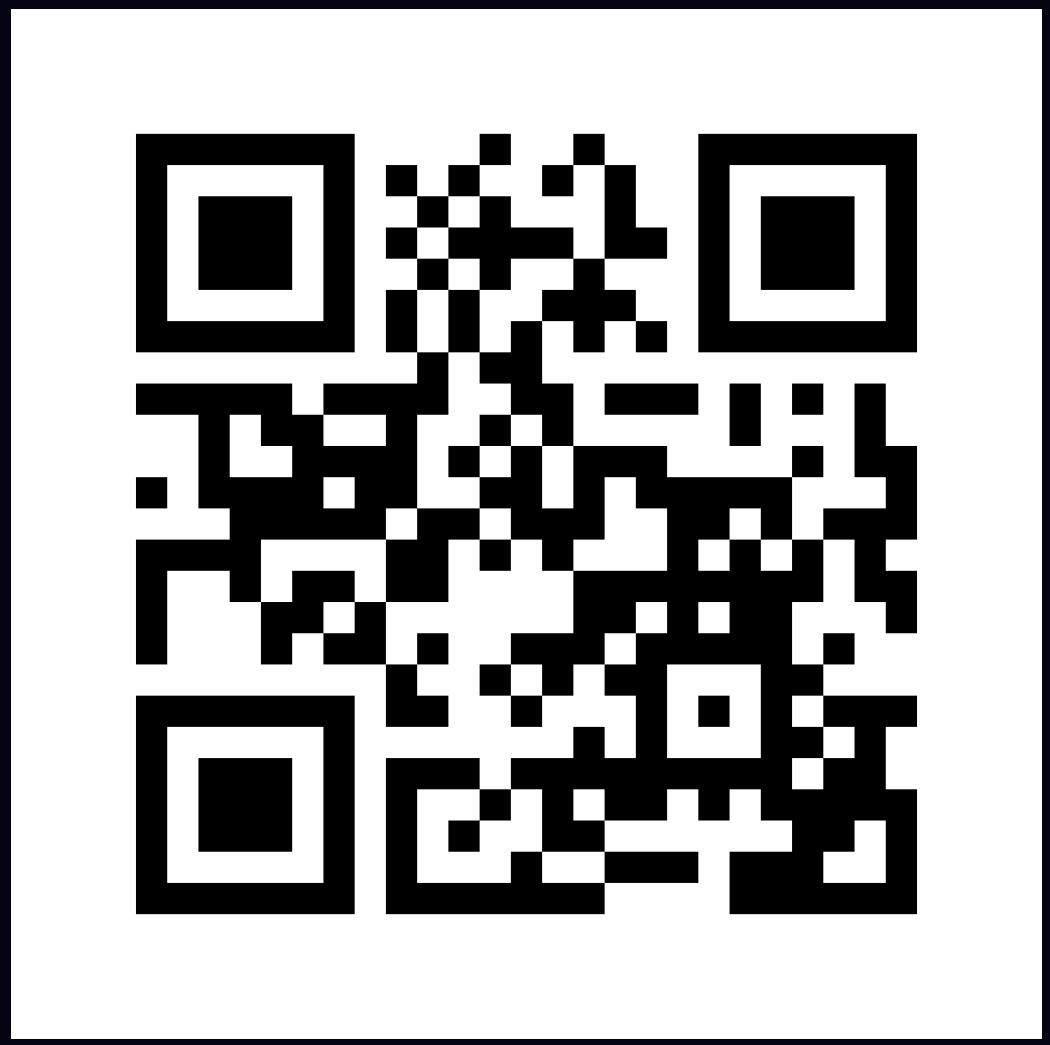
Obnam backup software

2026-11 at minidebconf in Cambridge

Lars Wirzenius



liw.fi/2026-minidebconf

What is Obnam currently?

In development.

Can kind of make a backup and restore it.

You'd be mad if you tried to use it for real.

What is Obnam going to be?

- easy, convenient
- fast
- encrypted, signed backups
- deduplicated data
- flexible
- secure

Obnam will be the best backup program the world has ever seen.

For values of best that I get to define.

Why Obnam?

Why I am building Obnam

- can't stop thinking about backup implementation
- interesting technical problems
- need one myself
  - not satisfied with existing software

Why you might care about Obnam

- want something better than what you currently have?

History

- 1984 first time using computers
  - two floppies

- 2004 hard drives for backup storage
  - hackety hack, this easy, Python is nice

- 2006 Obnam, Braawi
- 2011 Obnam 1.0
- 2017 sunset Obnam 1
  - no longer fun
  - retro: do not cut corners when developing, build a strong foundation

- 2018 I will never work on backup software again
  - I'm done with Python, Rust is nice

- 2020 Obnam 2
- 2022 cease work
  - no longer fun
  - I will never work on backup software again
  - retro: do not cut corners when developing, build a strong foundation

- 2024 Obnam 3
  - Sunday three hour sessions, for fun
  - built a foundation that I hope is strong
- 2026 giving first talk in public

Table stakes

- backup?
  - independent copy of primary data
  - if primary data changes, existing backup does not

- file data is split into chunks

- chunks are encrypted and stored in a repository
  - deduplication = store identical chunks only once
  - local repository accessed directly
  - remote repository via Obnam server using custom HTTP API

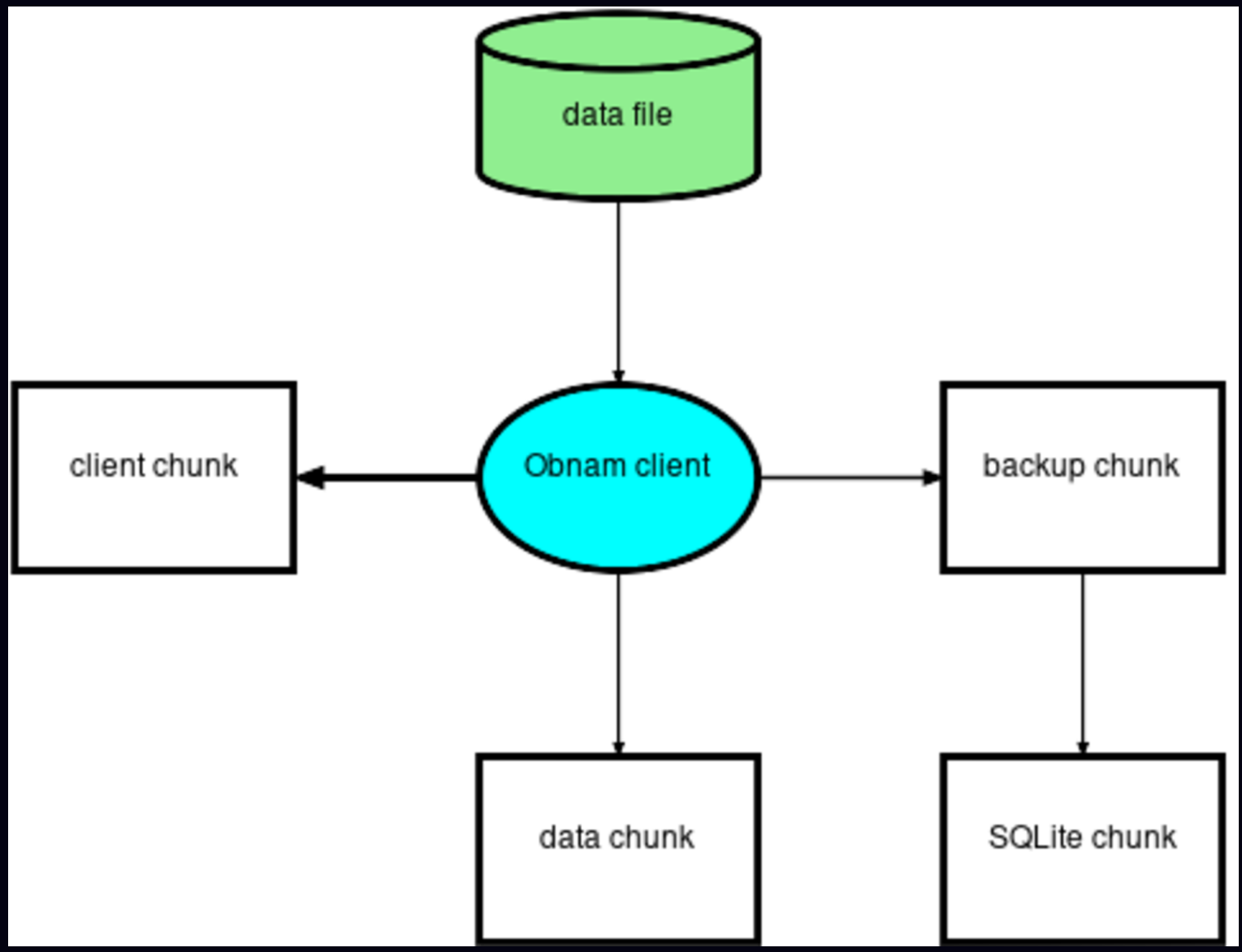
- clients may share repository and chunks
  - client decides about sharing

- encryption, authentication, deduplication of chunks on client only

- server is a passive storage location for chunks
  - deletion is decided by client only

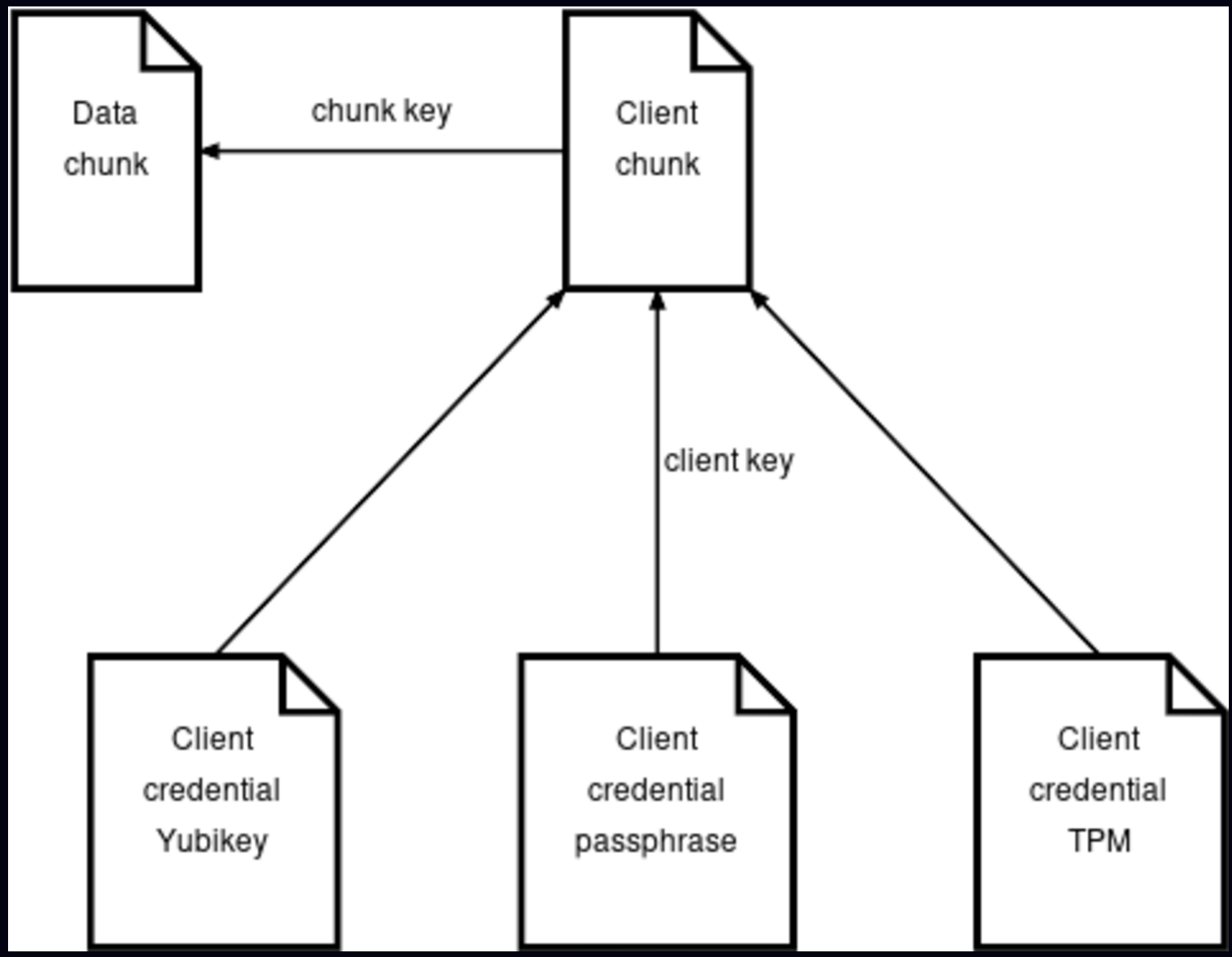
How

- split files into chunks
- deduplicate using cleartext checksum
- store chunks in repository
  - local file system API
  - remote via custom HTTP API
- store file list and metadata in an SQLite database
  - split into chunks, stored in repository
- store list of SQLite chunks in a special backup chunk
  - these can be found by chunk label



Cryptography

- Chunks encrypted with AEAD
  - also signs chunk
  - symmetric
  - have unique ID and non-unique label, chosen by client
  - label will be encrypted hash of cleartext data for data chunks
- Many chunk keys, stored in client chunk
- Client chunk encrypted using client key
- Client key encrypted, stored in credential chunk
  - OpenPGP, Yubikey, TPM, passphrase, ...



Status quo

- chunk encryption
- local and remote repositories
  - remote is HTTP API to files on server
  - API token for API access, specifies what client is allowed to: delete or not?
- can make a backup
  - `obnam backup start`
  - `obnam backup add my-important-file`
  - `obnam backup add my-other-file`
  - `obnam backup add ...`
  - `obnam backup finish`
- can restore a backup
  - `obnam restore ID /path/to/data`
- simplistic chunking
- no deduplication

This is not usable. But shows that most of the necessary ingredients are there.

Also a lot of "plumbing level" functionality, most of which will stay to enable future troubleshooting.

Future

- Recurse though directories
  - exclude using patterns
  - CACHEDIR.TAG

- Flexible chunking
  - content sensitive
  - file format specific
  - etc

- S3 for server storage
  - Obnam server gives client pre-signed URL
  - client transfers chunks directly to/from S3 server

- All file metadata

- Optional, user-controlled sharing of chunks

- FUSE file system: mount your backup to browse, restore selectively

- Benchmarks.
  - across Obnam versions
  - across other backup software

- Security audit(s)?
  - who will pay?

What do you want and need?

Community

Building things together for each other is fun.

- A community for Obnam
  - people with an interest in Obnam who want to nurture the software and the community
  - obnam.zulipchat.com
  - community building in progress
  - for now BD governance, will fix that as community grows

- All kinds of contributions welcome.
  - needs and wants
  - thank yous
  - testing, feedback
  - benchmarks
  - documentation
  - community meta work
  - security review
  - code

But please, without LLMs or generative AI.

- subplot.tech/genai

Fin

- Do you want a really good backup program?
  - Help me. Join the Obnam community.
- obnam.org
- To try: obnam.deb on apt.liw.fi
  - or Git clone source repository and build locally with Rust
  - will publish releases on crates.io when they happen

Thank you, questions?