(54) Title: DIRECT FILE TRANSFER WITHOUT SENDING REQUESTED FILE THROUGH REQUESTING DEVICE

(57) Abstract: A requesting device can browse global file repositories and select a file in a source to be copied to a target directly without having to pass the file through the requesting device. A servlet-established controller can manage and monitor the process.
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— with international search report (Art. 21(3))

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(b))
DIRECT FILE TRANSFER WITHOUT SENDING REQUESTED FILE THROUGH REQUESTING DEVICE

This application claims priority to U.S. provisional application serial no. 61/621,121, filed April 6, 2012, and to U.S. utility patent application serial no. 13/786,722, filed March 6, 2013.

I. FIELD OF THE INVENTION

The present application relates generally to direct file transfers between repositories without sending requested files through the requesting device.

II. BACKGROUND OF THE INVENTION

When a requesting device is used to browse global storage pools for content and to choose a function to enact such as copying a file from one remote storage pool to another remote storage pool, a user of the requesting device can "drag and drop" the file represented in an index from one storage location to another. This causes the file to be pushed back to the requesting device, which then facilitates the file transfer to the target location. As understood herein, such a transfer method consumes computing resources on the requesting device, including storage and bandwidth.

SUMMARY OF THE INVENTION

Accordingly, a device includes a computer processor, a display controlled by the processor, and a computer readable storage medium accessible to the processor and bearing instructions which when executed by the processor to cause the processor to execute a web interface to browse content files on a source repository and a target repository. The repositories are geographically separate from each other. The processor receives a user
command to copy or transfer a content file on the source repository to the target repository, and responsive to the command, sends to a controller a message to transfer the content file on the source repository to the target repository. The controller communicates with respective remote agents executing on the source repository and target repository to cause the content file to be transferred or sent directly from the source repository to the target repository without the content file being sent to the requesting device.

In some embodiments the remote agents are attached to content files stored on the repositories. Control messages to effect transfer or copying of the content file are sent from the web interface of the requesting device to the controller module, which may be implemented as a servlet. The controller can be implemented on the requesting device or on another device. Only control information need be exchanged between the web interface of the requesting device and the controller, with the content file to be transferred not being exchanged between the controller and the requesting device.

In another aspect, a method includes, responsive to a command including an address of a target repository from a requesting device to execute a function on a content file implicating a source repository and the target repository, sending a message to a remote agent of the source repository. The message commands the remote agent of the source repository to execute the function on the content file. Also, the message causes the remote agent to open a direct communication path to the target repository, bypassing the requesting device. The function is executed between the source repository and target repository without passing through the requesting device.

In another aspect, a requesting device includes a computer processor, a display controlled by the processor, and a computer readable storage medium accessible to the processor and bearing instructions which when executed by the processor to cause the processor to present on the display a user interface (UI). The UI is configured to enter a
command to copy or transfer a file from a source repository to a target repository without
the file being communicated to the requesting device.

The details of the present invention, both as to its structure and operation, can best
be understood in reference to the accompanying drawings, in which like reference numerals
refer to like parts, and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an example system in accordance with present
principles;

Figure 2 is a diagram showing example software architecture;

Figure 3 is a flow chart showing example logic according to present principles; and

Figure 4 is a screen shot of a sample monitoring presentation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to Figure 1, a system 10 includes a requesting device 12 that
without limitation may be implemented by a PC, laptop, or notebook computer, a slate
computer, a TV, a home entertainment controller, a game console, a personal digital
assistant, a wireless telephone, etc. The device 12 may include a processor 14 accessing
a disk-based or solid state computer readable storage medium 16 to execute logic for
undertaking present principles. The processor 14 may communicate with other devices in
the system 10 through one or more transceivers 18 (only one transceiver shown for clarity),
which may be a wireless transceiver such as but not limited to WiFi transceiver, Bluetooth
transceiver, wired or wireless modem, and the like. The device 12 may further include a
display 20 and speakers 22 for presenting visual and/or audio data to a human user, and one
or more input devices 24, such as a keypad with point and click device, e.g., a mouse, and/or touch screen capability within the display 20.

A source repository 26 that may be implemented by a server or other computing apparatus may include one or more processors 28 accessing one or more storage devices 30 to store content files thereon. The source repository 26 may use one or more computer transceivers 32 to communicate with the Internet 34, with which the requesting device 12 may also communicate.

A target repository 36 that may be implemented by a server or other computing apparatus may include one or more processors 38 accessing one or more storage devices 40 to store content files thereon. The target repository 36 may use one or more computer transceivers 42 to communicate with the Internet 34. The repositories 26, 36 are physically separated from each other and may indeed be physically located on different continents.

Figure 2 shows example software architecture that may be used in the execution of the logic shown in Figure 3. A web interface 44 may execute on the requesting device 12. An example user interface (UI) that the web interface can present on the display 20 of the requesting device 12 is illustrated in Figure 4.

Remote agents 46, 48 respectively execute on the source repository 26 and target repository 36. The remote agents 46, 48 may be attached to content files stored on the repositories 26, 36. As discussed further below, files sought by the requesting device 12 to be transferred or copied from the source repository 26 to the target repository 36 are sent directly from the source repository 26 to the target repository 36 as indicated by the line 50, without going through the requesting device 12.

On the other hand, control messages to effect such file transfer or copying are sent from the web interface 44 of the requesting device 12 to a controller module 52, which may
be implemented as a servlet. The controller module 52 in turn causes the desired operation to be executed by communicating with the remote agents 46, 48 of the source repository 26 and target repository 36. The controller module 52 may be implemented on a computing device, such as but not limited to one of the computing devices shown in Figure 1. As indicated by the line 54, only control information is exchanged between the web interface 44 of the requesting device 12 and the controller 52. Also, as indicated by the lines 56, 58, only control messages are exchanged between the controller 52 and the remote agents 46, 48 of the source repository 26 and target repository 36. The actual content file to be transferred is not exchanged between the controller 52 and the other agents/interfaces.

With the architecture of Figure 2 in mind, attention is now directed to Figure 3. Commencing at block 60, a user of the requesting device 12 can browse content on global storage pools, such as the source repository 26 and target repository 36. At block 62 a content file may be selected on, e.g., the source repository 26 and then at block 64 the user may enter a command to be executed to undertake a function, such as copying the file to another repository such as the target repository 36. In one example, the command to copy is entered by a user dragging and dropping the name or icon associated with the target file from a list associated with the source repository 26 to a list associated with the target repository 36, as shown in Figure 4 and discussed further below.

Proceeding to block 66, the requesting device 12 initiates a requesting service in its web interface 44 to send the function request (e.g., a copy request) to the controller 52. A service in the controller 52 receives the request at block 68 and relays the request to the remote agent 46 of the source repository 26. Recall that the remote agent 46 may reside on the target file. This request includes information pertaining to the target repository 36. For example, responsive to the user dragging and dropping a file "on" a target repository, the requesting service in the web interface 44 accesses an underlying address of the target
repository, including that address in the request to the controller 52, which then forwards the address to the remote agent 46 of the source repository 26.

Moving to block 70, using the information in the request from the controller 52, the remote agent 46 of the source repository 26 initiates the requested function (e.g., file copy or file transfer) and at block 72 opens a direct communication path 50 (Figure 2) to the target repository 36, bypassing the requesting device 12. The function, e.g., file copy or transfer, is then executed between the source repository 26 and target repository 36 without passing through the requesting device 12. However, at block 72 the controller 52 monitors the activity between the source repository 26 and target repository 36, reporting information regarding this activity to the requesting device 12 for presentation on the display 20 of the requesting device 12.

Figure 4 shows an example UI 76 that may be presented on the display 20 according to the logic above. As shown, a source repository column 78 and target repository column 80 may be presented listing content file names respectively stored on the repositories. A user may attach a file 82 in the source column 78 and drag and drop it to a location 84 in the target column 80 to cause the above-discussed file transfer direct from source to repository to commence, by passing the requesting device 12. The status 86 of the function execution as reported by the controller 52 at block 72 in Figure 3 is presented on the display 20, e.g., "sending" when file transmission starts (as reported to the controller 52, e.g., by the source repository 26), "delivered" when the transfer is complete (as reported to the controller 52, e.g., by the source repository 26), and "acknowledged" when the target repository acknowledges (through the controller 52) that it has successfully received the file.

While the particular DIRECT FILE TRANSFER WITHOUT SENDING REQUESTED FILE THROUGH REQUESTING DEVICE is shown and described in
detail, it is to be understood that the subject matter which is encompassed by the present invention is limited only by the claims.
WHAT IS CLAIMED IS:

1. Device, comprising:

   a computer processor;

   a display controlled by the processor; and

   a computer readable storage medium accessible to the processor and

   bearing instructions which when executed by the processor to cause the processor to:

   execute a web interface to browse content files on a source repository and a

   target repository, the repositories being geographically separate from each other;

   receive a user command to copy or transfer a content file on the source

   repository to the target repository;

   responsive to the command, send to a controller a message to transfer the

   content file on the source repository to the target repository, the controller communicating

   with respective remote agents executing on the source repository and target repository to

   cause the content file to be transferred or sent directly from the source repository to the

   target repository without the content file being sent to the requesting device.

2. The device of Claim 1, wherein the remote agents are attached to content

   files stored on the repositories.

3. The device of claim 1, wherein the processor when executing the

   instructions is configured such that control messages to effect transfer or copying of the

   content file are sent from the web interface of the requesting device to the controller

   module.

4. The device of Claim 3, wherein the controller is implemented as a servlet.
5. The device of Claim 1, wherein the controller is implemented on the requesting device.

6. The device of Claim 1, wherein the controller is not implemented on the requesting device.

7. The device of Claim 3, wherein only control information is exchanged between the web interface of the requesting device and the controller, the content file to be transferred not being exchanged between the controller and the requesting device.

8. Method, comprising:
   responsive to a command including an address of a target repository from a requesting device to execute a function on a content file implicating a source repository and the target repository, sending a message to a remote agent of the source repository;
   the message commanding the remote agent of the source repository to execute the function on the content file;
   the message causing the remote agent to open a direct communication path to the target repository, bypassing the requesting device; and
   the function being executed between the source repository and target repository without passing through the requesting device.

9. The method of Claim 8, wherein the remote agent of the source repository resides on the content file.

10. The method of Claim 8, wherein the function is a file copy.
11. The method of Claim 8, wherein the function is a file transfer.

12. The method of Claim 8, further comprising monitoring activity between the source repository and target repository, reporting information regarding the activity to the requesting device.

13. Requesting device, comprising:
   a computer processor;
   a display controlled by the processor; and
   a computer readable storage medium accessible to the processor and bearing instructions which when executed by the processor to cause the processor to:
   present on the display a user interface (UI), the UI being configured to enter a command to copy or transfer a file from a source repository to a target repository without the file being communicated to the requesting device.

14. The requesting device of Claim 13, wherein the UI includes a source repository data structure and a target repository data structure listing content file names respectively stored on the repositories.

15. The requesting device of Claim 14, comprising an input device configured to enable a user to attach a file in the source data structure and drag and drop the file to a location in the target data structure to cause the file to be transferred or copied directly from source repository to the target repository, bypassing the requesting device.
16. The requesting device of Claim 13, wherein the UI includes a status of function execution as reported by a controller communicating with the processor.

17. The requesting device of Claim 16, wherein the status includes "sending" to indicate file transmission between the source repository and target repository has commenced.

18. The requesting device of Claim 17, wherein the status includes "delivered" to indicate file transmission between the source repository and target repository is complete.

19. The requesting device of Claim 18, wherein the status includes "acknowledged" to indicate that the target repository has acknowledged that it has successfully received the file.
FIG. 1

SOURCE REPOSITORY
PROCESSOR  STORAGE
NETWORK INTERFACE

TARGET REPOSITORY
PROCESSOR  STORAGE
NETWORK INTERFACE

REQUESTING DEVICE
PROCESSOR  MEDIUM  NETWORK INTERFACE
DISPLAY
SPEAKERS  INPUT DEVICE(S)

INTERNET
FIG. 3

1. Browse global storage pools
2. Select content file, function
3. Requesting device initiates requesting service to send function request to controller
4. Execute command for function to be undertaken
5. Controller service receives request and relays to remote agent attached to content file
6. Using target information in request from controller service, remote agent initiates function (e.g., copy)
7. Remote agent opens direct connection to target repository and executes function
8. Controller service monitors execution and sends data to requesting device for display
FIG. 4

SOURCE
FILE 1
FILE 2

TARGET
FILE A
FILE B

STATUS:
SENDING
DELIVERED
TARGET
ACKNOWLEDGE
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8)- G06F 15/16
USPC - 726/7
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC(8)- G06F 15/16, H04L 9/02, G06F 21/00, G06F 13/00, G06F 17/30, G06F 12/16, G06F 12/00 (2013.01)
USPC - 726/7, 709/217, 719/310, 707/E17.8, 707/756, 707/E17.58, 707/634, 711/E12.1, 711/E12.103, 707/E17.44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Orbit, Google Patent, Google, Google Scholar.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 5,870,552 A (DOZIER et al) 09 February 1999 (09.02.1999), entire document</td>
<td>1-7</td>
</tr>
<tr>
<td>A</td>
<td>US 2006/0123406 A1 (SUDHI et al) 08 June 2006 (08.06.2006), entire document</td>
<td>1-19</td>
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☐ Special documents are listed in the continuation of Box C.

* document defining the general state of the art which is not considered to be of particular relevance

□ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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□ document member of the same patent family

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