caspar-AV user guide

caspar-AV is **a live-events media server built on CasparCG**. You place screens on a show canvas, build cues that change several of them on one frame, and fire them from a trigger grid — all in a browser, with every command it sends visible along the bottom of the window.

> **Before you rely on this:** the protocol work was derived from the CasparCG 2.5.0 source and then **verified against a real CasparCG 2.5.0 server** (Ubuntu 24.04, headless, Mesa llvmpipe), which caught six genuine bugs — including a command-ordering mistake that broke every `MIXER` and `CG` command. But it has **never been run on real output hardware or in a live show**. Validate it on your own rig first.
>
> This codebase was created with AI assistance, directed and reviewed by a human author. Not affiliated with or endorsed by the CasparCG project.

What you need

- **CasparCG Server 2.5** reachable over the network. caspar-AV speaks AMCP on TCP 5250 and listens for OSC telemetry over UDP.
- **media-scanner** on HTTP 8000, if you want the Media and Templates pages to have anything in them.
- A browser for the console. It does not have to be the machine running the daemon.

No CasparCG to hand? Run the fixture instead. It speaks real AMCP framing, real `REQ` / `RES` correlation and pushes real OSC telemetry, and it stands in for media-scanner too — so every page has something to show. It renders no pictures.

```
python3 scripts/fake-caspar.py
```

Running it

```
cargo build --release
cd console && npm ci && npm run build && cd ..
./target/release/caspar-avd --host <your-caspar-host> --show myshow.json
```

Then open http://localhost:8080. There are also prebuilt binaries for macOS, Windows and Linux — see the README's Download section, and UNSIGNED.md for getting past Gatekeeper, SmartScreen

and the Defender Firewall prompt.

Against a real server, it is worth checking the protocol assumptions still hold on your build:

```
python3 scripts/protocol-probe.py --host <your-caspar-host>
```

Why there's a daemon at all

CasparCG speaks AMCP over raw TCP and pushes state as OSC over UDP. A browser can do neither. So `caspar-avd` holds the connection and serves the console over ordinary HTTP.

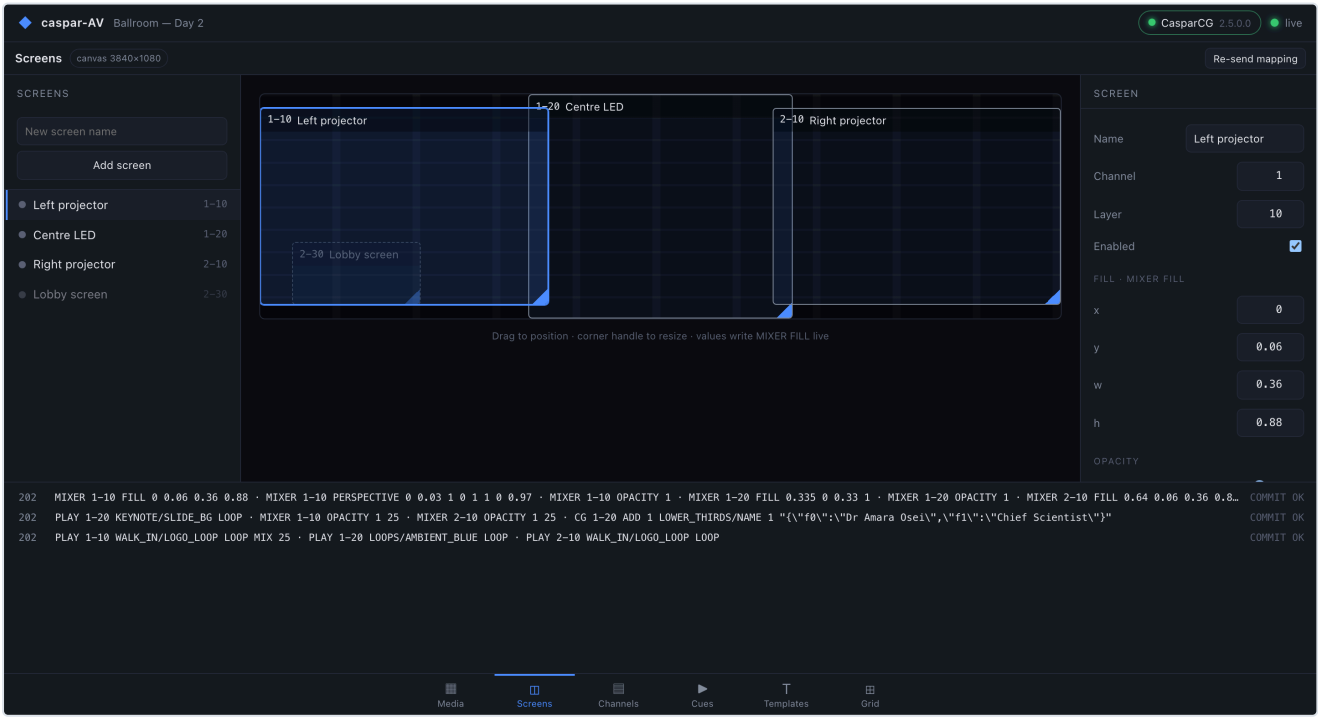
The console is a **passive mirror**: it holds no authoritative state, renders the daemon's snapshot, and sends commands. Two operators on two laptops see the same thing, and a browser that reconnects is immediately correct.

The console

Six pages on one shared frame, chosen from the tab bar along the bottom, with the **command log** always visible above it — because "did that command actually land?" is the question a show asks most. Each line shows the AMCP that went out and the server's status code back.

Screens — the show canvas

A **screen** is a named output: a CasparCG channel and layer, placed as a rectangle on the show canvas. Drag it to move, use the corner handle to resize.



Every screenshot in this guide is a real render of the console against `scripts/fake-caspar.py`, captured by `scripts/screenshots.py` — so the UI is genuine and no picture is coming out of anything.

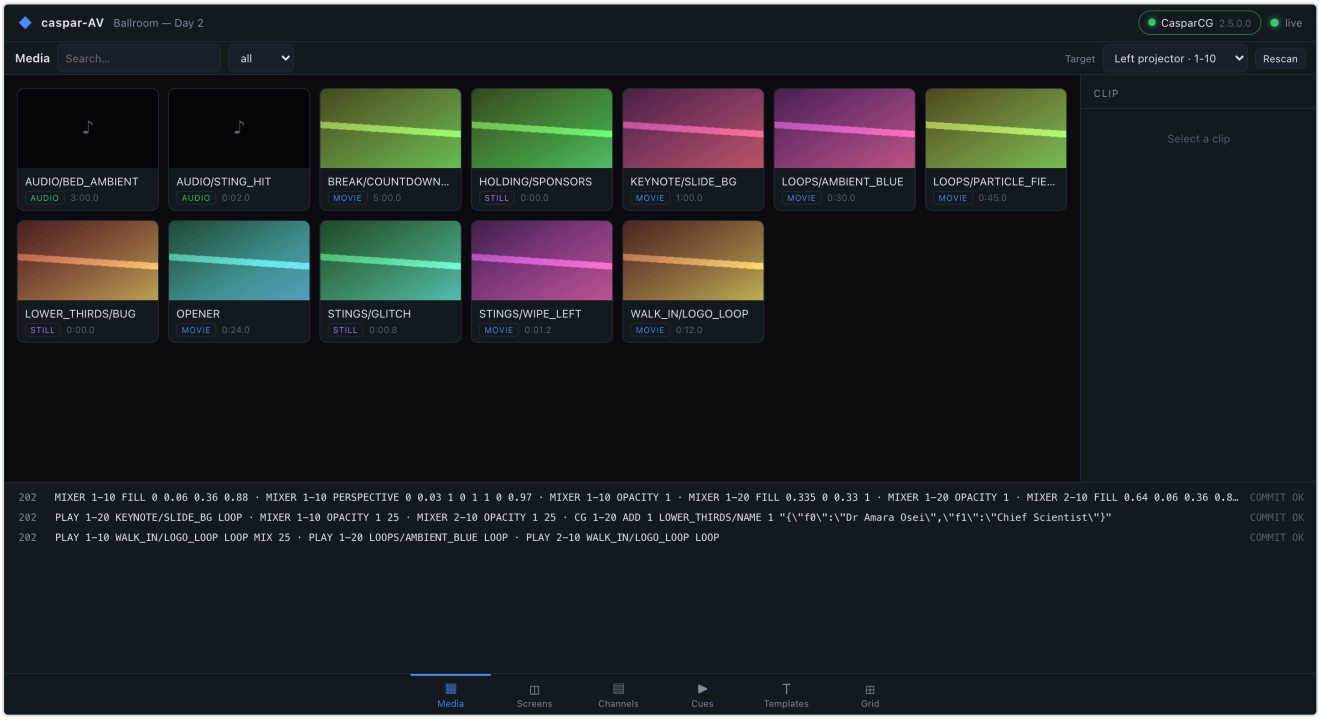
The right-hand inspector is where the mapping stops being abstract:

- **Channel** and **Layer** are the CasparCG channel/layer the screen owns — the `1-10` and `2-30` labels on the canvas.
- **x, y, w, h** are normalised fill values, and they write `MIXER FILL` live as you drag.
- The corner-pin numbers write `MIXER PERSPECTIVE`, which is a real four-corner warp — this is what makes projector keystone possible without anything outside CasparCG.
- **Enabled** off leaves the screen defined but unmapped. A greyed screen in the list (like "Lobby screen" above) is one of these.

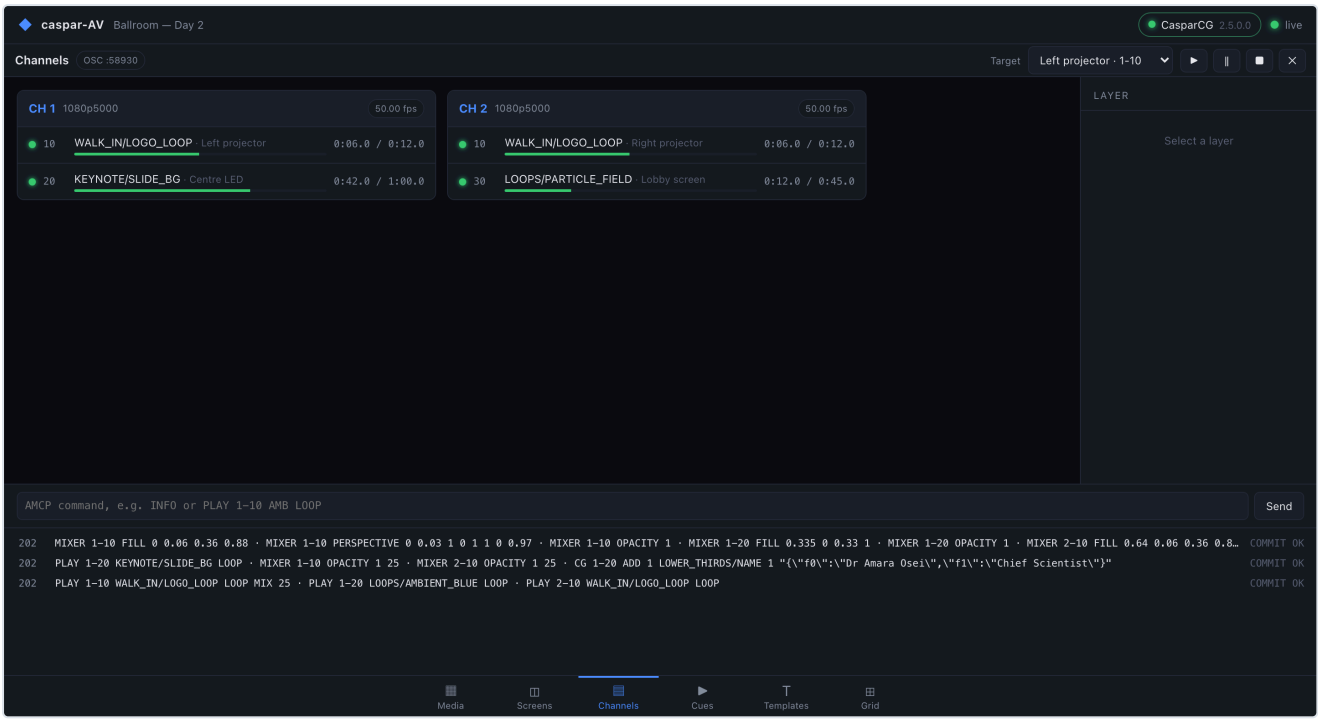
Re-send mapping pushes the whole mapping again — the thing to reach for after a server restart, when CasparCG has forgotten its mixer state and the console has not.

Media and Channels

Media is the library from media-scanner, with thumbnails. Double-click a clip to play it onto the target screen.

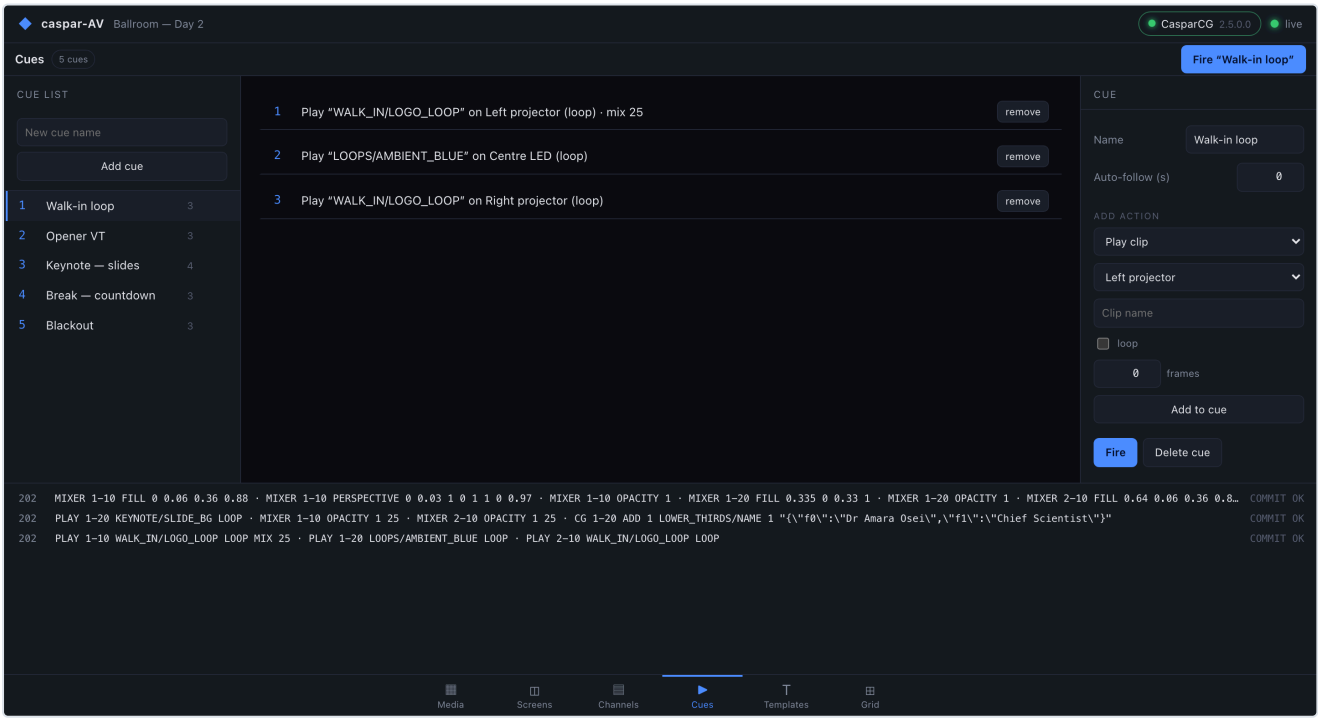


Channels is live state straight from OSC — what is playing on each channel, position and duration — plus a raw AMCP command line for when something is wrong and you need to talk to the server directly.



Cues

A **cue** is a list of actions across several screens, fired as a single `BEGIN` / `COMMIT` batch — so every screen it touches changes **on the same frame**, rather than drifting apart by however long the commands took to send.

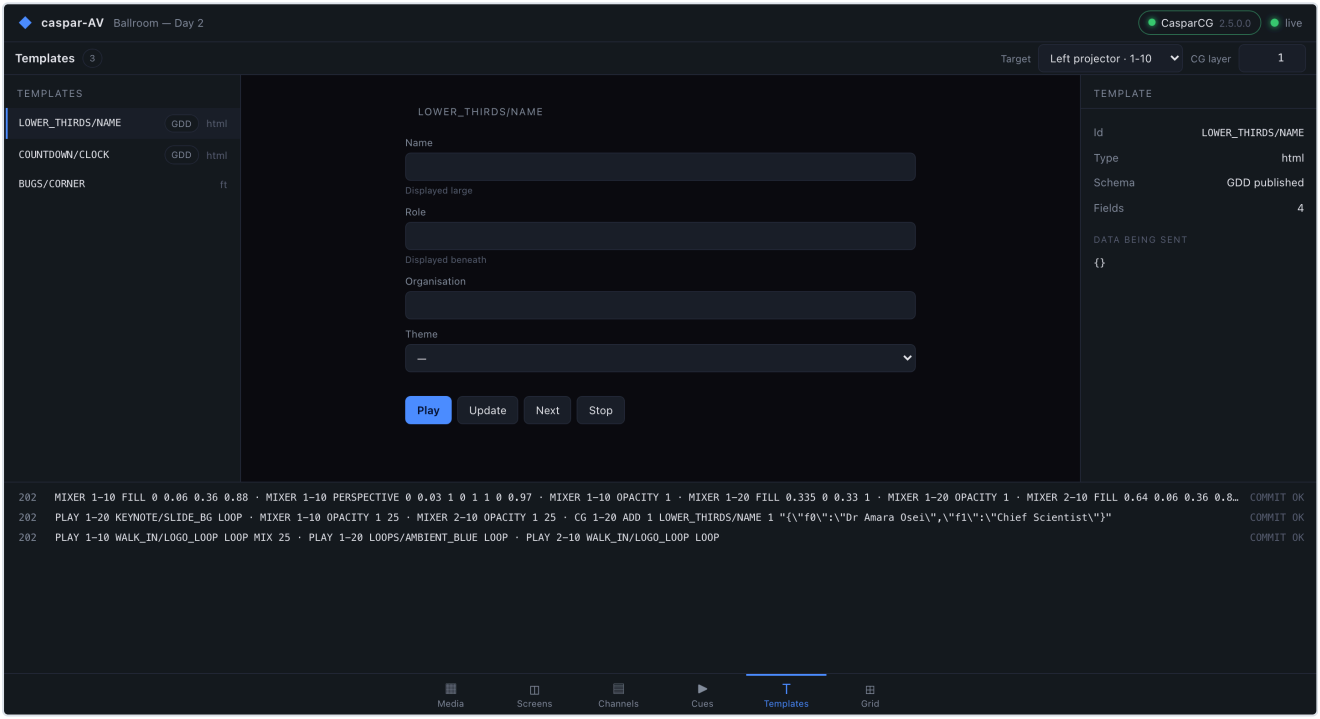


Build a cue by picking an action type (play a clip, set opacity, run a template…), the screen it applies to, and its parameters, then **Add to cue**. **Fire** sends the batch.

> **Auto-follow is stored, not executed.** A cue carries an auto-follow time, and the field is there in the inspector, but **nothing fires the next cue when it elapses**. Treat the number as a note to yourself until that lands.

Templates

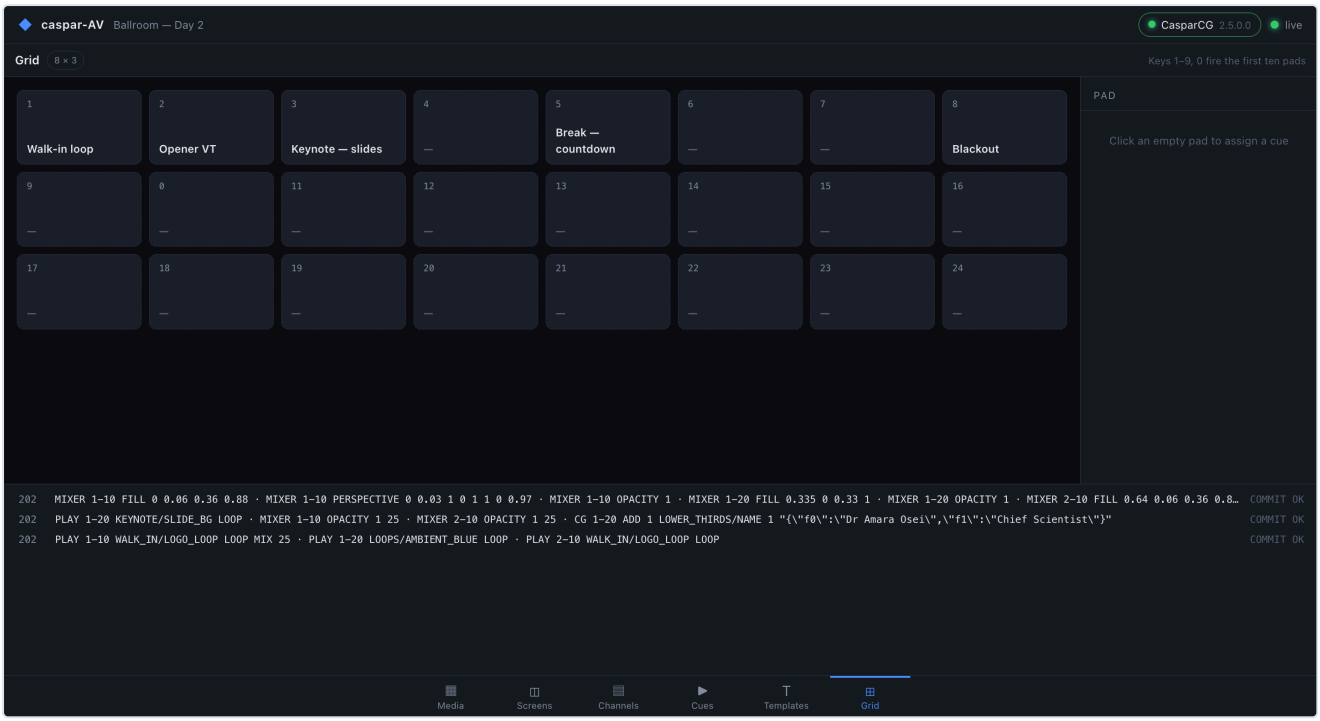
CasparCG HTML templates, listed from media-scanner. Where a template publishes a **GDD** schema, the data form is **generated from that schema** rather than typed as raw JSON — so a lower-third with name and title fields shows two labelled boxes.



Templates without a GDD schema still work; you supply the data as JSON.

Grid

The cues as trigger pads, for when the show is running and you want a target you can hit without reading. **Number keys 1–9 and 0 fire the first ten.**



What isn't built

Worth knowing before you plan a show around it:

- **No timeline or timecode playback.**
- **No auto-follow execution** — cues carry a follow time, nothing fires it.
- **No soft-edge blending UI.** `MIXER CLIP` and the blend modes exist in CasparCG; caspar-AV doesn't expose them yet.
- **No MIDI or OSC control in.** You drive it from the console.
- **No multi-server rigs** — one CasparCG server per daemon.
- **No audio metering.**

scope.md is the honest, maintained version of this list.

Troubleshooting

Symptom	Cause
Console loads, header says not connected	The daemon can't reach CasparCG on AMCP 5250. The console talks to the daemon, not the server — a healthy console proves nothing about the server.
Screens page is fine, nothing on Media or Templates	media-scanner isn't reachable on HTTP 8000. It is a separate service from the playout server.
Channels page never updates	OSC telemetry isn't arriving — it is UDP, and a firewall dropping it looks exactly like an idle server.
Dragged a screen, picture didn't move	Check the log for the `MIXER FILL` line and its status code. If the command went out and returned OK, the mapping is right and the layer is probably empty.
Mapping lost after a server restart	CasparCG forgets mixer state; the console doesn't. Press **Re-send mapping**.
A cue's screens change at slightly different times	That should not happen — the batch commits on one frame. Check the log for a `COMMIT` that didn't return OK.
Next cue never fires on its follow time	Auto-follow is stored but not executed.
Windows: console won't load and cues never arrive	The Defender Firewall prompt was denied. See UNSIGNED.md.

See also

- amcp.md — the protocol as 2.5.0 actually implements it, including where the wiki is wrong
- architecture.md — components, the snapshot contract, the show model, how cues compile
- scope.md — what is built, what is partial, what is not started
- diagnostics.md — logs, crash reports, and the one file to send about a fault
- test-server.md — running a real CasparCG to test against, on a Mac
- README — why this exists, and the download links