

SL

MATRIX

Sebiu Labs

Package **ndi-router**Version **0.1.0** · build d7017adIssued **2 Jul 2026**

sebiulabs.co.uk

SOFTWARE NDI® ROUTER · PRODUCT DATA SHEET

SebiuLabs Matrix for NDI®

Route any NDI source to any destination, preview with audio metering, and run your facility's NDI Discovery / Access server — one small binary, no video through the box.

Crosspoint Matrix

Single-stream Preview

Discovery / Access Server

Distribution Amplifiers

Failover · HA

SW-P-08 · Videohub · TSL

~0%

CPU PER ROUTE

NDI routing redirect carries no video through the box — dozens of destinations cost almost nothing.

32×64

MATRIX (STANDARD)

32 inputs × 64 outputs on Standard; **unlimited** on Pro. One decode slot for preview.

3-in-1

DEPLOY MODES

Docker appliance, self-installing Linux ISO, or Windows service — same build.

OVERVIEW

1 What it is — in plain terms

SebiuLabs Matrix for NDI is a software video router. On an NDI network, many devices *send* video (cameras, playout, vMix, OBS) and many *receive* it (monitors, recorders, switchers). SebiuLabs Matrix lets one operator connect **any source to any destination** from a web browser — the software equivalent of a broadcast crosspoint router, with no patch cables and no dedicated routing hardware.

- **Routing is near-free.** NDI's routing redirect points each destination's subscribers straight at the chosen source — no video passes through the box. Near-zero CPU and bandwidth, instant switches, no re-encoding or quality loss.
- **Preview is the only video it decodes** — one source at a time, low bandwidth, so memory stays flat.
- **Also an NDI Discovery / Access server** — runs the Discovery Server on `:5959` and manages Groups, external sources, and nicknames for the whole LAN.

Standard

£150 one-time

A complete facility router with fixed capacity — a **32 × 64** matrix (32 sources, 64 outputs) and **4** distribution-amplifier / audio channels. Full routing, preview, and discovery / access server included.

Pro **EVERYTHING UNLIMITED**

£450 one-time

Unlimited matrix size and **unlimited** amplifier / audio channels — no 32×64 or 4-channel caps at all. **Adds** failover & box-HA redundancy, processor nodes (spread work across extra VMs), and broadcast router-control integrations (SW-P-08 · Videohub · TSL UMD).

2 At a glance

Function	N×M NDI matrix router + single-stream preview + NDI Discovery/Access server	Discovery	mDNS (zero-config) or managed Discovery Server on :5959 (redundant primary+backup)
Routing engine	NDI native routing redirect (<code>NDILib_routing</code>) — zero video through box	Distribution Amps	Receive-once / re-serve-many · audio mux · remux · multichannel mix · breakaway
Matrix size	Standard 32 in × 64 out · Pro unlimited	Router control	SW-P-08 (Pro-Bel/Snell) · Videohub (Blackmagic) · TSL 3.1 UMD · vMix tally PRO
Preview	One Low-bandwidth receiver · JPEG / MJPEG / WebSocket · audio meter bridge	Resilience	Per-source failover · box-HA standby · processor nodes PRO BETA
Control API	REST + WebSocket on port 8088 (Windows: 9943 internal, 443 via Caddy)	Auth	none / bearer token / bcrypt users + HMAC session · 10-fail IP lockout
Runtime	Single Rust binary · Docker (host networking) · ~512 MB RAM comfortable	NDI runtime	Bundled <code>libndi</code> (redistributed under NDI SDK licence)

3 Editions & pricing

Capability	Standard	Pro
One-time purchase · includes 1 year of updates	£150	£450
Crosspoint routing · X-Y take · salvos / presets	✓	✓
Preview + audio meters (mono / stereo / N-CH)	✓	✓
Discovery / Access server (mDNS or Discovery Server)	✓	✓
Switcher tally (vMix) · nicknames · web UI + REST/WS API	✓	✓
Matrix size	32 × 64	unlimited
Distribution Amplifier / audio-mux channels	4	unlimited
Failover — per-source + box-HA BETA	—	✓
Processor nodes (scale amps across VMs)	—	✓
Router-control integrations — SW-P-08 · Videohub · TSL UMD	—	✓

One-time, no subscription. The price includes one year of updates. After that you keep the version you have and every update released within the year — forever. Newer releases run in Standard mode until you renew; the box never stops working.

30-day full-feature trial. Every install starts a Pro trial automatically. When it lapses the box degrades to Standard — it **never bricks**. Buy in-app via Settings → License (Stripe), or paste a key you already hold. Over a Standard cap the API returns `402` and the UI shows an upgrade hint.

4 Full feature list

Crosspoint routing

- N×M matrix, hard-cut any source → any destination
- Four operator views: **Matrix** grid, **X-Y Take**, **Controls** list, **Salvos**
- Salvos: store / recall / delete whole-matrix presets
- Route by stable source **id** or raw NDI name (survives discovery reshuffle)

Preview & audio meters

- Single Low-bandwidth receiver — memory stays bounded
- JPEG snapshot · MJPEG stream · WebSocket frames
- Meter bridge **beside** the picture: green → amber → red, dB-scaled
- Labels MONO / STEREO (L·R) / N-CH; pick listen pair or downmix

Discovery / Access server

- Owns the NDI **Discovery Server** on `:5959` (managed subprocess)
- Redundant primary + backup DS so clients fail over
- mDNS mode for zero-config flat LANs
- Manage **Groups**, **external source** IPs, **nicknames**

Distribution Amplifiers

- Receive a weak source **once**, re-serve to many subscribers
- Audio **mux** / **remux** / **multichannel mix** channel kinds
- Standard: 4 channels · Pro: unlimited
- ~1 frame of latency; trivial CPU per channel

Audio mixer & breakaway

- Break audio away from video on the crosspoint
- Video from one source, audio from another or a mix
- Clean-feed + commentary / PA, multi-language routing
- Drift-compensated mix combiner (PI wall-clock loop)

Failover & HA PRO BETA

- **Per-source**: ordered `[primary, backup...]` under one stable name
- Switch on source **death**, **black**, or **freeze**
- **Box-HA**: standby mirrors config, assumes NDI identity on death
- DA bank participates — rebuilds senders on promotion

Processor nodes PRO

- Scale DA / transcode work onto extra VMs
- Single-owner job placement (`AmpParams.node`)
- 1:N control plane — worker-pull + controller-push on change
- Role + node list + run-on picker in the UI

Router-control integrations PRO

- **SW-P-08** (Pro-Bel/Snell) inbound control server
- **Videohub** (Blackmagic) — Companion / ATEM drive crosspoints
- **TSL 3.1 UMD** tally output to monitor walls / multiviewers
- Drops into VSM / Ross / NVision / Bitfocus Companion

Interfaces & API

- Vanilla-JS web UI — router, take, controls, salvos, settings
- REST + WebSocket API on `:8088` ; `/ws` event stream
- Public `/healthz` : liveness, counts, edition, usage vs limits
- Advisory in-app update check (fail-soft)

Security & licensing

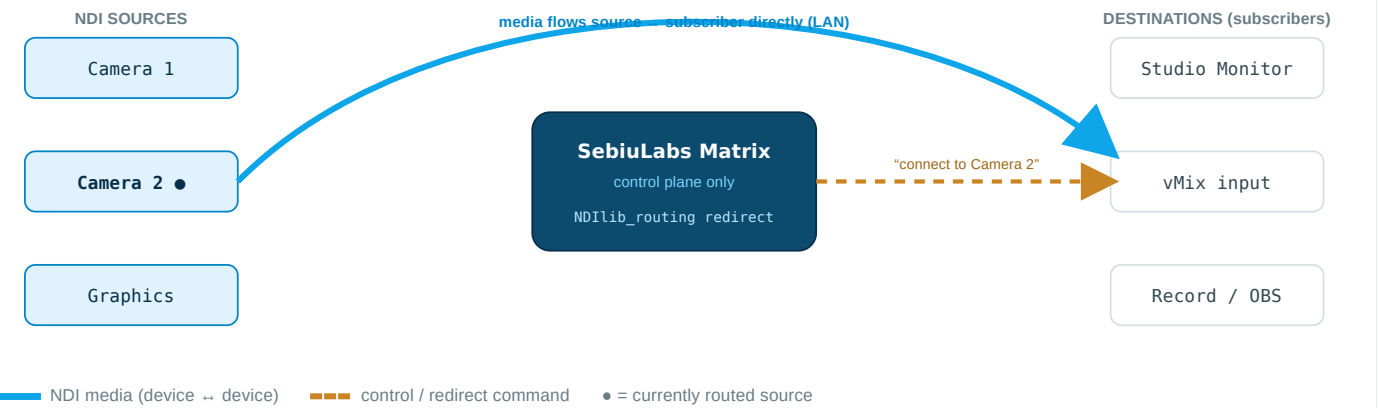
- Auth: none / bearer token / bcrypt users + HMAC session cookie
- 10 failed logins per IP → 5-min lockout; TLS via nginx/Caddy
- Node-locked licensing (Keygen) — degrades, never bricks; 7-day offline cache
- Binary holds only public ids; trial + Stripe behind a Cloudflare Worker

5 Workflows explained

Each diagram shows a real signal or control path through SebiuLabs Matrix. Throughout, **blue** is the NDI media path and **amber-dashed** is control / redirect signalling.

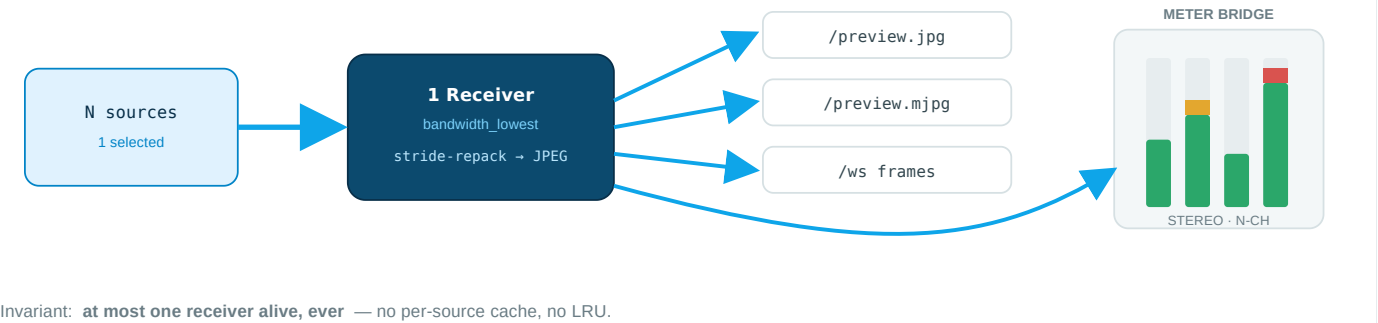
WF 1 Crosspoint routing — the redirect (no video through the box)

The router never touches video. On `POST /route {dest, source}` it issues an NDI routing redirect; the destination's subscribers then pull media **directly** from the chosen source over the LAN.



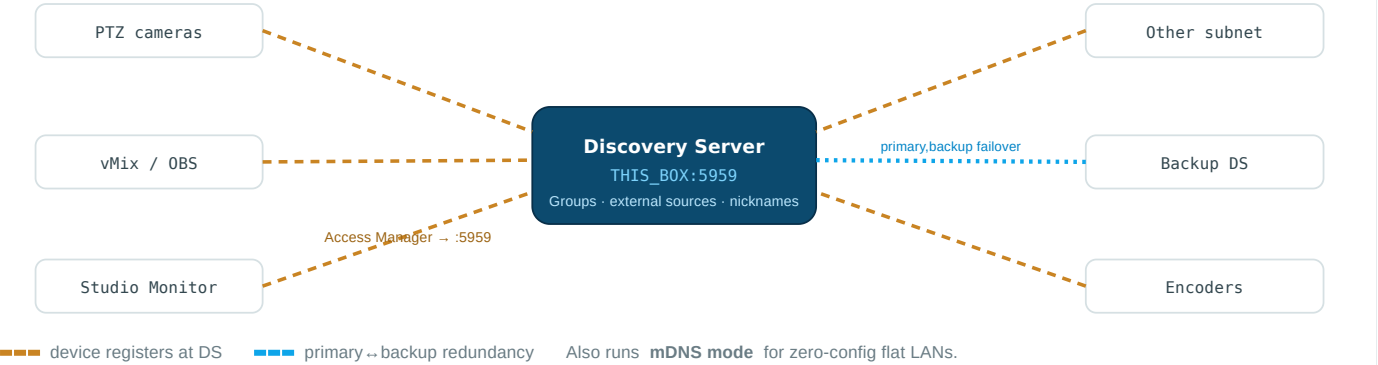
WF 2 Single-slot preview with audio metering

Preview is the one place media enters the box. `POST /preview {source}` tears down any existing receiver and opens exactly one **Low-bandwidth** receiver — bounded memory, no matter how many sources.



WF 3 Discovery / Access server — one place devices point at

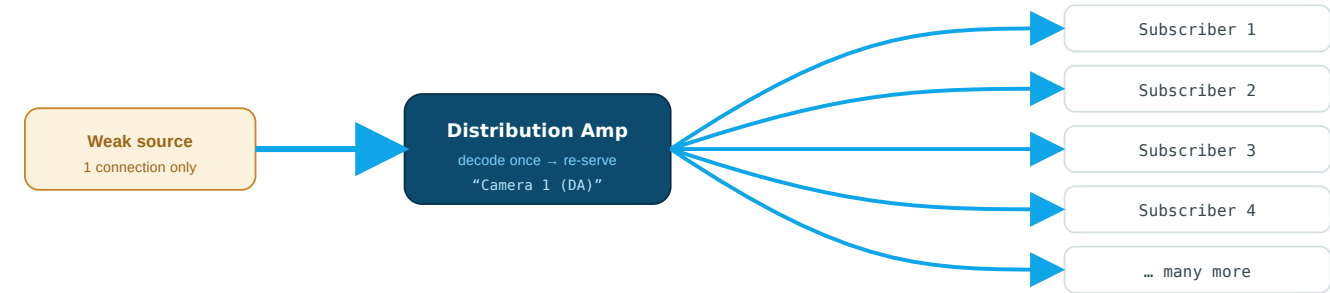
The box runs the central NDI Discovery Server on `:5959`. Every device's Access Manager registers here, so sources are found across subnets and receivers become remotely controllable.



5 Workflows explained (cont.)

WF 4 Distribution Amplifier — receive once, re-serve many

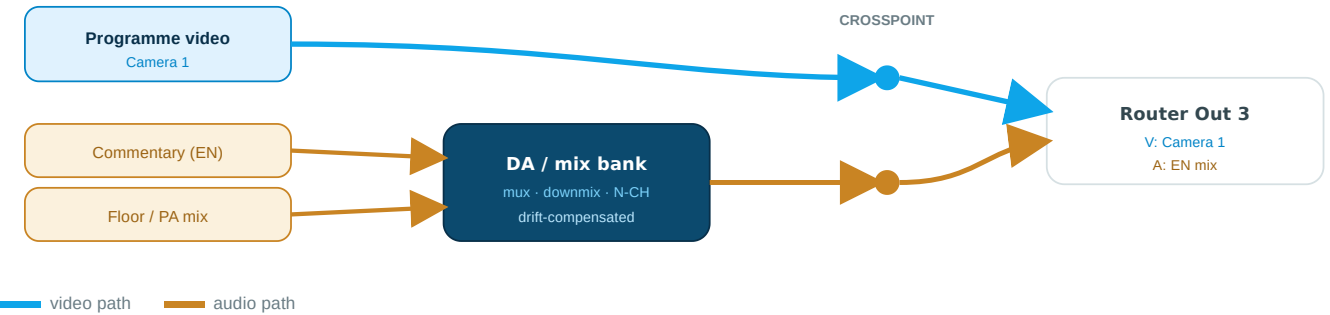
A weak source (a camera or software encoder that struggles when many receivers connect) is protected: the DA takes the single hit, decodes once, and re-serves under a new NDI name for the crowd.



Cost: ~1 frame latency + a little CPU per channel. **Standard 4 channels · Pro unlimited.** On Pro, processor nodes push this onto extra VMs (WF 7).

WF 5 Audio breakaway — split V and A on the crosspoint

A destination can take its **video** from one source and its **audio** from another (or a mix) — the classic clean-feed + separate commentary / PA and multi-language cases, no external mixer.



WF 6 Failover — per-source and box-HA **PRO** **BETA**

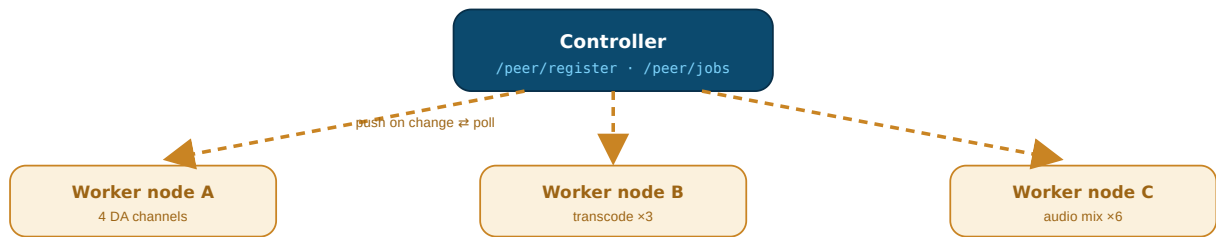
Two independent layers of resilience. Both are cold-standby today.



Downstream sees **one stable name** in both layers; the switch happens inside the box. Hot-standby & auto-failback on the roadmap.

WF 7 Processor nodes — scale amps across VMs PRO

When one box isn't the ceiling: a controller places DA / transcode jobs onto worker nodes. Workers auto-register and poll; the controller also pushes job changes on every `AmplifiersChanged` .



Single-owner placement (each job runs on exactly one node). Capacity auto-placement & worker failover on the roadmap.

6 Deploy & first-run workflow

Three install paths, one identical flow after install: **log in** → **activate licence** → **point devices at discovery** → **route**.



A · Docker	Existing Linux host. <code>docker compose up -d</code> , host networking. Front door <code>http://HOST:8088</code> .
B · Linux ISO	Dedicated box, zero-touch. Auto-installs to disk, prints a one-time admin password on the console banner. <code>https://APPLIANCE_IP/</code> . Enforce-lock on.
C · Windows	Runs a background service (WinSW) + Caddy TLS; app on 9943, HTTPS on 443 (never collides with vMix 8088). <code>https://localhost/</code> .

Licensing behaviour

- **Trial**: first run starts a 30-day full-feature (Pro) trial automatically.
- **Activate**: paste a key or buy in-app; binds to the machine fingerprint (survives reboot, not hardware swap).
- **Offline-safe**: validation cached up to 7 days — a network blip can't disable the box.
- **Degrade, never brick**: expired/absent licence → Standard; suspended/banned disables Pro on the *next* validation, never mid-stream.

7 API surface & security

REST + WebSocket (port 8088)

<code>/healthz</code>	liveness, counts, edition, usage (public)
<code>/sources</code> · <code>/destinations</code>	discovered sources · routing outputs
<code>/route</code> · <code>/route/clear</code>	switch / clear a destination
<code>/salvos (+recall/store)</code>	routing presets
<code>/preview</code> · <code>.jpg</code> · <code>.mjpg</code>	select / snapshot / MJPEG
<code>/receivers</code> · <code>/connect</code>	directed connect (Advanced-SDK build)
<code>/access/*</code> · <code>/discovery/status</code>	groups, external sources, DS state
<code>/ws</code>	route / preview / access event stream

Security posture

- **Auth modes**: `none` (trusted LAN), `token` (single bearer), `users_file` (bcrypt + HMAC session cookie, 12 h TTL).
- **Lockout**: 10 failed logins per IP → 5-min lockout.
- **TLS**: app binds locally; nginx (Docker/ISO) or Caddy (Windows) fronts HTTPS, self-signed by default; set `NDI_ROUTER_COOKIE_SECURE=1` behind TLS.
- **NDI is LAN-only** — never tunnel media; for off-LAN *management* only, front the API with VPN / SSH tunnel / Cloudflare Access.
- Secrets via env, validated present at startup; users file must be owned by the service user (`chmod 600`).

Everything the UI does is a documented HTTP call — wire the matrix into your own automation, dashboards, or button boxes.

8 System requirements & sizing

Size to the heaviest feature you'll actually run. Routing itself is almost free — no video passes through the box. But the amplifier, audio-processing, transcode and HA features *do* decode and move real media, so they need real CPU, RAM and bandwidth — and, for HA, a second machine.

If you run...	Plan for	Why
Routing + preview + discovery / access (the Standard essentials)	2 vCPU · 4 GB ~512 MB used	Routing carries no video; preview is a single Low-bandwidth decode. A 2-core box is genuinely plenty — an 8-core is over-specced.
+ Distribution Amplifiers · audio mux / mix · transcode	4–8 vCPU · 8 GB+ scales per channel	Each channel decodes and re-serves a real stream — genuine CPU, RAM and LAN bandwidth <i>per channel</i> , unlike routing. Size to channel count and resolution (1080p costs far more than SD).
+ Failover & HA — box-HA, per-source failover PRO	a 2nd box for the standby	Redundancy means a whole standby machine mirroring the active one. Warm standby keeps receivers running, so budget the same spec on both boxes .
Beyond one box's headroom PRO	+ processor nodes	When amps / transcode outgrow a single host, processor nodes spread the load across extra VMs — add nodes instead of one giant box.

Networking	Host networking mandatory (Docker). The routing redirect hands receivers a routable LAN IP, discovery needs the LAN, and the Discovery Server must be reachable on <code>:5959</code> . Bridge networking breaks all three.
Platforms	Linux (Docker appliance or self-installing ISO) · Windows 10+ (service + Caddy). Same single build across all three.
NDI runtime	Bundled <code>libndi</code> . Directed connect (<code>/receivers</code> + <code>/connect</code>) needs the Advanced-SDK build; the royalty-free build compiles it out and the UI auto-hides its controls.
Out of scope	Multiview / compositing / multiple simultaneous decodes, transitions, overlays, and WAN Bridge (cross-site) — by design.

SL

MATRIX

SebiuLabs Matrix for NDI®

Product data sheet · ndi-router 0.1.0 · build d7017ad · issued 2 Jul 2026
contact@sebiulabs.co.uk · sebiulabs.co.uk

This product uses NDI®, available from [ndi.video](#). NDI® is a registered trademark of NDI, Inc. The bundled NDI runtime (`libndi`) is redistributed under the NDI SDK licence. Failover, box-HA and processor nodes are **beta**; specifications subject to change.