

Backup met BorgBackup

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Wiebenik

- Jaap Droogers
- Linux gebruiker sinds eind vorige eeuw
- LaptopReviver (met al 4 laptops...)
- (Java) programmeur, sinds april met pensioen
- Woon in Huizen

Back-ups

- Nog nooit iets kwijtgeraakt?
- Er zijn drie dingen belangrijk bij systeembeheer
 - 1) Backups
 - 2) Backups
 - 3) Backups

Een goede backup

- Een goede backup is zo goed dat je nooit iets op papier hoeft te bewaren.
- Makkelijk
- Verschillende versies
- Verschillende media
- Is beveiligd
- Snel
- Offline
- Buiten de deur
- Voldoende
- Terugzetten`

Hoe

- cp
- rsync
- BorgBackup
- En vele anderen

Maar natuurlijk gescript en automatisch uitgevoerd!

rsync

```
rsync -va /home/jaap/Documents /home/jaap/temp
```

```
rsync -vae " $SSHOPT " --delete  
--exclude-from='nietbackup' /home $SERVER:${DEST}
```

Waarom Borg Backup

- Meerdere datums terug te halen
- Beveiligd
- Compressie
- Mount

Backups?

- **Repository** bevat nul of meer **archives**

Hoe dan

Installatie:

```
apt install borgbackup
```

Vorbereiding:

```
export BORG_PASSPHRASE="geheim"
```

`borg init --encryption=repokey ~/borg/bd`

IMPORTANT: you will need both KEY AND PASSPHRASE to access this repo!

Key storage location depends on the mode:

- repokey modes: key is stored in the repository directory.
- keyfile modes: key is stored in the home directory of this user.

For any mode, you should:

1. Export the borg key and store the result at a safe place:

`borg key export REPOSITORY encrypted-key-backup`

`borg key export --paper REPOSITORY encrypted-key-backup.txt`

`borg key export --qr-html REPOSITORY encrypted-key-backup.html`

2. Write down the borg key passphrase and store it at safe place.

borg key export ~/borg/bd ~/borg/encrypted-key-backup

cat ~/borg/encrypted-key-backup

```
BORG_KEY 061052ea494351b8a1edcc868891fa7fa4f0e5daff5c2740b98ab2824065112b
hq1hbGdvcm10aG2mc2hhMjU2pGRhdGHaAN4+ongPMt2yh2KCBkkTJyclonr0J925qzeex/
0i7YvmqVsCAi1+JNH1B0BeTuJhMLpDzNcLiXfpjZ+Hp4ZqAks0Gb7xr73GHI+IB9zuzCf1
sI1mg7hiuGkIuK2+nhAYK6MuzenEubIvUALSfAkS9u03++30yfWqBrFLol/29uD7moUXR9
CEtL3+pouj2A6C0njU1tXT4M0YFX/EZpjFkZHNmXBn/LjXHPRVYDGNgSU/skgmySbKIVm1
aTBGYJM5iwiSM5Hbtp+LuVHsabrYgC26uAPFaEtZLv4rbUmESG6kaGFzaNoAII2I19JnWJ
z51Zkk1AjoaRd3P8s/KNC9JzxsJFxA/71Qqm10ZXJhdGlvbnp0AAGGoKRzYWx02gAg0oPF
VfQdnIIXlV1qjp2xfYMr0c/KLzIiMwM/+1bSL7qndmVyc2lrbGcE=
```

Backup

- borg create ~/borg/bd/::Maandag ~/borg/docs
- borg create --stats ~/borg/bd/::Dinsdag ~/borg/docs

```
-----
Repository: /home/jaap/borg/bd
Archive name: Dinsdag
Archive fingerprint:
2ff5f326ea76257ebd4da026249018a0b9d79a6155a7331fc65cbaa63e845441
Time (start): Mon, 2026-10-05 16:54:02
Time (end):   Mon, 2026-10-05 16:54:02
Duration: 0.01 seconds
Number of files: 9
Utilization of max. archive size: 0%
```

```
-----
                                Original size      Compressed size      Deduplicated size
This archive:                   11.02 kB             7.82 kB                519 B
All archives:                   20.98 kB             14.61 kB               9.13 kB
```

```
                                Unique chunks      Total chunks
Chunk index:                     12                  22
-----
```

List

- `borg list ~/borg/bd/`

Repository: `/home/jaap/borg/bd`

Maandag Mon, 2026-10-05 16:53:19 [d66ab9e198c19fd64cabbeab252a6683d6]

Dinsdag Mon, 2026-10-05 16:54:02 [2ff5f326ea7625249018a0b9d79e845441]

Wijziging

- `echo "Nieuw bestand" > ~/borg/docs/nieuwbestand.txt`
- `echo "Extra regel" >> ~/borg/docs/file1.txt`
- `borg create ~/borg/bd::Woensdag ~/borg/docs`
- `borg diff ~/borg/bd::Maandag Dinsdag`
- `borg diff ~/borg/bd::Dinsdag Woensdag`

```
[ctime: Mon, 2026-10-05 16:20:31 -> Mon, 2026-10-05 17:04:50] [mtime: Mon,
2026-10-05 16:20:31 -> Mon, 2026-10-05 17:04:50] home/jaap/borg/docs
+28 B      -16 B [ctime: Mon, 2026-10-05 16:20:31 -> Mon, 2026-10-05
17:05:01] [mtime: Mon, 2026-10-05 16:20:31 -> Mon, 2026-10-05 17:05:01]
home/jaap/borg/docs/file1.txt
added      14 B home/jaap/borg/docs/nieuwbestand.txt
```

Naam archive

- `borg create ~/borg/bd/::{hostname}-{now}`
`~/borg/docs`
- `borg list ~/borg/bd`

Maandag	Mon,	2026-10-05	16:53:19	[fa337050139d7fcedd]
Dinsdag	Mon,	2026-10-05	16:58:21	[b4ce9222cb9f934218]
Woensdag	Mon,	2026-10-05	17:06:03	[da7ad99e2d33f6b631]
myron-2026-10-05T17:09:17	Mon,	2026-10-05	17:09:17	[1ceb1b8901e857503a]

Wat zit in archive

- borg list ~/borg/bd::Maandag

```
drwxrwxr-x jaap jaap      0 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs
drwxrwxr-x jaap jaap      0 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg
drwxrwxr-x jaap jaap      0 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/scripts
-rwxrwxr-x jaap jaap   941 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/scripts/demo.sh
-rwxrwxr-x jaap jaap   322 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/scripts/maakpresentaties.sh
-rwxrwxr-x jaap jaap 1224 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/scripts/demosetup.sh
drwxrwxr-x jaap jaap      0 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/presentatie
-rw-rw-r-- jaap jaap   146 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/presentatie/todo.md
-rw-rw-r-- jaap jaap   404 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/presentatie/qv-ik.png
-rw-rw-r-- jaap jaap 6262 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/presentatie/borgbackup.md
-rw-rw-r-- jaap jaap 1134 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/borg/presentatie/commandos.txt
-rw-rw-r-- jaap jaap    16 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/file1.txt
-rw-rw-r-- jaap jaap    16 Tue, 2026-10-06 16:28:43 home/jaap/borg/docs/file2.txt
```

Terugzetten

- `borg extract --list ~/borg/bd::Maandag`

```
home/jaap/borg/docs
home/jaap/borg/docs/borg
home/jaap/borg/docs/borg/scripts
home/jaap/borg/docs/borg/scripts/demo.sh
home/jaap/borg/docs/borg/scripts/maakpresentaties.sh
home/jaap/borg/docs/borg/scripts/demosetup.sh
home/jaap/borg/docs/borg/presentatie
home/jaap/borg/docs/borg/presentatie/todo.md
home/jaap/borg/docs/borg/presentatie/qr-ik.png
home/jaap/borg/docs/borg/presentatie/borgbackup.md
home/jaap/borg/docs/borg/presentatie/commandos.txt
home/jaap/borg/docs/file1.txt
home/jaap/borg/docs/file2.txt
```

Terugzetten

- `borg extract --list ~/borg/bd::Woensdag`

```
home/jaap/borg/docs/borg
home/jaap/borg/docs/borg/scripts
home/jaap/borg/docs/borg/scripts/demo.sh
home/jaap/borg/docs/borg/scripts/maakpresentaties.sh
home/jaap/borg/docs/borg/scripts/demosetup.sh
home/jaap/borg/docs/borg/presentatie
home/jaap/borg/docs/borg/presentatie/todo.md
home/jaap/borg/docs/borg/presentatie/qr-ik.png
home/jaap/borg/docs/borg/presentatie/borgbackup.md
home/jaap/borg/docs/borg/presentatie/commandos.txt
home/jaap/borg/docs/file1.txt
home/jaap/borg/docs/file2.txt
home/jaap/borg/docs/nieuwbestand.txt
```

Terugzetten, filter

- `borg extract --list ~/borg/bd::Maandag "sh:**/file?.txt"`

`home/jaap/borg/docs`

`home/jaap/borg/docs/file1.txt`

`home/jaap/borg/docs/file2.txt`

- `borg extract --list --exclude 're:docs/borg'`
`~/borg/bd::Maandag`

`home/jaap/borg/docs/file1.txt`

`home/jaap/borg/docs/file2.txt`

Mount

```
borg mount ~/borg/bd::Woensdag ~/borg/mount
```

```
borg umount ~/borg/mount
```

Delete

- `du -sh bd/`

152K bd/

- `borg delete -list ~/borg/bd::Dinsdag`

Deleting archive: Dinsdag Tue, 2026-10-06 17:16:30 [0fb46c1b9128d7ef1a3a80] (1/1)

- `du -sh bd/`

168K bd/

Compact

- `du -sh bd/`

168K bd/

- `borg compact -v ~/borg/bd/`

compaction freed about 64 kB repository space.

- `du -sh bd/`

104K bd/

Prune

- `list ~/borg/bd`

```
Maandag          Tue, 2026-10-06 16:28:45 [5eaa997852a0ec5ca7095b3a53b]
Woensdag         Tue, 2026-10-06 16:28:46 [e11f24b40fe2319fdda186fe980]
myron-2026-10-06T16:28:47 Tue, 2026-10-06 16:28:48 [79ce449ebb684a1a1c57cab4ece]
```

- `borg prune --list --show-rc --keep-daily 7 \`
`--keep-weekly 4 ~/borg/bd`

```
Keeping archive (rule: daily #1):          myron-2026-10-06T16:28:47 Tue, 2026-10-06 16:28:48 []
Pruning archive (1/1):                     Woensdag          Tue, 2026-10-06 16:28:46 []
Keeping archive (rule: daily[oldest] #2): Maandag           Tue, 2026-10-06 16:28:45 []
terminating with success status, rc 0
```

- `borg list ~/borg/bd`

```
Maandag          Tue, 2026-10-06 16:28:45 [5eaa997852a0ec5ca7095b3a53]
myron-2026-10-06T16:28:47 Tue, 2026-10-06 16:28:48 [79ce449ebb684a1a1c57cab4ec]
```

Prune

- Eigen voorbeeld

Keeping archive (rule: daily #1):	isel-2026-10-07T16:37:15	Wed, 2026-10-07 16:37:16	[]
Keeping archive (rule: daily #2):	isel-2026-10-04T15:55:21	Sun, 2026-10-04 15:55:27	[]
Keeping archive (rule: daily #3):	isel-2026-09-04T13:12:09	Fri, 2026-09-04 13:12:18	[]
Keeping archive (rule: daily #4):	isel-2026-09-03T08:00:09	Thu, 2026-09-03 08:00:10	[]
Keeping archive (rule: daily #5):	isel-2026-09-02T11:35:32	Wed, 2026-09-02 11:35:33	[]
Keeping archive (rule: daily #6):	isel-2026-09-01T13:23:01	Tue, 2026-09-01 13:23:02	[]
Keeping archive (rule: daily #7):	isel-2026-08-31T14:10:21	Mon, 2026-08-31 14:10:22	[]
Keeping archive (rule: weekly #1):	isel-2026-08-30T15:11:36	Sun, 2026-08-30 15:11:37	[]
Keeping archive (rule: weekly #2):	isel-2026-08-23T14:55:01	Sun, 2026-08-23 14:55:02	[]
Keeping archive (rule: weekly #3):	isel-2026-08-16T16:36:54	Sun, 2026-08-16 16:36:55	[]
Keeping archive (rule: weekly #4):	isel-2026-08-09T12:53:19	Sun, 2026-08-09 12:53:20	[]
Pruning archive (1/1):	isel-2026-08-02T14:38:13	Sun, 2026-08-02 14:38:14	[]
Keeping archive (rule: monthly #1):	isel-2026-07-31T10:16:38	Fri, 2026-07-31 10:16:39	[]
Keeping archive (rule: monthly #2):	isel-2026-06-30T09:41:03	Tue, 2026-06-30 09:41:04	[]
Keeping archive (rule: monthly #3):	isel-2026-05-31T16:59:22	Sun, 2026-05-31 16:59:23	[]
Keeping archive (rule: monthly #4):	isel-2026-04-30T20:35:10	Thu, 2026-04-30 20:35:11	[]
Keeping archive (rule: monthly #5):	isel-2026-03-31T12:02:00	Tue, 2026-03-31 12:02:02	[]
Keeping archive (rule: monthly #6):	isel-2026-02-28T13:02:10	Sat, 2026-02-28 13:02:12	[]

Tenslotte

- Test het terugzetten
- Neem verschillende schijven, usb-sticks e.d.
- <https://www.borgbackup.org/>
- <https://boerendroogers.nl/blog/02026-10-10-borg>

