Backup System Requirements (Priority List rev-11)

Must-have
1. **Prefer best-tested, proven tools & techniques** — default choice unless documented reason to diverge
2. Automatic local snapshots (hourly/daily).
3. Off-site copy (second USB or strongly-encrypted cloud) for full 3-2-1 coverage.
4. Btrfs subvolumes for logical separation (`@rootA`, `@rootB`, `@home`, `@snapshots`).
5. Boot continuity via the factory ESP on Disk 0.
6. Redundant ESP on Disk 1 kept in sync automatically.
7. Incremental send/receive replication to the USB backup disk.
8. Clear retention policies on both the internal and backup disks.
9. Automatic tolerance & catch-up for the USB disk (queue while away, flush on return).
10. Single shared 64-GB swap partition with safe `resume=` handling.
11. Monthly `btrfs scrub` with alerting.
12. Strong encryption for **all** backup targets.
13. Automatic health monitoring / push alerts (mail, SMS, etc.).
14. GitHub repository to store **all** docs, scripts, and timers.

Should-have
1. **Minimal configuration** — use distro defaults when they satisfy specs; document every deviation.
2. Per-subvolume quotas (qgroups).
3. Swing-space layout on the backup disk.
4. Convertible encryption path for the internal Linux disks.
5. Multi-machine sharing safeguards (per-host subvolumes & retention).
6. Inexpensive providers that still meet the strong-encryption rule.

Nice-to-have
1. Quarterly maintenance checklist.
2. Tool-set documentation (`tool-set.md`).
3. Provider anonymity / privacy extras.
4. GUI rollback tool **(prefer Qt over GTK)**.
5. Automated swing-space reclaim script.
6. Design notes include how well-tested / battle-proven each technique is.