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Tool For Managing File Ownership and Permissions For Online Storage Services

Samuel Markowitz

Ryo Akasaka

Josh Greco

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Tool For Managing File Ownership and Permissions For Online Storage Services

ABSTRACT

It is difficult and time-consuming for users of online file storage and sharing services to view and manage file permissions for the files that are stored and/or shared via such platforms. No easy mechanisms are available to see how a file is being shared without diving into each file individually. This disclosure describes a sharing visibility tool that enables users to see how their files are being shared via an online file sharing service and to manage file permissions individually or in bulk. With user permission, the tool utilizes application programming interfaces (APIs) provided by online file sharing services to access the user's files. The tool provides a user interface that enables users to view and modify file permissions, transfer file ownership, verify that file permissions have been audited, etc.

KEYWORDS

- Cloud storage
- File sharing
- File storage
- File permission
- Access control
- Storage audit
- Sharing statistics

BACKGROUND

Online file storage and sharing services are in widespread use. Users utilize such services to store and share various types of documents. It is difficult and time-consuming for

users to view and manage file permissions for multiple files that are stored and/or shared via such platforms.

To combat oversharing (which occurs when certain files are accessible to a larger than intended audience), some users perform audits of their files. During the audit, the users verify that each of their files have permissions appropriate for the information contained within. However, this is a difficult task that requires the user to open each file individually to verify permissions and correct permissions if necessary. For users that own a very large number of files - running into several hundreds or thousands of files - this is a time-consuming and error-prone process. Further, even outside of the audit context, maintaining visibility into file permissions on a sharing service is a difficult task. There are presently no easy mechanisms to see how a file is being shared without diving into each file individually using the mechanisms within the file sharing/storage service, e.g., a sharing dialog box or other user interface.

DESCRIPTION

This disclosure describes a sharing visibility tool that enables users to see how their files are being shared via an online file sharing service and to manage file permissions individually or in bulk. With user permission, the tool utilizes application programming interfaces (APIs) provided by online file sharing services to access the user's files. The user can provide read/write access for their files as well as other necessary permissions to enable the functionality of the tool. For example, if the user permits, the tool can access a domain directory (e.g., associated with the user's organization) to provide autocomplete functionality when transferring file ownership.

The tool queries a user's corpus for files to identify the files the user owns and displays a user interface with the files shown in a manner that highlights the permissions for the file along

with supplementary metadata such as file type, file name, modification date, parent folder, etc. Such data is obtained via the API by making a query for a listing of the user’s files and associated metadata fields. For example, file permissions can include “not shared,” “shared with specific users within the user’s organization,” “shared with all in the user’s organization,” “shared with specific users outside the organization,” “shared publicly via a link,” etc. The tool enables users to perform various tasks such as sorting and filtering files based on file name, modification date, file permissions, etc. or selecting one or more files and performing various actions on the selected files. Fig. 1 illustrates an example user interface.

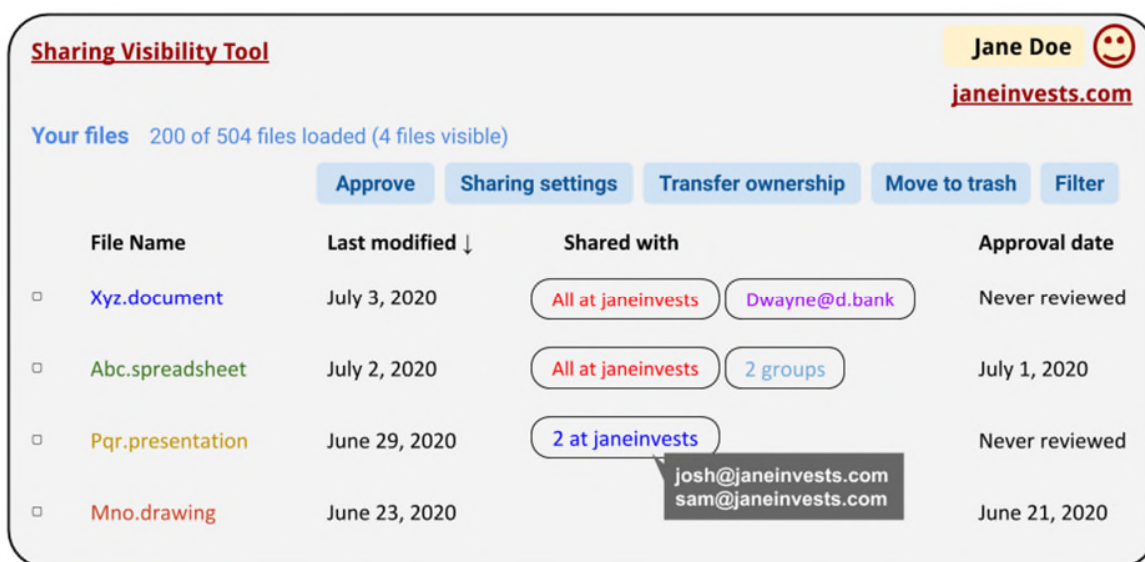


Fig. 1: User interface for sharing visibility tool

As can be seen in Fig. 1, the sharing visibility tool can provide a user interface that includes a header that shows the user’s files, including how many have been loaded (e.g., accessed by the tool). In the example of Fig. 1, the user interface is provided to the user “Jane Doe” that is associated with the organization “janeinvests.com.” As can be seen in Fig. 1, 200 files of a total of 504 files have been loaded. Further, the number of files that are currently

displayed in the user interface (e.g., that meet a search or filter criterion) is also shown (“4 files visible”).

The user interface includes a list of files and corresponding information such as the type of file, the last modified timestamp, a list of user accounts or groups that the file is shared with, and whether and when the file permissions were last reviewed. In the example of Fig. 1, the file “xyz.document” is a document that was last modified on July 3, 2020. The document is shared with all users in the user’s organization (“janeinvests.com”) and additionally with an outside user (“Dwayne@d.bank”). The user interface also shows that the permissions for this file have never been approved. Further, as seen for the file “Pqr.presentation” two users at the user’s organization, which are displayed via a tooltip that pops up when the user hovers over the indication “2 at janeinvests.” Tooltips are also provided if the last modified timestamp of a file is later than the approval date.

The user interface also includes various menu options for the user. For example, upon selecting one or more files the user can use the “Approve” option to approve the permissions for the file. In this example, a dialog box that shows all the selected files and corresponding permissions can be displayed along with an option for the user to selectively approve each file. As a result of this action, the corresponding files are marked as reviewed and an approval timestamp is written to a field in the file via the API. The timestamp represents the date and time at which the user has verified that the sharing permissions of the file are appropriate. This timestamp is displayed, e.g., as a “Reviewed” column in the user interface (UI) provided by the sharing visibility tool.

The user interface also enables a user to modify sharing settings via the “Sharing settings” option. For example, the user can:

- add, remove, and/or modify domain (e.g., file is accessible to users within the user's organization domain or to users outside the domain) and link sharing permissions (e.g., file can be accessed by anyone with a hyperlink that points to the file)
- add and/or remove group sharing permissions
- add and/or remove individual user sharing permissions
- add, remove, and/or modify file restrictions such as options to download, print, or copy the file; options to allow file editors to change access or add new people; etc.

The “Transfer ownership” option enables the user to transfer file ownership to another user within their domain, e.g., to another user in the same organization. For example, if the user permits access to the organization directory (or their address book), a file transfer dialog box can be provided that has autocomplete features, allowing the user to easily select another user account to transfer the selected file(s) to. The “Move to trash” option sends the selected file(s) to the user's trash within the online file sharing service. The “Filter” option enables the user to specify criteria to view files, e.g., “spreadsheets only,” “files shared outside of the organization,” “files that have not been reviewed,” etc.

Additional options can be provided to enable the user to download a file in a comma-separated values (CSV) file or other suitable format. The downloaded file includes file-related data that is visible within the sharing visibility tool. The downloaded file can be imported into any spreadsheet software for reporting or analysis.

The sharing visibility tool enables users to view and update file sharing settings in bulk. Such settings can include, e.g., whether to share with the entire organization or a particular group, whether to share the file via a link, etc. Users can also add or remove sharing permissions as well restrictions (e.g., restrictions on file operations such as downloading,

printing, copying, etc.), transfer file ownership, move files to trash, etc. in bulk. The tool can also allow users to view and undo actions performed via the tool. The tool also provides the users with a summary of file sharing statistics.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's files stored on a file storage and sharing service, a user's organizational directory, a user's address book, a user's preferences), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes a sharing visibility tool that enables users to see how their files are being shared via an online file sharing service and to manage file permissions individually or in bulk. With user permission, the tool utilizes application programming interfaces (APIs) provided by online file sharing services to access the user's files. The tool provides a user interface that enables users to view and modify file permissions, transfer file ownership, verify that file permissions have been audited, etc.