

Unified Backup Strategy for Linux and Windows PCs

This guide captures the cross-platform plan discussed: one off-site location, encrypted repositories, bare-metal **and** file-level restores for every family computer.

1 Why Share an Off-Site Bucket?

Benefit	Detail
Lower cost	Storage providers bill by total GB, so pooling saves money. Restic/Kopia deduplicate <i>across hosts</i> , storing duplicate ISO/media blocks once.
Simpler admin	One credential, one monitoring dashboard, one retention policy.
Consistent tooling	Same backup commands on every machine; fewer restore procedures to remember.

2 Engine Options & Cross-Host Dedup

Tool	Runs on	Multi-host dedup?	Note
Restic	Linux, Windows, macOS	Yes (host tag)	Single binary, S3-native
Kopia	Linux, Windows, macOS	Yes	GUI + CLI, fast prune
Borg 1.x	Linux & <i>via</i> WSL on Win	No (one host per repo)	Borg 2 roadmap adds multi-host but not stable yet
Duplicati / UrBackup	All major OSes	Yes	Heavier SQL backend

Recommendation: use **Restic** or **Kopia** as the cross-platform engine.

3 Keeping Btrfs send/receive and Windows Backups in One Account

```
remote/
├─ restic-repo/           ← encrypted: Windows & Linux backups
└─ btrfs-snapshots/      ← raw send-receive streams (Linux only)
    ├─ laptop-aeon/
    └─ desktop-tw/
```

- Linux hosts push both:
- `btrfs send` snapshot streams to `btrfs-snapshots/...` (*bit-perfect history*)
- Same snapshot path to **Restic** for file-level restore/dedup.
- Windows hosts push **Restic** backups only (see §4 imaging tools).

Single **SSH** or **S3** credential covers both trees.

4 Bare-Metal Imaging on Windows

Tool	File-level browse	Full-disk restore	Licence status	Why it fits
Veeam Agent Free	✓ mounts <code>.vbk</code>	✓ Recovery Media ISO	Actively supported	Images are single large files → Restic handles them easily
Rescuezilla / Clonezilla	✓	✓	Open-source	Slower incrementals
Macrium Reflect Free	✓	✓	<i>Retired 2024</i>	New installs require paid licence

Chosen path: install **Veeam Agent Free** on each Windows PC, target the USB drive (NTFS side) and let Restic upload the `.vbk` files.

5 Daily Workflows

Linux Snapshot + Dual Push

```
# hourly.timer
btrfs sub snap -r /home /.snapshots/`date +%s`
# Send to off-site Btrfs tree
btrfs send -p LAST /.snapshots/$(date +%s) | \
  ssh backupbox "btrfs receive /remote/btrfs-snapshots/$(hostname)"
```

```
# File-level copy into Restic repo
restic -r /remote/restic-repo backup /.snapshots/$(date +%s) --tag $(hostname)
```

Windows Task Scheduler Snippet

1. Nightly Veeam incremental → D:\Backups .
2. Post-job script:

```
restic.exe -r X:\remote\restic-repo backup D:\Backups\*.vbk --host WIN-LAPTOP
```

6 Restore Cheat-Sheets

Scenario	Steps
Linux bare-metal (disk died)	Boot live ISO → <code>mkfs.btrfs /dev/nvme0n1</code> → <code>mount /dev/nvme0n1 /mnt</code> → <code>ssh backupbox 'btrfs send /remote/btrfs-snapshots/laptop/latest'</code> → <code>btrfs receive /mnt</code> → <code>grub-install</code> → reboot
Linux single file	<code>restic -r /remote/restic-repo mount /mnt/tmp</code> → copy file from <code>/mnt/tmp/snapshots/LAPTOP/...</code>
Windows bare-metal	Boot Veeam Recovery Media → point to <code>.vbk</code> via Restic FUSE (<code>restic mount</code>) or copy locally → wizard restores image
Windows single file	Mount <code>.vbk</code> in Veeam or browse Restic mount and copy needed file

7 Cost & Administration Summary

Layer	Tool / Provider	Cost (1 TB)	Hands-on time
Off-site	Hetzner Storage Box or Backblaze B2	€3.20 / mo (SSH) or \ \$6 / TB-mo (S3)	Key rotation & retention tweaks quarterly
Local USB	Btrfs + NTFS split	sunk cost	Scrub + SMART check monthly
Monitoring	<code>borgmatic check</code> , <code>restic check</code> , or Kopia's UI	negligible	Weekly cron + email

8 TL;DR Workflow

1. **Restic or Kopia** is the single cross-platform repository engine.
2. Linux adds **Btrfs send** for block-perfect history, stored alongside the Restic repository in the same account.
3. Windows uses **Veeam Agent Free** → Restic.
4. One credential, one bucket; both file-level and bare-metal restores covered for every device in the house.