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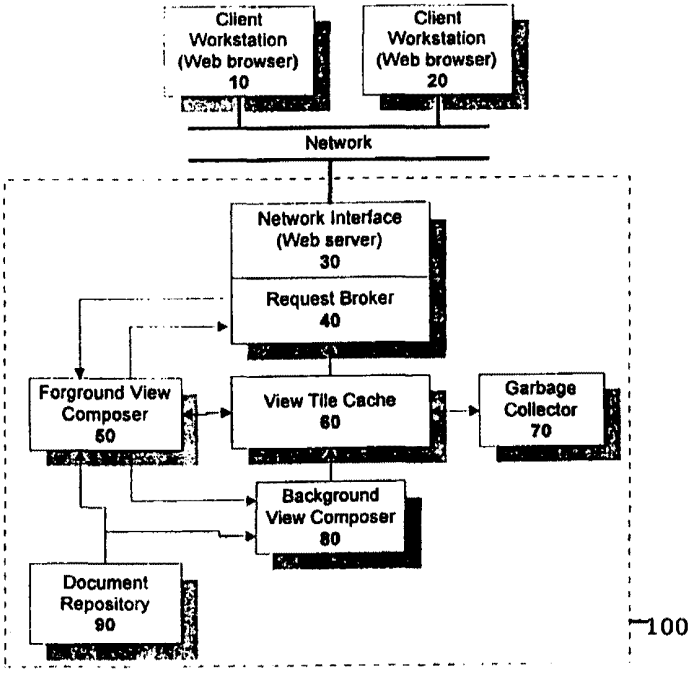
(54) Title: NETWORK IMAGE VIEW SERVER USING EFFICIENT CLIENT–SERVER, TILING AND CACHING ARCHITECTURE

(57) Abstract

A computer network server using HTTP (Web) server software combined with foreground view composer software (50), background view composer software (80), view tile cache (60), view tile cache garbage collector (70) and image files (90) provides image view data to client workstations (20) using graphical web browsers to display the view of an image from the server. Problems with specialized client workstation image view software are eliminated by using the internet and industry standards based graphical web browsers for the client software. Network and system performance problems that previously existed when accessing large image files from a network file server are eliminated by tiling the image view so that computation and transmission of the view data can be done in an incremental fashion. The vied tiles are cached on the client workstation to further reduce network traffic. View tiles are cached on the server to reduce the amount to view tile computation and to increase responsiveness of the image view server.



Network Image View Server

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NETWORK IMAGE VIEW SERVER USING EFFICIENT CLIENT-SERVER, TILING AND CACHING ARCHTECTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to workstation viewing images of digital documents stored on a network server and in particular to viewing large digital document images using a client-server architecture.

2. Description of the Prior Art

Current methods for viewing digital document images for workstations in a networked environment use proprietary workstation application software to access a network image file server. To view an image, the application software transfers a copy of the whole image file from the image file server to the networked client workstation This method has a number limitations including: inefficient use of the network; high software purchase cost per workstation; high software administrative cost per workstation; high computational demands on the workstation; proprietary software available only for limited workstation types. Some other network image viewers may provide viewing using more optimized image transmission protocols but only with proprietary protocols and proprietary workstation software.

It is an object of the invention to provide a method of obtaining graphical images from a network server for viewing at a computer workstation which does not require proprietary workstation software.

It is another object to provide such a method which makes efficient use of the network and results in greater speed of image display in response to requests from the workstations.

It is another object to provide such a method which makes use of caching mechanisms resulting in a balanced load on the network file server and a faster response time to a single client when many clients are accessing the server simultaneously.

It is another object to minimize the computing resources required by a client

workstation.

A further object is to provide apparatus for storing graphical images, requesting portions of the stored graphical images from storage, and quickly and efficiently displaying the images on a workstation.

A still further object is to provide a computer program which facilitates requesting portions of graphical images stored on a network server and displaying those portions on a workstation.

SUMMARY OF THE INVENTION

These objects, and others which will become apparent from the following disclosure, are achieved by this invention which comprises in one aspect method of identifying and delivering a graphical image from a computer network file server comprising providing a network file server on which are stored digital document image files, said server adapted to receive requests from a Web browser in Uniform Resource Locator (URL) code, to identify the image file and format selections being requested, to compose the requested view into a grid of view tiles, and to transmit HTML code for view tiles to the requesting Web browser.

Another aspect of the invention comprises apparatus comprising a computer network server adapted to store digital document image files, programmed to recieve requests from a client Web browser in URL code, the URL specifying a view which identifies an image file and format, to compose the requested view, and to transmit HTML code for the resultant view to the client Web browser to display.

A further aspect of the invention is the computer program recorded on magnetic or optical media for use on a network server comprising code which interprets HTTP requests from a workstation for a particular view of a digital document image file stored in memory, retrieves the digital document image file, composes a grid of view tiles corresponding to the requested view of the image, computes HTML code for the grid of view tiles in a form which can be transmitted from the server to the workstation.

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate an embodiment of the invention and together with the general description, serve to explain the principles of the invention.

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