Class	Subclass	ISSUE CLASSIFICATION
[illegible]	370	

[redacted]

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60/004,670

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60/004,670 PROVISIONAL	10/02/95				

APPLICANTS

BRENDA S. BAKER, BERKELEY HEIGHT, NJ.

CONTINUING DATA********
VERIFIED

FOREIGN/PCT APPLICATIONS********
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Foreign priority claimed 35 USC 119 conditions met	Verified and Acknowledged	AS FILED	STATE OR COUNTRY	SHEETS DRWGS	TOTAL CLAIMS	INDEP. CLAIMS	FILING FEE RECEIVED	ATTORNEY'S DOCKET NO.
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ADDRESS

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TITLE

FILTERING FOR DATABASE ACCESS

U.S. DEPT. OF COMM./ PAT. & TM—PTO-436L (Rev.12-94)

Form PTO-1625
(Rev. 5/95)

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PATENT APPLICATION

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Date Entered or Counted

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EXAMINER		300	10-30-95
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60/004670

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
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U.S. PATENT APPLICATION

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT
60/004,670 PROVISIONAL	10/02/95		

APPLICANT

BRENDA S. BAKER, BERKELEY HEIGHT, NJ.

CONTINUING DATA********
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STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS	FILING FEE RECEIVED	ATTORNEY DOCKET NO.
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MURRAY HILL NJ 07974-0636

TITLE

FILTERING FOR DATABASE ACCESS

This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the application which is identified above.

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60/004670

IN THE UNITED STATES
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PROVISIONAL APPLICATION

"Express Mail" mailing label number EJ476317960
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I hereby certify that this application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D. C. 20231.
T. Hanna
(Printed name of person mailing paper or fee)
(Signature of person mailing paper or fee)

Brenda S. Baker

—

Case 7

Title Improved Filtering For Database Access

COMMISSIONER OF PATENTS AND TRADEMARKS
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PROVISIONAL APPLICATION COVER SHEET

SIR:

This is a request to file a **Provisional Application** under **37 CFR 1.53 (b)(2)**.

[x] 4 number of pages in Specification
[ ] ____ sheet(s) of drawing(s)
[ ] Assignment
[ ] The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.
[x] No
[ ] Yes, the name of the U.S. Government agency and the Government contract number are:

Inventor(s): (full name and address)

1-00 Brenda Sue Baker resides at 140 North Road, Berkeley Heights (NJ) 07922.

The Commissioner is hereby authorized to charge **AT&T Bell Laboratories Deposit Account No. 02-1850** the amount of **$150.00** to cover the cost of filing fee.

Please address all correspondence to **S. H. Dworetsky, AT&T Bell Laboratories, 600 Mountain Avenue, PO Box 636, Murray Hill, New Jersey 07974-0636.** However, telephone calls should be made to me at (908) 582-2267.

Respectfully,

Attorney for Applicant(s)
Reg. No. 32914

Robert P. Marley

Date: 10-2-95

AT&T Bell Laboratories
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B.S. Baker 7

IMPROVED FILTERING FOR DATABASE ACCESS

Background of the Invention

A number of systems and methods have been proposed or created to control access to remote resources publicly available to users of other computers through the collection of networks known as the Internet. The collection of all such publicly available resources, linked together using files written in Hypertext Mark-up Language ("HTML"), is known as the World Wide Web ("WWW"). Some systems that have been proposed or created to control access to remote resources include a database of information about WWW resources and a program that allows or blocks access by a user to resources based on information stored in the database. A program that controls access to remote resources will be termed a filter.

In one embodiment, the database or permissions derived from the database are stored local to filter, possibly within a common firewall. Such a system is described in U.S. Patent Application No. 08/469.342, "System and Method for Database Access Control", filed on June 6, 1995. In another embodiment, the filter sends messages to a remote server that serves messages containing information from the database, and the filter uses that information to determine whether to permit access to a particular resource. In this case, the filtering code may be part of a browser, part of a proxy server, or a separate program that determines whether to allow or deny resources. These scenarios are under discussion by groups formed by the WWW Consortium and the Internet Engineering Task Force.

Since resources are requested by means of a name such as a Uniform Resource Locator ("URL"), a database of information about resources may refer to resources by means of such a name or expressions such as regular expressions that denote sets of such names.

However, URLs are not unique identifiers for resources. Distinct URLs can name the same resource in the sense that clients requesting these URLs will receive identical resources in response, and repeated requests for a single URL may result in the client's receiving different resources at different times. The following situations describe some ways in which such naming ambiguities occur.

To start, it is necessary to describe how distinct resources can name the same resource. This can happen in several ways. First, it can happen because different domain names are mapped by a Domain Name Server to the same physical server. Second, it can happen because a server knows that different path names at its site are aliases for the same resource. Third, it can happen when identical copies of the resource are stored, or mirrored, at distinct sites with different URLs. Finally, it can happen indirectly as follows. When a protocol such as hypertext transport protocol is initiated, the information transmitted in the protocol can include protocol status information, resource information, and/or a resource, as well as other fields. Information about a resource can include specific data such as the content type or last modification date but also can include data such as a different URL for the resource. Status information can include a response code

indicating that a request for a resource should be redirected to another URL. Thus, the following scenarios are possible. First, when the client requests the resource named by a URL, the remote server may return a redirection code and a new URL, and the client may then request the new URL separately. A second possibility is for the remote server to return a resource along with a new URL; in this case, there is no guarantee that the URL is a correct name for the resource, in the sense that a separate request for that URL is not guaranteed to produce a response with the identical resource. A third possibility is that when a client requests a URL from a remote server, the remote server sends a request for a different URL to another server and forwards the response back to the client. Redirections are commonly used because the resource moved, because it was requested by a method such as an imagemap where the requested URL includes keywords that encode information that the remote server uses to compute a URL to return, because it was requested via a Common Gateway Interface command which executes on the remote machine to determine what resource to return, or because the server uses redirections to facilitate collection of data on request behavior of individual users. The resource returned may also be computed on the fly from the information in the request.

Furthermore, requests for the same URL may result in distinct responses at different times, either because the resource itself has changed or because the remote server chooses to send back different resources or different redirection URLs at different times. When a request is made for a resource, the response may include a modification date, but in general the modification date is not guaranteed to be updated when changes are made to the file. For a file, the value of the file is often described by a checksum. A checksum or message digest is a number that is calculated from the resource such that identical resources are guaranteed to have the same checksum, and distinct resources are unlikely to have the same checksum. A number of such procedures exist in the literature. An example is the Message Digest 5 ("MD5") checksum procedure, which also has the feature that given a number, it is difficult to create a resource with that number as its checksum. This particular procedure is well known in the art, and discussed in Applied Cryptography: protocols, algorithms, and source code in C, by Bruce Schneier, Wiley Publishing, 1994, ISBN 0-471-59756-2. For practical purposes, it is ordinarily assumed that files are identical if and only if the checksums are identical.

In the above situations, the server of the resources may have knowledge of the relationships between URLs, but the client and user of the client do not have a priori knowledge of the relationships. For a given request, the client may see multiple URLs through redirections, but will not generally see all possible URLs for the same resource. The client may or may not show the user the new URL and the user of a client may not be aware of the existence of multiple URLs for the same resource. Thus, a rater who rates a resource using software for storing ratings in a database based on URLs may cause a rating to be stored for one or several of these URLs but not for all URLs naming the same resource, and the rater may not know of the existence of these other URLs.

A proposal has been made to assign a unique permanent name called a Uniform Resource Name,

or URN, to each resource. In this case, servers would translate a URN into a URL that would specify a specific copy of this resource. Distinct requests could result in the same URN being translated into distinct URLs, depending, for example, on the physical location of the client. However, this approach would not eliminate all the sources of ambiguities described above.

The above naming problems can also occur in other situations, such as systems using databases of keywords, annotations for resources, quality ratings, or categorizations of resources.

Summary of the Invention

Our invention uses two approaches to handle naming ambiguities in a filter. One is to consider responses from remote servers as well as request URLs in determining whether to allow or deny resources. The response information used may include header information or the resource itself. Another is to record and maintain a database of aliases for URLs that can be accessed by the filter.

Detailed Description of the Invention

The invention uses three approaches to handle naming ambiguities in a filter.

The following discussion is written as if the filter and client are separate programs; however, these methods also work if the filter is part of the client. An example of an image map will illustrate the methods used. If the user clicks on an image map, the requested URL includes keywords describing mouse position. If no filtering occurs, the client would receive a resource. In this particular embodiment, this resource has a different URL with no keywords, and as a result of the rating procedures, the latter URL is stored in the ratings database rather than the former.

When the filter receives a request for a URL, rather than deciding immediately whether to allow or deny the resource, the filter may choose to request the resource and make a decision based on the response. This decision may be based on the response header or on the response resource.

In particular, if the response is a redirection, the filter may choose to forward the redirection to the client, since it contains no forbidden material. The client can be expected to request the URL and in the course of processing the new request the new URL will be checked against the ratings database. Alternatively, upon receiving a redirection response, the filter may send a request for the redirected URL itself, and if necessary, make subsequent redirection requests as well, and look up any or all of these URLs in the database to determine whether to provide the final resource to the client.

On the other hand, if the response is a resource with a field specifying a new URL, the filter can look up the new URL in the ratings database to determine whether to allow the resource or forbid it to the client.

A second way of using response information is to make it possible for the filter to access ratings in the ratings database based on a checksum computed from a response resource. When a user requests a URL, the filter can request the resource, compute a checksum, and look the checksum up in the ratings database to determine whether a resource with that checksum is approved. This method could be used in addition to or in place of looking up URLs in a database.

Another approach is to maintain a relational database of aliases discovered by the filter or other programs such as a proxy servers or browsers that request resources on the WWW. When the filter receives a request for a URL, it accesses the alias database to determine which URLs are considered to be aliases for the requested URL. Either a URL would first be looked up in the redirection database and then the aliases would be looked up in the ratings database or alternatively, the aliases would be incorporated directly into the ratings database.

The above shall not be construed to be limited to URLs; other naming schemes such as URNs could be substituted or added as additional aliases.

The above schemes can be used separately or in combination. They can also be used in other situations in which naming problems arise, such as in systems using databases of keywords in resources, annotations of resources, quality ratings, or categorizations of resources.

PTO/SB/68 (02-10)
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In re Application of
Baker

Application Number	Filed
60/004,670	10,2,95

Paper No. #2

I hereby request access under 37 CFR 1.14(a)(1)(iv) to the application file record of the above-identified ABANDONED application, which is not within the file jacket of a pending Continued Prosecution Application (CPA) (37 CFR 1.53(d)) and which is identified in, or to which a benefit is claimed, in the following document (as shown in the attachment):

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US005961645A

United States Patent [19]

Baker

[11] Patent Number: 5,961,645

[45] Date of Patent: *Oct. 5, 1999

[54] **FILTERING FOR PUBLIC DATABASES WITH NAMING AMBIGUITIES**

[75] Inventor: **Brenda Sue Baker**, Berkeley Heights, N.J.

[73] Assignee: **AT&T Corp.**, Middletown, N.J.

[*] Notice: This patent is subject to a terminal disclaimer.

[21] Appl. No.: **08/724,415**

[22] Filed: **Oct. 1, 1996**

Related U.S. Application Data

[60] Provisional application No. 60/004,670, Oct. 2, 1995.

[51] **Int. Cl.**[6] **G06F 17/30**; G06F 13/00

[52] **U.S. Cl.** **713/201**; 713/200; 713/202

[58] **Field of Search** 395/187.01, 188.01, 395/186, 200.09, 200.03; 380/4, 25; 340/825.31; 713/200, 201, 202, 200.09, 200.03

[56] **References Cited**

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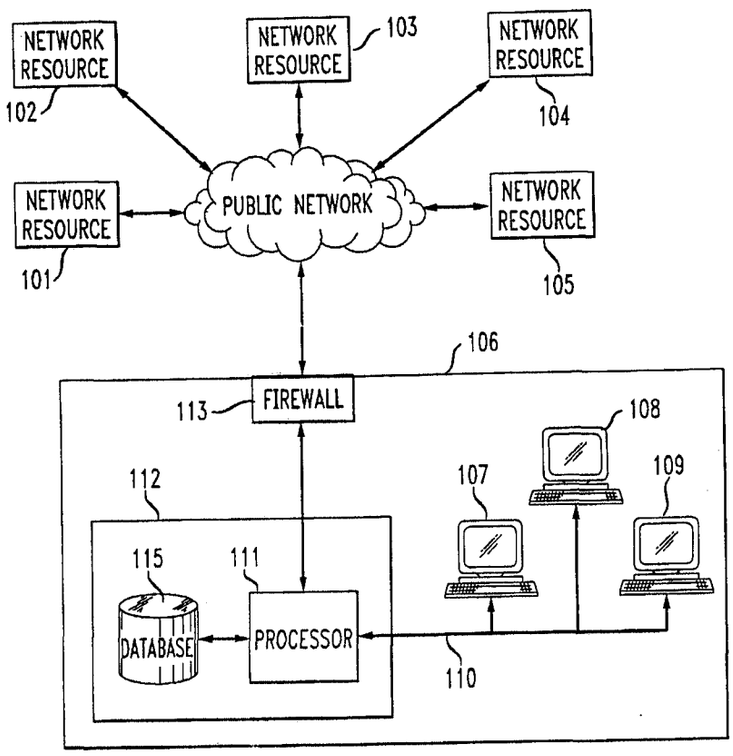
Primary Examiner—Ly V. Hua

[57] **ABSTRACT**

Multiple approaches are used with a filter to handle naming ambiguities when requesting access to a plurality of network resources through a public network such as the Internet. One approach is to consider responses from the public network as well as requested URLs in determining whether to allow or deny resources. The response information used may include header information or the resource itself. If the header information includes a new URL, the new URL can be forwarded to the requestor, or submitted to the public network. A permission database is queried to determine whether a resource corresponding to the new URL should be forwarded to the requestor. A checksum database can also be used to determine if a specific resource should be forwarded to the requestor. Another approach is to record and maintain a database of aliases for URLs. When a URL is requested, the alias URLs are determined for that URL. The alias URLs can then be queried in the permission database to determine if the resource corresponding to the aliases can be accessed by the requesting terminal before the URL is requested from the public network.

10 Claims, 1 Drawing Sheet



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