



# Seafile

## Seafile, what's new in 2022

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# Seafile Overview

## Seafile Cloud Storage

### Collaboration

✓Collaborative Editing

✓File Locking

### Full Platform

✓Windows, Mac, Linux

✓Web, Android, iOS

### Reliable

✓Reliable file syncing

✓Data integrity check

✓Used by millions

### Integration

✓LDAP, Shibboleth, OAuth

✓Restful API

### Usability

✓Drive Client

✓Windows Experience

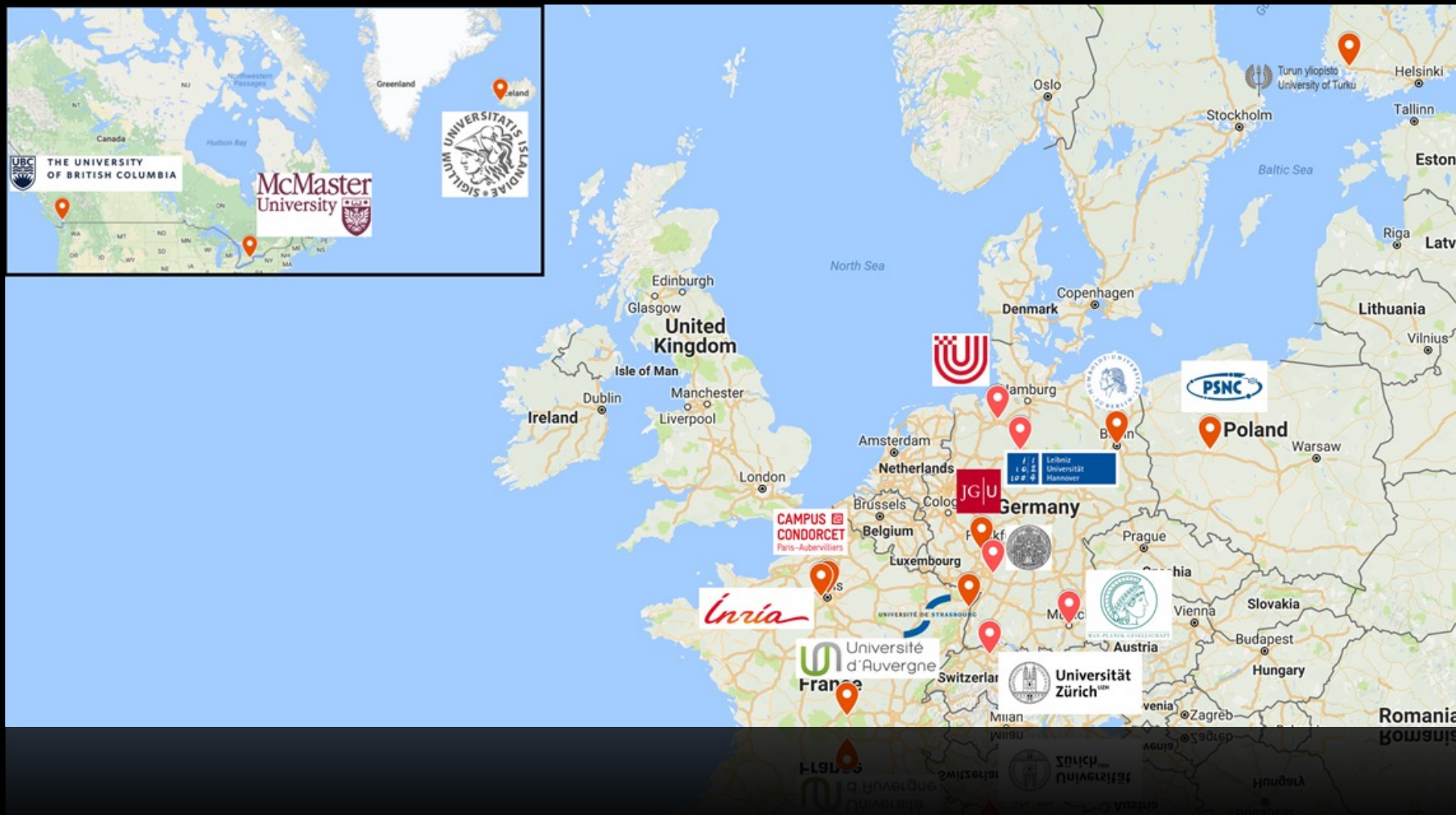
### High Performance

✓Sync 10k small files per minute

✓Low server loads

# Seafire Educational Users

- Europe
- Canada
- China



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**9.0 Version**

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## Seafile 9.0 – Improvements in 2022

- **Bug-fixes and performance improvements to Go fileserver**
- **Other improvements**

# Introduction to Go fileserver

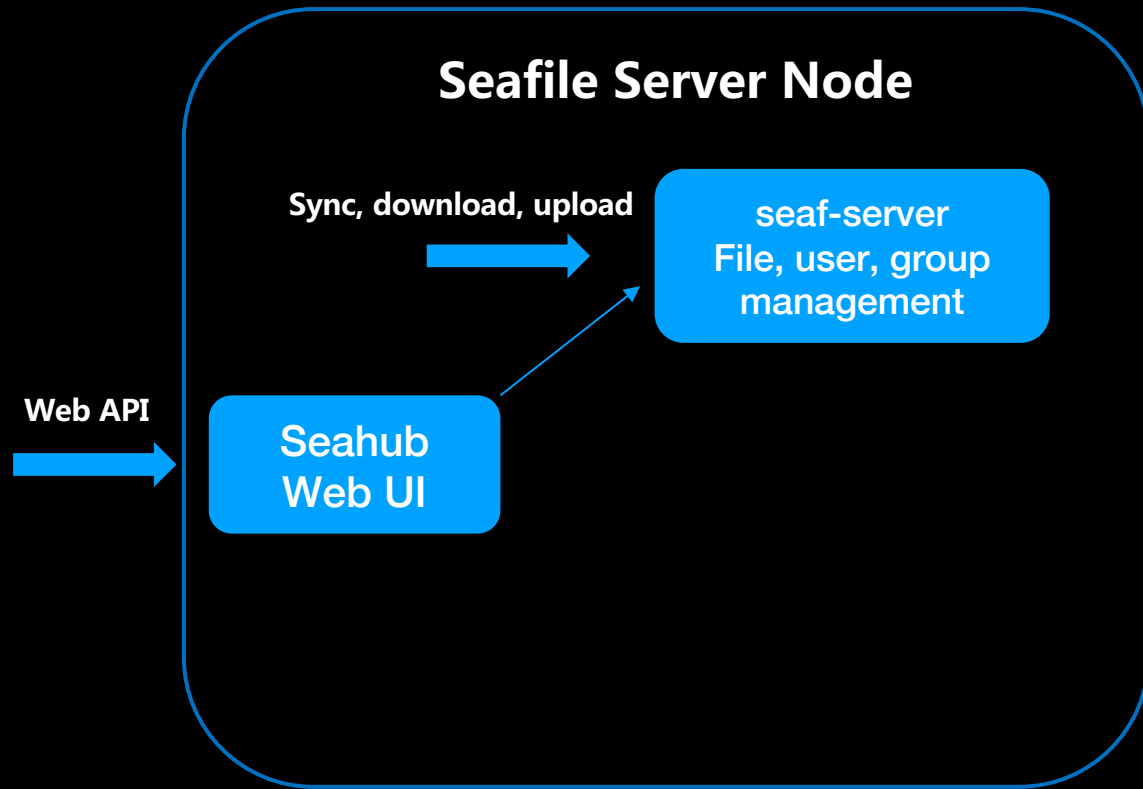
## What is file server?

- **File server is the component in seaf-server for file upload/download/ syncing**
- **It is part of seaf-server process, written in C language**

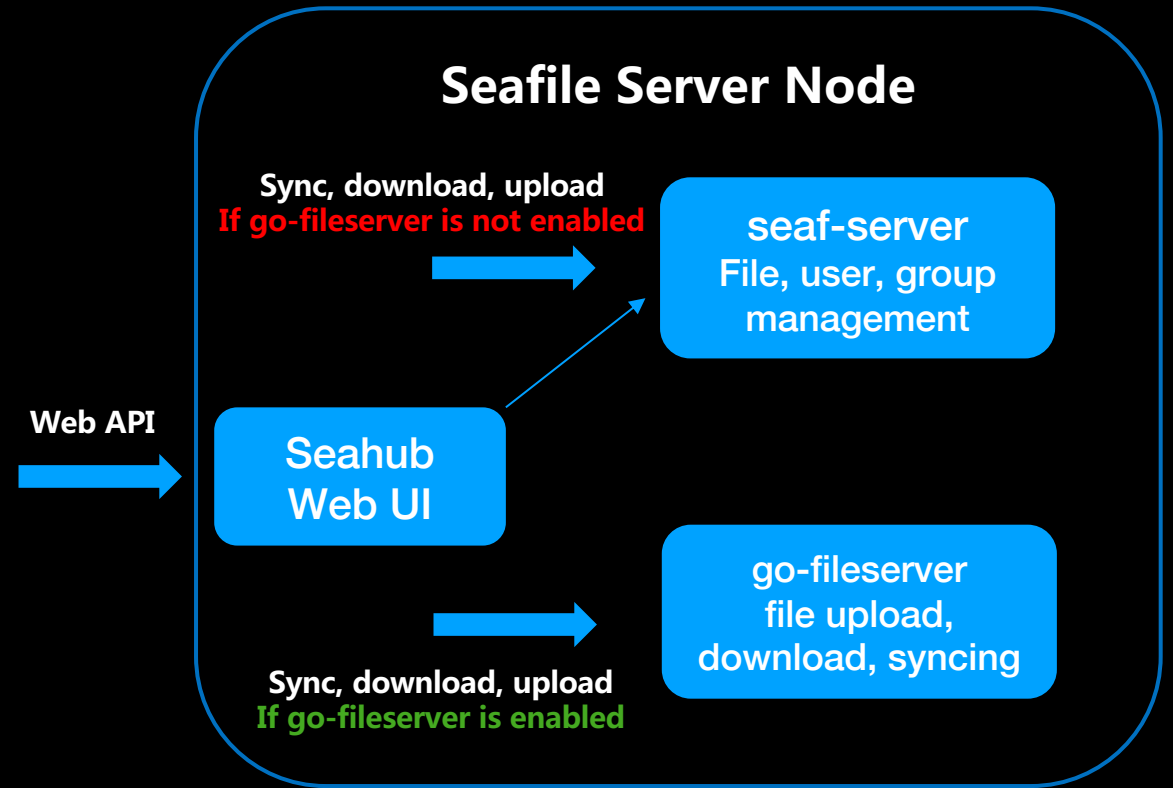
## Why rewriting in Go language?

- **Higher concurrency: no exhaustion of worker threads**
- **Syncing large libraries**
- **Chunked encoding for zip download of a folder**
- **Support rate limiting for file upload and download**
- **More secure and standard conforming http implementation**

# Architecture changes for go fileserver



8.0



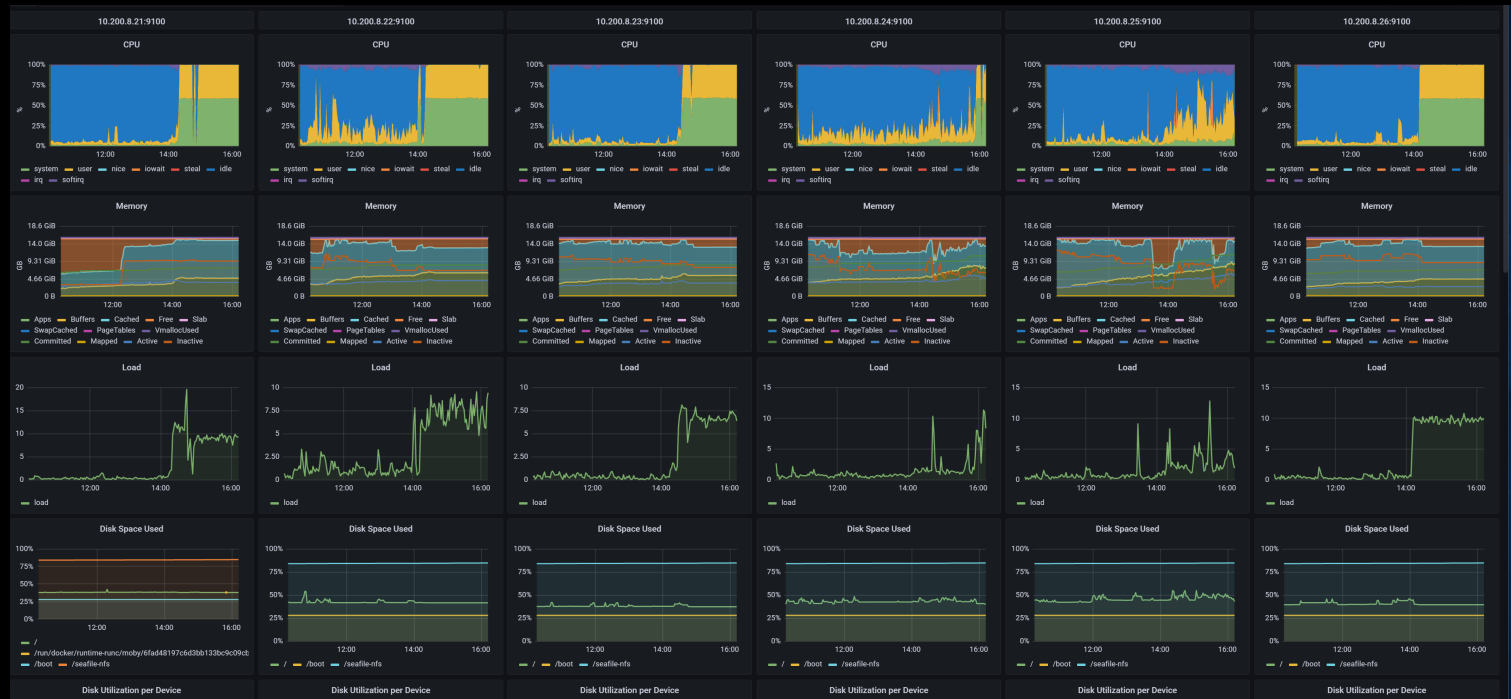
9.0



# Fixing performance issues for Go fileserver

- **Production system: 6-node cluster with 4-core 8GB RAM nodes. More than 20K users, many sync clients.**
- **P1: 100% CPU load, 50% by system, high ctx switch number**
- **P2: TCP out of memory**
- **P3: lots of request timeout errors**

## System Load when running Go fileserver



# Fixing performance issues for Go fileserver

## Cause Analysis

- Seafile needs to allocate and release many small JSON objects frequently. This makes GC in Golang very busy.
- Seafile uses Zlib to decompress fs objects. Every decompress operation allocates a new Zlib reader object. Somehow the Zlib library allocates a lot of small memory objects.
- Objects are not closed when we use object storage access library, causing leakage of sockets.
- Go allows for too many concurrent requests. It causes a lot of context switches. It could cause performance issues on not-so-powerful servers.

# Fixing performance issues for Go fileserver

## Solutions

- Reuse Zlib reader objects, to avoid frequent re-allocation
- The same JSON objects (fs objects) will be parsed from string for many times. Use a cache to avoid redundant creation of JSON objects.
- Close objects after accessing object storage.
- Limit the concurrency of frequent requests. (C fileserver only allow 10 concurrent requests by default.)

## Take aways

- Avoid frequent object allocation and release in Go
- High concurrency can cause performance issues if your task is not only doing I/O

## **Other Improvements**

- **Add cache for get locked files API**
- **Fix some OCM sharing bugs**
- **Avoid creating many conflict files with highly concurrent uploads**
- **System admin can search libraries by ID**
- **Add pagination for syncing errors in system admin panel**
- **Multi-tenant admin panel improvements: importing users, usage statistics, device management**
- **White-list for uploading file types**

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## Seafile 10.0 Features

- **Notification server**
- **OCM: Access Seafile shares from NextCloud**
- **Watch libraries and receive notification on updates**
- **Multi-tenancy: configure SAML login for each tenant**
- **UI enhancements: colors, alignments, interactions**
- **Upgrade 3<sup>rd</sup> party components: NodeJS, libraries, WebDav, ElasticSearch**

## Notification Server

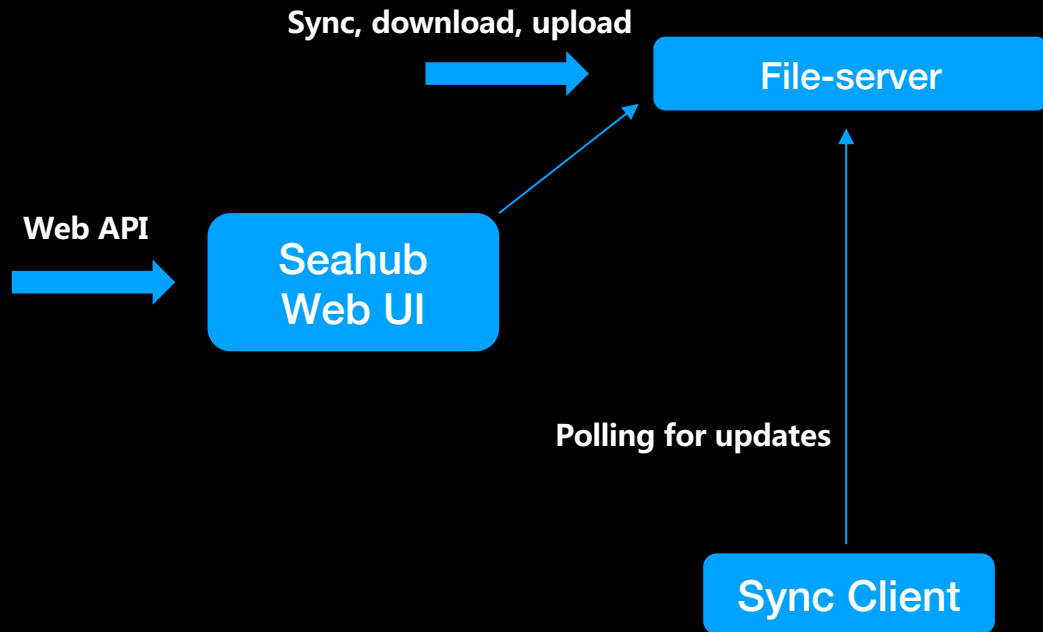
### What is notification server?

- A server component that sends notifications to clients via websockets, when libraries are updated, files are locked, folder permissions are changed
- A separate process implemented in Golang

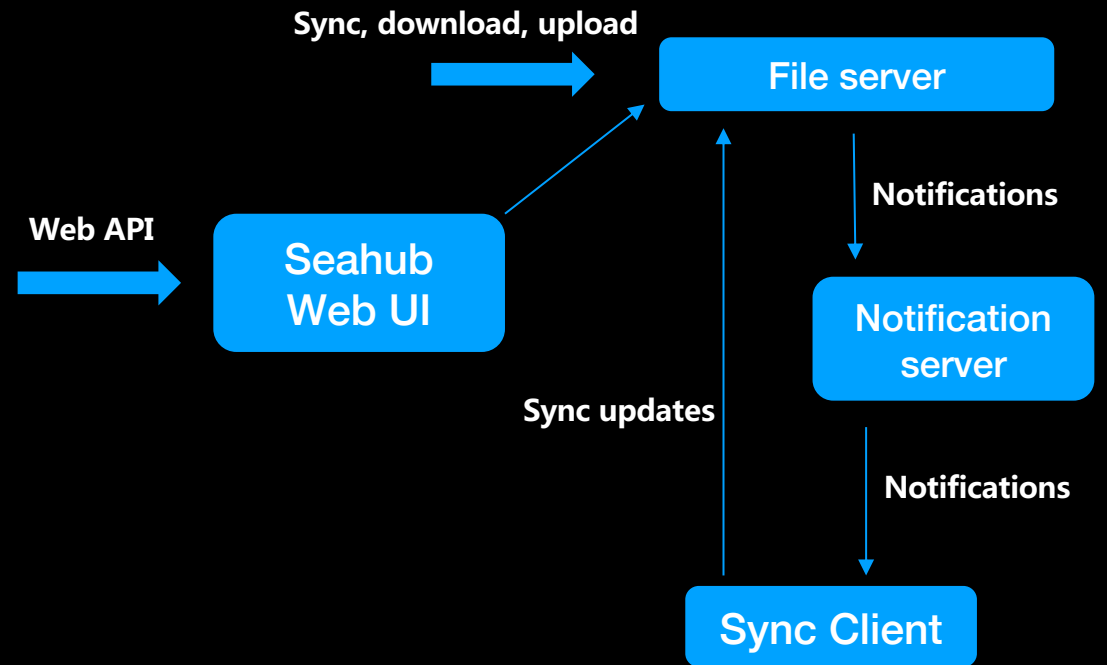
### Why do we need it?

- More timely sync
- More timely file locking status update (web and clients)
- Poll requests add more loads on the server

# Architecture for notification server



9.0



10.0



# OCM: Connecting to NextCloud

Share **My Library**

Share Link

Upload Link

Share to user

Share to group

Custom sharing permissions

Share to Nextcloud server

Server	User ID
nextcloud seafile top	seafile

Submit

Waiting for accepted

- Folders and files in NextCloud can be shared to Seafile server, and vice versa
- NextCloud uses webdav protocol to access folders and files from Seafile
- WIP: Still some issues to be fixed when getting contents from Seafile

All files

Recent

Favorites

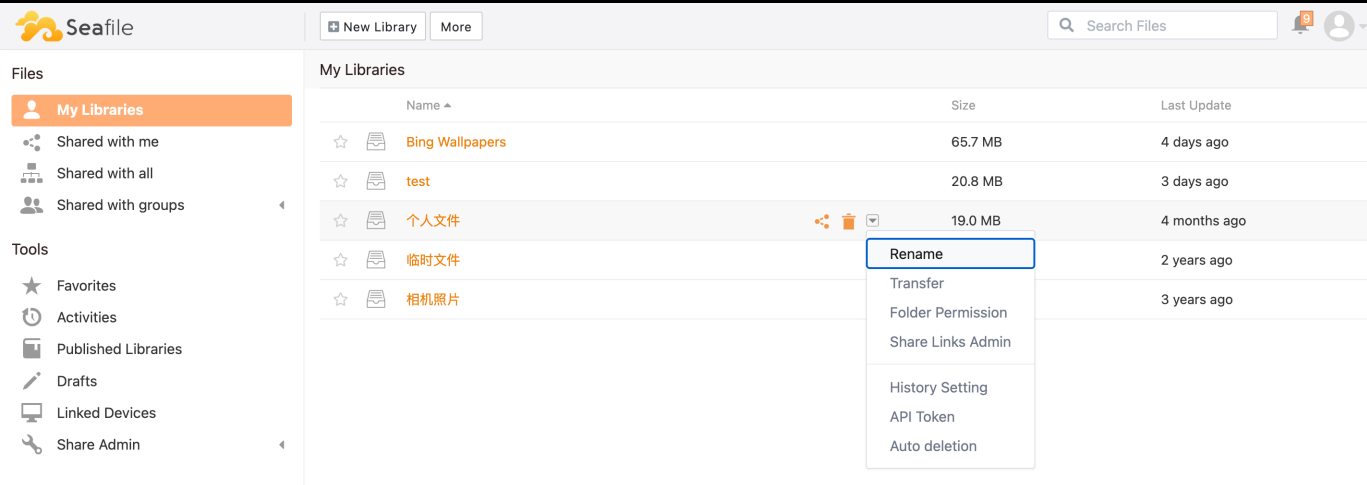
Shares

Tags

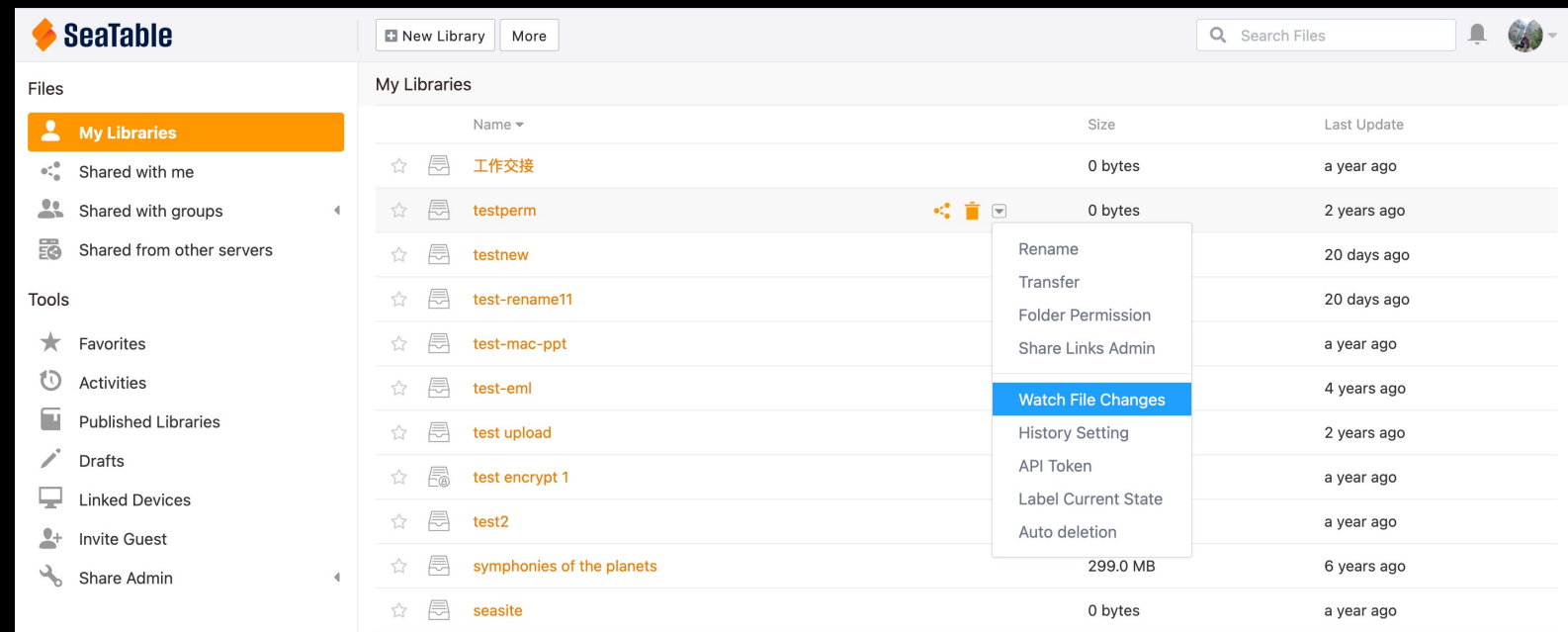
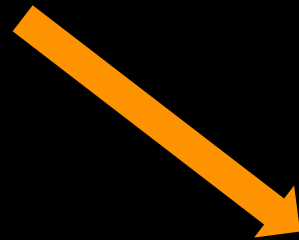
Name	Share time
users.xlsx	24 days ago
lian folder on demo.seafile.top	seconds ago
folder on demo.seafile (5).top	seconds ago
folder on demo.seafile (4).top	seconds ago

Shared by lian@demo.seafile.top/

# UI enhancements



- Colors become brighter
- More room between elements



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# SeaDrive for Windows

## Updates to 2.0.x

- Add mechanisms to prevent a placeholder file from becoming invalid
- Always don't remove cache folder when logout/remove account
- Add events.log to help debug sync issues
- Add confirmations when removing many files at once

## 3.0 version features

- Syncing multiple accounts at the same time
- Support notification server

# SeaDrive 3.0 for macOS

## Rewrite SeaDrive with File Provider API

- 2.0 version depends 3<sup>rd</sup> party kernel extension (macFuse)
- File Provider API will become the standard (Dropbox, OneDrive)
- Some incompatibility issues with other software (e.g. Powerpoint)

## How it works (currently Beta)

- Syncing daemon works as file provider extension for main GUI
- Folders are fetched from server on-demand
- Image thumbnails and context menus works out of the box
- Support syncing multiple accounts at the same time
- Auto locking of office files cannot be supported

## **Plans for 2023**

### **Seafile Server**

- **Improve identity management for users**
- **Improve notification server and go fileserver**
- **Upgrade to Django 4.0 and support Redis as cache**
- **Support turn on/off full-text search for each library**
- **Create more than one links for a folder/file**

### **Seafile Clients**

- **Improve SeaDrive 3.0 for macOS and make it production ready**



**THANKS**

# KEEP CONTACT

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