BorgBackup Deduplicating backups

START HERE

`borg init -e repokey <repo>`
Create an encrypted repo

`borg extract <repo>::<archive>`
Restore into current dir

`borg create --stats <repo>::<archive> <path>`
Back up a path

`borg prune --keep-daily 7 <repo>`
Apply retention

`borg list <repo>`
List archives

`borg compact <repo>`
Free the disk space

`borg list <repo>::<archive>`
List files in one archive

`borg key export <repo>`
Back up the key

Files your data → `create` **Archive** deduplicated, encrypted → `prune` **Deleted archive** space still used → `compact` **Space freed** repo shrinks

CONCEPTS

Set BORG_REPO and BORG_PASSCOMMAND once; then use :: instead of the repo path (borg create ::<archive> <path>).

Every archive looks like a full backup, but identical chunks are stored once, so later runs are small and fast.

Lose the key or passphrase and the data is gone. Keep a key export and the passphrase outside the repo and the backed-up machine.

REPOSITORY

`borg init -e <mode> <repo>`
Create a repository
The mode cannot be changed later. repokey is the usual default; keyfile keeps the key only in ~/.config/borg/keys.

`borg init -e repokey-blake2 <repo>`
Encrypted, BLAKE2 auth (no SHA hardware)

`borg init --append-only -e repokey <repo>`
Repo that clients cannot shrink

`export BORG_REPO=<repo>`
Default repository

`export BORG_PASSCOMMAND="<cmd>"`
Get the passphrase from a command

`export BORG_PASSPHRASE=<passphrase>`
Passphrase from the environment
Wins over BORG_PASSCOMMAND; visible to the process environment.

`ssh://<user>@<host>:<port>/<path>`
Remote repository URL

`export BORG_RSH="ssh -i <key>"`
Custom ssh command

`borg info <repo>`
Repository size and encryption

`borg key export <repo> <file>`
Back up the key

`borg key change-passphrase <repo>`
Change the passphrase

CREATE

`borg create <repo>::<archive> <path>...`
Back up paths into a new archive

`borg create --stats --progress <repo>::<archive> <path>`
Show statistics and progress

`borg create --list --dry-run <repo>::<archive> <path>`
Preview what would be stored

`borg create ... <repo>::{hostname}-{now:%Y-%m-%d} <path>`
Name archives by host and date

`borg create -e '<pattern>' ...`
Exclude matching paths
Not like tar: use '/dir' to match a nested dir anywhere.*

`borg create --exclude-from <file> ...`
Read excludes from a file

`borg create --exclude-caches ...`
Skip dirs with CACHEDIR.TAG

`borg create --exclude-if-present <name> ...`
Skip dirs holding a marker file

`borg create -x ...`
Stay on one filesystem

`borg create -C zstd,6 ...`
Choose compression

`borg create --patterns-from <file> ...`
Include/exclude rules from a file

Pattern styles

Prefix	Meaning
`fm:`	shell-like, default for --exclude
`sh:`	like fm, ** crosses dirs, * does not
`re:`	regular expression, substring match
`pp:`	path prefix, dir and contents
`pf:`	exact full path

`- <pattern>`
Patterns file: exclude

`+ <pattern>`
Patterns file: include

BROWSE AND RESTORE

`borg list <repo>`
List archives

BROWSE AND RESTORE (cont.)

`borg list <repo>::<archive>`
List files of an archive

`borg list --short <repo>::<archive>`
Only paths

`borg list --last <n> <repo>`
Only the newest archives

`borg list -a '<glob>' <repo>`
Filter archives by name

`borg info <repo>::<archive>`
Archive details and size

`borg extract <repo>::<archive>`
Restore everything into current dir
Always writes below the current directory: cd first.

`borg extract <repo>::<archive> <path>`
Restore only one path
Paths have no leading slash, as listed.

`borg extract --dry-run --list <repo>::<archive>`
Check a restore without writing

`borg extract --strip-components <n> ...`
Drop leading path elements

`borg mount <repo>::<archive> <dir>`
Mount an archive via FUSE

`borg mount <repo> <dir>`
Mount all archives

`borg umount <dir>`
Unmount

`borg diff <repo>::<archive1> <archive2>`
Compare two archives

RETENTION AND UPKEEP

`borg prune -v --list --dry-run <keep-options> <repo>`
Preview pruning

`borg prune --keep-daily 7 --keep-weekly 4 --keep-monthly 6 <repo>`
Apply a retention policy

`borg prune --keep-within 10d <repo>`
Keep everything from the last 10 days

RETENTION AND UPKEEP (cont.)

`borg prune --keep-yearly <n> <repo>`
Keep yearly archives

`borg prune -a '{hostname}-*' ... <repo>`
Only touch one host's archives
Without -a every archive in the repo is a candidate.

`borg compact <repo>`
Free space after prune/delete

`borg delete <repo>::<archive>`
Delete one archive

`borg check <repo>`
Verify repo and archive consistency

`borg check --verify-data <repo>`
Full cryptographic check, slow

COMMON OPTIONS

`-v / --info`
More output

`--progress`
Show progress

`--show-rc`
Print the exit code

Exit codes

Code	Meaning
`0`	success
`1`	warning, check the log
`2`	error
`128+N`	killed by signal N

Exit code 1 is a warning (for example a file vanished during backup); the archive is still created.

RECIPES

Daily backup script

```
export BORG_REPO=ssh://
<user>@<host>/<path>
export BORG_PASSCOMMAND="cat
<passfile>"
borg create --stats -C zstd -x \
  ::'{hostname}-{now:%Y-%m-%d}'
~ --exclude '*/.cache'
borg prune --keep-daily 7 --
keep-weekly 4 --keep-monthly 6 \
  -a '{hostname}-*'
borg compact
```

Restore one directory

```
mkdir /tmp/restore && cd /tmp/
restore
borg list ::<archive> | head
borg extract ::<archive> home/
<user>/Documents
```