

## CONTENT DISTRIBUTION SYSTEM

### FIELD OF THE INVENTION

[0001] The invention relates generally to information retrieval and more particularly to the retrieval of information that has been optimized for delivery through editing and compression.

### BACKGROUND OF THE INVENTION

[0002] As the Internet evolves, the amount of information available to users of the Internet expands exponentially. Available information comes in various forms, ranging from text to images. Some content is often delivered to the user, hereinafter referred to as the requestor, in compressed form. That portion of the compressed content which takes the form of an image is usually compressed using lossy compression techniques such as JPEG (Joint Photographic Experts Group), GIF (Graphics Interchange Format) or MPEG (Moving Picture Experts Group). Lossy compression is a compression technique in which a large file (such as graphics, video, or audio files) can be stored in a smaller amount of space than lossless compression, but some loss of quality will result when the file is decompressed. MPEG is a common type of lossy video compression that is used to deliver video content over the World Wide Web (WWW). Content compressed using the JPEG or GIF techniques can be delivered to the requestor via a browser in a manner that is both straightforward and transparent. However, some forms of data cannot be compressed using lossy techniques while still remaining usable. Text is one such data type, as are x-rays. Compression techniques in which no data is lost are referred to as lossless. The popular PK zip technique is an example of a lossless compression technique.

[0003] An individual who wishes to retrieve information from the Internet most typically connects to the Internet through an Internet Service Provider (ISP) by using one of numerous types of connections that are available for that purpose such as Digital Subscriber Lines (DSL), Cable, or Integrated Services Digital Network (ISDN). The speed with which the user can download information from the Internet is determined by the bandwidth of the connection. As is understood in the art, bandwidth is the amount of data that can be transmitted in a fixed amount of time. As multimedia grows in popularity and visual representations become the norm, the availability of adequate bandwidth is strained and the delivery capability of existing data infrastructures is slowed or overwhelmed. Commercial connections such as T1 and T3 lines offer fast delivery of content to the user by greatly increasing the available bandwidth. However, such connections are not economically feasible for most users.

[0004] Groups of users requesting the same content benefit from the improved performance provided by Proxy Servers. Proxy Servers save the results of requests for information made by all users. As a result, a request for information that has been cached is returned by the Proxy Server instead of necessitating that the request travel to the original source for the information. Accordingly, time in delivering requested content could be greatly reduced by the appropriate use of intermediate Proxy Servers. Several Proxy Servers exist that can be custom configured to enhance delivery of content. Jigsaw is an example of such a Proxy Server.

[0005] Various compression techniques, Proxy Servers, and caching routines interact to form a patchwork that

delivers content to the requesters. However, because of the increased demand for content, the current state of the art devours bandwidth capacity and slows delivery of such content to the requesters of information, thus creating a need for improved methods of content delivery from the Internet to the user.

[0006] Reference is now made to **FIG. 1** of the Drawings, wherein a conventional network is illustrated, depicting one example of the state of the art. As illustrated in the figure, content providers **110** provide content to the ISPs, LANs and/or WANs (collectively designated by the reference numeral **120**) through the Internet **130**. As is understood in this area, the content being provided via the Internet **130** requires large bandwidth (generally represented by the reference numeral **135**), which consumes valuable resources. This content is further provided to a number of respective Internet users **140** connected to the ISPs, LANs and/or WANs **120** with typically slow connections (generally represented by the reference numeral **145**). These slow connections **145** and the inefficiency of content delivery to the ISPs do not allow the Internet users **140** to receive the content efficiently, hence, all the bandwidth dedicated to the user is consumed.

[0007] As indicated, an Internet user **140** wishing to download content from one of the content providers **110** via the Internet will be provided the content through the ISP, LAN or WAN **120** server. The content is provided "as is" without any efficiency in its delivery, e.g., whenever the user browses a web page which has already been viewed before, all the content within that page needs to be downloaded again. This creates inefficiency by redundantly downloading the same content.

[0008] There is, therefore, clearly a need to conserve bandwidth resources by, for example, better utilizing or reducing the required content downloaded from web servers **110** by the ISP **120**. Faster, more efficient user connections to the web servers are needed to ease the web browsing process of Internet users, thereby making the subjective experience of surfing the web and visiting websites more enjoyable.

### SUMMARY OF THE INVENTION

[0009] The present invention is directed to a system, method and apparatus relating to the delivery of content from a computer network, the delivery of such content having been speed-enhanced by editing and compression. In other words the content delivery provided by the invention provides the user with faster downloading of requested content, while at the same time ensuring that the requested content has retained its essential characteristics.

[0010] A first embodiment of the present invention provides a method, system and apparatus for delivering content to a requester at a personal computer or workstation from the Optimal Content Delivery System (OCDS) network. The requestor makes a content delivery request through the network to the OCDS network distribution/control server, which checks to see if the requested material exists in an edited and compressed format in the OCDS cache. If the content exists in the OCDS cache in a compressed and edited format, this content is retrieved and delivered to the requester where it is decompressed by the requester. However, if the content is not available in an edited and/or