// RUNBOOK LINUX X86_64 · INSTALL · HARDEN · OPERATE · PILOT

LINUX DEPLOYMENT & HARDENING GUIDE

Production installation of ODIN and SLEIPNIR on Ubuntu 22.04+ or Debian 12+ (x86_64, systemd). One script handles verification, the service account, file permissions, sandboxed services and licence installation. Re-running it upgrades in place and keeps everything ODIN has learned.

01 REQUIREMENTS

HOST

x86_64, 2 vCPU, 2 GB RAM, 5 GB disk. VM or bare metal. 4 vCPU / 8 GB recommended for 250+ units.

OS

Ubuntu 22.04 / 24.04 LTS, Debian 12, or any systemd distribution with glibc 2.35+.

NETWORK

Outbound HTTPS to the hosts in section 06. Miner VLAN reachable on TCP 4028 / HTTP. Nothing inbound.

VENUE KEYS

Orders and pools: view and manage. Wallet: view. **Withdrawals off**, IP allow-list on.

02 INSTALL

```
# download from https://asgardhashworks.com/download (signed release), then:
tar -xzf odin-suite-v1.8.2-linux-x64.tar.gz && cd odin-suite
sha256sum -c SHA256SUMS.txt                 # the installer checks this again
sudo ./install.sh                           # asks for API key, pool and licence
# air-gapped site with an offline licence file:
sudo ./install.sh --license-file your-farm.lic
# scripted rollout (fill /etc/odin-suite/odin.env afterwards):
sudo ./install.sh --non-interactive --no-start
```

#	WHAT INSTALL.SH DOES
1	Refuses to continue if any binary fails its SHA-256 check.
2	Creates the system account `odin` with no login shell.
3	Installs root-owned binaries to `/opt/odin-suite/bin` and a symlink `/usr/local/bin/odin`.
4	Writes `/etc/odin-suite/odin.env` (root:root 0600) with `DRY_RUN=1`, a random HUGINN key and HUGINN bound to loopback.
5	Installs an offline licence if given, prints the machine fingerprint and checks the licence as the service user.
6	Installs and enables the sandboxed `odin.service` and `sleipnir.service`.
7	Starts both in watch-only mode. If Tailscale is signed in, publishes HUGINN to the tailnet.

03 FILE LAYOUT & PERMISSIONS

PATH	OWNER · MODE	CONTENTS
/opt/odin-suite/bin/	root · 0755	`odin`, `sleipnir`: not writable by the service
/etc/odin-suite/odin.env	root · 0600	settings (secrets moved out by the sealing script)
/etc/odin-suite/credentials/	root · 0700	keys, TPM2-sealed with `systemd-creds`
/var/lib/odin-suite/odin/	odin · 0750	learned state, book recordings, `odin_audit.jsonl`, licence
/var/lib/odin-suite/sleipnir/	odin · 0750	`sleipnir.json` (your units), SLEIPNIR logs

04 THE SYSTEMD UNIT, AS SHIPPED

```
[Unit]
Description=ODIN Suite - ODIN execution engine
After=network-online.target tailscaled.service
Wants=network-online.target

[Service]
User=odin
Group=odin
WorkingDirectory=/var/lib/odin-suite/odin
EnvironmentFile=/etc/odin-suite/odin.env
ExecStart=/opt/odin-suite/bin/odin
Restart=always
RestartSec=5
UMask=0077

[Install]
WantedBy=multi-user.target
```

```
# sandboxing
NoNewPrivileges=true
ProtectSystem=strict
ProtectHome=true
PrivateTmp=true
PrivateDevices=true
ReadWritePaths=/var/lib/odin-suite/odin
ProtectKernelTunables=true
ProtectKernelModules=true
ProtectControlGroups=true
RestrictSUIDSGID=true
MemoryDenyWriteExecute=true
RestrictAddressFamilies=AF_INET AF_INET6 AF_UNIX
CapabilityBoundingSet=
```

`sleipnir.service` runs as the same account with `SLEIPNIR_HOME=/var/lib/odin-suite/sleipnir` and `LimitNOFILE=65535` for large fleets. Check the applied sandbox with `systemd-analyze security odin.service`.

05 SETTINGS THAT MATTER FOR A CONTROLLED ROLLOUT

SETTING (ODIN.ENV)	EFFECT	DEFAULT
DRY_RUN	1 = watch-only: reads everything, changes nothing. 0 = live (needs a licence and the venue switched to `live`).	1
ODIN_HARD_CEILING	Absolute maximum bid in BTC/EH/day, whatever the models say.	0.55
ODIN_MIN_MARGIN_PCT	Required margin over break-even before ODIN bids.	1
ODIN_MAX_ORDERS · ODIN_MAX_LIMIT_THS	Exposure caps: concurrent orders (1–50) and speed per order.	1 · 5000
ODIN_MAX_DAILY_LOSS_SATS	Cross-market daily loss kill switch; holds after restarts until `odin_KILLED.flag` is removed.	20000
ODIN_BUDGET_DAYS	How long the funds should last (budget pacing), 1–10.	7
ODIN_EMAIL_MAX_PER_HOUR	Summary e-mails per hour (1–12); profit windows, kill switch and failed stops always go at once.	2
ODIN_HUGINN_BIND	Listen address of the phone dashboard. Keep loopback; publish with Tailscale.	127.0.0.1

A number setting that isn't a number starts ODIN watch-only on every market. Check everything with `odin --doctor`; every option is documented in `docs/CONFIGURATION.md`. After editing: `sudo systemctl restart odin`.

06 NETWORK SEGMENTATION

```
# nothing to open inbound: HUGINN is loopback-only
sudo ufw default deny incoming
sudo ufw default allow outgoing
sudo ufw allow proto tcp from 10.20.0.0/24 \
  to any port 22
sudo ufw enable
# phone access over your tailnet only (HTTPS)
sudo tailscale serve --bg 8787
```

OUTBOUND HOST	NEEDED FOR
api2.nicehash.com	orders (always)
mempool.space	difficulty, rewards (always)
pool.kryptex.com	verified P/L
Braiins · MRR · Clore · Vast	only if switched on
asgardhashworks.com	signed upgrades
ntfy.sh · SMTP	alerts (optional)

07 30-DAY PILOT ROLLOUT

PHASE	ACTIONS	EXIT CRITERIA
Days 1–7 Shadow	Keep `DRY_RUN=1`. Add ASIC IPs to `sleipnir.json` (`kind asic`, `api IP:4028`). Let ODIN record the order book and learn.	Every unit polled with no gaps; the "would have earned" counter and audit ledger fill; `--verify-audit` passes.
Days 8–14 Capped live	Tight `ODIN_HARD_CEILING`, `ODIN_MAX_ORDERS=1`, small `ODIN_MAX_LIMIT_THS` and loss cap; `odin --market nicehash live`; `DRY_RUN=0`.	Orders park above break-even, raises stay step-limited, verified P/L tracks the model within calibration.
Days 15–30 Scale	Raise caps to the pilot allocation. Run `odin --optimize` weekly. Ship `odin_audit.jsonl` to your SIEM.	Verified P/L report, OUTBOUND report and audit ledger delivered and reviewed against the pool baseline.

08 DAILY OPERATIONS

```
# live console and status
sudo journalctl -u odin -f -o cat ;  systemctl status odin sleipnir
# version, licence, machine fingerprint (for an offline licence), full settings check
odin --version ;  sudo -u odin odin --license ;  odin --fingerprint ;  sudo -u odin odin --doctor
# prove the decision history is intact
sudo -u odin odin --verify-audit /var/lib/odin-suite/odin/odin_audit.jsonl
# quant desk report and walk-forward tuning from your own recordings
cd /var/lib/odin-suite/odin && sudo -u odin odin --quant-report odin_book_*.jsonl
sudo -u odin odin --optimize && sudo systemctl restart odin
# need us? e-mails diagnostics (never keys, balances or addresses)
odin --support
# kill switch tripped? read why, then clear it
sudo cat /var/lib/odin-suite/odin/odin_KILLED.flag
sudo rm /var/lib/odin-suite/odin/odin_KILLED.flag && sudo systemctl restart odin
```

09 SECRETS AT REST

On Linux, ODIN reads its secrets from systemd encrypted credentials. Nothing secret stays in plain text on disk, and only `odin.service` sees the decrypted values, in a private in-memory directory that disappears when the service stops.

```
curl -fsSLO https://asgardhashworks.com/deploy/linux/odin-seal-secrets.sh
sudo bash odin-seal-secrets.sh --dry-run      # lists what it would seal, changes nothing
sudo bash odin-seal-secrets.sh --restart      # seal to TPM2 + host key, then restart odin
```

Every API key, secret, password and alert token in `odin.env` is encrypted with `systemd-creds`, each value proven to decrypt before the plain copy is removed, and `odin.service` gets `LoadCredentialEncrypted=` lines. ODIN's start-up line confirms "N secret(s) from systemd encrypted credentials". Needs systemd 250+; keep `/etc` on an encrypted volume.

10 LOGS AND SIEM

ODIN_AUDIT.JSONL

Hash-chained JSON lines: every event and decision with order state. Point Loki, Splunk or Elastic at the file.

JOURNALD

The live console and errors: `journalctl -u odin -o json` for structured export.

ODIN_EVENTS.LOG

Human-readable event history, one line per event, mirroring the alerts.

11 UPGRADE AND REMOVAL

```
# upgrade: download the new signed release, unpack it and run its installer (settings and learned state are kept)
sha256sum -c SHA256SUMS.txt && sudo ./install.sh
# remove services and binaries, keep settings and state / remove everything
sudo ./uninstall.sh          sudo ./uninstall.sh --purge
```

12 NEW FOR OPERATORS SINCE 1.6

SIGNED RELEASES · 1.8.0

Every release's `SHA256SUMS.txt` is Ed25519-signed by the Asgard release key, kept offline. Releases are published only at asgardhashworks.com/download; the upgrader refuses anything we didn't sign.

FIVE VENUES, ONE HOLD · 1.6.4–1.6.5

Braiins, MRR, Clore and Vast trade live behind per-venue switches. Watch-only and the kill switch hold all of them; a trip also stops running GPU rentals.

VALIDATED SETTINGS · 1.8.0

Every number setting is range-checked where it is read; anything unreadable starts ODIN watch-only. `odin --doctor` lists problems before you go live.

QUIETER ALERTS · 1.8.1

At most two summary e-mails an hour; profit windows, the kill switch, low funds and failed stops are always sent at once. Phone push is unchanged.

Orders already placed keep running on the venue until you cancel them there. Support and pilot tuning: **steve@asgardhashworks.com** · releases and checksums: **asgardhashworks.com/download**