# 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 *across hosts*, 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 & *via* 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 .vbk | ✔ Recovery Media ISO | Actively supported | Images are single large files → Restic handles them easily |
| Rescuezilla / Clonezilla | ✔ | ✔ | Open‑source | Slower incrementals |
| Macrium Reflect Free | ✔ | ✔ | *Retired 2024* | 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 → mkfs.btrfs /dev/nvme0n1 → mount /dev/nvme0n1 /mnt → `ssh backupbox ‘btrfs send /remote/btrfs-snapshots/laptop/latest’ | btrfs receive /mnt→grub-install` → reboot |
| **Linux single file** | restic -r /remote/restic-repo mount /mnt/tmp → copy file from /mnt/tmp/snapshots/LAPTOP/... |  |
| **Windows bare‑metal** | Boot Veeam Recovery Media → point to .vbk via Restic FUSE (restic mount) or copy locally → wizard restores image |  |
| **Windows single file** | Mount .vbk 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 | borgmatic check, restic check, 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.