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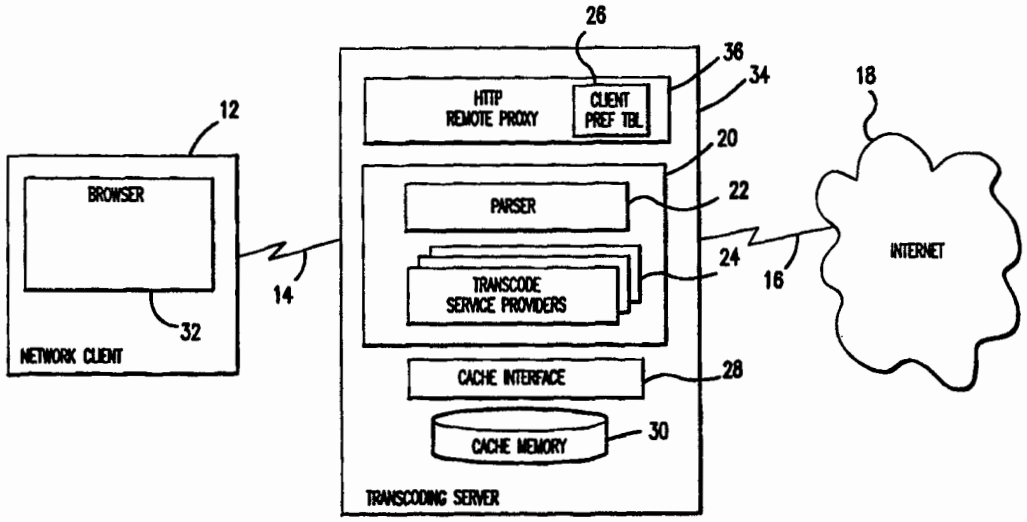

(57) Abstract

A system for dynamically transcoding data transmitted between computers is implemented in an apparatus for use in transmitting data between a network server (10) and a network client (12) over a communications link (14). The apparatus includes a parser (22) coupled to a transcode service provider (24). The parser (22) is configured to selectively invoke the transcode service provider (24) in response to a predetermined selection criterion.

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SYSTEM FOR DYNAMICALLY TRANSCODING DATA TRANSMITTED BETWEEN COMPUTERS

Background of the Invention

This application claims the benefit of U.S. Provisional Application No. 60/041,366, filed March 25, 1997.

Field of the Invention

The present invention relates generally to the field of data communications for personal computers (PCs), and in particular to a system for dynamically transcoding data transmitted between two computers over a communications link.

Related Art

The Internet is quickly becoming the preferred data communications medium for a broad class of computer users ranging from private individuals to large multi-national corporations. Such users now routinely employ the Internet to access information, distribute information, correspond electronically, and even conduct personal conferencing. An ever-growing number of individuals, organizations and businesses have established a presence on the Internet through "web pages" on the World-Wide Web (WWW).

For a wide variety of reasons, it may be desirable to manipulate data transmitted between a local client computer and a network server computer. For

example, in certain instances it may be advantageous to dynamically add, modify or delete content retrieved from an Internet server computer before that content is provided to a client computer. Conversely, it may be advantageous to modify a content request from a client computer prior to transmitting the request to an Internet server computer. While such dynamic manipulation of requests and responses is desirable, it is impractical to expect the expansive Internet infrastructure to quickly change to accommodate such a new capability. For this reason, it is desirable to implement such new capabilities in a way that does not require changes to either existing client computers or Internet server computers.

It is known to deploy a proxy server, or network proxy, as an intermediary between one or more client computers and an external network such as the Internet. Network proxies are described generally in Ian S. Graham, HTML Source Book: A Complete Guide to HTML 3.0 403 (2d ed. 1996). One common application for a proxy server is as a so-called "firewall," wherein the proxy server is responsible for all communications with the outside world. In other words, local devices are not permitted to communicate directly with external network computers, such as Internet servers. Instead, each local device directs requests for network-resident data to the proxy server. When the proxy server receives such a request, it forwards the request to the appropriate external computer, receives the response from the external computer, and then forwards the response to the local device. The external computer thus has no knowledge of the local devices. In this way, the local devices are protected from potential dangers such as unauthorized access.

Existing proxy servers do not manipulate the data passing through them. In essence, proxy servers are merely blind conduits for requests and responses. This limitation of existing proxy servers restricts these devices from being used to full advantage when facilitating communications between local devices and network devices. There is therefore a need for a so-called "smart" proxy capable of examining the data passing through it, whether it be a request intended for an external network device or network content being returned to a local device, and dynamically acting

upon that data. Such a device can be used to transparently provide a wide range of services that were heretofore impossible without modifying existing Internet infrastructure.

Summary of the Invention

Embodiments of the present invention relate to devices, systems and methods for transcoding information transmitted between computers, such as a network server computer and a network client computer.

According to one embodiment, an apparatus for use in transmitting data between a network server and a network client over a communications link includes a parser coupled to a transcode service provider. The parser is configured to selectively invoke the transcode service provider in response to a predetermined selection criterion.

Brief Description of the Drawings

Fig. 1 is a schematic diagram illustrating an environment in which embodiments of the present invention may be applied.

Fig. 2 is a schematic diagram illustrating a transcoder module according to an embodiment of the present invention.

Fig. 3 is a schematic diagram illustrating an embodiment of the present invention for a non-enabled network client.

Fig. 4 is a schematic diagram illustrating an example of a user interface for providing a non-enabled network client with control over transcoding functionality.

Fig. 5 is a schematic diagram illustrating an embodiment of the present invention for an enabled network client.

Fig. 6 is a schematic diagram illustrating a network client with transcoding functionality integrated in a browser according to an embodiment of the present invention.

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