)* The wireless device of claim 31, wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music, a digital picture.

33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a ~~second remote-server~~ comprises:
obtaining, by the wireless device, the information for the file from the ~~second remote-server~~;
transmitting the information for the file ~~from cache~~ in the wireless device to the ~~first server~~;
and
causing the ~~first server~~ in accordance with the information for the file to ~~store/download~~ the file directly from the ~~second server~~ into the remote storage space.

34. *(Currently Amended)* The wireless device of claim 31, wherein said operation for ~~remotely~~ access ~~to~~ the ~~remote~~ storage space comprises:
creating, from the wireless device, a folder structure in the ~~remote~~ storage space.

35. *(Currently Amended)* The wireless device of claim 31, wherein said operation for ~~remotely~~ access ~~to~~ the ~~remote~~ storage space comprises:
deleting or moving or renaming or copying, from the wireless device, a file or folder in the ~~remote~~ storage space.

36. *(Currently Amended)* The wireless device of claim 31, wherein said information for the file ~~in the cache storage cached in the wireless device~~ comprises ~~at least~~ the name of the file and the internet protocol ("IP") address of the ~~second remote-server~~

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device ("PDA").

38. *(Currently Amended)* The wireless device of claim 31, further comprising: the wireless device executing a web browser for ~~the user~~ access ~~to~~ the Internet, or access ~~to~~ the remote storage space.

39. *(Currently Amended)* A ~~non-transitory~~ computer-readable ~~medium storage device~~, in a wireless device, comprising program instructions which, ~~being executed by the wireless~~

~~device, cause configure~~ the wireless device access ~~to~~ a remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a first server across a communication link for access ~~to~~ the remote storage space controlled by the first server;
program instructions for the wireless device receiving information of the remote storage space from the first server and presenting the remote storage space to a user on the wireless device; and

program instructions for the wireless device coupling with the first server to carry out an operation for access ~~to~~ the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation ~~being carried out~~ for access ~~to~~ the remote storage space comprises storing data therein or retrieving data therefrom,
the storing data further comprising to download a file from a second remote server across a network into the remote storage space through utilizing information for the file cached in a cache storage of the wireless device in response to the user from the wireless device performing the downloading of the file.

40. *(Currently Amended)* The computer-readable ~~storage device medium~~ of claim 39, wherein said downloading a file from a second remote server comprises:
obtaining by the wireless device the information for the file from the second remote server;
transmitting the information for the file from cached in the wireless device to the first server,
~~and to cause causing the first server in accordance with the information for the file to~~
~~store download~~ the file directly from the second server into the remote storage space.

41. *(Currently Amended)* The computer-readable medium of claim 39, wherein said operation for access ~~to~~ the remote storage space comprises:
creating, from the wireless device, a folder structure in the remote storage space.

42. *(Currently Amended)* The computer-readable medium of claim 39, wherein said operation for access ~~to~~ the remote storage space comprises:

deleting or moving or rename or copying, from the wireless device, a file or folder in the remote storage space.

43. *(Currently Amended)* The computer-readable medium of claim 31, wherein said information for the file ~~cached in the wireless device said cache storage~~ comprises at least the name of the file and the internet protocol (“IP”) address of the ~~second remote~~ server

44. *(Currently Amended)* The computer-readable medium of claim 31, wherein the wireless device further executes a web browser for ~~the user access to~~ the Internet or ~~access to~~ the remote storage space.

45. *(Currently Amended)* A server for delivering storage service, comprising:
a plurality of storage spaces; and
~~a non-transitory computer-readable medium storage device comprising program instructions that, being executed by the server, causes~~ configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for establishing a communication link for a first wireless device ~~remote~~ly access ~~to~~ a first one of the storage spaces;
program instructions for sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to a user on the first wireless device; and
program instructions for updating the first one of the storage spaces in accordance to a requested operation for ~~remote~~ly access ~~to~~ the first one of the storage spaces in response to the user, ~~through the information of the first one of the storage spaces displayed on~~ from the first wireless device, performing the operation,
wherein said operation for ~~remote~~ly access ~~to~~ the first one of the storage spaces comprises storing data therein or retrieving data therefrom,
the storing data further comprising to download a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in the first wireless device ~~in response to the user from the first wireless device~~ performing the downloading of the file.

46. *(Currently Amended)* The server of claim 45, wherein said downloading a file from a remote server further comprises:

the first wireless device obtaining information for the file from the remote server, and transmitting the cached information for the file to the server to cause the server in accordance with the information for the file to ~~store, download~~ the file directly from the ~~remote server~~ into the first one of the storage spaces.

47. *(Previously Presented)* The server of claim 45, wherein the data being stored into or retrieved from the first one of the storage spaces further is a message or multimedia data of video, digital music, or digital picture.

48. *(Previously Presented)* The server of claim 45, wherein said operation further comprises: from the first wireless device remotely deleting, moving, copying or renaming a file or folder in the first one of the storage spaces, or remotely creating a folder or a folder structure in the first one of the storage spaces.

49. *(Currently Amended)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user remotely access ~~to~~ the second one of the storage spaces.

50. *(Currently Amended)* The server of claim 45, wherein the ~~cached~~ information for the file further comprises ~~at least~~ the name of the file and the internet protocol ("IP") address of the remote server.



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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO., EXAMINER, ART UNIT, PAPER NUMBER, NOTIFICATION DATE, DELIVERY MODE. Includes application details for Sheng Tai Tsao and examiner information.

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ted.tsao@sttwebos.com
ted.tsao@yahoo.com
ted.tsao@comcast.net

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31-50 have been presented for examination.

SPECIFICATION

2. Claim 1 is objected to because the amendment removed the period at the end of the claim.
3. Paragraph 022, line 10 has the phrase ‘*or received cold be,*’ which should be ‘*or received could be*’.
4. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant’s cooperation is requested in correcting any errors of which applicant may become aware in the specification.

DOUBLE PATENTING

5. The rejections based on nonstatutory double patenting are ***withdrawn*** due to the filing of terminal disclaimers.

35 USC 102

6. The rejection of claims 31-50 as being anticipated by Bhide (US 2003/0194998) is ***maintained*** and repeated below.
7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or

application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

8. Claims 31-50 are rejected under 35 U.S.C. 102(a) as being anticipated by Bhide (US 2003/0194998).

9. Bhide teaches the claimed invention (claim 31) as claimed including a wireless device having access to a storage space, the wireless device comprising:

at least one cache storage (e.g. see Figure 1, element 150);

one computer-readable storage device comprising program instructions which, configure the wireless device to access the storage space, wherein, program instructions comprise instructions stored in memories (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user (e.g. see Figure 1, element 150);

the program instructions comprise:

program instructions for the wireless device establishing a wireless link for the remote storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access with the remote storage space being served by a first server with the first server being equivalent to Adjunct server (e.g. see paragraph 0015 with the Adjunct server also being shown in Figure 1, element 190);

program instructions for the wireless device presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server as program instructions including a configuration program that allows the user to have remote access to the remote storage space via a remote wireless device as *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or*

remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150' (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out a requested operation for the remote storage space in response to the user, through the remote storage space presented on the wireless device, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for access to the storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a server across a network into the remote storage space through utilizing information for the file cached in the wireless device as downloading data or files from network elements to the personal cache when the memory of the wireless device does not have sufficient space for the downloaded information (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 32, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claim 33, Bhide teaches the present invention wherein downloading a file from a second server (e.g. see Figure 2, element 295) comprises obtaining, by the wireless device, the information for a file from the second server; transmitting the information for the file from the wireless device to the first server and causing the first server in accordance with the information for the file to store the file directly from the second server into the remote storage space as retrieving data from remote web sites or remote databases and saving the data in the user's personal cache 250 (e.g. see paragraph 0023).

As to claim 34, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises creating, from the wireless device, a folder structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 35, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 36, Bhide teaches the present invention wherein the data for the file is cached in the wireless device comprising the name of the file and the internet protocol (“IP”) address of the second server as it being inherent that “IP” addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claim 38, Bhide teaches the present invention further comprising the wireless device executing a web browser as the user having access to web locations (e.g. see paragraph 0015).

10. Bhide teaches the present invention (claim 39) as claimed including a computer-readable

storage device, in a wireless device, comprising program instructions which, configure the wireless device access to remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a first server across a communication link for access to the remote storage space controlled by a first server as a network which has multiple parts (e.g. see Figure 1);

program instructions for the wireless device receiving information of the remote storage space from the first server and presenting the remote storage space to a user on the wireless device as the network including a personal cache as being equivalent to the remote storage space and with the first server being equivalent to an Adjunct server (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out an operation for access to the remote storage space in response to the user from the wireless device performing the operation (e.g. see paragraph 0015);

wherein the operation being carried out for access to the remote storage space comprises storing data therein or retrieving data therefrom as a user accessing the personal cache for storing and retrieving data (e.g. see paragraph 0015); and,

storing data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cache in the wireless device as a user being able to access either adjunct server 190 or adjunct server 195 for transferring files to or from other web locations (e.g. see paragraph 0015).

As to claim 40, Bhide teaches the present invention wherein the downloading a file from a second server comprises obtaining by the wireless device the information for the file from the second server as the user having access to adjunct server 190 and adjunct server 195 (e.g. see

paragraph 0015); transmitting the information for the file from the wireless device to the first server as a using having access to both a personal cache and the first server, adjunct server 190 (e.g. see paragraph 0015); and causing the first server in accordance with the information for the file to store the file directly from the second server into the remote storage space as the reference having the connectivity for the access and transactions described (e.g. see Figure 1).

As to claim 41, Bhide teaches the present invention wherein the operation for access to the remote storage space comprises creating, from the wireless device, a folder structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 42, Bhide teaches the present invention wherein the operation for access to the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the remote storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 43, Bhide teaches the present invention wherein the information for the file cached in the wireless device, the name of the file and the internet protocol (“IP”) address of the second server as it being inherent that “IP” addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 44, Bhide teaches the present invention wherein the wireless device further executes a web browser for accessing the Internet or access the remote storage space as the user

having access to web locations (e.g. see paragraph 0015).

11. Bhide teaches the present invention (claim 45) as claimed including a server for delivering storage service, comprising:

a plurality of storage spaces (e.g. see Figure 1);

a computer readable storage device comprising program instructions that configure the server to control delivering the storage service as an adjunct server 190 for controlling a personal cache 150 (e.g. see paragraph 0015);

wherein the program instructions comprise:

program instructions for sending information of a first storage space to a first wireless device to present the first storage space to a user on the first wireless device as a wireless device using a personal cache 150 (e.g. see paragraph 0015);

program instructions for updating the first of the storage spaces in accordance to a requested operation for remotely accessing the first storage space in response to the user, through the information of the first storage spaces displayed on the first wireless device as having a wireless device such as a PDA or cell phone connected to a personal cache 150 (e.g. see paragraph 0015);

wherein the operation for remotely accessing the first storage space for storing and retrieving data therefrom (e.g. see paragraph 0015); and,

the storing of data further comprising downloading a file from a remote server across a network into the first storage space through utilizing information for the file as downloading data using the personal cache, a wireless device and a server (e.g. see paragraph 0022).

As to claim 46, Bhide teaches the present invention wherein downloading a file from a

remote server (e.g. see Figure 2, element 295) comprises obtaining information for the file from the remote server as the wireless device receiving data from the adjunct server and transmitting the cached information for the file from the first server in accordance with the information for the file to store the file directly from the remote server to the remote storage space as retrieving data from remote web sites or remote databases and saving the data in the user's personal cache 250 (e.g. see paragraph 0023).

As to claim 47, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claim 48, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 49, Bhide teaches the present invention wherein the server presents a second one of the storage space to a user on a second wireless device for facilitating the user for remotely accessing the second storage spaces as it being inherent that a network can comprise multiple user, multiple personal caches and multiple servers.

As to claim 50, Bhide teaches the present invention wherein the information for a file further comprises the name of the file and the internet protocol ("IP") address of the remote server as it being inherent that "IP" addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts

of the network.

RESPONSE TO APPLICANT'S REMARKS

12. Applicant's arguments filed September 26, 2016 have been fully considered but they are not persuasive.

	<i>Claim 39</i>	<i>Bhide</i>
Device controls downloading	A wireless device	A wireless device
Designation of the download	A remote storage space controller by a first server on a network that is accessible to the wireless device <i>the wireless device of the present invention must identify the file to be downloaded as given in paragraph 30 of the present disclosure which discusses using a web browser on the wireless device</i>	The wireless device itself
Source file of the download	Residing on a second server on a network.	On a personal cache storage of an Adjunct server on a network subscribed (assigned to) by a user of the wireless device. Paragraph 0015: <i>'After accessing the configuration program the user may transfer selected files from a user's machine or from other web locations to a personal cache 150.</i>
The process of the download	downloading the source file from the server to the remote storage space	The wireless device directly downloading the source file from the subscribed personal

controlled by the first cache storage of the Adjunct server through using the information of the source file stored in the wireless device. server to the wireless device itself.

Paragraph 0015:
'After accessing the configuration program the user may transfer selected files from a user's machine or **from other web locations to a personal cache 150.**

Exemplary Support Information

Fig. 3, claim 8, and page 5, lines 37 to page 6, line 20 of parent 10/726897.

Fig. 1, Fig. 2, [0015], [0027] & [0029].

Paragraph 0027:
*'a determination is made whether the wireless device 205 has sufficient memory to store all the information in the user's personal cache 250. If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. **If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis.***

Paragraph 0029:
'After executing the rules at 335, a determination is made whether the wireless device 205 has sufficient memory to store the information in the new personal cache 265. If the wireless device 205 has sufficient memory, then at 345, the information in the new personal cache 265 is downloaded to the wireless

device 205. However, if the wireless device 205 does not have sufficient memory, the information is maintained in the new personal cache 265, and parts of the information may be downloaded to the wireless device 205 on an as-needed basis.

CONCLUSION

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reba I. Elmore, whose telephone number is (571) 272-4192. The examiner can normally be reached on Monday and Thursday from 7:30am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the art unit supervisor for AU 2131, Christian Chace, can be reached for general questions concerning this application at (571) 272-4190. Additionally, the official fax phone number for the art unit is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center central telephone number is (571) 272-2100.

/Reba I. Elmore/
Primary Patent Examiner
Art Unit 2131

Application No. 14/977,509

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Non-Final Office Action

Dear Commissioner:

This communication directs to response to the non-final office action mailed on 10/24/2016. In the request response, enclosed please find:

- 1) Claim amendments in response to the office actions started on page 2 of this paper; and
- 2) A copy of remark for overcoming the office rejections.
- 3) A substitute specification accompanied with a markup version of the specification for correcting the informalities found by the office action in the paragraph [022]. There is no other changes.

Very appreciate helps from PTO to enter the amended claims and reconsidering the allowance of the instant application since all office rejections have been overcome.

Respectively Submitted

10/31/2016

/shengtai Tsao/

Sheng Tai (Ted) Tsao

3906 Borgo Common,
Fremont, CA 94538
408-813-0536
510-580-8592

AMENDMENT TO THE CLAIMS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device access a remote storage space, the wireless device comprising:
- at least one cache storage for caching data from the Internet, and
 - one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein the program instructions comprise:
 - program instructions for the wireless device establishing a wireless link for access the remote storage space served by a first server;
 - program instructions for the wireless device presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server; and
 - program instructions for the wireless device coupling with the first server to carry out a requested operation for access the remote storage space in response to the user, through using the remote storage space presented on the wireless device, performing the operation,
- wherein the operation being carried out for access the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device.
32. *(Previously Presented)* The wireless device of claim 31, wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music, a digital picture.
33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

obtaining, by the wireless device, the information for the file from the second server;
transmitting the information for the file from the wireless device to the first server, and
causing the first server in accordance with the information for the file to store the file directly
from the second server into the remote storage space.

34. *(Previously Presented)* The wireless device of claim 31, wherein said operation for access the remote storage space comprises:

creating, from the wireless device, a folder structure in the remote storage space.

35. *(Previously Presented)* The wireless device of claim 31, wherein said operation for access the remote storage space comprises:

deleting or moving or renaming or copying, from the wireless device, a file or folder in the remote storage space.

36. *(Previously Presented)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises the name of the file and the internet protocol (“IP”) address of the second server

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim ~~36~~34, ~~wherein said program instructions configuring the wireless device access the remote storage space further comprising program instructions for~~ the wireless device executing a web browser for access the Internet, or access the remote storage space.

39. *(Currently Amended)* A computer-readable storage device, in a wireless device, comprising program instructions which configure the wireless device access a remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a first server across a communication link for access the remote storage space controlled by the first server;

program instructions for the wireless device receiving information of the remote storage space from the first server and presenting the remote storage space to a user on the wireless device; and

program instructions for the wireless device coupling with the first server to carry out an operation for access the remote storage space in response to the user from the wireless device performing the operation,

wherein said operation being carried out for access the remote storage space comprises, ~~from the wireless device,~~ storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device.

40. *(Currently Amended)* The computer-readable storage device of claim 39, wherein said downloading a file from a second server comprises:
obtaining by the wireless device the information for the file from the second server;
transmitting the information for the file from the wireless device to the first server, and
causing the first server in accordance with the information for the file to store the file directly from the second server into the remote storage space.

41. *(Currently Amended)* The computer-readable ~~storage device medium~~ of claim 39, wherein said operation for access the remote storage space comprises:
creating, from the wireless device, a folder structure in the remote storage space.

42. *(Currently Amended)* The computer-readable ~~storage device medium~~ of claim 39, wherein said operation for access the remote storage space comprises:
deleting or moving or rename or copying, from the wireless device, a file or folder in the remote storage space.

43. *(Currently Amended)* The computer-readable ~~storage device medium~~ of claim ~~39~~34, wherein said information for the file cached in the wireless device comprises the name of the file and the internet protocol ("IP") address of the second server

44. *(Currently Amended)* The computer-readable ~~storage device medium~~ of claim ~~43~~4, wherein the wireless device further executes a web browser for access t the Internet or access the remote storage space.

45. *(Currently Amended)* A server for delivering storage service, comprising:
a plurality of storage spaces; and
a computer-readable storage device comprising program instructions that configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely access a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to a user on the first wireless device; and
program instructions for the server updating the first one of the storage spaces in accordance to a requested operation for remotely access the first one of the storage spaces in response to the user, through using the information of the first one of the storage spaces displayed on the first wireless device, performing the operation,
wherein said operation for remotely access the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom,
the storing data further comprising to download a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in the first wireless device.

46. *(Currently Amended)* The server of claim 45, wherein said ~~program instructions configuring the server to control delivering the storage service comprise program instructions for the server carrying out said downloading of a file from a remote server into the first one of the storage spaces by utilizing information for the file cached in the first wireless device in response to said user thereof performing said requested operation for said downloading further comprises:~~

~~the first wireless device obtaining information for the file from the remote server and transmitting the cached information for the file to the server to cause the server in accordance with the information for the file to store the file directly from the remote server into the first one of the storage spaces.~~

47. *(Previously Presented)* The server of claim 45, wherein the data being stored into or retrieved from the first one of the storage spaces further is a message or multimedia data of video, digital music, or digital picture.
48. *(Previously Presented)* The server of claim 45, wherein said operation further comprises: from the first wireless device remotely deleting, moving, copying or renaming a file or folder in the first one of the storage spaces, or remotely creating a folder or a folder structure in the first one of the storage spaces.
49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user remotely access the second one of the storage spaces.
50. *(Previously Presented)* The server of claim 45, wherein the information for the file further comprises the name of the file and the internet protocol ("IP") address of the remote server.

:

REMARK

1: Regarding Specification:

Applicant very appreciates the office action pointed out the informalities in the claim 1 and in the paragraph 022. The informalities are corrected in the amended claims and in the amended specification.

2. Regarding The 35 USC §102 Rejections:

The Office Action of 10/24/2016 has rejected the claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

After a careful reviewing office action, it is found that the Bhide has failed to teach or suggestion many limitations of instant application. For convenience of discussion, the rejected claim 31 is recited bellow (recited in part and emphasis added):

“31. A wireless device access a remote storage space, the wireless device comprising:
at least one cache storage for caching the Internet data, and
one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein the program instructions comprise:
program instructions for the wireless device establishing a wireless link for access the remote storage space served by a first server;
program instructions for the wireless device presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server; and
program instructions for the wireless device coupling with the first server to carry out a requested operation for access the remote storage space in response to the user, by using the remote storage space presented on the wireless device, performing the operation,
wherein the operation being carried out for access the remote storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device” .

In the claim 31 of instant application, a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading a file from a second server into the remote storage space controlled by the first server by utilizing information for the file stored in the wireless device that are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent 10/726,897.

On the other hand, Bhide has disclosed a system to facilitate a wireless device 105 accessing, across a network, a personal cache storage 150 controlled by an Adjunct server 190. The wireless device of Bhide facilitates downloading a file from the cache storage 150 into the wireless device itself or facilitates the user “After accessing the configuration program the user may transfer selected files from a user’s machine or **from other web location to a personal cache 150**” according to o Fig. 1 and [0015] & [0016] of Bhide.

Nevertheless, the entire specification of Bhide does not enable and does not comprise limitation of “by utilizing information for the file cached in the wireless device” for transferring the “selected files from a user’s machine or **from other web location to a personal cache 150**” while such limitations are presented in the independent claims 31, 39, and 45 and disclosed in are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent 10/726,897 from which instant application is inherited. Thus, the claims 31, 39, and 45 are patentable over the referenced Bhide. Further, all dependent claims of the claims 31, 39 and 45 are also patentable over the Bhide as matter of the law.

3: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor’s address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 10/31/2016

/shengtai tsao/

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<<<<The markup version of the amended specification>>>>

The Use of System and Method For Wireless Device Access To Devices' External Storage

**By: ~~Sheng (Ted) Tai Tsao~~
11/19/2003**

Field of the Invention

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced ~~is the continuation of the previous invention,~~ application number 10/713,904 ~~60/401,238~~ of “Concurrent Web Based Multi-task Support for Control Management System”; ~~where the claim 20 item a), b), d), claim 30 item b), and together with claim 36 represent an invention of using storage of a server system as the external storage for wireless devices. This invention focuses on how can a wireless device user actually use external storage. Specially it focus on how can a wireless device to download data to its external storage, which its principle has preliminary described in claim 19) of the previous invention, and application number 10/713,905 ~~60/402,626~~ of “IP Based Distributed Virtual SAN” in the name of same inventor, to transmit data in wireless environment. All mentioned prior applications are herein incorporated by reference in their entirety for all purpose.~~

Field of the Invention

[002] This invention relates to wireless devices access to and use of external storage space provided by a server.

Background Information

a)

[003] **Terminology:**

Storage system can be categorized as internal storage or external storage system.

[004] **~~The Internal Storage of a System:~~**

The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory [[etc.]], and others that are internally [[is]] connected [[to a]] in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal ~~is a~~ components of [[a]] the computing system in a same enclosure.

[005] **~~The External Storage of a System:~~**

The external storages of a computing system are those storage media that are [[is]] not the internal [[a]] components of [[a]] the computing system in a same enclosure. Therefore, they ~~it has~~ have to be connected through [[a]] longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media [[etc.]], and others. The storage media of the external storage could be magnetic hard disk drives, solid ~~state~~ state disk, optical storage drives, memory card, ~~etc.~~ and could be in any form such as Raid[[,]] which usually consists of a group of hard disk drives.

[006] **~~The Storage Partition, its Volumes, and the Corresponding File System:~~**

To effectively use ~~the a~~ a storage system, the storage devices of the storage system usually need[[s]] to be partitioned into small volumes. After the partition, each of the volumes can be used [[to]] for establishing a file system[[s]] on top of it. To simplify the discussion, herein, the term of the storage volume[[,]] and its corresponding file system, and the term of the storage partition of a storage are often used without differentiation in this invention.

[007] **~~CCDSVM:~~**

CCDSVM ~~It~~ is an abbreviation for a central controlled distributed scalable virtual machine system. The CCDSVM allows a control management station system to control a group of computing systems for providing and provide distributed services to client systems over the [[in]] Internet, Intranet, and LAN environment.

[008] ~~ISP & ASP:~~

The ISP refers to Internet service provider and the ASP refers to application service provider.

b) [009]

Brief Description Of Figures:

[010] Fig. 1: ~~This is the same figure as the Fig. 1 of a prior application No. 10/713,904 of the~~ “Concurrent Web Based Multi-task Support for Control Management System” with an exception of renaming a console host as a wireless device.

[011] Fig. 2: ~~This is the same figure as the Fig. 1 of this invention with an exception that it shows the~~ illustrates a more detailed details of storage system controlled by the a server. In addition, multiple wireless devices are presented.

[012] Fig. 3: ~~This figure shows the a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to the an external storage of this the wireless device.~~

[013] Fig. 4: ~~This is the same figure as the Fig. 1 of the prior application No. 10/713,905 of~~ “IP Based Distributed Virtual SAN” with an exception that each IP storage server provide provides a file system as external storage for each of wireless device[s] instead of ~~provide providing~~ providing IP based virtual SAN service. Also, each host actually is a wireless device.

e) Assumptions:

[014] Unless specified, the programming languages[.] and the protocols used by the ~~each~~ software modules, and the computing systems used ~~described~~ in this invention are assumed to be the same as described in the previous prior patent[[s]] submission applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element [[will]] may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, ~~the wireless~~ users commonly face ~~the a~~ problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users ~~own~~ possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been ~~claimed~~ briefly introduced in the previous two prior patent[[s]] applications submission by the same author.

[018] Now ~~we can~~ examine how ~~does~~ can the external storage actually be used by the wireless devices. First, We can let each server unit (e.g. the server 3 of the Fig. 2) partition[[s]] its storage system in such way that each of volumes will have multiple~~[-]~~GB in size. Therefore, ~~each a user from a web-browser~~ of any one of the wireless devices can exclusively be assigned ~~and exclusively~~ for access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB ~~of~~ storage space, then a 160GB disk drive can support 40 users~~['']~~. Therefore, [[A]] a 4096GB storage system on-a the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volumes~~-on-a~~ of the server unit. In addition, the user on the wireless device also can download ~~the~~ multimedia data from ~~any an~~ an ISP or ASP to the assigned storage volume[[s]] of the a-designated server unit 3 through out-band approach (~~shown in~~ Fig. 3). Finally, the user can use ~~their a~~ a web-browser, which has a functionality of invoking embedded video or music, to enjoy ~~their~~ his/her stored multimedia contents.

[019] These and other futures, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures ~~where:~~.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, this figure demonstrates a network connection between a wireless device and a server, where Net (2) represents a communication link, which may be combined with wireless and ~~non-wireless~~ wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that ~~the~~ a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] ~~b) As described in previous patents submission~~ In the Fig. 1, the console support software (5) on the server (3) can support web-based multi[-]tasking ~~for~~ while a user[[s]] ~~on~~ using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated able to perform creating structured layered files/~~directory~~ directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories and others ~~etc.~~ on ~~the~~ an assigned storage volume of the server (3).

~~e) As described in previous patents submission~~ In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data (file) being sent or received could ~~be~~ be a digital photo picture, a message and others [[etc.]].

[023] ~~d) As described in previous patents submission~~ Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others, ~~etc.~~

[024] ~~e) As described in previous patents submission~~ Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] ~~The Fig. 2. This figure has~~ demonstrated how ~~can does~~ the storage of a server 3 ~~can~~ be assigned to multiple wireless devices as their external storage at follow[[.]]:

~~a) As described in the previous patents submission,~~ First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a ~~web~~ console host (12).

[027] ~~b) Second,~~ the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server 3 for maximum numbers of the wireless devices.

[028] ~~e) As described in previous patents submission~~ In addition, the storage connection media could be any kind[[s]] such as SCSI cable, IP cable, Fiber cable and others etc. The storage system itself could be various types.

[029] ~~d) It~~ Finally, ~~assumes that~~ the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] ~~The Fig. 3. This figure has~~ demonstrated ~~how that~~ a user from a web-browser (8) on a wireless device[[s]] (1) can download data from a known web-site (1512) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication ~~channel link~~ between the wireless device (1) and ~~any a remote download~~ web-site (1512), which provides ~~the~~ contents for web download. The dash-lined path (b) represents a communication ~~channel link~~ between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication ~~link channel~~ between the server 3 ~~wireless devices (1)~~ and the remote web-server (1512), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] ~~+-~~ The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram of the wireless devices (1 ~~of Fig. 2~~) using the external storage system (10 ~~of Fig. 2~~) of a server (3 ~~of Fig. 2~~), which will effectively-resolve the storage limitation problem ~~of~~ for the wireless devices (1 ~~of Fig. 2~~).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10 of Fig. 2) on a server (3 of Fig. 2) needs to be partitioned into suitable size of volumes (11 of Fig. 2) such as 4GB for each, which will allow the server 3 to serve maximum number of the wireless devices (1 of Fig. 2). With the web console support software (5 of Fig. 2) of the server (3 of Fig. 2), the task of partitioning the storage system (10) can be done through a web-console (13 of Fig. 2) on a console host (12 of Fig. 2) by an administrative staff.

[034] In order to support ~~such~~ storage partition, first the console support software (5 of Fig. 2) of the server (3 of Fig. 2) must send storage information of the server (3 of Fig. 2) to the web-console (13 of Fig. 2) of the console host (12 of Fig. 2). ~~This~~ The storage information ~~including the~~ includes each storage device name, storage total size ~~etc.~~ and others. Second, based on the storage information received, the administration staff on the console host (12 of Fig. 2) can use the web-console (13 of Fig. 2) to fill partition each storage device and [[to]] send the storage partition information to the console support software (5 of Fig. 2) of the server (3 of Fig. 2). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13 of Fig. 2) of the console host (12 of Fig. 2), the console support software (5 of Fig. 2) of the server (3 of Fig. 2) performs the actual storage partition ~~by, which divides~~ dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11 of Fig. 2) [[of]] on the storage system (10 of Fig. 2) [[on]] of the server (3 of Fig. 2) needs to be exclusively assigned and exported to a given specific wireless device (1 of Fig. 2) by the console support software (5 of Fig. 2) [[on]] of the server (3 of Fig. 2).

[036] Data and storage volume management (refer to Fig. 2)

4) With the support of the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2), the a user on a web-browser (8 of Fig. 2) of the wireless device (1 of

Fig. 2) can setup ~~the~~ folder[[/]] or directory structure on the file system of his/her assigned external storage volume (11 ~~of Fig. 2~~). In addition, the user on the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) can performing all data management operations such as delete, copy, move, or rename etc. and others for file or folder on that file system.

[037] In order to support such data management [[on]] over the external storage (10 ~~of Fig. 2~~) by using ~~the~~ ~~from~~ web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~), first the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~) must communicate with the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) for presenting the external storage to the user. Therefore, the user from the web-browser (8 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) can choose desired data management operations and submit each operation for sending the operation information to the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~). These operations include establishing folder[[/]] or directory, and copying, moving, or renaming data file ~~etc. and others for the folder or directory~~. Second, upon receiving the data management operation, the console support software modules (5 ~~of Fig. 2~~) of the server system (3 ~~of Fig. 2~~) actually performs these requested operations [[on]] over the assigned file system of an assigned external storage volume (11 ~~of Fig. 2~~) on the server system (3 ~~of Fig. 2~~).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures[[,]] or messages into the assigned file system on the external storage (11 ~~10 of Fig. 2~~) of a server (3 ~~of Fig. 2~~), the other software modules (9 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) need to send these data to the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) via communication link between them. Upon receiving the data, the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) write these data to the assigned file system [[of]] on the assigned storage volume (11 ~~of Fig. 2~~) [[on]] of the server (3 ~~of Fig. 2~~). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If ~~a~~ the wireless device (1 ~~of Fig. 3~~) user wants to download data from a remote web server (1512 ~~of Fig. 3~~) into an assigned file system (11 ~~of Fig. 3~~) of the external storage (1110 ~~of Fig. 3~~) on a server (3 ~~of Fig. 3~~), the following steps are required:

[041] 1) The user from a web-browser (8 ~~of Fig. 3~~) of ~~the~~ a specific wireless device (1 ~~of Fig. 3~~) accesses to a remote ~~download~~ web server site (1512 ~~of Fig. 3~~) and to obtain the information for the downloading via the path (a) of the Fig. 3. For example, ~~[[to]]~~ the user ~~get~~ obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9 ~~of Fig. 3~~) of ~~a specific~~ the wireless device (1 ~~of Fig. 3~~) ~~obtains~~ obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1 ~~of Fig. 3~~) after the web-browser (8 ~~of Fig. 3~~) accessing to the ~~download~~ web site (1512 ~~of Fig. 3~~).

[043] 3) The other software modules (9 ~~of Fig. 3~~) of ~~a specific~~ the wireless device (1 ~~of Fig. 3~~) send the obtained downloading information to other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) via the path (b) ~~of the Fig. 3~~.

[044] 4) Upon receiving the downloading information from ~~a specific~~ the wireless device (1), the other service module (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) sends a web download request to ~~download~~ the web-site (1512 ~~of Fig. 3~~) via the path (c) ~~of Fig. 3~~ based on download information obtained ~~it~~ and then receives the downloading ~~information~~ data from the web server of ~~download~~ the web-site (1512 ~~of Fig. 3~~).

[045] 5) Upon receiving downloading~~[[ed]]~~ data, the other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) write ~~these~~ the data for the ~~specific~~ wireless device (1 ~~of Fig. 3~~) into the assigned file system (11 ~~of Fig. 3~~) on the server (3 ~~of Fig. 3~~).

[046] Retrieve data from external storage of a wireless device;

[047] 1) If a web-browser (8) has embedded video or music functionality, the web-browser (8 of Fig. 2) of a wireless device (1 of Fig. 2) can be used to retrieve and play ~~those~~ multimedia data file such as video or music stored in the wireless device's external storage volume (11 ~~10~~ of Fig. 2), which actually located on a server (3 of Fig. 2).

[048] 2) If there is needs, the other software module (9 of Fig. 2) of the wireless device (1 of Fig. 2) also can retrieve data file from the assigned file system of the assigned storage volume (11 of Fig. 2) on a server (3 of Fig. 2).

[049] Support external storage for large number of the wireless devices;

[050] Referring now to the Fig. 4. If ~~[[we]]~~ there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on ~~[[a]]~~ the server unit can support 2024 user. Therefore, a Each server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, ~~with external storage~~ such as for supporting 500,000 ~~of them~~ wireless devices, a larger number of the servers ~~are~~ is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in ~~previous~~ the prior patent ~~[[s]] applications~~ submission. With the CCDSVM the control management system ~~station~~ can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

<<<<The Clean version of the amended specification>>>>

System and Method For Wireless Device Access To External Storage

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced application number 10/713,904 of “Concurrent Web Based Multi-task Support for Control Management System” and application number 10/713,905 of “IP Based Distributed Virtual SAN” in the name of same inventor.

Field of the Invention

[002] This invention relates to wireless devices access to and use of external storage space provided by a server.

Background Information

[003] Storage system can be categorized as internal storage or external storage system.

[004] The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory, and others that are internally connected in the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal components of the computing system in a same enclosure.

[005] The external storages of a computing system are those storage media that are not the internal components of the computing system in a same enclosure. Therefore, they have to be connected through longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media, and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical

storage drives, memory card and others, and could be in any form such as Raid which usually consists of a group of hard disk drives.

[006] To effectively use a storage system, the storage devices of the storage system usually need to be partitioned into small volumes. After the partition, each of the volumes can be used for establishing a file system on top of it. To simplify the discussion, herein, the term of the storage volume and its corresponding file system, and the term of the storage partition are often used without differentiation in this invention.

[007] CCDSVM is an abbreviation for a central controlled distributed scalable virtual machine. The CCDSVM allows a control management system to control a group of computing systems for providing distributed services to client systems over the Internet, Intranet, and LAN environment.

[008] The ISP refers to Internet service provider and the ASP refers to application service provider.

[009] **Brief Description Of Figures:**

[010] Fig. 1 is the same figure as the Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception of renaming a console host as a wireless device.

[011] Fig. 2 is the same figure as the Fig. 1 of this invention with an exception that illustrates a more detailed storage system controlled by a server. In addition, multiple wireless devices are presented.

[012] Fig. 3 shows a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to an external storage of the wireless device.

[013] Fig. 4 is the same figure as the Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server provides a file system as external storage for each of wireless device instead of providing IP based virtual SAN service. Also, each host actually is a wireless device.

[014] Unless specified, the programming languages and the protocols used by the software modules, and the computing systems used in this invention are assumed to be the same as described in the prior patent applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, users commonly face a problem of lack of storage capacity configured on their wireless devices such as cell phone or PDA, which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been briefly introduced in the prior patent applications by the same author.

[018] Now examine how can the external storage actually be used by the wireless devices. First, let each server unit (e.g. the server 3 of the Fig. 2) partition its storage system in such way that each of volumes will have multiple GB in size. Therefore, a user of any one of the wireless devices can exclusively be assigned for access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB storage space, then a 160GB disk drive can support 40 users. Therefore, a 4096GB storage system on the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volume on the server unit. In addition, the user on the wireless device also can download multimedia data from an ISP or ASP to the assigned storage volume of the designated server unit

3 through out-band approach shown in Fig. 3). Finally, the user can use a web-browser, which has a functionality of invoking embedded video or music, to enjoy his/her stored multimedia contents.

[019] These and other futures, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, this figure demonstrates a network connection between a wireless device and a server, where Net (2) represents a communication link, which may be combined with wireless and wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] In the Fig. 1, the console support software (5) on the server (3) can support web-based multitasking while a user using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated to perform creating structured layered file directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories and others on an assigned storage volume of the server (3).

In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data (file) being sent or received could be a digital photo picture, a message and others.

[023] Also, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others.

[024] Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] The Fig. 2 has demonstrated how can the storage of a server 3 be assigned to multiple wireless devices as their external storage as follow:

First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a console host (12).

[027] Second, the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server 3 for maximum numbers of the wireless devices.

[028] In addition, the storage connection media could be any kind such as SCSI cable, IP cable, Fiber cable and others. The storage system itself could be various types.

[029] Finally, the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] The Fig. 3 has demonstrated that a user from a web-browser (8) on a wireless device (1) can download data from a known web-site (15) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication link between the wireless device (1) and a remote web-site (15), which provides contents for web download. The dash-lined path (b) represents a communication link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link between the server 3 and the remote web-server (15), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram of the wireless devices (1) using the external storage system (10) of a server (3), which will effectively-resolve the storage limitation problem for the wireless devices (1).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10) on a server (3) needs to be partitioned into suitable size of volumes (11) such as 4GB for each, which will allow the server 3 to serve maximum number of the wireless devices (1). With the web console support software (5) of the server (3), the task of partitioning the storage system (10) can be done through a web-console (13) on a console host (12) by an administrative staff.

[034] In order to support storage partition, first the console support software (5) of the server (3) must send storage information of the server (3) to the web-console (13) of the console host (12). The storage information includes each storage device name, storage total size and others. Second, based on the storage information received, the administration staff on the console host (12) can use the web-console (13) to partition each storage device and send the storage partition information to the console support software (5) of the server (3). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13) of the console host (12), the console support software (5) of the server (3) performs the actual storage partition by dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11) on the storage system (10) of the server (3) needs to be exclusively assigned and exported to a given specific wireless device (1) by the console support software (5) of the server (3).

[036] Data and storage volume management (refer to Fig. 2)

With the support of the console support software modules (5) of the server system-(3), a user on a web-browser (8) of the wireless device (1) can setup folder or directory structure on the file system of his/her assigned external storage volume (11). In addition, the user on the web-browser (8) of the wireless device (1) can performing all data management operations such as delete, copy, move, or rename and others for file or folder on that file system.

[037] In order to support such data management over the external storage (10) by using the web-browser (8) of the wireless device (1), first the console support software modules (5) of the server system (3) must communicate with the web-browser (8) of the wireless device (1) for presenting the external storage to the user. Therefore, the user from the web-browser (8) of the wireless device (1) can choose desired data management operations and submit each operation for sending the operation information to the console support software modules (5) of the server system (3). These operations include establishing folder or directory, and copying, moving, or renaming data file and others for the folder or directory. Second, upon receiving the data management operation, the console support software modules (5) of the server system (3) actually performs these requested operations over the assigned file system of an assigned external storage volume (11) on the server system (3).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures or messages into the assigned file system on the external storage (11) of a server (3), the other software modules (9) of the wireless device (1) need to send these data to the other service modules (7) of the server (3) via communication link between them. Upon receiving the data, the other service modules (7) of the server (3) write these data to the assigned file system on the assigned storage volume (11) of the server (3). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If a wireless device (1) user wants to download data from a remote web server (15) into an assigned file system (11) of the external storage (11) on a server (3), the following steps are required:

[041] 1) The user from a web-browser (8) of the wireless device (1) access to a remote web server site (15) to obtain information for the downloading via the path (a) of the Fig. 3. For example, the user obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1) after the web-browser (8) access to the web site (15).

[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server (3) via the path (b).

[044] 4) Upon receiving the downloading information from the wireless device (1), the other service module (7) of the storage server (3) sends a web download request to the web-site (15) via the path (c) based on download information obtained and then receives the downloading data from the web server of the web-site (15).

[045] 5) Upon receiving downloading data, the other service modules (7) of the storage server (3) write the data for the wireless device (1) into the assigned file system (11) on the server (3).

[046] Retrieve data from external storage of a wireless device:

[047] 1) If a web browser (8) has embedded video or music functionality, the web-browser (8) of a wireless device (1) can be used to retrieve and play multimedia data file such as video or music stored in the wireless device's external storage volume (11), which actually located on a server (3).

[048] 2) If there is needs, the other software module (9) of the wireless device (1) also can retrieve data file from the assigned file system of the assigned storage volume (11) on a server (3).

[049] Support external storage for large number of the wireless devices:

[050] Referring now to the Fig. 4. If there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on the server unit can support 2024 user. Therefore, a server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, such as for supporting 500,000 wireless devices, a larger number of the servers is required, in

this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in the prior patent applications. With the CCDSVM the control management system can control larger number of storage servers to provide external storage for a huge number of the wireless devices.



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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO., EXAMINER, ART UNIT, PAPER NUMBER, NOTIFICATION DATE, DELIVERY MODE. Includes details for Sheng Tai Tsao and examiner Elmore, Reba I.

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

- ted.tsao@sttwebos.com
ted.tsao@yahoo.com
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Office Action Summary	Application No. 14/977,509	Applicant(s) TSAO, SHENG TAI	
	Examiner REBA I. ELMORE	Art Unit 2131	AIA (First Inventor to File) Status Yes

-- 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 MONTHS 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 October 31, 2016.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 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) 31-50 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) 31-50 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 December 21, 2015 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).

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)).

** 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/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 4) Other: _____.

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31-50 have been presented for examination.

DRAWINGS

2. The drawings are objected to because Figure 1 needs to be labeled 'Prior Art' as this figure is described in paragraph 010 of the present specification as being the '*same figure as the Fig. 1 of a prior application No. 10/713904*' which is now patent number 7,418,702 issued August 26, 2008. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

SPECIFICATION

3. The clean copy of the specification filed October 31, 2016 has not been copied correctly from the marked-up version of the amended specification. The sentence ‘*All mentioned prior applications are herein incorporated by reference in their entirety for all purpose.*’ was left out of the clean version of the application filed on the given date.

4. The objection to claim 1 is ***withdrawn***.

5. The objection to paragraph 022 is ***withdrawn*** due to the amendment.

6. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant’s cooperation is requested in correcting any errors of which applicant may become aware in the specification.

35 USC 102

7. The rejection of claims 31-50 as being anticipated by Bhide (US 2003/0194998) is ***maintained*** and repeated below with further explanation.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

9. Claims 31-50 are rejected under 35 U.S.C. 102(a) as being anticipated by Bhide (US 2003/0194998).

10. Bhide teaches the claimed invention (claim 31) as claimed including a wireless device

having access to a storage space as given *'In one embodiment of the invention a wireless device may be a personal digital assistant (PDA), wireless telephones, beepers, laptop computers, etc.'* (e.g. see paragraph 0015, lines 42-44), the wireless device comprising:

at least one cache storage for caching data from the internet as *'Adjunct servers (190, 195) are well known by a person having ordinary skill in the art of communications. In one embodiment of the invention, the adjunct server 195 may be coupled to the MSC 115. After accessing the configuration program the user may transfer selected files from the user's machine or from other web locations to a personal cache 150.* (e.g. see Figure 1, element 150 and as given in paragraph 0015, lines 22-28);

one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein, program instructions comprise instructions stored in memories as *'In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or on a users wireless device 135 or remotely, e.gl., on adjunct servers (190 or 195) connected to personal cache 150.'* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

the program instructions comprise:

program instructions for the wireless device establishing a wireless link for accessing the remote storage space served by a first server as the first server being equivalent to Adjunct

servers which allow access to the personal cache (Figure 1, elements 190 and 195 with element 150 being the personal cache) for the remote storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access with the remote storage space being served by a first server with the first server being equivalent an Adjunct server (e.g. Figure 1, elements 190 and 195);

program instructions for the wireless device presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server as program instructions including a configuration program that allows the user to have remote access to the remote storage space via a remote wireless device as *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to the user, through using the remote storage space presented on the wireless device *'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined profile.'* (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for access to the storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device, *'If the wireless*

device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.' (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 32, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claim 33, Bhide teaches the present invention wherein downloading a file from a second server (e.g. see Figure 2, element 295) comprises obtaining, by the wireless device, the information for a file from the second server; transmitting the information for the file from the wireless device to the first server and causing the first server in accordance with the information for the file to store the file directly from the second server into the remote storage space as retrieving data from remote web sites or remote databases and saving the data in the user's personal cache 250 (e.g. see paragraph 0023).

As to claim 34, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises creating, from the wireless device, a folder structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 35, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 36, Bhide teaches the present invention wherein the data for the file is cached in the wireless device comprising the name of the file and the internet protocol ("IP") address of the second server as it being inherent that "IP" addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claim 38, Bhide teaches the present invention wherein the program instructions configuring the wireless device accesses the remote storage space further comprising the wireless device executing a web browser as the user having access to web locations (e.g. see paragraph 0015).

11. Bhide teaches the present invention (claim 39) as claimed including a computer-readable storage device, comprising program instructions which configure the wireless device access to a remote storage space '*In one embodiment of the invention a wireless device may be a personal digital assistant (PDA), wireless telephones, beepers, laptop computers, etc.*' (e.g. see paragraph 0015, lines 42-44), comprising program instructions which, configure the wireless device access

to remote storage space, wherein the program instructions comprise:

program instructions for the wireless device connecting to a first server across a communication link for access to the remote storage space controlled by a first server as a network which has multiple parts (e.g. see Figure 1);

program instructions for the wireless device receiving information of the remote storage space from the first server and presenting the remote storage space to a user on the wireless device as the network including a personal cache as being equivalent to the remote storage space and with the first server being equivalent to an Adjunct server (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out an operation for access to the remote storage space in response to the user from the wireless device performing the operation (e.g. see paragraph 0015);

wherein the operation being carried out for access to the remote storage space comprises, from the wireless device, storing data therein or retrieving data therefrom as a user accessing the personal cache for storing and retrieving data (e.g. see paragraph 0015); and,

wherein the operation being carried out for access to the storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device, *'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop*

away from the wireless device 205.' (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 40, Bhide teaches the present invention wherein the downloading a file from a second server comprises obtaining by the wireless device the information for the file from the second server as the user having access to adjunct server 190 and adjunct server 195 (e.g. see paragraph 0015); transmitting the information for the file from the wireless device to the first server as a using having access to both a personal cache and the first server, adjunct server 190 (e.g. see paragraph 0015); and causing the first server in accordance with the information for the file to store the file directly from the second server into the remote storage space as the reference having the connectivity for the access and transactions described (e.g. see Figure 1).

As to claim 41, Bhide teaches the present invention wherein the operation for access to the remote storage space comprises creating, from the wireless device, a folder structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 42, Bhide teaches the present invention wherein the operation for access to the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the remote storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 43, Bhide teaches the present invention wherein the information for the file

cached in the wireless device, the name of the file and the internet protocol (“IP”) address of the second server as it being inherent that “IP” addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 44, Bhide teaches the present invention wherein the wireless device further executes a web browser for accessing the Internet or access the remote storage space as the user having access to web locations (e.g. see paragraph 0015).

12. Bhide teaches the present invention (claim 45) as claimed including a server for delivering storage service, comprising:

a plurality of storage spaces as the user having access to adjunct servers, wireless devices and a personal cache (e.g. see Figure 1 and paragraph 0015, lines 18-24);

a computer readable storage device comprising program instructions that configure the server to control delivering the storage service; wherein the program instructions comprise program instructions for the server establishing a communication link for a first wireless device remotely access a first storage space as an adjunct server 190 for controlling a personal cache 150, *‘In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user’s computer 135 or on a users wireless device 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150.’* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *‘In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.’* (e.g. see Figure 1, element 150 as

given in line 28-31 of paragraph 0015);

wherein the program instructions comprise:

program instructions for the server for sending information of a first storage space to a first wireless device to present the first storage space to a user on the first wireless device as a wireless device using a personal cache 150 *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the server updating the first of the storage spaces in accordance to a requested operation for remotely accessing the first storage space in response to the user, through the information of the first storage spaces displayed on the first wireless device as having a wireless device such as a PDA or cell phone connected to a personal cache 150, *'Wireless device 400 includes mass storage 407, input devices 406 and display device 405 coupled to processing unit 402 via bus 401. Mass storage device 407 represents a persistent data storage device, such as a memory stick, or a fixed disk drive (e.g., magnetic, optical, magneto-optical, or the like). Mass storage device 407 stores program data 430 including the agent 430, application programs 428, and operating system 426.'* (e.g. see paragraph 0032) as well as *'Display device 405 provides graphical output for wireless device 400. Input devices 406 such as a keypad or mouse are coupled to bus 401 for communicating information and command selections to processor 402. Also coupled to process 402 through bus 401 are one or more network devices 408 that can be used to control and transfer data to electronic devices (printers, other computers, etc.) connected to wireless device 400. Network devices 408 also connect wireless device 400 to a network, and may include Ethernet devices, phone jacks and satellite*

links. It will be apparent to one of ordinary skill in the art that other network devices such as wireless devices may also be utilized' (e.g. see paragraph 0033);

wherein the operation for remotely accessing the first storage space comprises from the first wireless device storing data therein or retrieving data therefrom, '*FIG. 4 illustrates an apparatus for using personal cache according to one embodiment of the invention. FIG. 4 illustrates a wireless device 400 in which the present invention operates. The wireless device is used for accessing and using information in personal cache.*' (e.g. see Figure 4 with support in paragraph 0030); and,

wherein the operation being carried out for access to the storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device, '*If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.*' (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 46, Bhide teaches the present invention wherein the program instructions configuring the server to control delivering the storage service comprise program instructions for the server carrying out the downloading of a file from a remote server into the first storage space

by utilizing information for the file cached in the first wireless device in response to the user thereof performing the requested operation for the downloading, " *The information in personal cache 250 may be downloaded to wireless device 205 or may be stored in personal cache 250 is at the most only one-hop away from wireless device 205.* (e.g. see paragraph 0022).

As to claim 47, Bhide teaches the present invention wherein the data being stored into or retrieved from the remote storage space further is one of a message, a digital video, a digital music or a digital picture (e.g. see paragraph 0015).

As to claim 48, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises deleting or moving or renaming or copying, from the wireless device, a file or folder in the storage space as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 49, Bhide teaches the present invention wherein the server presents a second one of the storage space to a user on a second wireless device for facilitating the user for remotely accessing the second storage spaces as it being inherent that a network can comprise multiple user, multiple personal caches and multiple servers.

As to claim 50, Bhide teaches the present invention wherein the information for a file further comprises the name of the file and the internet protocol ("IP") address of the remote server as it being inherent that "IP" addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

RESPONSE TO APPLICANT'S REMARKS

13. Applicant's arguments filed October 31, 2016 have been fully considered but they are not persuasive. The following analysis, which was provided in the previous office action still applies and is hereby repeated.

	<i>Claim 39</i>	<i>Bhide</i>
Device controls downloading	A wireless device	A wireless device
Designation of the download	A remote storage space controller by a first server on a network that is accessible to the wireless device <i>the wireless device of the present invention must identify the file to be downloaded as given in paragraph 30 of the present disclosure which discusses using a web browser on the wireless device</i>	The wireless device itself
Source file of the download	Residing on a second server on a network.	On a personal cache storage of an Adjunct server on a network subscribed (assigned to) by a user of the wireless device. Paragraph 0015: <i>'After accessing the configuration program the user may transfer selected files from a user's machine or from other web locations to a personal cache 150.</i>
The process of the download	downloading the source file from the server to the remote storage space controlled by the first cache	The wireless device directly downloading the source file from the subscribed personal storage of the Adjunct

server through using the information of the source file stored in the wireless device.

server to the wireless device itself.

Paragraph 0015:
'After accessing the configuration program the user may transfer selected files from a user's machine or **from other web locations to a personal cache 150.**

Exemplary Support Information

Fig. 3, claim 8, and page 5, lines 37 to page 6, line 20 of parent 10/726897.

Fig. 1, Fig. 2, [0015], [0027] & [0029].

Paragraph 0027:
*'a determination is made whether the wireless device 205 has sufficient memory to store all the information in the user's personal cache 250. If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. **If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis.***

Paragraph 0029:
'After executing the rules at 335, a determination is made whether the wireless device 205 has sufficient memory to store the information in the new personal cache 265. If the wireless device 205 has sufficient memory, then at 345, the information in the new personal cache 265 is downloaded to the wireless

device 205. However, if the wireless device 205 does not have sufficient memory, the information is maintained in the new personal cache 265, and parts of the information may be downloaded to the wireless device 205 on an as-needed basis.

OFFICE ACTION FINALITY

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

CONCLUSION

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBA I. ELMORE whose telephone number is (571)272-4192. The examiner can normally be reached on Monday thru Thursday, working a flex schedule.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANN J. LO can be reached on (571) 272-9767. 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.

/REBA I. ELMORE/
Primary Examiner
Art Unit 2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T ; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Final Office Action

Dear Commissioner:

This communication responds to the final office action mailed on 02/23/2017. In the response, enclosed please find:

A remark is started on the page 2 of this paper for overcoming the rejection and objection of the final office action. There is no amendment for the claims filed on 10/31/2016. Further a request for allowing instant application is respectively submitted due to the objections and rejections has been overcome.

Respectively Submitted

03/08/2017

/shengtai tsao/

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3906 Borgo Common
Fremont, CA 94538
408-813-0536
510-580-8592

REMARK

The final office action mailed on 02/23/2017 has been carefully reviewed and considered. Hence, without amending the pending claims, a request for allowing instant application is respectively submitted in light of the remark made below:

1: Regarding Drawings:

Applicant appreciates the office action pointed out the issue of the Figure 1. Applicant believes that the Figure 1 is not a prior art as indicated by new matters thereof, e.g. a “wireless device” connected to a “server” which is a storage server that both of the wireless device and the storage server are new to the Figure 1 of the parent application 10/713,904. Therefore, a request for withdrawing the objection over the Figure 1 as being a “prior art” is respectively submitted.

2: Regarding Specification:

Applicant also appreciates the office action pointed out that the clean version of the specification has not been copied correctly from the marked-up version of the amended specification. A correction has been made for correcting the above error in the clean version of the specification. This clean version of the specification will be filed upon the allowance of instant application, or upon filing a RCE for instant application whenever there is a need.

2. Regarding The 35 USC §102 Rejections:

The Office Action of 02/23/2017 has rejected the claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

After a careful reviewing of the office action, it is found that the Bhide has failed to teach or suggestion many limitations of instant application, for example, the limitations of claim 31 is recited bellow (recited in part and emphasis added):

“31. A wireless device access a remote storage space, the wireless device comprising:
at least one cache storage for caching the Internet data, and
one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein the program instructions comprise:
program instructions for the wireless device establishing a wireless link for access the remote storage space served by a first server;

program instructions for the wireless device presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server; and
program instructions for the wireless device coupling with the first server to carry out a requested operation for access the remote storage space in response to the user, by using the remote storage space presented on the wireless device, performing the operation,
wherein the operation being carried out for access the remote storage space comprises storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device” .

In the claim 31 above, a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading (transferring) a file from a second server (a web site) into the remote storage space controlled by the first server by utilizing information for the file cached in the wireless device that are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent application 10/726,897.

On the other hand, Bhide has disclosed a system to facilitate a wireless device 105 accessing a remote external personal cache storage 150 controlled by an Adjunct server 190 across a network. The wireless device of Bhide facilitates downloading a file from the remote external cache storage 150 into the wireless device itself or facilitates the user “After accessing the configuration program the user may transfer selected files from a user’s machine or from other web location” to the remote external personal cache 150 according to o Fig. 1 and [0015] & [0016] of Bhide.

Nevertheless, the entire specification of Bhide has obviously failed to teach the limitation of internal cache storage of a wireless device in the claims e.g. claim 31 of instant application. More importantly, Bhide has failed to teach the limitation of from a wireless device “by utilizing information for the file cached in the wireless device” for transferring the selected files from other web location to the remote external personal cache 150 that taught by instant application and presented in the claims 31, 39, and 45. Therefore, people skilled in art has no idea how Bhide can achieve transferring selected files from other web location to the remote external personal cache 150.

Thus, based on above evidences alone, the claims 31, 39, and 45 are patentable over the referenced Bhide. Further, all dependent claims of the claims 31, 39 and 45 are also patentable over the Bhide as matter of the law.

3: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor's address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 03/08/2017

/shengtai tsao/

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3906 Borgo Common,
Fremont, CA 94538
408-813-0536
510-580-8592

AMENDMENT TO THE CLAIMS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device accessing a remote storage space, the wireless device comprising:

at least one cache storage for caching data from the Internet, and

one computer-readable storage device comprising program instructions which, when executed, configure the wireless device accessing the remote storage space, wherein the program instructions comprise:

program instructions for the wireless device establishing a ~~communication~~ wireless link for accessing the remote storage space served by a first server;

program instructions for the wireless device ~~displaying~~ presenting the remote storage space to a user on the wireless device upon receiving information of the remote storage space from the first server; and

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through using the remote storage space ~~displayed~~ presented on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device.

32. *(Canceled)*

33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

obtaining, by the wireless device, the information for the file from the second server;

transmitting the information for the file from the wireless device to the first server, and

causing the first server in accordance with the information for the file, to ~~download~~ the file directly from the second server into the remote storage space.

34 - 35. *(Canceled)*

36. *(Previously Presented)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises the name of the file and the internet protocol (“IP”) address of the second server

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 36, wherein said ~~program instructions~~ ~~wireless device displaying~~ ~~configuring the wireless device access~~ the remote storage space ~~further comprising program instructions for the wireless device executing~~ ~~comprises~~ ~~displaying the remote storage space in a web browser for said user performing operation of~~ ~~accessing the remote storage space, for access the Internet, or access the remote storage~~ ~~space.~~

39 – 44 *(Canceled)*

45. *(Currently Amended)* A server for delivering storage service, comprising:

a plurality of storage spaces ~~residing among a plurality of storage devices;~~ and

a computer-readable storage device comprising program instructions that ~~when executed,~~ ~~configure the server to control delivering the storage service;~~ wherein the program instructions comprise:

program instructions for the server establishing a communication link for a first wireless device remotely ~~accessing~~ a first one of the storage spaces;

program instructions for the server sending information of the first one of the storage spaces to the first wireless device ~~for displaying to present~~ the first one of the storage spaces ~~to a user~~ on the first wireless device; and

program instructions for the server updating the first one of the storage spaces ~~according in accordance~~ to a requested operation ~~received from the first wireless device~~ for remotely ~~accessing~~ the first one of the storage spaces ~~upon an response to the user;~~ through using

the ~~displayed~~ information of the first one of the storage spaces ~~displayed on the first wireless device~~, performing the operation, wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a remote ~~web~~ server across a network into the first one of the storage spaces through utilizing information for the file cached in the first wireless device.

46. *(Currently Amended)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions for the server ~~carrying out said downloading said of a file from said a remote web server~~ into the first one of the storage spaces by utilizing information for the file cached in the first wireless device ~~in response to said user thereof performing said requested operation for said downloading~~.

47 - 48. *(Canceled)*

49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user to perform operations for remotely accessing the second one of the storage spaces.

50. *(Canceled)*

51. *(New)* The server of claim 45, wherein said displaying the first one of the storage spaces comprises: displaying the first one of the storage spaces in a web browser on the first wireless device for said user performing operation for accessing the first one of the storage spaces.

52. *(New)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions to cause displaying said plurality of storage devices on a web console for an administrator to partition each of said storage devices for creating the storage spaces.

53. (New) The server of claim 51, wherein said operation further comprises:
from the first wireless device remotely creating a folder or a layered folder structure in the first one of the storage spaces, or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure, wherein the data object is a file, a folder, or a message, where the file includes digital picture, music or video file.
54. (New) The wireless device of claim 38, wherein said operation for accessing the remote storage space comprises:
creating, from the wireless device, a layered folder or directory structure or a folder in the remote storage space.
55. (New) The wireless device of claim 54, wherein said operation for access the remote storage space comprises:
from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein said data object is a file or folder.
56. (New) The wireless device of claim 54, wherein said operation for accessing the remote storage space comprises from the wireless device storing therein or retrieving therefrom a data object of a message, or a digital video, music, or picture file.
57. (New) A method for a wireless device accessing a remote storage space, the method comprising:
establishing, by the wireless device, a communication link for accessing the remote storage space served by a storage server;
displaying the remote storage space on the wireless device upon receiving information of the remote storage space from the storage server; and
coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation,
wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing

data comprising to download a file from a remote web server across a network into the remote storage space through utilizing information for the file cached in the wireless device.

58. (*New*) the method of claim 57, wherein said downloading a file from a remote web server comprises:
- obtaining, by the wireless device, the information for the file from the remote web server;
 - transmitting the information for the file from the wireless device to the storage server, and
 - causing the storage server in accordance with the received information for the file to download the file from the remote web server into the remote storage space.
59. (*New*) the method of claim 57, wherein said wireless device displaying the remote storage space comprises displaying the remote storage space in a web browser for said user performing operation for accessing the remote storage space.
60. (*New*) The method of claim 59, wherein said operation for accessing the remote storage space comprises:
- creating, from the wireless device, a layered folder or director structure or a folder in the remote storage space.
61. (*New*) The method of claim 60, wherein said operation for accessing the remote storage space comprises:
- from the wireless device moving, copying, deleting, or renaming a data object of file or folder in respect to the layered folder or director structure.
62. (*New*) The method of claim 60, wherein said operation for accessing the remote storage space comprises storing therein or retrieving therefrom a data object of message, digital video, digital music, or digital picture.

REMARK

The final office action mailed on 02/23/2017 has been carefully reviewed and considered. The rejected claims are amended, including cancellation of 12 claims and adding 12 new claims. After the amendment, the claims 31, 33, 36-38, 45-46, 49, 51 – 62 are currently pending. A request for allowing instant application is respectively submitted in light of the claim amendment above and the remark made below:

1: Regarding Drawings:

Applicant appreciates the office action pointed out the issue of the Figure 1. The description for the Fig. 1 in paragraph [010] of the specification is amended in response to the objection to the drawing. Applicant believes that the Fig. 1 is not a prior art as indicated by new matters thereof, e.g. a “wireless device” connected to a “server” which is a storage server according to the description of the Fig. 2. Therefore, both of the wireless device and the storage server are new matter to the Figure 1 of the prior patent application 10/713,904, thus the Fig. 1 in this invention is not an prior art. Therefore, a request for withdrawing the objection for the Fig. 1 as being a “prior art” is respectively submitted.

2: Regarding Specification:

Applicant appreciates the office action pointed out that the clean version of the specification has not been copied correctly from the marked-up version of the amended specification. As suggested by the office action, the specification is further checked for cleaning up all possible minor errors by further amending the specification without introducing new matters. Based on the amendments, a substitute specification and a markup version of the specification are enclosed in this filing wrapper that includes a correction made for overcome the objection. Thus, a request for withdrawing the objection on the specification is also respectively submitted.

2. Regarding The 35 USC §102 Rejections:

The Office Action of 02/23/2017 has rejected the claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

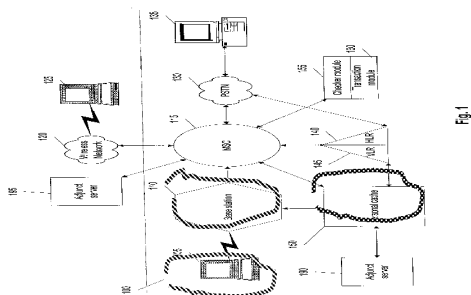
After a careful reviewing of the office action, it is found that the Bhide has failed to teach or suggestion many limitations of instant application, for example, the limitations of claim 31 is recited bellow (recited in part and emphasis added):

“31. A wireless device accessing a remote storage space, the wireless device comprising: at least one cache storage for caching data from the Internet, and comprise: program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server; program instructions for the wireless device displaying the remote storage space upon receiving information of the remote storage space from the first server; and program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation, wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device.

In the claim 31 above, a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading (transferring) a file from a second server (a web site) into the remote storage space controlled by the first server by utilizing information for the file cached in the wireless device that are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent application 10/726,897.

First, according to Fig. 1 and [0015] of Bhide, a system to facilitate a wireless device 105 (or 135) (Red-marked) access, through a based station 110 (Green marked), to a remote personal cache storage 150 (Blue marked) across a network. Thus the personal cache storage 150 is a storage external to the wireless device 105 (or 135). Thus, it is opposite to comments in lines 3 – 4 in page 5 in the final office action, the wireless device 105 physically does not “comprise the personal cache storage 150”. The external cache storage 150 is controlled by an Adjunct server 190 across a network. The Fig. 1 and [0015] of Bhide are recited in part as below:

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“[0015] ... user’s computer 135, ... a user wireless device 135, ... the user wireless device 105 If the user has subscribed to the personal cache 150 feature, The information in the personal cache 150 may be sent, automatically, e.g., on a time schedule, from the personal cache on the wireless network to a user's wireless device and vice-versa”

Second, the entire specification of Bhide has obviously failed to teach the limitation of internal cache storage of a wireless device in the claims e.g. claim 31 of instant application. More significantly, the referenced lines 16-23 of [0027] and [0027]-[0029] of Bhide by the office action have failed to teach the limitation of from a wireless device “by utilizing information for the file cached in the wireless device” to download the selected files from a web location to the remote assigned storage space of a user that resembled in the claims 31, 39, and 45 and taught by instant application in lines 5-8 of page 6 and claim 8 of prior parent 10/726,897. Therefore, people skilled in art has no idea how Bhide can achieve transferring selected files from other web location to the remote external personal cache 150 since there are several possibilities for such transferring.

Third, although Bhide [0015] & [0023] has disclosed retrieving file from a web site, yet does not disclose anything about a web browser. Even if Bhide disclosed web browser, there are still issues of how the information being presented in the web browser since there are several very different ways to present. Due to there are different way of accessing a web site, thus Bhide has failed to teach the use of a web browser of instant application, e.g. amended claims 38 and 54-56, claims 51-53.

Thus, based on above evidences alone, the claims 31, 39, and 45 are patentable over the referenced Bhide. Further, all their dependent claims such as claims 38 and 54-56, claims 51-5 and others are also patentable over the Bhide as matter of the law.

3: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor’s address of 3906 Borgo Common, Fremont, CA 94538.

Application No. 14/977,509

Respectfully submitted,
Date: 04/03/2017

/shengtai tsao/

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<<<<The markup version of the amended specification>>>>

The Use of System and Method For Wireless Device Access To Devices' External Storage

**By: ~~Sheng (Ted) Tai Tsao~~
11/19/2003**

Field of the Invention

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced ~~is the continuation of the previous invention,~~ application number 10/713,904 ~~60/401,238~~ of “Concurrent Web Based Multi-task Support for Control Management System”; ~~where the claim 20 item a), b), d), claim 30 item b), and together with claim 36 represent an invention of using storage of a server system as the external storage for wireless devices. This invention focuses on how can a wireless device user actually use external storage. Specially it focus on how can a wireless device to download data to its external storage, which its principle has preliminary described in claim 19) of the previous invention, and application number 10/713,905 ~~60/402,626~~ of “IP Based Distributed Virtual SAN” in the name of same inventor, to transmit data in wireless environment. All mentioned prior applications and patents are herein incorporated by reference in their entirety for all purpose.~~

Field of the Invention

[002] This invention relates to wireless devices accessing and using external storage spaces provided by one or more servers.

Background Information

a)

[003] **Terminology:**

Storage system can be categorized as internal storage or external storage system.

[004] **~~The Internal Storage of a System:~~**

The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory [[etc.]], and others that are internally [[is]] connected [[to a]] within the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal is a components of [[a]] the computing system in a same enclosure.

[005] **~~The External Storage of a System:~~**

The external storages of a computing system are those storage media that are [[is]] not the internal [[a]] components of [[a]] the computing system in a same enclosure. Therefore, they ~~it has~~ have to be connected through [[a]] longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media [[etc.]], and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical storage drives, memory card, etc. and could be in any form such as Raid[[,]] which usually consists of a group of hard disk drives.

[006] **~~The Storage Partition, its Volumes, and the Corresponding File System:~~**

To effectively use ~~the a~~ a storage system, the storage devices of the storage system usually need[[s]] to be partitioned into small volumes. After the partitioning, each of the volumes can be used [[to]] for establishing a file system[[s]] on top of it. To simplify the discussion, herein, the term of the storage volume[[,]] and its corresponding file system, and the term of the storage partition of a storage are often used without differentiation in this invention.

[007] **~~CCDSVM:~~**

CCDSVM ~~it~~ in this invention is an abbreviation for a central controlled distributed scalable virtual machine system. ~~The CCDSVM allows a control management station system to control a group of computing systems for providing and provide distributed services to client systems over the [[in]] Internet, Intranet, and LAN environment.~~

[008] ~~ISP & ASP:~~

By the way, in this invention, the ISP refers to Internet service provider and the ASP refers to application service provider.

⇒ [009]

Brief Description Of Figures:

[010] Fig. 1: ~~This is a figure the same figure as a Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with an exceptions of renaming that a console host of the prior application being replaced herein by a [[as]] wireless device. In addition, the server herein is a storage server while the server in the Fig. 1 of the prior application may be not.~~

[011] Fig. 2: ~~This is a figure the same figure as the Fig. 1 of this invention with an exception that it shows the a more detailed details of storage system configured and controlled by the server illustrated in the Fig. 1 of this invention. In addition, multiple wireless devices are presented in this Fig. 2.~~

[012] Fig. 3: ~~This figure shows the a scheme of a wireless device downloading data (contents) from an ISP/ASP or from other web sites to the an external storage of this the wireless device.~~

[013] Fig. 4: ~~This is a figure the same figure as a Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server provide herein provides file system for as external storage for to each of the wireless devices instead of provide providing IP based virtual SAN service of the prior application. Also, each host in the Fig. 1 of the prior application now actually is has been replaced herein by a wireless device of this invention.~~

⇒ **Assumptions:**

[014] Unless specified, the programming languages[.] and the protocols used by the ~~each~~ software modules, and the computing systems used ~~described~~ in this invention are assumed to be the same as described in the previous prior patent[[s]] submission applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element [[will]] may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, ~~the wireless~~ users commonly face ~~the a~~ problem of lack of storage capacity [[on]] in their wireless devices such as in their cell phones or personal data assistant devices (“PDA”), which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users ~~own~~ possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been ~~claimed~~ briefly introduced in the previous two prior patent[[s]] applications ~~submission by the same author~~.

[018] The followings describe details on ~~Now we can examine how does can~~ the external storage actually be used by the wireless devices by referring to the Fig. 2. First, We can let each server unit 3 (e.g. the server 3 of the Fig. 2) partition[[s]] its storage system in such way that each of volumes will have multiple[[-]]GB in size. Therefore, ~~each a user from a web browser~~ of any one of the wireless devices can exclusively be assigned ~~and exclusively for~~ access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB ~~of~~ storage space, then a 160GB disk drive can support 40 users[[']]. Therefore, [[A]] a 4096GB storage system on a the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volume ~~on a the~~ server unit. In addition, the user on the wireless device also can download ~~the~~ multimedia data from ~~any an~~ an ISP or ASP to the assigned storage volume[[s]] of the a designated server unit 3 through out-band approach (~~as shown in Fig. 3~~). Finally, the user

can use ~~their~~ a web-browser, which has a functionality of invoking embedded video or music, to enjoy ~~their~~ his/her stored multimedia contents.

[019] These and other features ~~features~~, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures ~~where~~.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1[[:]], ~~this~~ ~~This~~ figure demonstrates a ~~the~~ network connection between a wireless device and a server, where ~~a~~, Net (2) represents a communication link, which may be combined with wireless and ~~non-wireless~~ wired connection media and guarantee that the communication packets can be sent[[/]] or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that ~~the~~ a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] ~~b) As described in previous patents submission~~ In the Fig. 1, the console support software (5) on the server (3) can support web-based multi[[-]]tasking ~~for~~ while a user[[s]] ~~on~~ using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated able to perform creating structured layered files/~~directory~~ directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders[[/]] or directories and others ~~etc.~~ residing on ~~the~~ an assigned storage volume of the server (3).

~~e) As described in previous patents submission~~ In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data ~~file~~ being sent or received ~~could~~ ~~be~~ a digital photo picture, a message and others [[etc.]].

[023] ~~d) As described in previous patents submission~~ In addition, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others, etc.

[024] ~~e) As described in previous patents submission~~ Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which, is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] The Fig. 2: This figure has demonstrated how ~~can does~~ the storages of a server (3) can be assigned to multiple wireless devices for being used as their external storage at follows[.]:

~~a) As described in the previous patents submission,~~ First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a web console host (12).

[027] ~~b) Second,~~ the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by for the server (3) supporting for maximum numbers of the wireless devices.

[028] ~~e) As described in previous patents submission~~ In addition, the storage connection media could be any kind[[s]] such as SCSI cable, IP cable, Fiber cable and others etc. Meanwhile the storage system itself could be various types.

[029] ~~d) It Finally, assumes that~~ the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] The Fig. 3: This figure has demonstrated how that a user from a web-browser (8) on a wireless device[[s]] (1) can download data from a known web-site (1542) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication channel link between the wireless device (1) and ~~any~~ a remote download web-site (1542), which provides ~~the~~ contents for web download. The dash-lined path (b) represents a

communication ~~channel~~ link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link ~~channel~~ between the server 3 ~~wireless devices (1)~~ and the remote web-server (15+2), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] ~~The Use of the External Storage of the Wireless Device:~~

The Fig. 2 shows a simplified diagram ~~[[of]]~~ illustrating the wireless devices (1 ~~of Fig. 2~~) using and accessing the external storage system (10 ~~of Fig. 2~~) of a server (3 ~~of Fig. 2~~), ~~which will~~ for effectively ~~resolve~~ solving the storage limitation problem of the wireless devices (1 ~~of Fig. 2~~).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10 ~~of Fig. 2~~) on a server (3 ~~of Fig. 2~~) needs to be partitioned into suitable size of volumes (11 ~~of Fig. 2~~) such as 4GB for each volume, ~~which will~~ for allowing the server 3 to serve maximum number of the wireless devices (1 ~~of Fig. 2~~). With the web console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~), the task of partitioning the storage system (10) can be done through a web-console (13 ~~of Fig. 2~~) on a console host (12 ~~of Fig. 2~~) by an administrative staff.

[034] In order to support ~~such~~ storage partition, first the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) must send storage information of the server (3 ~~of Fig. 2~~) to the web-console (13 ~~of Fig. 2~~) of the console host (12 ~~of Fig. 2~~). ~~This~~ The storage information including the includes each storage device name, storage ~~total~~ size ~~etc.~~ and others. Second, based on the storage information received, the administration staff on the console host (12 ~~of Fig. 2~~) can use the web-console (13 ~~of Fig. 2~~) to fill partition each storage device and ~~[[to]]~~ send the storage partition information to the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13 ~~of Fig. 2~~) of the console host (12 ~~of Fig. 2~~), the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) performs the actual storage partition by, ~~which divides~~ dividing the entire storage into multiple small

volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11 of Fig. 2) [[of]] on the storage system (10 of Fig. 2) [[on]] of the server (3 of Fig. 2) needs to be exclusively assigned and exported to a given specific wireless device (1 of Fig. 2) by the console support software (5 of Fig. 2) [[on]] of the server (3 of Fig. 2).

[036] Data and storage volume management (refer to Fig. 2)

↳ With the support of the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2), the a user on a web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can setup the folder[[/]] or directory structure on the file system of his/her assigned external storage volume (11 of Fig. 2). In addition, the user on the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can performing all data management operations such as delete, copy, move, or rename etc. and other operations for file or folder on that file system.

[037] In order to support such data management [[on]] over the external storage (10 of Fig. 2) by using the ~~from~~ web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2), first the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2) must communicate with the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) for presenting the external storage to the user. Therefore, the user from the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can choose and submit desired data management operations and for the wireless device (1) sending the operation information to the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2). These operations include establishing folder[[/]] or directory, and copying, moving, or renaming data file ~~etc.~~ and others for the folder or directory. Second, upon receiving the each data management operations, the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2) actually performs these each of the operations [[on]] over the assigned file system [[of]] on an assigned external storage volume (11 of Fig. 2) on the server system (3 of Fig. 2).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures[[,]] or messages into the assigned file system on the external storage (11 ~~10 of Fig. 2~~) of a server (3 ~~of Fig. 2~~), the other software modules (9 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) need to send ~~these~~ data to the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) via communication link between them. Upon receiving the data, the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) write these data to the assigned file system [[of]] on the assigned storage volume (11 ~~of Fig. 2~~) on the server (3 ~~of Fig. 2~~). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If a user of a ~~the~~ wireless device (1 ~~of Fig. 3~~) user wants to download data from a remote web server (1512 ~~of Fig. 3~~) into an assigned file system (11 ~~of Fig. 3~~) of the external storage (1140 ~~of Fig. 3~~) on a server (3 ~~of Fig. 3~~), the following steps are required:

[041] 1) Provide the user from a web-browser (8 ~~of Fig. 3~~) of the ~~a specific~~ wireless device (1 ~~of Fig. 3~~) accesses to a remote ~~download~~ web server site (1512 ~~of Fig. 3~~) and to obtain the information for the downloading via the path (a) of the Fig. 3. For example, [[to]] provide the user get via the web browser obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9 ~~of Fig. 3~~) of ~~a specific~~ the wireless device (1 ~~of Fig. 3~~) ~~obtains~~ obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1 ~~of Fig. 3~~) after the web-browser (8 ~~of Fig. 3~~) accessing to the ~~download~~ web site (1512 ~~of Fig. 3~~).

[043] 3) The other software modules (9 ~~of Fig. 3~~) of ~~a specific~~ the wireless device (1 ~~of Fig. 3~~) send the obtained downloading information to other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) via the path (b) ~~of the~~ Fig. 3.

[044] 4) Upon receiving the downloading information from a specific the wireless device (1), the other service module (7 of Fig. 3) of the storage server (3 of Fig. 3) sends a web download request to download the web-site (1512 of Fig. 3) via the path (c) of Fig. 3 based on download information obtained. ~~It~~ and then receives the downloading information data from the web server of download the web-site (1512 of Fig. 3).

[045] 5) Upon receiving downloading data, the other service modules (7 of Fig. 3) of the storage server (3 of Fig. 3) write these the data for the specific wireless device (1 of Fig. 3) into the assigned file system (11 of Fig. 3) on the server (3 of Fig. 3).

[046] Retrieve data from external storage of a wireless device:

[047] 1) If a web-browser (8) has embedded video or music functionality, the web-browser (8 of Fig. 2) of a wireless device (1 of Fig. 2) can be used to retrieve and play those multimedia data file such as video or music stored in the wireless device's external storage volume (11 40 of Fig. 2), which actually located on a server (3 of Fig. 2).

[048] 2) If there is needs, the other software module (9 of Fig. 2) of the wireless device (1 of Fig. 2) also can retrieve data file from the assigned file system of the assigned storage volume (11 of Fig. 2) on a server (3 of Fig. 2).

[049] Support external storage for large number of the wireless devices:

[050] Referring now to the Fig. 4. If ~~[[we]]~~ there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on ~~[[a]]~~ the server unit can support 2024 user. Therefore, a ~~Each~~ server unit ~~3~~ only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, ~~with external storage~~ such as for supporting 500,000 of them wireless devices, a larger number of the servers ~~are is~~ required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in ~~previous the prior patent~~ ~~[[s]] applications submission~~. With the CCDSVM

the control management system station can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

<<<<The Clean version of the amended specification>>>>

System and Method For Wireless Device Access To External Storage

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced application number 10/713,904 of “Concurrent Web Based Multi-task Support for Control Management System” and application number 10/713,905 of “IP Based Distributed Virtual SAN” in the name of same inventor. All mentioned prior applications and patents are herein incorporated by reference in their entirety for all purpose.

Field of the Invention

[002] This invention relates to wireless devices accessing and using external storage spaces provided by one or more servers.

Background Information

[003] Storage system can be categorized as internal storage or external storage system.

[004] The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory, and others that are internally connected within the computing system through system bus or a few inches of cable. Therefore, the storage media actually are internal components of the computing system in a same enclosure.

[005] The external storages of a computing system are those storage media that are not the internal components of the computing system in a same enclosure. Therefore, they have to be

connected through longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media, and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical storage drives, memory card and others, and could be in any form such as Raid which usually consists of a group of hard disk drives.

[006] To effectively use a storage system, the storage devices of the storage system usually need to be partitioned into small volumes. After the partitioning, each of the volumes can be used for establishing a file system on top of it. To simplify the discussion, herein, the term of the storage volume and its corresponding file system, and the term of the storage partition are often used without differentiation in this invention.

[007] CCDSVM in this invention is an abbreviation for a central controlled distributed scalable virtual machine. The CCDSVM allows a control management system to control a group of computing systems for providing distributed services to client systems over the Internet, Intranet, and LAN environment.

[008] By the way, in this invention, the ISP refers to Internet service provider and the ASP refers to application service provider.

[009] **Brief Description Of Figures:**

[010] Fig. 1 is a figure the same as a Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with exceptions that a console host of the prior application being replaced herein by a wireless device. In addition, the server herein is a storage server while the server in the Fig. 1 of the prior application may be not.

[011] Fig. 2 is a figure the same as the Fig. 1 of this invention with an exception that it shows a more detailed storage system configured and controlled by the server illustrated in the Fig. 1 of this invention. In addition, multiple wireless devices are presented in this Fig. 2.

[012] Fig. 3 shows a scheme of a wireless device downloading contents from an ISP/ASP or from other web sites to an external storage of the wireless device.

[013] Fig. 4 is a figure the same as a Fig. 1 of the prior application No. 10/713,905 of "IP Based Distributed Virtual SAN" with an exception that each IP storage server herein provides file system for external storage to each of the wireless devices instead of providing IP based virtual SAN service of the prior application. Also, each host in the Fig. 1 of the prior application has been replaced by a wireless device of this invention.

[014] Unless specified, the programming languages and the protocols used by the software modules, and the computing systems used in this invention are assumed to be the same as described in the prior patent applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, users commonly face a problem of lack of storage capacity in their wireless devices such as in their cell phones or personal data assistant devices ("PDA"), which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been briefly introduced in the prior patent applications by the same author.

[018] The followings describe details on how can the external storage actually be used by the wireless devices by referring to the Fig. 2. First, let each server unit (e.g. the server 3 of the Fig. 2) partition its storage system in such way that each of volumes will have multiple GB in size. Therefore, a user of any one of the wireless devices can exclusively be assigned for access to a specific storage volume on the server unit 3. For example, if we need to provide each user a

4GB storage space, then a 160GB disk drive can support 40 users. Therefore, a 4096GB storage system on the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volume on the server unit. In addition, the user on the wireless device also can download multimedia data from an ISP or ASP to the assigned storage volume of the designated server unit 3 through out-band approach as shown in Fig. 3. Finally, the user can use a web-browser, which has a functionality of invoking embedded video or music, to enjoy his/her stored multimedia contents.

[019] These and other features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, this figure demonstrates a network connection between a wireless device and a server, where Net (2) represents a communication link, which may be combined with wireless and wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] In the Fig. 1, the console support software (5) on the server (3) can support web-based multitasking while a user using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated to perform creating structured layered file directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories and others residing on an assigned storage volume of the server (3). In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data being sent or received could be a digital photo picture, a message and others.

[023] In addition, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with any suitable languages such as C, C++, Java, and others.

[024] Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with any other web server through the HTTP protocol.

[026] The Fig. 2 has demonstrated how can the storage of a server (3) be assigned to multiple wireless devices for being used as their external storage at follows:

First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a console host (12).

[027] Second, the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size for the server (3) supporting maximum numbers of the wireless devices.

[028] In addition, the storage connection media could be any kind such as SCSI cable, IP cable, Fiber cable and others. Meanwhile, the storage system itself could be various types.

[029] Finally, the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] The Fig. 3 has demonstrated that a user from a web-browser (8) on a wireless device (1) can download data from a known web-site (15) to his/her assigned external storage (10) of the server (3). The dash-lined path (a) represents a communication link between the wireless device (1) and a remote web-site (15), which provides contents for web download. The dash-lined path (b) represents a communication link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link between the server 3 and the remote web-server (15), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram illustrating the wireless devices (1) using and accessing the external storage system (10) of a server (3) for solving the storage limitation problem of the wireless devices (1).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10) on a server (3) needs to be partitioned into suitable size of volumes (11) such as 4GB for each volume for allowing the server 3 to serve maximum number of the wireless devices (1). With the web console support software (5) of the server (3), the task of partitioning the storage system (10) can be done through a web-console (13) on a console host (12) by an administrative staff.

[034] In order to support storage partition, first the console support software (5) of the server (3) must send storage information of the server (3) to the web-console (13) of the console host (12). The storage information includes each storage device name, storage size and others. Second, based on the storage information received, the administration staff on the console host (12) can use the web-console (13) to partition each storage device and send the storage partition information to the console support software (5) of the server (3). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13) of the console host (12), the console support software (5) of the server (3) performs the actual storage partition by dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11) on the storage system (10) of the server (3) needs to be exclusively assigned and exported to a given specific wireless device (1) by the console support software (5) of the server (3).

[036] Data and storage volume management (refer to Fig. 2)

With the support of the console support software modules (5) of the server system-(3), a user on a web-browser (8) of the wireless device (1) can setup folder or directory structure on the

file system of his/her assigned external storage volume (11). In addition, the user on the web-browser (8) of the wireless device (1) can performing all data management operations such as delete, copy, move, or rename and other operations for file or folder on that file system.

[037] In order to support such data management over the external storage (10) by using the web-browser (8) of the wireless device (1), first the console support software modules (5) of the server system (3) must communicate with the web-browser (8) of the wireless device (1) for presenting the external storage to the user. Therefore, the user from the web-browser (8) of the wireless device (1) can choose and submit desired data management operations for the wireless device (1) sending the operation information to the console support software modules (5) of the server system (3). These operations include establishing folder or directory, and copying, moving, or renaming data file and others for the folder or directory. Second, upon receiving each data management operation, the console support software modules (5) of the server system (3) actually performs each of the operations over the assigned file system on an assigned external storage volume (11) on the server system (3).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures or messages into the assigned file system on the external storage (11) of a server (3), the other software modules (9) of the wireless device (1) need to send the data to the other service modules (7) of the server (3) via communication link between them. Upon receiving the data, the other service modules (7) of the server (3) write these data to the assigned file system on the assigned storage volume (11) on the server (3). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If a user of a wireless device (1) wants to download data from a remote web server (15) into an assigned file system (11) of the external storage (11) on a server (3), the following steps are required:

[041] 1) Provide the user from a web-browser (8) of the wireless device (1) access to a remote web server site (15) to obtain information for the downloading via the path (a) of the Fig. 3. For example, provide the user via the web browser obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1) after the web-browser (8) access to the web site (15).

[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server (3) via the path (b).

[044] 4) Upon receiving the downloading information from the wireless device (1), the other service module (7) of the storage server (3) sends a web download request to the web-site (15) via the path (c) based on download information obtained and then receives the downloading data from the web server of the web-site (15).

[045] 5) Upon receiving downloading data, the other service modules (7) of the storage server (3) write the data for the wireless device (1) into the assigned file system (11) on the server (3).

[046] Retrieve data from external storage of a wireless device:

[047] 1) If a web browser (8) has embedded video or music functionality, the web-browser (8) of a wireless device (1) can be used to retrieve and play multimedia data file such as video or music stored in the wireless device's external storage volume (11), which actually located on a server (3).

[048] 2) If there is needs, the other software module (9) of the wireless device (1) also can retrieve data file from the assigned file system of the assigned storage volume (11) on a server (3).

[049] Support external storage for large number of the wireless devices:

[050] Referring now to the Fig. 4. If there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on the server unit can support 2024 user. Therefore, a server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, such as for supporting 500,000 wireless devices, a larger number of the servers is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in the prior patent applications. With the CCDSVM the control management system can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

Application No. 14/977,509

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Supplemental Amendment For RCE filing

Dear Commissioner:

This communication directs to file a supplemental response for the RCE filed on 4/3/2017 for instant application identified above response to the final office action mailed on 02/23/2017.

In this filing wrapper, enclosed please find:

- 1) a request for withdrawing the claim amendments and remark filed on 4/3/2017.
- 2) New claim amendments, including canceling 12 original claims of 32, 34-35, 39-44, 47-48, and 50, and adding 12 new claims from claims 51 – 62. The amendment to the claims started on page 2 of this paper and there is no fee due since the number of the canceled claims are the same as the new claims; and
- 2) A new copy of remark for overcoming the office rejections.

Very appreciate helps from PTO to enter the amended claims and reconsider the allowance of the instant application since all office rejections have been overcome.

Respectively Submitted

04/19/2017

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510-580-8592

AMENDMENT TO THE CLAIMS:

Please replace all prior versions of the claims in the application with the following list of claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device accessing a remote storage space, the wireless device comprising:

at least one cache storage for caching data from the Internet, and

one computer-readable storage device comprising program instructions which, ~~when executed,~~ configure the wireless device accessing the remote storage space, wherein the program instructions comprise:

program instructions for the wireless device establishing a ~~communication~~ wireless link for accessing the remote storage space served by a first server;

program instructions for the wireless device ~~displaying~~ presenting the remote storage space ~~to a user on the wireless device~~ upon receiving information of the remote storage space from the first server; and

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to ~~a~~ the user, through ~~using~~ the remote storage space ~~displayed~~ presented on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data ~~further~~ comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device.

32. *(Canceled)*

33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

obtaining, by the wireless device, the information for the file from the second server;

transmitting the information for the file ~~cached in from~~ the wireless device to the first server,
and

causing the first server in accordance with the information for the file, to ~~download~~store the file ~~directly~~ from the second server into the remote storage space.

34 - 35. *(Canceled)*

36. *(Currently Amended)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises at least the name of the file and the internet protocol (“IP”) address of the second server

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 36, wherein said ~~program instructions~~ ~~wireless device displaying~~ ~~configuring the wireless device access~~ the remote storage space further ~~comprising program instructions for the wireless device executing~~ comprises displaying information of the remote storage space in a web browser for accessing the remote storage space, ~~for access the Internet, or access the remote storage space.~~

39 – 44 *(Canceled)*

45. *(Currently Amended)* A server for delivering ___storage service, comprising:
a plurality of storage spaces residing among a plurality of storage devices; and
a computer-readable storage device comprising program instructions that when executed, configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely accessing a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to a user on the first wireless device; and
program instructions for the server updating the first one of the storage spaces according to ~~accordance~~ a requested operation received from the first wireless device for remotely accessing the first one of the storage spaces in response to the user, through using the

~~displayed~~ information of the first one of the storage spaces ~~displayed on the first wireless device,~~ performing the operation,

wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in the first wireless device.

46. *(Currently Amended)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions for the server ~~carrying out said~~ downloading ~~said~~ a file from ~~said~~ a remote server into the first one of the storage spaces by utilizing information for the file cached in the first wireless device ~~after the information for the file received therefrom.~~

47 - 48. *(Canceled)*

49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user to perform operations for remotely accessing the second one of the storage spaces.

50. *(Canceled)*

51. *(New)* The server of claim 45, wherein said displaying the first one of the storage spaces further comprises: causing displaying of the first one of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces.

52. *(New)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions to cause displaying said plurality of storage devices on a web console for an administrator to partition each of said storage devices for creating the storage spaces.

53. *(New)* The server of claim 51, wherein said operation further comprises:

from the first wireless device remotely creating a folder or a layered folder or directory structure in the first one of the storage spaces, or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure, wherein the data object is a file, a folder, or a message, where the file includes digital picture, music or video file.

54. *(New)* The wireless device of claim 38, wherein said operation for accessing the remote storage space comprises:

creating, from the wireless device, a folder, or a layered folder or directory structure in the remote storage space.

55. *(New)* The wireless device of claim 54, wherein said operation for access the remote storage space comprises:

from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein said data object is a file or folder.

56. *(New)* The wireless device of claim 45, wherein said operation for accessing the remote storage space comprises from the wireless device storing therein or retrieving therefrom a data object of a message, or a digital video, music, or picture file.

57. *(New)* A method for a wireless device accessing a remote storage space, the method comprising:

establishing, by the wireless device, a communication link for accessing the remote storage space served by a storage server;

displaying the remote storage space on the wireless device upon receiving information of the remote storage space from the storage server; and

coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a remote server across a network into the

remote storage space through utilizing information for the file cached in the wireless device.

58. (*New*) the method of claim 57, wherein said downloading a file from a remote server comprises:

obtaining, by the wireless device, the information for the file from the remote server;
transmitting the information for the file cached in the wireless device to the storage server,
and
causing the storage server in accordance with the received information for the file to download the file from the remote server into the remote storage space.

59. (*New*) the method of claim 57, wherein said wireless device displaying the remote storage space further comprises displaying the remote storage space in a web browser for accessing the remote storage space.

60. (*New*) The method of claim 59, wherein said operation for accessing the remote storage space comprises:

creating, from the wireless device, a folder, or a layered folder or director structure in the remote storage space.

61. (*New*) The method of claim 60, wherein said operation for accessing the remote storage space comprises:

from the wireless device moving, copying, deleting, or renaming a data object of file or folder in respect to the layered folder or director structure.

62. (*New*) The method of claim 57, wherein said operation for accessing the remote storage space comprises storing therein or retrieving therefrom a data object of message, digital video, digital music, or digital picture.

REMARK

The final office action mailed on 02/23/2017 has been carefully reviewed and considered. The rejected claims are amended, including cancellation of 12 claims and adding 12 new claims. After the amendment, the claims 31, 33, 36-38, 45-46, 49, 51 – 62 are currently pending. A request for allowing instant application is respectively submitted in light of the claim amendment above and the remark made below:

1: Regarding Drawings:

Applicant appreciates the office action pointed out the issue of the Figure 1. The description for the Fig. 1 in paragraph [010] of the specification is amended in response to the objection to the drawing. Applicant believes that the Fig. 1 is not a prior art as indicated by new matters thereof, e.g. a “wireless device” connected to a “server” which is a storage server according to the description of the Fig. 2. Therefore, both of the wireless device and the storage server are new matter to the Figure 1 of the prior patent application 10/713,904, thus the Fig. 1 in this invention is not an prior art. Therefore, a request for withdrawing the objection for the Fig. 1 as being a “prior art” is respectively submitted.

2: Regarding Specification:

Applicant appreciates the office action pointed out that the clean version of the specification has not been copied correctly from the marked-up version of the amended specification. As suggested by the office action, the specification is further checked for cleaning up all possible minor errors by further amending the specification without introducing new matters. Based on the amendments, a substitute specification and a markup version of the specification are enclosed in this filing wrapper that includes a correction made for overcome the objection. Thus, a request for withdrawing the objection on the specification is also respectively submitted.

2. Regarding The 35 USC §102 Rejections:

The Office Action of 02/23/2017 has rejected the claims 31-50 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

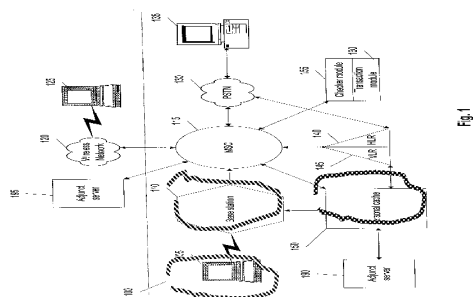
After a careful reviewing of the office action, it is found that the Bhide has failed to teach or suggestion many limitations of instant application, for example, the limitations of claim 31 is recited bellow (recited in part and emphasis added):

“31. A wireless device accessing a remote storage space, the wireless device comprising:
at least one cache storage for caching data from the Internet, and comprise:
 program instructions for the wireless device establishing a communication link for
 accessing the remote storage space served by a first server;
 program instructions for the wireless device displaying the remote storage space upon
 receiving information of the remote storage space from the first server; and
 program instructions for the wireless device coupling with the first server to carry out a
 requested operation for accessing the remote storage space in response to a user,
 through the remote storage space displayed on the wireless device, performing the
 operation,
 wherein the operation being carried out for accessing the remote storage space comprises
 from the wireless device storing data therein or retrieving data therefrom, the storing
 data comprising to download a file from a second server across a network into the
 remote storage space through utilizing information for the file cached in the wireless
 device.

In the claim 31 above, a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading (transferring) a file from a second server (e.g. a web site) into the remote storage space controlled by the first server by utilizing information for the file cached in the wireless device that are disclosed according to Fig. 3, claim 8, and page 5 lines 37 - page 6 line 20 of parent application 10/726,897.

On the other hand, according to Fig. 1 and [0015] of Bhide, a system to facilitate a wireless device 105 (or 135) (Red-marked) access, through a based station 110 (Green marked), to a remote personal cache storage 150 (Blue marked) across a network. Thus, Bhide ahs failed to disclose an internal cache storage of his wireless device 105 or 135; instead disclosed a remote personal cache storage 150. The external cache storage 150 is controlled by an Adjunct server 190 across a network. The Fig. 1 and [0015] of Bhide are recited in part as below:

Patent Application Publication Oct. 16, 2003 Sheet 1 of 8 US 2003/019498 A1



“[0015] ... user’s computer 135, ... a user wireless device 135, ... the user wireless device 105 If the user has subscribed to the personal cache 150 feature, The information in the personal cache 150 may be sent, automatically, e.g., on a time schedule, from the personal cache on the wireless network to a user's wireless device and vice-versa”

Second, the entire specification of Bhide has obviously failed to teach the limitation of from a wireless device “download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device” that includes “transmitting the information for the file cached in the wireless device to the first server” resembled in the claim 31 and 33 of instant application. Simply, the referenced lines 16-23 of [0027] and [0027]-[0029] and the entire specification of Bhide do not comprise the elements of the claims 31 and 33 of instant application. Therefore, people skilled in art has no idea how can Bhide achieve transferring selected files from other web location to the remote external personal cache 150 since there is no such enablement.

Thus, based on above evidences alone, the claims 31 & 33, 39, and 45 are patentable over the referenced Bhide. Further, all their dependent claims 38 and 54-56, claims 51-5 and others are also patentable over the Bhide as matter of the law.

3: Summary:

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action for carefully examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor’s address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 04/20/2017

/shengtai tsao/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/977,509	12/21/2015	Sheng Tai Tsao		6764
77501	7590	05/19/2017	EXAMINER	
Sheng Tai (Ted) Tsao 3906 Borgo Common. Fremont, CA 94538			ELMORE, REBA I	
			ART UNIT	PAPER NUMBER
			2131	
			NOTIFICATION DATE	DELIVERY MODE
			05/19/2017	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ted.tsao@sttwebos.com
ted.tsao@yahoo.com
ted.tsao@comcast.net

Office Action Summary	Application No. 14/977,509	Applicant(s) TSAO, SHENG TAI	
	Examiner REBA I. ELMORE	Art Unit 2131	AIA (First Inventor to File) Status Yes

-- 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 MONTHS 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 April 20, 2017.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 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) 31,33,36-38,45,46,49 and 51-62 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) 31,33,36-38,45,46,49 and 51-62 is/are allowed.
- 7) Claim(s) _____ 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 December 21, 2015 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).

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)).

** 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/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 4) Other: _____.

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31, 33, 36-38, 45-46, 49 and 51-62 have been presented for examination. Claims 32, 34-35, 39-44, 47-48 and 50 have been cancelled by the amendment filed April 20, 2017.

DRAWINGS

2. The objection to Figure 1 is ***maintained*** and repeated below. This is still the same drawing as the one filed in patent number 7,418,702 (application number 10/713904) and has been in the public domain since August 26, 2008. This drawing does not show any aspect directed toward the present invention. Stating that the drawing is not ‘prior art’ because of a relationship with Figure 2 does not make this a drawing which is an embodiment of the present invention.

3. The drawings are objected to because Figure 1 needs to be labeled ‘Prior Art’ as this figure is described in paragraph 010 of the present specification as being the ‘*same figure as the Fig. 1 of a prior application No. 10/713904*’ which is now patent number 7,418,702 issued August 26, 2008. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be

necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

SPECIFICATION

4. The objection to the disclosure for a clean copy of the amended specification not being filed is *withdrawn* due to the filing of the clean copy.
5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant’s cooperation is requested in correcting any errors of which applicant may become aware in the specification.

NEW MATTER

6. The amendment filed April 20, 2017 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. Limitations have been added to the claims which fail to have support in the disclosure. The disclosure does not discuss or teach using displays in conjunction with claimed limitations. The added material which is not supported by the original disclosure is as follows:

added to claim 31- ‘.program instructions for the *wireless device displaying the remote storage space* upon receiving information of the remote storage space from the first server as program instructions including a configuration program that allows the user to have remote access to the remote storage space via a remote wireless device as ‘*a user may access a program, e.g., a configuration program that runs either locally on the user’s computer 135 or remotely,*

e.g., on adjunct servers (190 or 195) connected to personal cache 150' (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, ***through the remote storage space displayed on the wireless device*** 'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined profile.' (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015);

added to claim 45 - program instructions for the server updating the first of the storage spaces according to a requested operation received from the first wireless device for remotely accessing the first storage space in response to the user, ***through the displayed information of the first storage spaces***, performing the operation as having a wireless device such as a PDA or cell phone connected to a personal cache 150;

newly added claim 51 – wherein said ***displaying the first one of the storage spaces***;

newly added claim 52 – program instructions to cause displaying said plurality of storage devices;

newly added claim 57 - ***displaying the remote storage space on the wireless device*** upon receiving information of the remote storage space from the storage server;

coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, ***through the remote storage space displayed on the wireless device***, performing the operation; and

newly added claim 59 – ***wherein said wireless device displaying the remote storage space.***

Applicant is required to cancel the new matter in the reply to this Office Action.

35 USC 102

7. The rejection of claims 31, 33, 36-38, 45-46, 49 and 51-61 as being anticipated by Bhide (US 2003/0194998) is *maintained* and repeated below.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

9. Claims 31, 33, 36-38, 45-46, 49 and 51-61 are rejected under 35 U.S.C. 102(a) as being anticipated by Bhide (US 2003/0194998).

10. Bhide teaches the claimed invention (claim 31) as claimed including a wireless device having access to a storage space as given ‘*In one embodiment of the invention a wireless device may be a personal digital assistant (PDA), wireless telephones, beepers, laptop computers, etc.*’ (e.g. see paragraph 0015, lines 42-44), the wireless device comprising:

at least one cache storage for caching data from the internet as ‘*Adjunct servers (190, 195) are well known by a person having ordinary skill in the art of communications. In one embodiment of the invention, the adjunct server 195 may be coupled to the MSC 115. After accessing the configuration program the user may transfer selected files from the user's machine or from other web locations to a personal cache 150.*’ (e.g. see Figure 1, element 150 and as given in paragraph 0015, lines 22-28);

one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein, program instructions, when

executed, comprise instructions stored in memories as *'In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or on a users wireless device 135 or remotely, e.gl., on adjunct servers (190 or 195) connected to personal cache 150.'* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

the program instructions comprise:

program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server as the first server being equivalent to Adjunct servers which allow access to the personal cache (Figure 1, elements 190 and 195 with element 150 being the personal cache) for the remote storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access with the remote storage space being served by a first server with the first server being equivalent an Adjunct server (e.g. Figure 1, elements 190 and 195);

program instructions for the wireless device displaying the remote storage space upon receiving information of the remote storage space from the first server as program instructions including a configuration program that allows the user to have remote access to the remote storage space via a remote wireless device as *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out a

requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device *'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined profile.'* (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for accessing to the remote storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device, *'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.'* (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 33, Bhide teaches the present invention wherein downloading a file from a second server (e.g. see Figure 2, element 295) comprises obtaining, by the wireless device, the information for a file from the second server; transmitting the information for the file cached in the wireless device to the first server and causing the first server in accordance with the information for the file to download the file from the second server into the remote storage space as retrieving data from remote web sites or remote databases and saving the data in the user's personal cache 250 (e.g. see paragraph 0023).

As to claim 36, Bhide teaches the present invention wherein the data for the file is cached in the wireless device comprising at least the name of the file and the internet protocol (“IP”) address of the second server as it being inherent that “IP” addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claim 38, Bhide teaches the present invention wherein the wireless device displaying the remote storage space further comprises displaying information of the remote storage space in a web browser for accessing the remote storage space as the user having access to web locations (e.g. see paragraph 0015).

11. Bhide teaches the present invention (claim 45) as claimed including a server for delivering storage service, comprising:

a plurality of storage spaces residing among a plurality of storage devices as the user having access to adjunct servers, wireless devices and a personal cache (e.g. see Figure 1 and paragraph 0015, lines 18-24);

a computer readable storage device comprising program instructions that, when executed, configure the server to control delivering the storage service; wherein the program instructions comprise program instructions for the server establishing a communication link for a first wireless device remotely access a first storage space as an adjunct server 190 for controlling a personal cache 150, *‘In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user’s computer 135 or on a users wireless*

device 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150.' (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

wherein the program instructions comprise:

program instructions for the server establishing a communication link for a first wireless device remotely accessing a first storage space

program instructions for the server for sending information of a first storage space to a first wireless device to present the first storage space to a user on the first wireless device as a wireless device using a personal cache 150 *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the server updating the first of the storage spaces according to a requested operation received from the first wireless device for remotely accessing the first storage space in response to the user, through the displayed information of the first storage spaces, performing the operation as having a wireless device such as a PDA or cell phone connected to a personal cache 150, *'Wireless device 400 includes mass storage 407, input devices 406 and display device 405 coupled to processing unit 402 via bus 401. Mass storage device 407 represents a persistent data storage device, such as a memory stick, or a fixed disk drive (e.g., magnetic, optical, magneto-optical, or the like). Mass storage device 407 stores program data 430 including the agent 430, application programs 428, and operating system*

426.' (e.g. see paragraph 0032) as well as 'Display device 405 provides graphical output for wireless device 400. Input devices 406 such as a keypad or mouse are coupled to bus 401 for communicating information and command selections to processor 402. Also coupled to process 402 through bus 401 are one or more network devices 408 that can be used to control and transfer data to electronic devices (printers, other computers, etc.) connected to wireless device 400. Network devices 408 also connect wireless device 400 to a network, and may include Ethernet devices, phone jacks and satellite links. It will be apparent to one of ordinary skill in the art that other network devices such as wireless devices may also be utilized' (e.g. see paragraph 0033);

wherein the operation for remotely accessing the first storage space comprises from the first wireless device storing data therein or retrieving data therefrom, 'FIG. 4 illustrates an apparatus for using personal cache according to one embodiment of the invention. FIG. 4 illustrates a wireless device 400 in which the present invention operates. The wireless device is used for accessing and using information in personal cache.' (e.g. see Figure 4 with support in paragraph 0030); and,

wherein the operation being carried out for access to the storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in the wireless device, 'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop

away from the wireless device 205.' (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 46, Bhide teaches the present invention wherein the program instructions configuring the server to control delivering the storage service comprise program instructions for the server downloading the file from the remote server into the first storage space by utilizing information for the file cached in the first wireless device after the information for the file received therefrom as the user thereof performing the requested operation for the downloading, " *The information in personal cache 250 may be downloaded to wireless device 205 or may be stored in personal cache 250 is at the most only one-hop away from wireless device 205.*' (e.g. see paragraph 0022).

As to claim 49, Bhide teaches the present invention wherein the server presents a second one of the storage space to a user on a second wireless device for facilitating the user for remotely accessing the second storage spaces as it being inherent that a network can comprise multiple user, multiple personal caches and multiple servers.

As to claim 51, Bhide teaches the present invention wherein the displaying the first of the storage spaces further comprises: causing displaying of the first of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces as the wireless device including a display device for displaying storage shown in a web browser which thereby allows the user to select or browse network components available to the wireless device (e.g. see Figure 4 with support in paragraphs 0030-0033).

As to claim 52, Bhide teaches the present invention wherein the program instructions configuring the server to control delivering the storage service comprise program instructions to

cause displaying the plurality of storage devices on a web console for an administrator to partition each of the storage devices for creating the storage spaces as the wireless provider supplying memory in the form of a personal cache to a user with the amount of storage assigned to the user being based upon the amount of storage the user requires (e.g. see paragraph 0015).

As to claim 53, Bhide teaches the present invention wherein the operation further comprises from the first wireless device remotely creating a folder or a layered folder or directory structure in the first storage space as maintaining rules relating to the user and storing the rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028), or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure as having a user profile which includes rules for managing information in both the wireless device and the personal cache (e.g. see paragraphs 0013-0018), wherein the data object is a file, a folder, or a message, where the file includes digital picture, music or video file (e.g. see paragraph 0015).

As to claim 54, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises creating, from the wireless device, a folder or a layered folder or directory structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 55, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein the data object is a file or folder as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 56, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device storing therein or retrieving therefrom a data object of a message or a digital video, music or picture file (e.g. see paragraph 0015).

12. Bhide teaches the present invention (claim 57) as claimed including a method for a wireless device accessing a remote storage space, the method comprising:

establishing, by the wireless device, a communication link for accessing the remote storage space served by a storage server as an adjunct server 190 for controlling a personal cache 150, *'In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or on a users wireless device 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150.'* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

displaying the remote storage space on the wireless device upon receiving information of the remote storage space from the storage server as the wireless device including a display device which provides a graphical output for the wireless device (e.g. see paragraph 0033);

coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation *'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined*

profile.' (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a remote server across a network into the remote storage space through utilizing information for the file cached in the wireless device *'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.'* (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

As to claim 58, Bhide teaches the present invention wherein the downloading of a file from a remote server comprises:

obtaining, by the wireless device, the information for the file from the remote server as the user having access to adjunct server 190 and adjunct server 195 (e.g. see paragraph 0015);

transmitting the information for the file cached in the wireless device to the storage server as a user having access to both a personal cache and the first server, adjunct server 190 (e.g. see paragraph 0015); and,

causing the storage server in accordance with the received information for the file to download the file from the remote server into the remote storage space as the reference having the connectivity for the access and transactions (e.g. see Figure 1).

As to claim 59, Bhide teaches the present invention wherein the wireless device displaying the remote storage space further comprises displaying the remote storage space in a web browser for accessing the remote storage space as the wireless device having a display which can be used for displaying information accessible to the wireless device (e.g. see paragraphs 0030-0033).

As to claim 60, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises creating, from the wireless device, a folder, or a layered folder or director structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraphs 0028).

As to claim 61, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device moving, copying, deleting or renaming a data object of a file or folder in respect to the layered folder or director structure as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 62, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises storing therein or retrieving therefrom a data object of message, digital video, digital music or digital picture (e.g. see paragraph 0015).

RESPONSE TO APPLICANT'S REMARKS

13. Applicant's arguments filed April 20, 2017 have been fully considered but they are not persuasive. The following analysis, which was provided in the previous office action still applies and is hereby repeated.

	<i>Claim 39</i>	<i>Bhide</i>
Device controls downloading	A wireless device	A wireless device
Designation of the download	A remote storage space controller by a first server on a network that is accessible to the wireless device <i>the wireless device of the present invention must identify the file to be downloaded as given in paragraph 30 of the present disclosure which discusses using a web browser on the wireless device</i>	The wireless device itself
Source file of the download	Residing on a second server on a network.	On a personal cache storage of an Adjunct server on a network subscribed (assigned to) by a user of the wireless device. Paragraph 0015: <i>'After accessing the configuration program the user may transfer selected files from a user's machine or from other web locations to a personal cache 150.</i>
The process of the download	downloading the source file from the server to the remote storage space controlled by the first cache server through <u>using the information of the source file stored in the wireless device.</u>	The wireless device directly downloading the source file from the subscribed personal storage of the Adjunct server to the wireless device itself. Paragraph 0015: <i>'After accessing the configuration program the user may transfer selected files from a user's machine or from other web locations to a personal cache 150.</i>

Exemplary Support Information

Fig. 3, claim 8, and page 5, lines 37 to page 6, line 20 of parent 10/726897.

Fig. 1, Fig. 2, [0015], [0027] & [0029].

Paragraph 0027:

*'a determination is made whether the wireless device 205 has sufficient memory to store all the information in the user's personal cache 250. If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. **If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis.***

Paragraph 0029:

*'After executing the rules at 335, a determination is made whether the wireless device 205 has sufficient memory to store the information in the new personal cache 265. If the wireless device 205 has sufficient memory, then at 345, the information in the new personal cache 265 is downloaded to the wireless device 205. **However, if the wireless device 205 does not have sufficient memory, the information is maintained in the new personal cache 265, and parts of the information may be downloaded to the wireless device 205 on an as-needed basis.***

14. As to remarks directed toward Bhide failing to disclose an internal cache storage in the

wireless device, the claims do not include the wireless device having an internal cache.

15. As to remarks directed toward Bhide failing to *'download a file from a second server across a network into the remote storage space through utilizing information for the file cache in the wireless device'* and *'transmitting the information for the file cache in the wireless device to the first server'*, these are not claimed limitations.

16. Additionally, the entire disclosure of Bhide teaches specifically using a wireless device which is connected to a network, having a personal cache assigned to the user of the wireless device and downloading data from network locations to either the personal network cache of the user or downloading data to the wireless device if there is sufficient memory for the download.

CONCLUSION

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBA I. ELMORE whose telephone number is (571)272-4192. The examiner can normally be reached on Monday thru Thursday, working a flex schedule.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on 571-272-4204. 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.

/REBA I. ELMORE/
Primary Examiner
Art Unit 2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Non-Final Office Action

Dear Commissioner:

This communication responds to the non-final office action mailed on 5/19/2017. In the response, enclosed please find:

- 1) Amendment to the Fig. 1 and related specification in response to the objection to the Fig. 1.
- 2) Amendment to the claims started on the page 2 of this paper.
- 3) A remark for overcome the office rejections:

Since all office rejections and objections are overcome, a request for allowance of the amended claims is respectively submitted.

-Thanks For Helps From PTO

7/5/2017

/shengtai Tsao/

Sheng Tai (Ted) Tsao
3906 Borgo Common,
Fremont, CA 94538
408-813-0536
510-580-8592

AMENDMENT TO THE CLAIMS (Response to the “New Matter Objections”) :

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device accessing a remote storage space, the wireless device comprising:

at least one cache storage for caching data ~~received~~ from the Internet, and
one computer-readable storage device comprising program instructions which, when executed, configure the wireless device accessing the remote storage space, wherein the program instructions comprise:

program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server;

program instructions for the wireless device ~~presenting~~ displaying the remote storage space ~~on the wireless device~~ upon receiving information of the remote storage space from the first server; and

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space ~~presented~~ displayed on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in ~~the cache storage in~~ the wireless device.

32. *(Canceled)*

33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

obtaining, by the wireless device, the information for the file from the second server;

transmitting the information for the file cached in the ~~cache storage in the~~ wireless device to the first server, and

causing the first server in accordance with the information for the file, to download the file from the second server into the remote storage space.

34 - 35. *(Canceled)*

36. *(Previously Presented)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises at least the name of the file and the internet protocol (“IP”) address of the second server

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 36, wherein said wireless device ~~presenting~~ displaying the remote storage space further comprises ~~displaying~~ presenting information of the remote storage space in a web browser for accessing the remote storage space ~~or accessing the Internet.~~

39 – 44 *(Canceled)*

45. *(Currently Amended)* A server for delivering storage service, comprising:
a plurality of storage spaces residing among a plurality of storage devices; and
a computer-readable storage device comprising program instructions that, when executed, configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely accessing a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device to present the first one of the storage spaces to ~~a user~~ on the first wireless device; and
program instructions for the server updating the first one of the storage spaces according to a requested operation received from the first wireless device for remotely accessing the first one of the storage spaces in response to ~~a the user~~, through the ~~displayed~~ presented information of the first one of the storage spaces performing the operation,

wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom, the storing data further comprising to download a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in a cache storage in the first wireless device.

46. *(Currently Amended)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions for the server downloading said file from said a remote server into the first one of the storage spaces by utilizing information for the file cached in the cache storage in the first wireless device after the information for the file received therefrom.

47 - 48. *(Canceled)*

49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user to perform operations for remotely accessing the second one of the storage spaces.

50. *(Canceled)*

51. *(Currently Amended)* The server of claim 45, wherein said ~~presenting~~ displaying the first one of the storage spaces further comprises: ~~presenting~~ causing displaying of the first one of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces.

52. *(Currently Amended)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions to ~~cause displaying~~ present said plurality of storage devices on a web console for an administrator to partition each of said storage devices for creating the storage spaces.

53. *(Currently Amended)* The server of claim ~~45~~ 51, wherein said operation further comprises: from the first wireless device and via a wireless link remotely creating a folder or a layered folder or directory structure in the first one of the storage spaces, or remotely deleting,

moving, copying or renaming a data object in respect to the layered folder structure, wherein the data object is a file, a folder, or a message, where the file includes digital picture, music or video file.

54. (*Currently Amended*) The wireless device of claim ~~3138~~, wherein said operation for accessing the remote storage space comprises:
~~creating~~ from the wireless device ~~and via a wireless link~~ ~~creating~~ a folder, or a layered folder or directory structure in the remote storage space.
55. (*Previously Presented*) The wireless device of claim 54, wherein said operation for access the remote storage space comprises:
from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein said data object is a file or folder.
56. (*Currently Amended*) The wireless device of claim ~~3145~~, wherein said operation for accessing the remote storage space comprises; from the wireless device ~~and via a wireless link~~ storing therein or retrieving therefrom a data object of a message, or a digital video, music, or picture file.
57. (*Currently Amended*) A method for a wireless device accessing a remote storage space, the method comprising ~~actions performed by the wireless device, including:~~
~~establishing~~ ~~by the wireless device~~, a communication link for accessing the remote storage space served by a storage server;
~~presenting~~ ~~displaying~~ the remote storage space on the wireless device upon receiving information of the remote storage space from the storage server; and
coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space
~~presented~~ ~~displayed~~ on the wireless device, performing the operation,
wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a remote server across a network into the

remote storage space through utilizing information for the file cached in a cache storage in the wireless device.

58. *(Currently Amended)* the method of claim 57, wherein said downloading a file from a remote server comprises:

obtaining, by the wireless device, the information for the file from the remote server;
transmitting the information for the file cached in the cache storage in the wireless device to the storage server, and
causing the storage server in accordance with the received information for the file to download the file from the remote server into the remote storage space.

59. *(Currently Amended)* the method of claim 57, wherein said wireless device

~~presenting~~displaying the remote storage space further comprises ~~presenting~~displaying the remote storage space in a web browser for accessing the remote storage space.

60. *(Currently Amended)* The method of claim ~~57~~59, wherein said operation for accessing the remote storage space comprises:

~~creating~~from the wireless device and via a wireless link creating a folder, or a layered folder or director structure in the remote storage space.

61. *(Currently Amended)* The method of claim 60, wherein said operation for accessing the remote storage space comprises:

from the wireless device and via a wireless link moving, copying, deleting, or renaming a data object of file or folder in respect to the layered folder or director structure.

62. *(Currently Amended)* The method of claim 57, wherein said operation for accessing the remote storage space comprises: from the wireless device and via a wireless link, storing therein or retrieving therefrom a data object of message, digital video, digital music, or digital picture.

REMARK

The office action mailed on 05/19/2017 has been carefully reviewed and considered. The claims 31, 33, 36-38, 45-46, 49, 51 – 62 are previously pending and are rejected by the office action. The claims 31, 33, 36-38, 45-46, 49, 51 – 62 are amended in response to the office action and are currently pending. A request for allowing instant application is respectively submitted in light of the claim amendment above and the remark made below:

1: Regarding Drawings:

Applicant appreciates the office action pointed out the issue of the Figure 1. The Fig. is amended by labeling it as “prior art” in response to the objection to the drawing. After amendment, the Fig. 1 is now labeled as “Prior Art” as suggested by the office action. Thus, a request for withdrawing the objection for the Fig. 1 is respectively submitted. There is no new matter being added.

2: Regarding Specification:

Based on the amendment to the Fig. 1, the description for the Fig. 1 in [010] of the specification is also amended accordingly. A substitute specification including a markup version and a clean version of the amended specification are enclosed in this filing wrapper. There is no new matter being added in the specification. Thus, a request for withdrawing the objection on the specification is also respectively submitted.

2. Regarding New Matters and Claims Amendments:

Applicant appreciates the office action pointed out the new matters. The claims 31, 45, 51-52, 57 and 59 are amended by removing the “New Matters” from the related claims. Thus, the “new matter” objections are overcome.

3. Regarding The 35 USC §102 Rejections:

The Office Action of 05/19/2017 has rejected the claims 31, 33, 36-38, 45-46, 49, 51 – 62 under 35 U.S.C. 102(a) (2) as being anticipated by Bhide (US 2003/0194998) hereafter as “Bhide”.

After a careful traversing of the office action, it is found that the Bhide has failed to teach or suggestion many limitations in the claims of instant application, for example, the limitations of claim 31 comprises: (recited in part and emphasis added):

“A wireless device accessing the remote storage space served by a first server; ... from the wireless device storing data therein, the storing data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the cache storage in the wireless device.”

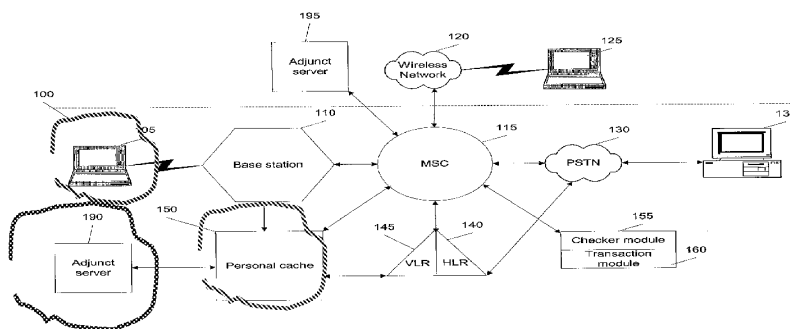
The limitation of claim 31 recited above has clearly indicated that a wireless device is configured for access a remote storage space controlled by a first server. Specially, the access to the remote storage space includes downloading (transferring) a file from a second server (e.g. a web site) into the remote storage space controlled by the first server by utilizing information for the file cached in the wireless device that are disclosed according to Fig. 3 and par [039] – [045] of instant application.

On the other hand, Bhide has failed to teach the mentioned limitation of the claim 31 discussed above with following reasons:

a) As a premier matter, as per 37 C.F.R. § 1.104(c)(2):

“[w]hen a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.”

The page 6, lines 10 – 13 of office action views the Adjunct server 190 being equivalent to the first device of the claim 31, however, in Applicant’s view, this could not be true due to lack of disclosures throughout the entire Behide. Thus, applicant requests the office action providing detailed evidences from Behide to explain in which way of either implicitly or explicitly the Adjunct server 190 or 195 is equivalent to the first server of claim 1 in respect to Fig. 1 and [0015] of Bhide ?
(Fig. 1 recited in part below)



According to [0015] and Fig. 1 of Bhide, the PSTN 130 is provided for wired-line communication and the MSC 115 (where Base station 110 can be part of it according to lines 8-10 of [0020],) switches the between wireless and wired communication. The PSTN is connected to the MSC 115 for providing communication across wireless link and wired line.

As matter of a fact, Bhide discloses nothing on how does the Adjunct server 190 control the storage of personal cache 150.

b) The [0015] lines 22-28 of Bhide referenced by the office action (recited in part and emphasis added below):

“... After accessing the configuration program the user may transfer selected files from the user's machine or from other web locations to a personal cache 150. In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.”

However, the office action has ignored a fact that the transfer of a file to the remote personal cache 10 in the [0015] of Behide above and in the entire specification do not disclose anything on how to “utilizing the information for the file cached in the cache storage of the wireless device” that is a key limitation of the claim 31.

Applicant asserts that the office action repeatedly ignores the fact that Behide has never taught and never enable said key limitation of the claim 31 of how to “utilizing information for the file cached in the cache storage in the wireless device” for transferring a file from a remote second server into a remote storage space served by a first server that is disclosed in par [039] – [045] and Fig. 3 of instant applicaiton.

In addition, this key limitation of the clam 31 is further defined and limited by the claim 33 such that:

“33. The wireless device of claim 31, wherein said downloading a file from a second server comprises: obtaining, by the wireless device, the information for the file from the second server; transmitting the information for the file cached in the cache storage on the wireless device to the first server, and causing the first server in accordance with the information for the file, to download the file from the second server into the remote storage space.”

In pursuant to MPEP § 707.07(f), “[w]here the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant’s argument and answer the substance of it.”

While applicant has traverses the rejection to the key limitation of the claim 1 and provided detailed explanation for why such limitation can not be found in Behide, Applicant requests the office action to reconsider the applicant's evidences for allowance of said claims, otherwise, Applicant seeks answers with substance from examiner to explain why Behide teaches said limitation of the claim 31 without repeating previous stated reason because Applicant has not seen any valid reason with substances for the rejections of the claim 31 from in the office action .

c) The [0027] lines 2-23 of Bhide also recited by the office action as main reasons for rejecting the claims of instant application (recited in part & emphasis added):

“At 305, information (e.g., text files, audio files, video files etc.) and rules that determine the parameters by which files are copied and stored in personal cache 250 are copied to a wireless cell 202 If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205”.

Applicant asserts that the [0027] of Bhide above basically states (i) “if a wireless device has memory, the downloading a file from the “wireless cell” 202 across a network into the wireless device 205 because files in the personal cache 250 are copied to the “wireless cell 202”, which include MSC 260, Base station 255, Adjunct server 295”; (ii) if the wireless device does not have the memory, then downloading a file from the remote personal caches 250 into the wireless device on a as needed basis”.

Therefore, the meaning of the [0027] is very simple and no one can misinterpret such meanings. As matter of fact, the [0027] of Behide recited above has nothing being disclosed for said key limitation of the claim 1 of how to “utilizing information for the file cached in the wireless device” for transferring a file from a remote second server into a remote storage space served by a first server.

The office action has misinterpreted the meaning of [0027] and entire specification of Behide. As per MPEP § 707.07:

“... in every case the applicant is entitled to a full and fair hearing, and that a clear issue between applicant and examiner should be developed, if possible, before appeal.”

Therefore, applicant would like to request the office action to explain which words or which sentence in the [0027] or in entire Behide has either implicitly or explicitly taught, or suggested or enabled said key limitation of the claim 1 of how to “utilizing information for the file cached in the wireless device” for transferring a file from a remote second server into a remote storage space served by a first server?.

In pursuant to the MPEP § 707.07, if the office action can not provide substance to explain why [0027] of Behide has suggested or enabled said key limitation of the claim 1, Applicant urges the office action immediately allowing the claims 31, and similarly to allow the claim 45 and 57 for the same reason.

If the office action continues to reject the claims of instant application without providing the substance for new reasons, Applicant think the office action shall carry its own burden for appeal.

3: Summary:

Based on the reasons discussed above, the claim 31 is patentable over the Behide, and the independent claims 45 and 57 are also patentable since they carry similar patentable limitations. Besides , all their dependent claims 38 and 54-56, claims 51-5 and others are also patentable over the Bhide as matter of the law.

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor’s address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 07/05/2017

/shengtai tsao/

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3906 Borgo Common,
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408-813-0536
510-580-8592

(Annotated Sheet)

Wireless devices supports in a simple environment

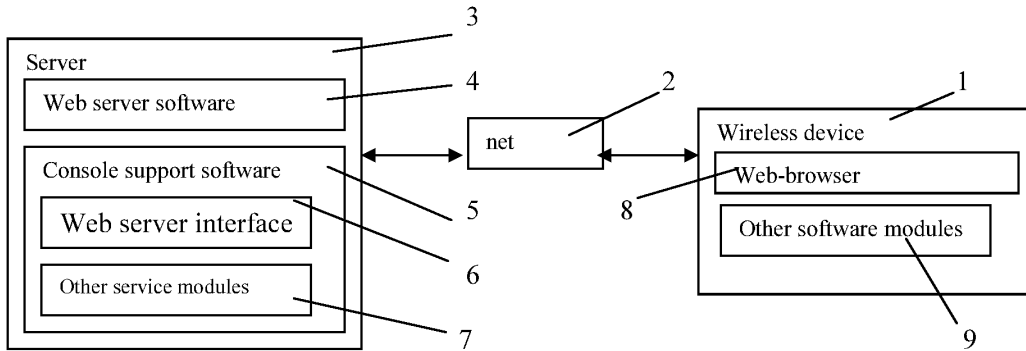


Fig. 1 (Prior Art)

Wireless out-band download

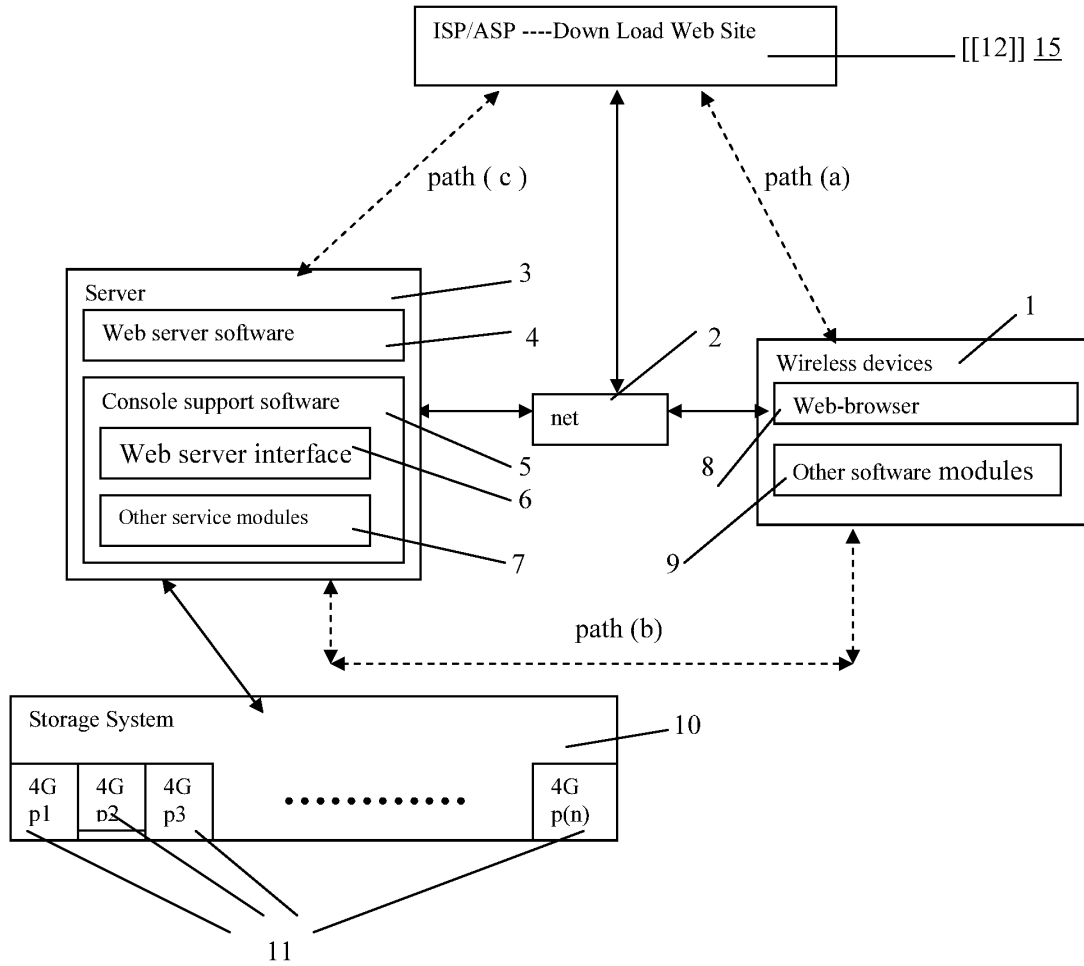


Fig. 3

(Replacement Sheet)

Wireless devices supports in a simple environment

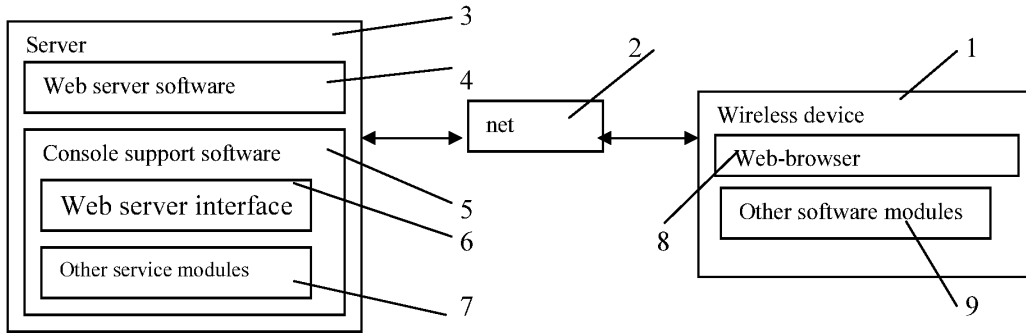


Fig. 1 (Prior Art)

(Replacement Sheet)

Wireless devices access external storage through web browser

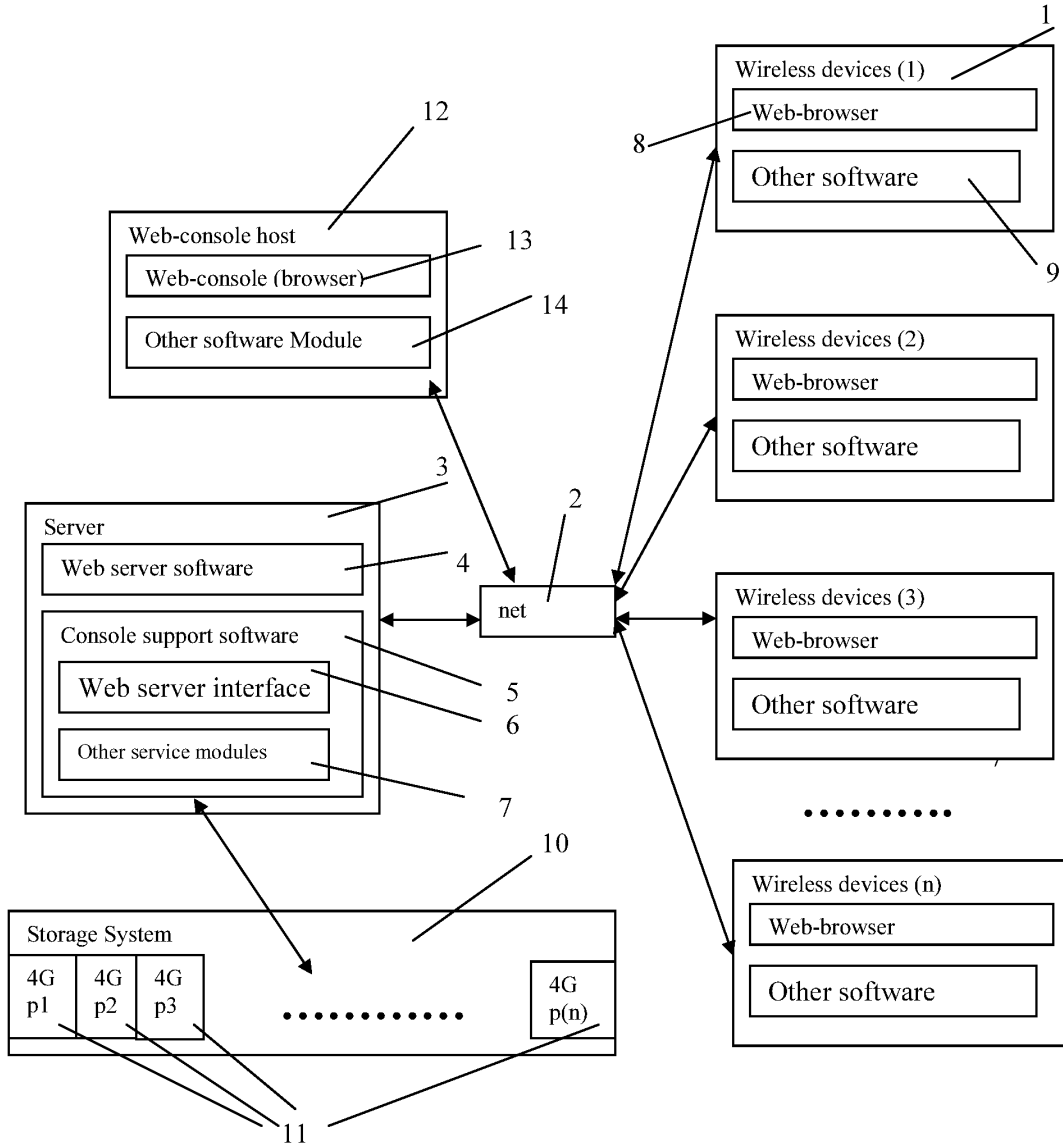


Fig. 2

Wireless out-band download

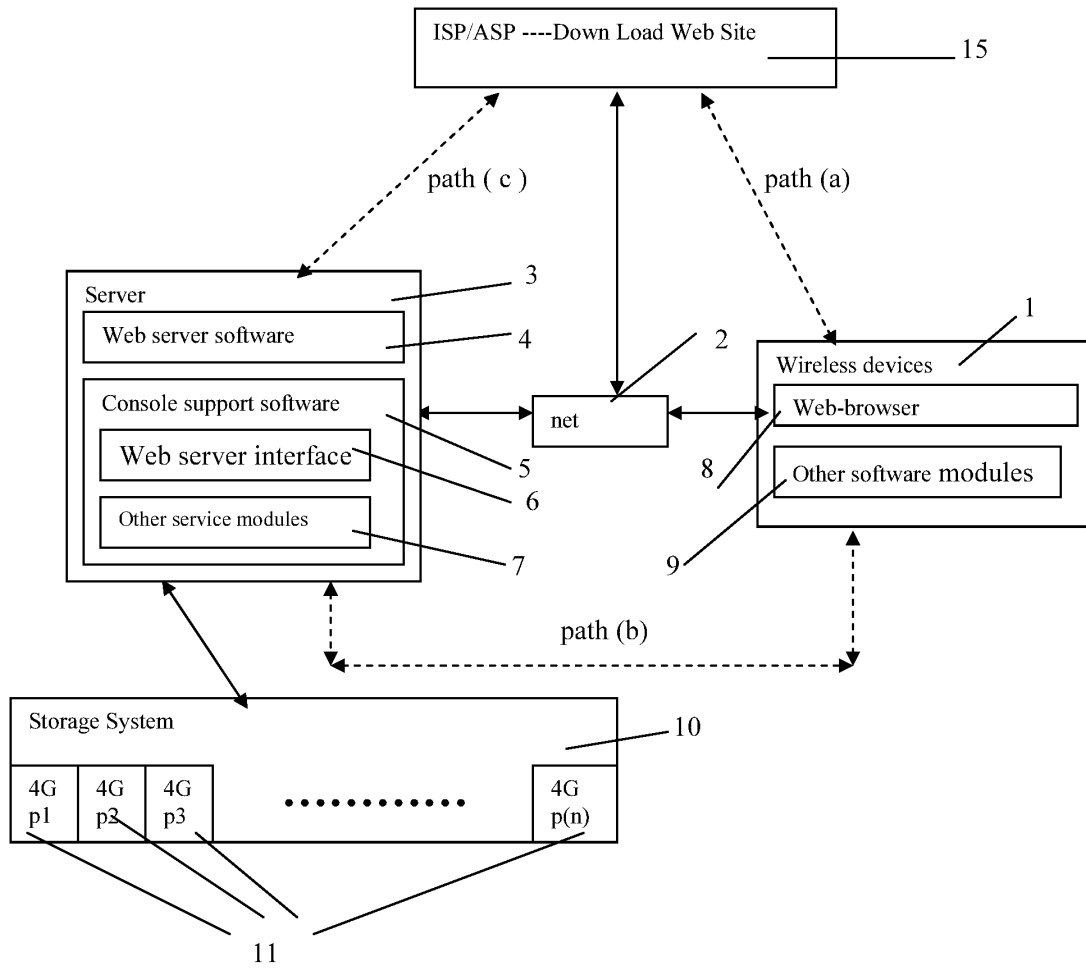


Fig. 3

(Replacement Sheet)

The CCDSVM Support External Device for Huge Number of Wireless Device

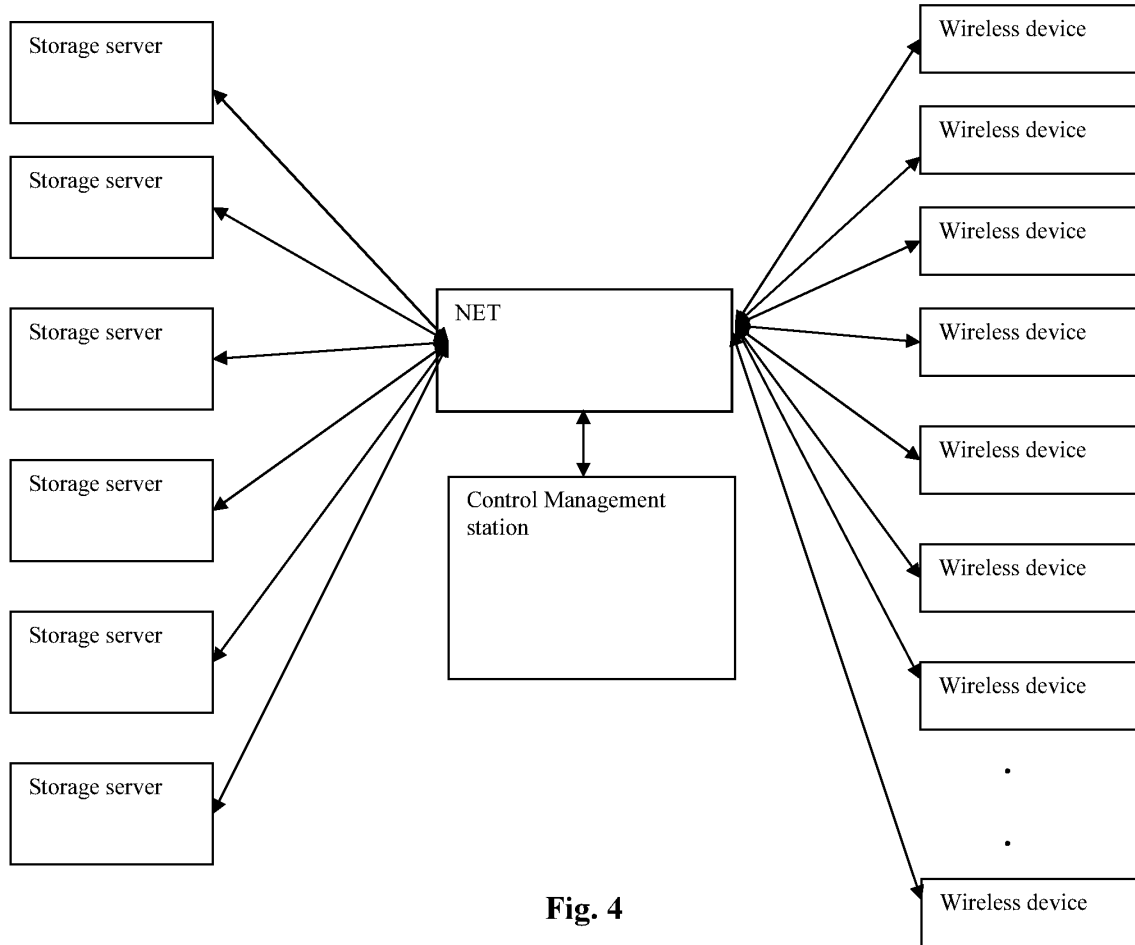


Fig. 4

<<<<The markup version of the Substitute specification>>>>

The Use of System and Method For Wireless Device Access To Devices' External Storage

**By: ~~Sheng (Ted) Tai Tsao~~
11/19/2003**

Field of the Invention

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced ~~is the continuation of the previous invention,~~ application number 10/713,904 ~~60/401,238~~ of “Concurrent Web Based Multi-task Support for Control Management System”; ~~where the claim 20 item a), b), d), claim 30 item b), and together with claim 36 represent an invention of using storage of a server system as the external storage for wireless devices. This invention focuses on how can a wireless device user actually use external storage. Specially it focus on how can a wireless device to download data to its external storage, which its principle has preliminary described in claim 19) of the previous invention, and application number 10/713,905 ~~60/402,626~~ of “IP Based Distributed Virtual SAN” in the name of same inventor, to transmit data in wireless environment. All mentioned prior applications and patents are herein incorporated by reference in their entirety for all purpose.~~

Field of the Invention

[002] This invention relates to wireless devices accessing and using external storage spaces provided by one or more servers.

Background Information

a)

[003] **Terminology:**

Storage system can be categorized as internal storage or external storage system.

[004] **The Internal Storage of a System:**

The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory [[etc.]], and others that are internally [[is]] connected [[to a]] within the computing system directly through system bus or a few inches of cable. Therefore, the storage media actually are internal is a components of [[a]] the computing system in a same enclosure.

[005] **The External Storage of a System:**

The external storages of a computing system are those storage media that are [[is]] not the internal [[a]] components of [[a]] the computing system in a same enclosure. Therefore, they ~~it has~~ have to be connected through [[a]] longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media [[etc.]], and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical storage drives, memory card, etc. and could be in any form such as Raid[[,]] which usually consists of a group of hard disk drives.

[006] **The Storage Partition, its Volumes, and the Corresponding File System:**

To effectively use ~~the a~~ a storage system, the storage devices of the storage system usually need[[s]] to be partitioned into small volumes. After the partitioning, each of the volumes can be used [[to]] for establishing a file system[[s]] on top of it. To simplify the discussion, herein, the term of the storage volume[[,]] and its corresponding file system, and the term of the storage partition of a storage are often used without differentiation in this invention.

[007] **CCDSVM:**

CCDSVM ~~it~~ in this invention is an abbreviation for a central controlled distributed scalable virtual machine system. The CCDSVM allows a control management ~~station~~ system to control a group of computing systems for providing and provide distributed services to client systems over the [[in]] Internet, Intranet, and LAN environment.

[008] ~~ISP & ASP:~~

By the way, in this invention, the ISP refers to Internet service provider and the ASP refers to application service provider.

b) [009]

Brief Description Of Figures:

[010] Fig. 1: ~~This is a figure the same figure as a Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with an exception of renaming a console host of the prior application as wireless device herein.~~

[011] Fig. 2: ~~This is a figure the same figure as the Fig. 1 of this invention with an exception that it shows the a more detailed details of storage system configured and controlled by the server in the Fig. 1 above. In addition, multiple wireless devices are presented in this Fig. 2.~~

[012] Fig. 3: ~~This figure shows the a scheme of a wireless device downloading data (contents) from an ISP/ASP or from other web sites to the an external storage of this the wireless device.~~

[013] Fig. 4: ~~This is a figure the same figure as a Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server provide herein provides file system for as external storage for to each of the wireless devices instead of provide providing IP based virtual SAN service of the prior application. Also, each host in the Fig. 1 of the prior application now actually is has been replaced herein by a wireless device of this invention.~~

e) Assumptions:

[014] Unless specified, the programming languages[[,]] and the protocols used by the each software modules, and the computing systems used ~~described~~ in this invention are assumed to be the same as described in the previous prior patent[[s]] submission applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element [[will]] may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, ~~the wireless~~ users commonly face ~~the a~~ a problem of lack of storage capacity [[on]] in their wireless devices such as in their cell phones or personal data assistant devices (“PDA”), which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users ~~own~~ possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been ~~claimed~~ briefly introduced in the previous two prior patent~~[[s]] applications submission~~ by the same author.

[018] The followings describe details on ~~Now we can examine~~ how ~~does can~~ the external storage actually be used by the wireless devices by referring to the Fig. 2. First, We can let each server unit 3 (e.g. the server 3 of the Fig. 2) partition~~[[s]]~~ its storage system in such way that each of volumes will have multiple~~[[-]]~~GB in size. Therefore, ~~each a user from a web browser~~ of any one of the wireless devices can exclusively be assigned ~~and exclusively for~~ access to a specific storage volume on the a server unit 3. For example, if we need to provide each user a 4GB ~~of~~ storage space, then a 160GB disk drive can support 40 users~~[[]]~~. Therefore, [[A]] a 4096GB storage system on a the server unit 3 can support a total of 1024 users. Further, any data on the wireless device can be transmitted to the assigned storage volumes ~~on a the~~ server unit. In addition, the user on the wireless device also can download ~~the~~ multimedia data from ~~any an~~ ISP or ASP to the assigned storage volume~~[[s]]~~ of the a designated server unit 3 through out-band approach ~~(as shown in Fig. 3)~~. Finally, the user can use ~~their a~~ web-browser, which has a functionality of invoking embedded video or music, to enjoy ~~their~~ his/her stored multimedia contents.

[019] These and other ~~features~~ features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures ~~where~~.

[020] **Detailed Description of the Drawings**

[021] ~~Referring now to the Fig. 1~~ Referring now to the Fig. 1, ~~this~~ this figure demonstrates ~~a~~ a network connection between a wireless device and a server, where ~~a~~ a Net (2) represents a communication link, which may be combined with wireless and ~~non-wireless~~ wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that ~~the~~ a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] ~~b) As described in previous patents submission~~ In the Fig. 1, the console support software (5) on the server (3) can support web-based multi~~[-]~~ tasking ~~for~~ while ~~a~~ a user~~[[s]]~~ on using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated ~~able~~ to perform creating structured layered files/~~directory~~ directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories ~~etc.~~ residing on ~~the~~ an assigned storage volume of the server (3).

[023] ~~c) As described in previous patents submission~~ In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data ~~file~~ being sent or received could ~~be~~ be a digital photo picture, a message and other data [[etc.]].

[024] ~~d) As described in previous patents submission~~ In addition, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with ~~any~~ any suitable languages such as C, C++, Java, and others, ~~etc.~~.

[025] ~~e) As described in previous patents submission~~ Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which, is capable to communication

with web server software (4) on the server (3) or with ~~any~~ other web server through the HTTP protocol.

[026] ~~The Fig. 2: This figure has~~ demonstrated how can ~~does~~ the storages of a server (3) ~~can~~ be assigned to multiple wireless devices for being used as their external storage as follows[[.]]:

~~a) As described in the previous patents submission,~~ First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a ~~web~~ console host (12).

[027] ~~b) Second,~~ the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server (3) for supporting maximum numbers of the wireless devices.

[028] ~~c) As described in previous patents submission~~ In addition, the storage connection media could be any kind[[s]] such as SCSI cable, IP cable, Fiber cable and others ~~etc.~~ Meanwhile the storage system itself could be various types.

[029] ~~d) It~~ Finally, ~~assumes that~~ the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] ~~The Fig. 3: This figure has~~ demonstrated ~~how that~~ a user from a web-browser (8) on a wireless device[[s]] (1) can download data from a known web-site (1512) to his/her assigned external storage (10) ~~of on the~~ server (3). The dash-lined path (a) represents a communication channel link between the wireless device (1) and ~~any the~~ remote download web-site (1512), which provides ~~the~~ contents for web download. The dash-lined path (b) represents a communication channel link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link channel between the server 3 ~~wireless devices (1)~~ and the remote web-server (1512), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] ~~The Use of the External Storage of the Wireless Device:~~

The Fig. 2 shows a simplified diagram ~~[[of]]~~ illustrating the wireless devices (1 ~~of Fig. 2~~) using and accessing the external storage system (10 ~~of Fig. 2~~) of a server (3 ~~of Fig. 2~~), which will for effectively resolve solving the storage limitation problem of the wireless devices (1 ~~of Fig. 2~~).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10 ~~of Fig. 2~~) on a server (3 ~~of Fig. 2~~) needs to be partitioned into suitable size of volumes (11 ~~of Fig. 2~~) such as 4GB for each volume, which will for allowing the server 3 to serve maximum number of the wireless devices (1 ~~of Fig. 2~~). With the web console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~), the task of partitioning the storage system (10) can be done through a web-console (13 of Fig. 2) on a console host (12 of Fig. 2) by an administrative staff.

[034] In order to support ~~such~~ storage partition, first the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) must send storage information of the server (3 ~~of Fig. 2~~) to the web-console (13 ~~of Fig. 2~~) of the console host (12 ~~of Fig. 2~~). ~~This~~ The storage information including the includes each storage device name, storage ~~total~~ size ~~etc.~~ and others. Second, based on the storage information received, the administration staff on the console host (12 ~~of Fig. 2~~) can use the web-console (13 ~~of Fig. 2~~) to fill (partition storage device) and ~~[[to]]~~ send the storage partition information to the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13 ~~of Fig. 2~~) of the console host (12 ~~of Fig. 2~~), the console support software (5 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) performs the actual storage partition by, ~~which divides~~ dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11 of Fig. 2) [of] on the storage system (10 of Fig. 2) [on] of the server (3 of Fig. 2) needs to be exclusively assigned and exported to a given specific wireless device (1 of Fig. 2) by the console support software (5 of Fig. 2) [on] of the server (3 of Fig. 2).

[036] Data and storage volume management (refer to Fig. 2)

4) With the support of the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2), the a user on a web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can setup the folder[[/]] or directory structure on the file system of his/her assigned external storage volume (11 of Fig. 2). In addition, the user on the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can performing all data management operations such as delete, copy, move, or rename etc. and other operations for files or folders on that file system.

[037] In order to support such data management [[on]] over the external storage (10 of Fig. 2) by using the ~~from~~ web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2), first the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2) must communicate with the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) for presenting the external storage to a user on a user device. Therefore, the user from the web-browser (8 of Fig. 2) of the wireless device (1 of Fig. 2) can choose desired data management operation[[s]] and ~~send~~ submit the operation for the wireless device sending the operation information to the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2). These operations include establishing folder[[/]] or directory, and copying, moving, or renaming data file ~~etc.~~ and others for the folder or directory. Second, upon receiving the each data management operations, the console support software modules (5 of Fig. 2) of the server system (3 of Fig. 2) actually performs these operations [[on]] over the assigned file system of the assigned external storage volume (11 of Fig. 2) on the server system (3 of Fig. 2).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures[[,]] or messages into the assigned file system on the external storage (11 ~~10 of Fig. 2~~) of a server (3 ~~of Fig. 2~~), the other software modules (9 ~~of Fig. 2~~) of the wireless device (1 ~~of Fig. 2~~) need to send ~~these~~ data to the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) via communication link between them. Upon receiving the data, the other service modules (7 ~~of Fig. 2~~) of the server (3 ~~of Fig. 2~~) write these data to the assigned file system of the assigned storage volume (11 ~~of Fig. 2~~) on the server (3 ~~of Fig. 2~~). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3);

[040] If a user of a the wireless device (1 ~~of Fig. 3~~) user wants to download data from a remote web server (1512 ~~of Fig. 3~~) into an assigned file system (11 ~~of Fig. 3~~) of the assigned external storage (10 ~~of Fig. 3~~) on a server (3 ~~of Fig. 3~~), the following steps are required:

[041] 1) Provide the user from a web-browser (8 ~~of Fig. 3~~) of the -a specific- wireless device (1 ~~of Fig. 3~~) accesses to a remote ~~download~~ web server site (1512 ~~of Fig. 3~~) and to obtain the information for the downloading via the path (a) of the Fig. 3. For example, to provide the user get via the web browser obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9 ~~of Fig. 3~~) of a specific the wireless device (1 ~~of Fig. 3~~) obtains the downloading information, which becomes available in the cached web-pages on the wireless device (1 ~~of Fig. 3~~) after the web-browser (8 ~~of Fig. 3~~) accessing the download web site (1512 ~~of Fig. 3~~).

[043] 3) The other software modules (9 ~~of Fig. 3~~) of a specific the wireless device (1 ~~of Fig. 3~~) send the obtained downloading information to other service modules (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) via the path (b) of the Fig. 3.

[044] 4) Upon receiving the downloading information from a specific the wireless device (1), the other service module (7 ~~of Fig. 3~~) of the storage server (3 ~~of Fig. 3~~) sends a web

download request to ~~download~~ the web-site (1512 of Fig. 3) via the path (c) of Fig. 3 based on download information obtained. ~~It~~ and then receives the downloading ~~information~~ data from ~~the~~ web server of ~~download~~ the web-site (1512 of Fig. 3).

[045] 5) Upon receiving downloading data, the other service modules (7 of Fig. 3) of the storage server (3 of Fig. 3) write ~~these~~ the data for the ~~specific~~ wireless device (1 of Fig. 3) into the assigned file system (11 of Fig. 3) on the server (3 of Fig. 3).

[046] Retrieve data from external storage of a wireless device;

[047] 1) If a web-browser (8) has embedded video or music functionality, the web-browser (8 of Fig. 2) of a wireless device (1 of Fig. 2) can be used to retrieve and play ~~those~~ multimedia data file such as video or music stored in ~~the~~ wireless device's external storage volume (11 10 of Fig. 2), which actually located on a server (3 of Fig. 2).

[048] 2) If there is needs, the other software module (9 of Fig. 2) of ~~the~~ wireless device (1 of Fig. 2) also can retrieve data file from ~~the~~ assigned file system of the assigned storage volume (11 of Fig. 2) on a server (3 of Fig. 2).

[049] Support external storage for large number of ~~the~~ wireless devices;

[050] Referring now to the Fig. 4. If ~~[[we]]~~ ~~there is a~~ need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on ~~[[a]]~~ ~~the~~ server unit can support 2024 user. ~~Therefore, a Each~~ server unit ~~3~~ only can efficiently support a limited size of the storage system. In order to support a large number of ~~the~~ wireless devices, ~~with external storage~~ such as ~~for supporting~~ 500,000 of ~~them~~ ~~wireless devices~~, a larger number of ~~the~~ servers ~~are is~~ required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support ~~the~~ larger number of the wireless devices, an infrastructure like ~~the~~ CCDSVM is desirable, which has been described in ~~previous~~ ~~the~~ prior patent ~~[[s]]~~ ~~applications~~ ~~submission~~. With ~~the~~ CCDSVM the control management ~~system~~ ~~station~~ can control larger number of storage servers to provide external storage for a huge number of the wireless devices.

<<<<The Clean version of the Substitute specification>>>>

System and Method For Wireless Device Access To External Storage

Cross Reference to Prior Application

[001] This invention is a continuation application of the US patent application No. 14/036,744 filed on 09/25/2013, now a US Patent No. 9,239,686 and which itself is continuation application for US patent application No. 10/726,897 filed on 12/04/2003 and now a US patent No. 8606880. The application No. 10/726,897 has also referenced application number 10/713,904 of “Concurrent Web Based Multi-task Support for Control Management System” and application number 10/713,905 of “IP Based Distributed Virtual SAN” in the name of same inventor. All mentioned prior applications and patents are herein incorporated by reference in their entirety for all purpose.

Field of the Invention

[002] This invention relates to wireless devices accessing and using external storage spaces provided by one or more servers.

Background Information

[003] Storage system can be categorized as internal storage or external storage system.

[004] The internal storages of a computing system include those storage media such as hard disk drives, memory sticks, memory, and others that are internally connected within the computing system through system bus or a few inches of cable. Therefore, the storage media actually are internal components of the computing system in a same enclosure.

[005] The external storages of a computing system are those storage media that are not the internal components of the computing system in a same enclosure. Therefore, they have to be

connected through longer cable, such as through Ethernet cable for IP based storage, Fiber channel cable for fiber channel storage, or wireless communication media, and others. The storage media of the external storage could be magnetic hard disk drives, solid state disk, optical storage drives, memory card and others, and could be in any form such as Raid which usually consists of a group of hard disk drives.

[006] To effectively use a storage system, the storage devices of the storage system usually need to be partitioned into small volumes. After the partitioning, each of the volumes can be used for establishing a file system on top of it. To simplify the discussion, herein, the term of the storage volume and its corresponding file system, and the term of the storage partition are often used without differentiation in this invention.

[007] CCDSVM in this invention is an abbreviation for a central controlled distributed scalable virtual machine. The CCDSVM allows a control management system to control a group of computing systems for providing distributed services to client systems over the Internet, Intranet, and LAN environment.

[008] By the way, in this invention, the ISP refers to Internet service provider and the ASP refers to application service provider.

[009] **Brief Description Of Figures:**

[010] Fig. 1 is a figure the same as a Fig. 1 of a prior application No. 10/713,904 of the “Concurrent Web Based Multi-task Support for Control Management System” with exceptions that a console host of the prior application being replaced herein by a wireless device.

[011] Fig. 2 is a figure the same as the Fig. 1 of this invention with an exception that it shows a more detailed storage system configured and controlled by the server in the Fig. 1 above. In addition, multiple wireless devices are presented in this Fig. 2.

[012] Fig. 3 shows a scheme of a wireless device downloading data (contents) from an ISP/ASP or from other web sites to an external storage of the wireless device.

[013] Fig. 4 is a figure the same as a Fig. 1 of the prior application No. 10/713,905 of “IP Based Distributed Virtual SAN” with an exception that each IP storage server herein provides file system for external storage to each of the wireless devices instead of providing IP based virtual SAN service of the prior application. Also, each host in the Fig. 1 of the prior application has been replaced by a wireless device of this invention.

[014] Unless specified, the programming languages and the protocols used by the software modules, and the computing systems used in this invention are assumed to be the same as described in the prior patent applications.

[015] In addition, in the drawing, like elements are designated by like reference numbers. Further, when a list of identical elements is present, only one element may be given the reference number.

[016] **Brief Description of the Invention**

[017] Today, users commonly face a problem of lack of storage capacity in their wireless devices such as in their cell phones or personal data assistant devices (“PDA”), which are usually limited to 256MB for the PDA and much less for the cell phone. To effectively solve this problem and let users possess multiple gigabytes (GB) of storage for their wireless devices as well as allowing the users to use the GB storage for their multimedia applications, the storage on a server can be used as the external storage for the wireless devices. This technology has been briefly introduced in the prior patent applications by the same author.

[018] The followings describe details on how can the external storage actually be used by the wireless devices by referring to the Fig. 2. First, let each server unit (e.g. the server 3 of the Fig. 2) partition its storage system in such way that each of volumes will have multiple GB in size. Therefore, a user of any one of the wireless devices can exclusively be assigned for access to a specific storage volume on the server unit 3. For example, if we need to provide each user a 4GB storage space, then a 160GB disk drive can support 40 users. Therefore, a 4096GB storage system on the server unit 3 can support a total of 1024 users. Further, any data on the wireless

device can be transmitted to the assigned storage volume on the server unit. In addition, the user on the wireless device also can download multimedia data from an ISP or ASP to the assigned storage volume of the designated server unit 3 through out-band approach as shown in Fig. 3. Finally, the user can use a web-browser, which has a functionality of invoking embedded video or music, to enjoy his/her stored multimedia contents.

[019] These and other features, aspects and advantages of the present invention will become understood with reference to the following description, appended claims, and accompanying figures.

[020] **Detailed Description of the Drawings**

[021] Referring now to the Fig. 1, this figure demonstrates a network connection between a wireless device and a server, where Net (2) represents a communication link, which may be combined with wireless and wired connection media and guarantee that the communication packets can be sent or received between the wireless device and the server. It is also assumed that the net (2) infrastructure is built up in such way that a user from a web-browser of a wireless device can access and browse any web-site on the Internet, and Intranet.

[022] In the Fig. 1, the console support software (5) on the server (3) can support web-based multitasking while a user using a web-browser (8) of a wireless device (1). Further, the user on the web-browser (8) is facilitated to perform creating structured layered file directories or folders, and perform data management operations, such as delete, move, copy, rename for data files or folders or directories residing on an assigned storage volume of the server (3).

[023] In addition, the other software modules (9) of the wireless device (1) is also configured capable to send data to or receive data from the other service modules (7) of the server (3) via communication link (2) through a suitable IP or non-IP based protocol. The data being sent or received could be a digital photo picture, a message and other data.

[024] In addition, the console supporting software (5) of the server (3) and the other software modules (9) of the wireless device (1) can be implemented with suitable languages such as C, C++, Java, and others.

[025] Besides, the web-browser (8) of the wireless device (1) can be any suitable software tool, which is capable to communication with web server software (4) on the server (3) or with other web server through the HTTP protocol.

[026] The Fig. 2 has demonstrated how can the storages of a server (3) be assigned to multiple wireless devices for being used as their external storage as follows:

First, the storage system (10) of the server (3) can be partitioned into multiple volumes (11), for example, by administration staff through a web-console (13) of a console host (12).

[027] Second, the storage system (10) of the server (3) can be partitioned in such way that each of the wireless devices can be assigned with a storage volume of a desired size, which can be best supported by the server (3) for supporting maximum numbers of the wireless devices.

[028] In addition, the storage connection media could be any kind such as SCSI cable, IP cable, Fiber cable and others. Meanwhile, the storage system itself could be various types.

[029] Finally, the storage system (10) can be accessed by each of the wireless devices through IP or non-IP based network and protocols.

[030] The Fig. 3 has demonstrated that a user from a web-browser (8) on a wireless device (1) can download data from a known web-site (15) to his/her assigned external storage (10) on the server (3). The dash-lined path (a) represents a communication link between the wireless device (1) and the remote web-site (15), which provides contents for web download. The dash-lined path (b) represents a communication link between the wireless devices (1) and the storage server (3). The dash-lined path (c) represents a communication link between the server 3 and the remote web-server (15), which provides download contents.

[031] **The Detailed Description of the Invention**

[032] The Use of the External Storage of the Wireless Device:

The Fig. 2 shows a simplified diagram illustrating the wireless devices (1) using and accessing the external storage system (10) of a server (3) for solving the storage limitation problem of the wireless devices (1).

[033] Partition storage volumes (refer to the Fig. 2):

With this invention, the entire storage (10) on a server (3) needs to be partitioned into suitable size of volumes (11) such as 4GB for each volume for allowing the server 3 to serve maximum number of the wireless devices (1). With the web console support software (5) of the server (3), the task of partitioning the storage system (10) can be done through a web-console (13) on a console host (12) by an administrative staff.

[034] In order to support storage partition, first the console support software (5) of the server (3) must send storage information of the server (3) to the web-console (13) of the console host (12). The storage information includes each storage device name, storage size and others. Second, based on the storage information received, the administration staff on the console host (12) can use the web-console (13) to fill (partition each storage device) and send the storage partition information to the console support software (5) of the server (3). The storage partition information includes the number of the partitions (volumes) and the size of each partition (volume). Third, upon receiving the storage partition information from the web-console (13) of the console host (12), the console support software (5) of the server (3) performs the actual storage partition by dividing the entire storage into multiple small volumes. Finally, for each small storage volume, a corresponding file system could be built up.

[035] Assign storage volumes (refer to the Fig. 2):

Each of the storage volumes (11) together with its corresponding file system (11) on the storage system (10) of the server (3) needs to be exclusively assigned and exported to a given specific wireless device (1) by the console support software (5) of the server (3).

[036] Data and storage volume management (refer to Fig. 2)

With the support of the console support software modules (5) of the server system-(3), a user on a web-browser (8) of the wireless device (1) can setup folder or directory structure on the

file system of his/her assigned external storage volume (11). In addition, the user on the web-browser (8) of the wireless device (1) can performing all data management operations such as delete, copy, move, or rename and other operations for files or folders on that file system.

[037] In order to support such data management over the external storage (10) by using the web-browser (8) of the wireless device (1), first the console support software modules (5) of the server system (3) must communicate with the web-browser (8) of the wireless device (1) for presenting the external storage to a user on a user device. Therefore, the user from the web-browser (8) of the wireless device (1) can choose and submit desired data management operation for the wireless device (1) sending the operation information to the console support software modules (5) of the server system (3). These operations include establishing folder or directory, and copying, moving, or renaming data file and others for the folder or directory. Second, upon receiving each data management operation, the console support software modules (5) of the server system (3) actually performs the operation over the assigned file system of the assigned external storage volume (11) on the server system (3).

[038] Store data from wireless device into external storage (refer to Fig. 2):

To store the data such as digital photo pictures or messages into the assigned file system on the external storage (11) of a server (3), the other software modules (9) of the wireless device (1) need to send the data to the other service modules (7) of the server (3) via communication link between them. Upon receiving the data, the other service modules (7) of the server (3) write these data to the assigned file system of the assigned storage volume (11) on the server (3). The protocol used between these two communication entities could be either IP or non-IP based protocol.

[039] Download data from a remote web server site into external storage (refer to the Fig. 3):

[040] If a user of a wireless device (1) wants to download data from a remote web server (15) into an assigned file system (11) of the assigned external storage on a server (3), the following steps are required:

[041] 1) Provide the user from a web-browser (8) of the wireless device (1) access to a remote web server site (15) to obtain information for the downloading via the path (a) of the Fig. 3. For example, to provide the user via the web browser obtains a web-page, which contains IP address of the remote web site and the data name for the downloading.

[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information, which becomes available in the cached web-pages on the wireless device (1) after the web-browser (8) accessing the web site (15).

[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server (3) via the path (b).

[044] 4) Upon receiving the downloading information from the wireless device (1), the other service module (7) of the storage server (3) sends a web download request to the web-site (15) via the path (c) based on download information obtained and then receives the downloading data from the web server of the web-site (15).

[045] 5) Upon receiving downloading data, the other service modules (7) of the storage server (3) write the data for the wireless device (1) into the assigned file system (11) on the server (3).

[046] Retrieve data from external storage of a wireless device:

[047] 1) If a web browser (8) has embedded video or music functionality, the web-browser (8) of a wireless device (1) can be used to retrieve and play multimedia data file such as video or music stored in the wireless device's external storage volume (11), which actually located on a server (3).

[048] 2) If there is needs, the other software module (9) of the wireless device (1) also can retrieve data file from the assigned file system of the assigned storage volume (11) on a server (3).

[049] Support external storage for large number of the wireless devices:

[050] Referring now to the Fig. 4. If there is a need to provide each user a 2GB of storage space, then a 160GB disk drive can support 80 users. A 4096GB (4 Tera Bytes) storage system on the server unit can support 2024 user. Therefore, a server unit 3 only can efficiently support a limited size of the storage system. In order to support a large number of the wireless devices, such as for supporting 500,000 wireless devices, a larger number of the servers is required, in this case 250 servers is required. In order to let a larger number of the servers to effectively support the larger number of the wireless devices, an infrastructure like the CCDSVM is desirable, which has been described in the prior patent applications. With the CCDSVM the control management system can control larger number of storage servers to provide external storage for a huge number of the wireless devices.



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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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. Claims 31, 33, 36-38, 45-46, 49 and 51-62 have been presented for examination. Claims 32, 34-35, 39-44, 47-48 and 50 have been cancelled by the amendment filed April 20, 2017.

DRAWINGS

2. The objection to Figure 1 is *withdrawn* due to the amendment.

SPECIFICATION

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

NEW MATTER

4. The objection to the disclosure for including new matter into the claim language is *withdrawn* due to the amendment.

35 USC 102

5. The rejection of claims 31, 33, 36-38, 45-46, 49 and 51-61 as being anticipated by Bhide (US 2003/0194998) is *withdrawn* and a new rejection is now given.

35 USC § 103

6. The following is a quotation of pre-AIA 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 negated by the manner in which the invention was made.

7. Claims are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Bhide

(US 2003/0194998) in view of Paul (US 6,356,838).

8. Bhide teaches the claimed invention (claim 31) as claimed including a wireless device having access to a storage space as given *'In one embodiment of the invention a wireless device may be a personal digital assistant (PDA), wireless telephones, beepers, laptop computers, etc.'* (e.g. see paragraph 0015, lines 42-44), the wireless device comprising:

at least one cache storage for caching data from the internet as *'Adjunct servers (190, 195) are well known by a person having ordinary skill in the art of communications. In one embodiment of the invention, the adjunct server 195 may be coupled to the MSC 115. After accessing the configuration program the user may transfer selected files from the user's machine or from other web locations to a personal cache 150.* (e.g. see Figure 1, element 150 and as given in paragraph 0015, lines 22-28);

one computer-readable storage device comprising program instructions which configure the wireless device access the remote storage space, wherein, program instructions, when executed, comprise instructions stored in memories as *'In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or on a users wireless device 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150.'* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

the program instructions comprise:

program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server as the first server being equivalent to

Adjunct servers which allow access to the personal cache (Figure 1, elements 190 and 195 with element 150 being the personal cache) for the remote storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access with the remote storage space being served by a first server with the first server being equivalent an Adjunct server (e.g. Figure 1, elements 190 and 195);

program instructions for the wireless device presenting the remote storage space on the wireless device upon receiving information of the remote storage space from the first server as program instructions including a configuration program that allows the user to have remote access to the remote storage space via a remote wireless device as *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space presented on the wireless device *'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined profile.'* (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for accessing to the remote storage space comprises, from the wireless device storing data therein or retrieving data therefrom, the storing of data comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file requested by the wireless device, *'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless*

device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.' (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

Bhide teaches the limitations as given above, however, the primary reference does not specifically teach the wireless device requesting content using data stored in the wireless device memory. Paul teaches using wireless devices in conjunction with Internet components including servers and content providers which provide downloadable information, with the request for information originating with the wireless device. In order for the wireless device to make a request for data, the wireless device, using data stored in a memory of the wireless device, provides a link to download streaming information files (e.g. see col. 6, lines 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Paul with the teachings of Bhide because the references are analogous art which both include wireless devices, internet servers and internet caches which are used to download different types of data including audio and video data to the wireless device.

As to claim 33, Bhide teaches the present invention wherein downloading a file from a second server (e.g. see Figure 2, element 295) comprises obtaining, by the wireless device, the information for a file from the second server; transmitting the information for the file cached in the cache storage in the wireless device to the first server and causing the first server in accordance with the information for the file to download the file from the second server into the remote storage space as retrieving data from remote web sites or remote databases and saving the data in the user's personal cache 250 (e.g. see paragraph 0023).

As to claim 36, Bhide teaches the present invention wherein the data for the file is cached

in the wireless device comprising at least the name of the file and the internet protocol (“IP”) address of the second server as it being inherent that “IP” addresses are used as well as being available for any device which can perform a browse transaction since such access is needed for connecting to other parts of the network.

As to claim 37, Bhide teaches the present invention wherein the wireless device comprises at least one cell phone, personal data assistant and management device (PDA) (e.g. see paragraph 0015).

As to claim 38, Bhide teaches the present invention wherein the wireless device presenting the remote storage space further comprises presenting information of the remote storage space in a web browser for accessing the remote storage space or accessing the Internet as the user having access to web locations (e.g. see paragraph 0015).

9. Bhide teaches the present invention (claim 45) as claimed including a server for delivering storage service, comprising:

a plurality of storage spaces residing among a plurality of storage devices as the user having access to adjunct servers, wireless devices and a personal cache (e.g. see Figure 1 and paragraph 0015, lines 18-24);

a computer readable storage device comprising program instructions that, when executed, configure the server to control delivering the storage service; wherein the program instructions comprise program instructions for the server establishing a communication link for a first wireless device remotely access a first storage space as an adjunct server 190 for controlling a personal cache 150, *‘In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user’s computer 135 or on a users wireless device 135 or remotely, e.gl., on adjunct servers (190 or 195) connected to personal cache 150.’* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of

the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

wherein the program instructions comprise:

program instructions for the wireless device establishing a communication link for a first wireless device remotely accessing a first on the storage spaces as a storage space being served by a first server with the first server being equivalent to Adjunct servers which allow access to the personal cache (Figure 1, elements 190 and 195 with element 150 being the personal cache) for the remote storage space, the storage space assigned exclusively by a server to a user of the wireless device for remote access with the remote storage space being served by a first server with the first server being equivalent an Adjunct server (e.g. Figure 1, elements 190 and 195);

program instructions for the server for sending information of a first storage space to a first wireless device to present the first storage space to the first wireless device as a wireless device using a personal cache 150 *'a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or remotely, e.g., on adjunct servers (190 or 195) connected to personal cache 150'* (e.g. see paragraph 0015);

program instructions for the server updating the first of the storage spaces according to a requested operation received from the first wireless device for remotely accessing the first storage space in response to a user, through the presented information of the first storage spaces, performing the operation as having a wireless device such as a PDA or cell phone connected to a personal cache 150, *'Wireless device 400 includes mass storage 407, input devices 406 and display device 405 coupled to processing unit 402 via bus 401. Mass storage device 407 represents a persistent data storage device, such as a memory stick, or a fixed disk drive (e.g.,*

magnetic, optical, magneto-optical, or the like). Mass storage device 407 stores program data 430 including the agent 430, application programs 428, and operating system 426.’ (e.g. see paragraph 0032) as well as ‘Display device 405 provides graphical output for wireless device 400. Input devices 406 such as a keypad or mouse are coupled to bus 401 for communicating information and command selections to processor 402. Also coupled to process 402 through bus 401 are one or more network devices 408 that can be used to control and transfer data to electronic devices (printers, other computers, etc.) connected to wireless device 400. Network devices 408 also connect wireless device 400 to a network, and may include Ethernet devices, phone jacks and satellite links. It will be apparent to one of ordinary skill in the art that other network devices such as wireless devices may also be utilized’ (e.g. see paragraph 0033); and,

wherein the operation for remotely accessing the first storage space comprises from the first wireless device storing data therein or retrieving data therefrom, ‘*FIG. 4 illustrates an apparatus for using personal cache according to one embodiment of the invention. FIG. 4 illustrates a wireless device 400 in which the present invention operates. The wireless device is used for accessing and using information in personal cache.*’ (e.g. see Figure 4 with support in paragraph 0030); with the storing of data further comprising downloading a file from a second server across a network into the remote storage space through utilizing information for the file cached in a cache storage in the wireless device, ‘*If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.*’ (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support

in paragraphs 0027-0029).

Bhide teaches the limitations as given above, however, the primary reference does not specifically teach the wireless device requesting content using data stored in the wireless device memory. Paul teaches using wireless devices in conjunction with Internet components including servers and content providers which provide downloadable information, with the request for information originating with the wireless device. In order for the wireless device to make a request for data, the wireless device, using data stored in a memory of the wireless device, provides a link to download streaming information files (e.g. see col. 6, lines 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Paul with the teachings of Bhide because the references are analogous art which both include wireless devices, internet servers and internet caches which are used to download different types of data including audio and video data to the wireless device.

As to claim 46, Bhide teaches the present invention wherein the program instructions configuring the server to control delivering the storage service comprise program instructions for the server downloading the file from the remote server into the first storage space by utilizing information for the file cached in the cache storage in the first wireless device after the information for the file received therefrom as the user thereof performing the requested operation for the downloading, "*The information in personal cache 250 may be downloaded to wireless device 205 or may be stored in personal cache 250 is at the most only one-hop away from wireless device 205.*" (e.g. see paragraph 0022).

As to claim 49, Bhide teaches the present invention wherein the server presents a second one of the storage space to a user on a second wireless device for facilitating the user for remotely accessing the second storage spaces as it being inherent that a network can comprise multiple user, multiple personal caches and multiple servers.

As to claim 51, Bhide teaches the present invention wherein the presenting the first of the storage spaces further comprises: presenting of the first of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces as the wireless device including a display device for displaying storage shown in a web browser which thereby allows the user to select or browse network components available to the wireless device (e.g. see Figure 4 with support in paragraphs 0030-0033).

As to claim 52, Bhide teaches the present invention wherein the program instructions configuring the server to control delivering the storage service comprise program instructions to present the plurality of storage devices on a web console for an administrator to partition each of the storage devices for creating the storage spaces as the wireless provider supplying memory in the form of a personal cache to a user with the amount of storage assigned to the user being based upon the amount of storage the user requires (e.g. see paragraph 0015).

As to claim 53, Bhide teaches the present invention wherein the operation further comprises from the first wireless device and via a wireless link remotely creating a folder or a layered folder or directory structure in the first storage space as maintaining rules relating to the user and storing the rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028), or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure as having a user profile which includes rules for managing information in both the wireless device and the personal cache (e.g. see paragraphs 0013-0018), wherein the data object is a file, a folder, or a message, where the file includes digital picture, music or video file (e.g. see paragraph 0015).

As to claim 54, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device and via a wireless link, creating a folder or a layered folder or directory structure in the remote storage space as maintaining rules

relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraph 0028).

As to claim 55, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein the data object is a file or folder as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 56, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device and via a wireless link storing therein or retrieving therefrom a data object of a message or a digital video, music or picture file (e.g. see paragraph 0015).

10. Bhide teaches the present invention (claim 57) as claimed including a method for a wireless device accessing a remote storage space, the method comprising actions performed by the wireless device, including:

establishing a communication link for accessing the remote storage space served by a storage server as an adjunct server 190 for controlling a personal cache 150, *'In one embodiment of the invention, a user may access a program, e.g., a configuration program that runs either locally on the user's computer 135 or on a users wireless device 135 or remotely, e.gl., on adjunct servers (190 or 195) connected to personal cache 150.'* (e.g. see paragraph 0015), including a storage space assigned exclusively by a server to a user of the wireless device for remote access as there being a personal cache for the user, in addition *'In one embodiment of the invention, a user may transfer the selected files to store in personal cache 150 using either a wired connection or a wireless connection.'* (e.g. see Figure 1, element 150 as given in line 28-31 of paragraph 0015);

presenting the remote storage space on the wireless device upon receiving information of the remote storage space from the storage server as the wireless device including a display device which provides a graphical output for the wireless device (e.g. see paragraph 0033);

coupling with the storage server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space presented on the wireless device, performing the operation *'In other embodiments of the invention the information in the personal cache may be sent to a destination based upon a set of rules in a user defined profile.'* (e.g. see paragraph 0015, lines 49-51, performing the operations using the personal cache via the wireless device (e.g. see Figure 1 with support in 0015); and,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a remote server across a network into the remote storage space through utilizing information for the file cached in a cache storage in the wireless device *'If the wireless device 205 has sufficient memory, at 325, the information is downloaded to the wireless device 205. If the wireless device 205 does not have sufficient memory, at 330, the wireless device 205 obtains information from the personal cache 250 on an as needed basis. Thus, the information in the personal cache 250 is available to the wireless device 205, and is at the most one-hop away from the wireless device 205.'* (e.g. see paragraph 0027, lines 16-23), this teaches downloading data or files from network elements to/from the personal cache to/from the wireless device (e.g. see Figure 3 with support in paragraphs 0027-0029).

Bhide teaches the limitations as given above, however, the primary reference does not specifically teach the wireless device requesting content using data stored in the wireless device memory. Paul teaches using wireless devices in conjunction with Internet components including servers and content providers which provide downloadable information, with the request for

information originating with the wireless device. In order for the wireless device to make a request for data, the wireless device, using data stored in a memory of the wireless device, provides a link to download streaming information files (e.g. see col. 6, lines 23-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Paul with the teachings of Bhide because the references are analogous art which both include wireless devices, internet servers and internet caches which are used to download different types of data including audio and video data to the wireless device.

As to claim 58, Bhide teaches the present invention wherein the downloading of a file from a remote server comprises:

obtaining, by the wireless device, the information for the file from the remote server as the user having access to adjunct server 190 and adjunct server 195 (e.g. see paragraph 0015);

transmitting the information for the file cached in the cache storage in the wireless device to the storage server as a user having access to both a personal cache and the first server, adjunct server 190 (e.g. see paragraph 0015); and,

causing the storage server in accordance with the received information for the file to download the file from the remote server into the remote storage space as the reference having the connectivity for the access and transactions (e.g. see Figure 1).

As to claim 59, Bhide teaches the present invention wherein the wireless device displaying the remote storage space further comprises presenting the remote storage space in a web browser for accessing the remote storage space as the wireless device having a display which can be used for displaying information accessible to the wireless device (e.g. see paragraphs 0030-0033).

As to claim 60, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises, from the wireless device and via a wireless link, a folder, or

a layered folder or director structure in the remote storage space as maintaining rules relating to the user and storing those rules or parameters in either the personal cache 250 or in the wireless device 205 (e.g. see paragraphs 0028).

As to claim 61, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device and via a wireless link moving, copying, deleting or renaming a data object of a file or folder in respect to the layered folder or director structure as having a user profile which includes rules for managing information in both the wireless device and the personal cache 150 (e.g. see paragraphs 0013-0018).

As to claim 62, Bhide teaches the present invention wherein the operation for accessing the remote storage space comprises from the wireless device and via a wireless link storing therein or retrieving therefrom a data object of message, digital video, digital music or digital picture (e.g. see paragraph 0015).

RESPONSE TO APPLICANT'S REMARKS

11. Applicant's arguments with respect to claims 31, 33, 36-38, 45-46, 49 and 51-62 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

CONCLUSION

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBA I. ELMORE whose telephone number is (571)272-4192. The examiner can normally be reached on Monday thru Thursday, working a flex schedule.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ann J. Lo can be reached on 571-272-9767. 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.

/REBA I. ELMORE/
Primary Examiner
Art Unit 2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Non-Final Office Action

Dear Commissioner:

This communication responds to the non-final office action mailed on 10/18/2017. In the response, enclosed please find:

- 1) Amendment to the claims started on the page 2 of this paper.
- 2) A remark for overcoming the office rejections:

Since all office rejections and objections are overcome, a request for allowance of the amended claims is respectively submitted.

Thanks for helps from PTO for entering the amendments
12/14/2017

/shengtai Tsao/

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AMENDMENT TO THE CLAIMS:

Please replace all prior claims in instant application with the following list of the claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device accessing a remote storage space, the wireless device comprising:

at least one cache storage for caching data received from the Internet, and
one computer-readable storage device comprising program instructions which, when executed, configure the wireless device accessing the remote storage space, wherein the program instructions comprise:

program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server;

program instructions for the wireless device ~~presenting~~ displaying the remote storage space ~~on the wireless device~~ upon receiving information of the remote storage space from the first server; and

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space ~~presented~~ displayed on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the cache storage in the wireless device.

32. *(Canceled)*

33. *(Currently Amended)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

~~program instructions for the wireless device obtaining, by the wireless device, the~~
information for the file from the second server; ~~and~~

transmitting the information for the file cached in the cache storage in the wireless device to the first server, ~~and to cause~~ causing the first server, in accordance with the information for the file, to download the file from the second server into the remote storage space.

34 - 35. *(Canceled)*

36. *(Previously Presented)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises at least the name of the file and the internet protocol (“IP”) address of the second server

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 36, wherein said ~~wireless device presenting displaying~~ the remote storage space further comprises ~~program instruction for the wireless device presenting displaying~~ information of the remote storage space in a web browser ~~on the wireless device~~ for accessing the remote storage space or accessing the Internet.

39 – 44 *(Canceled)*

45. *(Currently Amended)* A server for delivering storage service, comprising:
a plurality of storage spaces residing among a plurality of storage devices; and
a computer-readable storage device comprising program instructions that, when executed, configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely accessing a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device ~~to present for causing display of the information the first one of the storage spaces to~~ on the first wireless device; and
program instructions for the server updating the first one of the storage spaces according to a requested operation received from the first wireless device ~~for remotely accessing the~~

~~first one of the storage spaces in response to upon a user thereof, through the displayed/presented information of the first one of the storage spaces performing the operation for remotely accessing the first one of the storage spaces,~~

wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom, wherein the storing data further ~~comprising~~ comprises program instructions for the server ~~to~~ downloading a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in a cache storage in the first wireless device.

46. *(Currently Amended)* The server of claim 45, wherein said ~~program instructions configuring the server to control delivering the storage service comprise program instructions for the server downloading a said file from said a remote server into the first one of the storage spaces by through~~ utilizing information for the file cached in the cache storage in the first wireless device ~~after comprises program instructions for the server receiving the information for the file received therefrom from the first wireless device, and sending a request of downloading the file to the remote server according to the information for the file received.~~

47 - 48. *(Canceled)*

49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user to perform operations for remotely accessing the second one of the storage spaces.

50. *(Canceled)*

51. *(Currently Amended)* The server of claim 45, wherein said ~~presenting causing display of the~~ first one of the storage spaces further comprises: ~~presenting causing display of the~~ first one of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces.

52. *(Currently Amended)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions for the

~~server to present~~ send information of said plurality of storage devices ~~to an administrator to partitioning~~ on a web console for creating the storage spaces.

53. *(Currently Amended)* The server of claim 45, wherein said operation further comprises:

from the first wireless device ~~and via a wireless link~~ remotely creating a folder or a layered folder or directory structure in the first one of the storage spaces, or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure, wherein the data object is a file, a folder, ~~or a message~~, where the file includes digital picture, music or video file.

54. *(Previously Presented)* The wireless device of claim 31, wherein said operation for accessing the remote storage space comprises:

from the wireless device and via a wireless link creating a folder, or a layered folder or directory structure in the remote storage space.

55. *(Previously Presented)* The wireless device of claim 54, wherein said operation for access the remote storage space comprises:

from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein said data object is a file or folder.

56. *(Previously Presented)* The wireless device of claim 31, wherein said operation for accessing the remote storage space comprises: from the wireless device and via a wireless link storing therein or retrieving therefrom a data object of a message, or a digital video, music, or picture file.

57. *(Currently Amended)* A method for a wireless device accessing a remote storage space, the method comprising actions performed by the wireless device, including:

establishing a communication link for accessing the remote storage space served by a

~~storage first server;~~

~~displaying~~ ~~presenting~~ the remote storage space on the wireless device upon receiving

information of the remote storage space from the ~~storage first server;~~ and

coupling with the ~~first storage~~ server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space ~~displayed/presented~~ on the wireless device, performing the operation, wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a ~~second remote~~ server across a network into the remote storage space through utilizing information for the file cached in a cache storage in the wireless device.

58. (*Currently Amended*) the method of claim 57, wherein said downloading a file from a ~~second remote~~ server comprises:
~~the wireless device obtaining, by the wireless device, the information for the file from the remote second server,;~~
transmitting the information for the file cached in the cache storage in the wireless device to the ~~first storage~~ server, and
causing the ~~first storage~~ server in accordance with the received information for the file to download the file from the ~~second remote~~ server into the remote storage space.

59. (*Currently Amended*) the method of claim 57, wherein said wireless device ~~displaying/presenting~~ the remote storage space further comprises ~~displaying/presenting~~ the remote storage space in a web browser for accessing the remote storage space.

60. (*Previously Presented*) The method of claim 57, wherein said operation for accessing the remote storage space comprises:
from the wireless device and via a wireless link creating a folder, or a layered folder or director structure in the remote storage space.

61. (*Previously Presented*) The method of claim 60, wherein said operation for accessing the remote storage space comprises:
from the wireless device and via a wireless link moving, copying, deleting, or renaming a data object of file or folder in respect to the layered folder or director structure.

62. (*Currently Amended*) The ~~server method~~ of claim 4557, wherein said operation for accessing the remote storage space comprises: from the wireless device and via a wireless link, storing therein or retrieving therefrom a data object of message, digital video, digital music, or digital picture.

REMARK

The office action mailed on 10/18/2017 has been carefully reviewed and considered. The claims 31, 33, 36-38, 45-46, 49, 51 –62 are previously pending and are rejected by the office action. The claims 31, 33, 36-38, 45-46, 49, 51 –62 are amended in response to the rejection and are currently pending. Applicant respectively request for allowance of instant application in light of the amendments above and the remark made below:

1: Regarding Specification:

Applicant appreciates suggestion from the office action for necessary checking of the amended specification for any possible errors and will make further efforts to identify and correct errors if there is any.

2. Regarding The 35 USC §103 Rejections:

The Office Action of 10/18/2017 has rejected the claims 31, 33, 36-38, 45-46, 49, 51 – 62 under 35 U.S.C. 103(a) as being un-patentable over Bhide (US 2003/0194998 hereafter as “Bhide”) and further in view of Paul Sunil (6,356,838 hereafter as “Paul”).

After a careful traversing of the office action, it is found that the combined Bhide and Paul have failed to teach or suggestion many limitations in the claims of instant application.

First, regarding the wireless device of the claim 31, 33, 36–38, and 54-56, Behide and Paul have failed to teach at least the wireless device of claim 31& 33 which is recited in part below (emphasis added):

“31. A wireless device accessing a remote storage space, the wireless device comprising: at least one cache storage , and one computer-readable storage device comprising program instructions comprise: program instructions for the wireless device establishing a communication link for accessing the remote storage space served and controlled by a first server; program instructions for the wireless device displaying the remote storage space upon receiving information of the remote storage space from the first server; and program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation, wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a second server across a network into the

remote storage space through utilizing information for the file cached in the cache storage in the wireless device”.

“33. The wireless device of claim 31, wherein said downloading a file from a second server comprises:
program instructions for the wireless device obtaining the information for the file from the second server, and transmitting the information for the file cached in the cache storage in the wireless device to the first server to cause the first server in accordance with the information for the file, to download the file from the second server into the remote storage space”

program instructions in the wireless device recited above being executed to perform requested operations of storing data into or retrieving data from a remote storage served and controlled by a first (storage) server, including to perform requested operation of so called “out-band” downloading of a file from a remote web site into the remote storage in the claim 31 & 33, also see [018] , [040]-[045]of instant application.

On the other hand, the entire specification and drawings of Behide have failed to teach the program instructions of a wireless device for “storing data” into a remote storage, including the out-band downloading resembled in the claims 31, 33, 36–38, and 54-56 of instant application. The reasons are discussed below:

- (1) Behide [0015] discloses “...a user may access a program, e.g., a configuration program that runs either locally... on a users wireless device 135 After accessing the configuration program, the user may transfer selected files from the user's machine or from other web locations to a personal cache 150”

With claim 31 of instant application recited above, the wireless device comprises program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space, wherein the operation comprises from the wireless device ‘storing data’ therein”.

On the other hand, the “storing data” of Behide [0022] disclosed:

“... a user of a wireless device 205 may save information in personal cache 250, coupled to adjunct server 290 using client 235 (e.g., a personal computer) ...”

In the [0022], the wireless device of Behide requires another client (“personal computer”) on the network to save (store) information into the remote “personal cache 150 or 250” that has failed to teach the wireless device in claim 31 to “storing data” into said remote storage because the limitations in **the claim 31 does not require the wireless device to deploy another client device (PC) to store the data into the remote**

storage. For this reason alone, the wireless device of claim 31 is patentable over the Behide and Paul.

- (2) In addition, during Behide provides user on a wireless device 135 accessing the “personal cache 150 or 250”, the program instructions of Behide makes duplication of information such as duplicate a file to be stored at multiple locations. For example, Behide has disclosed (note: unlike instant application, the information in Behide is a file, instead of metadata of a file such as the name of the file and IP address of the second server in claim 36 of instant application):

“[0015] The personal cache 150 may contain any information such as audio files, text files, video files and audio-video files or programs. ”, and

“[0016] ... the information in a user's personal cache 150 is stored on a server e.g., adjunct server 190 ...”

that means when user from a wireless device access the remote “personal cache 150 or 250”, the program instructions of the wireless device of Behide causes duplication of information in the “personal cache 150” and in “adjunct server 190”. Next, the Behide’s

“[0018] ... the HLR 140 may either contain, or may be linked to, the information in the user's personal cache”,

that is when user from a wireless device access the remote “personal cache 150 or 250”, the program instructions of a wireless device of Behide causes duplication of information in the “personal cache 150 or 250” and in the “HLR database”. Further, Behide’s

“[0022] the information that is copied from the personal cache 150 is maintained in the user's profile that may be maintained in the HLR or VLR, e.g., as a table, or in the personal cache 150”;

that is when user from a wireless device access the remote “personal cache 150 or 250”, the program instructions of Behide causes duplication of the information in the “personal cache 150 and in 250” the “HLR or VLR” database.

Opposite to the Behide, with the program instructions of the wireless device in the claims 31, 33, 36-38, 54-56 and in the entire specification of instant application, **the wireless device of claim 31 “storing data” into the remote storage never causes the**

data to be stored at two different locations. Thus, the wireless device of Behide has again failed to teach limitation of the wireless device “storing data” in the claims 31, 33, 36–38, and 54-56. For this reason alone, the claims for wireless device are patentable over the combined Behide and Paul.

- (3) More significantly, Behide and Paul has failed to teach limitation of so called out-band downloading file in the claims 31 and 33.

For example, Behide [0015] (recited in part & emphasis added), the “configuration program runs locally on the wireless device 135 or remotely on adjunct server”. Specially, “After accessing the configuration program, the user may transfer selected files from the user's machine or from other web locations to a personal cache 150”. Here, the “After accessing the configuration program” does not means of “by using or applying the configuration program”. Thus, the question is “After accessing the configuration program”, are there any other program instructions in Behide can “transfer a selected file from other web locations” to a remote personal cache 150 ? Indeed, Behide has disclosed (emphasis added):

“[0022] ... , the information that is copied from the personal cache 150 is maintained in the user's profile that may be maintained in the HLR or VLR, e.g., as a table, or in the personal cache 150”.

“[0023] ... user's profile comprising set of 'rules' that may be executed by transaction module 160 a user may specify a rule, ... when the rule executes, the information may be retrieved, e.g., from one or more remote web sites or from a remote database, and the retrieved information is saved in the user's personal cache 250 ...” .

From above, it is clear that Behide requires a user of wireless device to (i) remotely setup rules in the user's profile that is stored in the personal cache 150 or 250, or in the HLR or VLR; (ii) the transaction module 160 executes the rule for retrieving information from one or more web locations. That is totally opposite to the claims 31 & 33 of instant application, in which no “rule” needs to be remotely setup by the user of a wireless device, instead the claims 31 & 33 only requires the wireless device “obtaining the information for the file from the second server, and transmitting the information for the file cached in the cache storage in the wireless device to the first server to cause ...”.

The “out-band” downloading of a file in the claims 31 & 33 are clearly disclosed in Fig. 3 & [041]-[045] of instant application that include

“[041] 1) Provide the user from a web-browser (8) of the wireless device (1) access to a remote web server site (15) to obtains a web-page, which contains IP address of the remote web site and the data name for the downloading”;

“[042] 2) The other software modules (9) of the wireless device (1) obtain the downloading information, ... in the cached web-pages on the wireless device (1) ...”;

“[043] 3) The other software modules (9) of the wireless device (1) send the obtained downloading information to other service modules (7) of the storage server”;

“[044] 4) Upon receiving ..., the other service module (7) of the storage server (3) sends a web download request to the web-site ... based on download information obtained and then receives the downloading data from the web server of the web-site (15)”.

Therefore, the conclusion is clear that the entire specification of **instant application does not require a user profile be stored in the remote storage space, and does not require a user to remotely “setup rule” in a user profile in order for the user to download (transfer or store) a file from a web server across a network into the remote storage served by a storage server.** Thus, both Behide and Paul have again failed to teach the limitation of “storing data”, which includes “out-band” downloading” a file resembled in the claims 31 & 33 of instant application.

Based on such significant difference discussed above alone, the claims 31, 33, 36–38, and 54-56 are patentable over the combined Behide and Paul since Paul.

Besides, as a minor the entire specification has failed to enable for how does the “rule” of Behide can be setup by a user on a wireless device into the remote personal cache 150 or HLR or VLR for transferring the selected file from web locations.

- (4) The technology of caching data on a device has been existed long before the disclosures of Behide and Paul. The question for an invention is about how the cached data be used for improving computer functionality. After a careful traversing the rejections, applicant has found that even if assuming that the wireless device of Behide has also cached information of a file (e.g by combining the Col. 6 lines 23-42 of Paul), however, there is no evidence that the information of a file on a web site cached by a wireless device of Behide is used for accomplishing so called “out-band” downloading.

The reason is simple, **both Behide and Paul have failed to teach key steps of the claims 31 and 33.** For example, Behide does ‘transfer selected file’ from wireless device to the remote “personal cache 150”, however, both Behide and Paul are failed to

teach a key step of the wireless device “obtaining the information for the file from the second server, and transmitting the information for the file cached in the cache storage in the wireless device to the first server to cause the first server in accordance with the information for the file, to download the file ...” in the claim 33 recited above.

It is obvious that Adjunct Server 295 of Fig. 2 and the [0023] of Behide referenced by the office action do not comprise step of a wireless device “transmitting the information for the file cached” in the wireless device to the first server (storage server).

Therefore, both Behide and Paul referenced by the office action have failed to teach the “out-band” downloading of the claims 31 and 33 disclosed in the [039] – [045] of instant application and discussed previously. In addition, as a minor, the adjunct server 295 is actually never described in the specification of Behide. For this reason alone, the claims 31 and 33, and 36–38, and 54-56 are all patentable over the combined Behide and Paul by the law.

- (5) There also many other limitations in the claims 31, 33, 36–38, and 54-56 and in the entire specification that the combined Behide and Paul have failed to teach that can be discussed whenever there is needs.

Second, regarding claims 45-46, 49, 51 – 53, Behide has also failed to teach a server in the claim 45 and 46 of instant application. The claim 45 is recited in part below (emphasis added):

“45. A server for delivering storage service, comprising:
a plurality of storage spaces residing among a plurality of storage devices; and
a computer-readable storage device comprising program instructions that, when executed, configure the server to control delivering the storage service, the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely accessing a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device for displaying the information on the first wireless device; and
program instructions for the server updating the first one of the storage spaces according to a requested operation received from the first wireless device upon a user thereof, through the displayed information of the first one of the storage spaces performing the operation for remotely accessing the first one of the storage spaces,
wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom,
the storing data further comprising program instructions for the server downloading a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in a cache storage in the first wireless device.”

46. The server of claim 45, wherein said downloading a file through utilizing information for the file cached in the first wireless device comprises program instructions for the server receiving the information for the file from the first wireless device, and sending a request of downloading the file to the remote server according to the information for the file received.

The reasons that Behide and Paul have failed to teach the server in the claims 45-46, 49, 51 – 53 are listed below:

- (1) Similar to Behide and Paul having failed to teach the wireless device claims 31, 33, 36–38, and 54-56, Behide and Paul also have failed to teach the “storing data” in the claims 45-46, 49, 51 – 53. For example, as discussed previously: (i) Behide’s wireless device 205 “storing data” into the remote “personal cache 150 or 250” requires the using of a client 235 (a personal computer) as disclosed in the Fig. 2 and [0022] of Behide; (ii) Behide’s wireless device 205 “storing data” into the remote personal cache 150 or 250 will end up to store the data in two different locations as disclosed in [0016], [0018] & [0022] of Behide; (iii) Behide’s wireless device 205 “storing data” into the remote “personal cache 150 or 250” requires a user profile be stored in the personal cache and requires the user from the wireless device remotely setup “Rule” in order for transferring a file from a web site into the “personal cache 150 or 250” as disclosed in [0022] & [0023] of Behide. All of limitations in the examples have failed to teach the “storing data” in the server claims of 45-46 of instant application. For these reasons alone, the claims 45-46 and all other server claims are patentable over the combined Behide and Paul as matter of law.
- (2) Similar to the combined Behide and Paul having failed to teach the so called “out-band” downloading for a user from a wireless device downloading a file from a web site into a remote storage assigned to the user of the wireless device, the combined Behide and Paul have also failed to teach the so called “out-band” download in the server claims of 45-46, 49, 51 – 53 of instant application. For this reason alone, the claims 45-46 and all other server claims are patentable over the combined Behide and Paul as matter of law.
- (3) Although the office action believes the “Adjunct Server 190 or 195” being the equivalent to the server in claim 45, see page 7, line 12 of the office action. However, the server in claim 45-46, 49, 51 – 53 provides controlling of the storage spaces resigning among a storage devices while the Adjunct Server of Behide can not provide.

Here the “control” means the server in the claim 45 comprises (owns) the storage devices as indicated in the claim 45 and controls partition (creation) of storage devices for creating storage spaces as indicated by the claim 52, and also serves read and write operations over the storage spaces upon which being remotely access by wireless device as indicated in the claims 45, 53, 54, and 62.

On the other hand, the Adjunct Server 190 or 195 of Behide is not characterized for said “control” over the personal cache 150. For example, the only relevant information can be found for the Adjunct Server are:

- (i) there is connection between them such as “[0015] ... adjunct servers (190 or 195) connected to personal cache 150 ...”, and
- (ii) a user log on the Adjunct Server can see the Personal Cache such as “[0015] ... the user may log on, e.g., using a URL and a password to the wireless adjunct servers 190 or 195 that includes the personal cache 150. ...” that is quit common in provide storage service in the industry.
- (iii) the information in the personal cache 150 is duplicated in the Adjunct Server 190, such as in “[0016] ... the information in a user's personal cache 150 is stored on a server e.g., adjunct server 190, ...” and in “[0020] ... the information in the personal cache 150 that may reside in the VLR 145 or on servers, e.g., adjunct server 190, ...”.

The scenario of (iii) above has indicated that the Adjunct Server 190 and the personal cache 150 are two different entities that rules out the possibility for the (ii) above that adjunct servers 190 or 195 comprises (owns) the storage devices. In addition, the Adjunct Server 190 does not control the creation of personal cache 150 by partitioning storage devices. Further, from (i) – (ii) above, there is no evidence that the Adjunct Server of 190 or 195 serves the “read or write operations” over the personal cache upon which being remotely accessed by a wireless device because there is no explicit or implicit disclosures and no enablement. Therefore, the Adjunct Server 190 can not be equivalent to the storage server of claim 45 as suggested by the office action. For this reason alone, the claims 45-46, 49, 51 – 53 are patentable over the combined Behide and Paul.

3: Summary:

In pursuant to MPEP § 2143.03:

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art”. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974);

"All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970); and

“If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious”. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) (emphasis added).

Based on the reasons discussed above, many limitations in the claims 31 & 33 and in the claims 45-46 can not be found in the combined Behide and Paul, therefore, the claims 31 & 33 and the claims 45-46 are all patentable over the Behide. Hence, the dependent claims of the claim 31 and 45 are also patentable Bhide and Paul as matter of the law.

Applicant invites Examiner to review the remark above for reconsidering the allowance of the pending claims. Also, since all office rejections under the 35 USC §103 are overcome, thus a request for allowing the pending claims of instant application is respectively submitted.

Applicant also appreciates the Office Action examining instant application and if a telephone conference would facilitate the advance of the examination of this application, the applicant Sheng Tai (Ted) Tsao can be reached at (408) 813-0536 and at 510-580-8592. Please also forward the corresponding materials to inventor’s address of 3906 Borgo Common, Fremont, CA 94538.

Respectfully submitted,
Date: 12/14/2017

/shengtai tsao/

Sheng Tai (Ted) Tsao
3906 Borgo Common,
Fremont, CA 94538
408-813-0536
510-580-8592



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NOTICE OF ALLOWANCE AND FEE(S) DUE

77501 7590 04/12/2018
Sheng Tai (Ted) Tsao
3906 Borgo Common.
Fremont, CA 94538

EXAMINER

ELMORE, REBA I

ART UNIT PAPER NUMBER

2131

DATE MAILED: 04/12/2018

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Values: 14/977,509, 12/21/2015, Sheng Tai Tsao, 6764

TITLE OF INVENTION: SYSTEM AND METHOD FOR WIRELESS DEVICE ACCESS TO EXTERNAL STORAGE

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE. Values: nonprovisional, SMALL, \$500, \$0, \$0, \$500, 07/12/2018

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

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)

77501 7590 04/12/2018
 Sheng Tai (Ted) Tsao
 3906 Borgo Common.
 Fremont, CA 94538

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.
14/977,509	12/21/2015	Sheng Tai Tsao		6764

TITLE OF INVENTION: SYSTEM AND METHOD FOR WIRELESS DEVICE ACCESS TO EXTERNAL STORAGE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0	\$0	\$500	07/12/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
ELMORE, REBA I	2131	711-171000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "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.</p>	<p>2. For printing on the patent front page, list (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____ (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. 2 _____ 3 _____</p>
---	---

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

<p>4a. The following fee(s) are submitted: <input type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	--

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 forms 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: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____	Date _____
Typed or printed name _____	Registration No. _____



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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO., EXAMINER, ART UNIT, PAPER NUMBER. Includes applicant information for Sheng Tai (Ted) Tsao and examiner Elmore, Reba I.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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. 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.

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. 14/977,509	Applicant(s) TSAO, SHENG TAI	
	Examiner REBA I. ELMORE	Art Unit 2131	AIA (First Inventor to File) Status Yes

-- 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 papers December 14, 2017.
 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 31,33,36-38,45,46,49 and 51-61. 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: _____.

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. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/REBA I. ELMORE/
Primary Examiner
Art Unit: 2131

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Sheng Tai (Ted) Tsao, et al.
Application No.: 14/977,509 Confirmation No.: 6764
FILING DATE: 12/21/2015
TITLE: System And Method For Wireless Device Access to External Storage
EXAMINER: Elmore, Reba T; Phone: 571-272-4192
ART UNIT: 2131

Mail Stop: Amendment
COMMISSIONER FOR PATENTS
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Alexandria, VA 22313-1450

Rule-312 Amendment

Dear Commissioner:

This communication directs to the Rule 312 (37 CFR 1.312) amendment in response to the Notice of Allowance mailed on 04/12/2018. Enclosed please find:

The claims amendments starting on page 2 of this paper that include the Examiner's Amendment mailed on 04/23/2018. Applicant very appreciates the examiner's Amendments.

Due to the amendments to the claims does not change the scope of the allowed subject matters, therefore, there is no need for re-examining present application. Thus, a request for approval of the Rule-312 amendment is respectively submitted.

Thanks for helps from PTO for entering the amendments
04/23/2018

/shengtai Tsao/

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AMENDMENT TO THE CLAIMS:

Please replace all prior claims in instant application with the following list of the claims:

1 – 30 (Canceled)

31. *(Currently Amended)* A wireless device accessing a remote storage space, the wireless device comprising:

at least one cache storage for caching data received from the Internet, and
one computer-readable storage device comprising program instructions which, when executed by the wireless device, configure the wireless device accessing the remote storage space, wherein the program instructions comprise:

program instructions for the wireless device establishing a communication link for accessing the remote storage space served by a first server;

program instructions for the wireless device displaying the remote storage space upon receiving information of the remote storage space from the first server; and

program instructions for the wireless device coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in the cache storage in the wireless device.

32. *(Canceled)*

33. *(Previously Presented)* The wireless device of claim 31, wherein said downloading a file from a second server comprises:

program instructions for the wireless device obtaining the information for the file from the second server, and

transmitting the information for the file cached in the wireless device to the first server to cause the first server, in accordance with the information for the file, to download the file from the second server into the remote storage space.

34 - 35. *(Canceled)*

36. *(Currently Amended)* The wireless device of claim 31, wherein said information for the file cached in the wireless device comprises at least the name of the file and the internet protocol (“IP”) address of the second server.

37. *(Previously Presented)* The wireless device of claim 31, wherein the wireless device is one of a cell phone, or a personal data assistant and management device (“PDA”).

38. *(Currently Amended)* The wireless device of claim 36, wherein said displaying the remote storage space further comprises program instruction for ~~the wireless device displaying information of the remote storage space in executing~~ a web browser on the wireless device for accessing the remote storage space or accessing the Internet.

39 – 44 *(Canceled)*

45. *(Currently Amended)* A server for delivering storage service, comprising:
a plurality of storage spaces residing among a plurality of storage devices; and
a computer-readable storage device comprising program instructions that, when executed ~~by the server~~, configure the server to control delivering the storage service; wherein the program instructions comprise:
program instructions for the server establishing a communication link for a first wireless device remotely accessing a first one of the storage spaces;
program instructions for the server sending information of the first one of the storage spaces to the first wireless device for causing display of the information on the first wireless device; and
program instructions for the server updating the first one of the storage spaces according to a requested operation received from the first wireless device upon a user thereof, through

the displayed information of the first one of the storage spaces performing the operation for remotely accessing the first one of the storage spaces,
wherein said operation for remotely accessing the first one of the storage spaces comprises from the first wireless device storing data therein or retrieving data therefrom, wherein the storing data further comprises program instructions for the server downloading a file from a remote server across a network into the first one of the storage spaces through utilizing information for the file cached in a cache storage in the first wireless device.

46. *(Previously Presented)* The server of claim 45, wherein said downloading a file through utilizing information for the file cached in the first wireless device comprises program instructions for the server receiving the information for the file from the first wireless device, and sending a request of downloading the file to the remote server according to the information for the file received.

47 - 48 *(Canceled)*

49. *(Previously Presented)* The server of claim 45, wherein the server presents a second one of the storage spaces to a user on a second wireless device for facilitating the user to perform operations for remotely accessing the second one of the storage spaces.

50. *(Canceled)*

51. *(Previously Presented)* The server of claim 45, wherein said causing display of the first one of the storage spaces further comprises: causing display of the first one of the storage spaces in a web browser on the first wireless device for accessing the first one of the storage spaces.

52. *(Previously Presented)* The server of claim 45, wherein said program instructions configuring the server to control delivering the storage service comprise program instructions for the server to send information of said plurality of storage devices to a web console for partitioning each of said storage devices for creating the storage spaces.

53. *(Previously Presented)* The server of claim 45, wherein said operation further comprises:

from the first wireless device remotely creating a folder or a layered folder or directory structure in the first one of the storage spaces, or remotely deleting, moving, copying or renaming a data object in respect to the layered folder structure, wherein the data object is a file, a folder, where the file includes digital picture, music or video file.

54. *(Previously Presented)* The wireless device of claim 31, wherein said operation for accessing the remote storage space comprises:

from the wireless device and via a wireless link creating a folder, or a layered folder or directory structure in the remote storage space.

55. *(Previously Presented)* The wireless device of claim 54, wherein said operation for access the remote storage space comprises:

from the wireless device moving, copying, deleting or renaming a data object in respect to the layered folder or directory structure, wherein said data object is a file or folder.

56. *(Previously Presented)* The wireless device of claim 31, wherein said operation for accessing the remote storage space comprises: from the wireless device and via a wireless link storing therein or retrieving therefrom a data object of a message, or a digital video, music, or picture file.

57. *(Previously Presented)* A method for a wireless device accessing a remote storage space, the method comprising actions performed by the wireless device, including:

establishing a communication link for accessing the remote storage space served by a first server;

displaying the remote storage space on the wireless device upon receiving information of the remote storage space from the first server; and

coupling with the first server to carry out a requested operation for accessing the remote storage space in response to a user, through the remote storage space displayed on the wireless device, performing the operation,

wherein the operation being carried out for accessing the remote storage space comprises from the wireless device storing data therein or retrieving data therefrom, the storing

data comprising to download a file from a second server across a network into the remote storage space through utilizing information for the file cached in a cache storage in the wireless device.

58. *(Currently Amended)* the method of claim 57, wherein said downloading a file from a second server comprises:

the wireless device obtaining the information for the file from the second server, transmitting the information for the file cached in the cache storage in the wireless device to the first server, and causing the first server in accordance with the received information for the file to download the file from the second server into the remote storage space.

59. *(Previously Presented)* the method of claim 57, wherein said wireless device displaying the remote storage space further comprises displaying the remote storage space in a web browser for accessing the remote storage space.

60. *(Previously Presented)* The method of claim 57, wherein said operation for accessing the remote storage space comprises:

from the wireless device and via a wireless link creating a folder, or a layered folder or director structure in the remote storage space.

61. *(Previously Presented)* The method of claim 60, wherein said operation for accessing the remote storage space comprises:

from the wireless device and via a wireless link moving, copying, deleting, or renaming a data object of file or folder in respect to the layered folder or director structure.

62. *(Currently Amended)* The server of claim 45, wherein said operation for accessing the ~~first one of the remote storage spaces~~ comprises: from the wireless device and via a wireless link, storing therein or retrieving therefrom a data object of message, digital video, digital music, or digital picture.



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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 0 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):

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