

Steam Streaming

This guide covers how to stream games from the headless server gaming stack to any thin client, laptop, mobile device, or TV.

The host runs **Sunshine** on top of **Steam-Headless**, accelerated by the server's **AMD Radeon AI PRO R9700** (hardware-accelerated AV1, HEVC, and H.264 video encoding via VA-API). Clients connect using the open-source **Moonlight** GameStream client.

Server & Connection Details

- **Hostname:** `sunshine.drheck.dev`
 - **Internal IPv4:** `10.0.0.112`
 - **Internal IPv6:** `[fd77:7777:5010:0:1337:f1ac:d00d:4799]`
 - **Public IPv6:** `[2603:3001:626:9d40:1337:f1ac:d00d:4799]`
 - **Sunshine Admin Web Portal:** `https://sunshine.drheck.dev` (Authentik SSO protected, restricted to `akadmin`)
 - **Headless Desktop Web Viewer (noVNC):** `http://10.0.0.112:8083` (LAN access for initial Steam GUI login and 2FA)
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Universal Pairing Process

Every Moonlight client connects via mutual TLS certificates authenticated once with a 4-digit PIN:

1. Launch **Moonlight** on your client device.
 2. Click the **+** (**Add Host**) button (or select `sunshine` if discovered via mDNS).
 3. Enter `sunshine.drheck.dev` (or the internal IP `10.0.0.112` if on local LAN).
 4. Moonlight will display a random **4-digit PIN** (e.g. `4821`).
 5. Open a browser to `https://sunshine.drheck.dev/pin` and log in with your `akadmin` Authentik account.
 6. Enter the 4-digit PIN and give your client a friendly name.
 7. Click **Send**. The lock icon on Moonlight will turn into a green checkmark, showing your available applications (`Desktop`, `Steam Big Picture`).
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Client Setup Instructions

1. Arch Linux (Desktop / Laptop / Handheld)

Installation

Moonlight is available in the official Arch repositories:

```
sudo pacman -S moonlight-qt
```

(Optional gamepad support packages):

```
# For Xbox Wireless controllers over Bluetooth
sudo pacman -S xpadneo-dkms

# For PlayStation DualSense / DualShock controllers
sudo pacman -S linux-firmware
```

Configuration & Tuning

1. Open **Moonlight Settings (Gear Icon)**:

- **Resolution**: Match your monitor natively (e.g., `1920x1080`, `2560x1440`, or `3840x2160`).
- **Frame Rate**: Set to `60 FPS` or `120 FPS` depending on your screen refresh rate.
- **Video Bitrate**:
 - 1080p60: 20–30 Mbps
 - 1440p60/120: 40–60 Mbps
 - 4K60/120: 60–80 Mbps
- **Video Codec**: Choose **Automatic** or force **HEVC / AV1** (the R9700 encodes AV1 and HEVC with ultra-low latency).
- **Hardware Acceleration**: Set to `VA-API` or `VDPAU` depending on your client GPU.

2. Android (Phones & Tablets)

Installation

- Install **Moonlight Game Streaming** from the [Google Play Store](#) or [F-Droid](#).

Controller Support

- Connect any Bluetooth gamepad (Xbox Wireless, PS5 DualSense, 8BitDo, Razer Kishi, Backbone One). Android natively maps standard HID gamepads.
- On-screen virtual touchscreen controls are available if no gamepad is connected.

Configuration & Tuning

1. Open **Settings** in Moonlight:
 - **Display Resolution:** Select **Native resolution** or `1080p`.
 - **Framerate:** Match your phone screen (`60 FPS`, `90 FPS`, or `120 FPS` for high-refresh AMOLED panels).
 - **Video Decoder:** Set to **Hardware decoding** and enable **Prefer HEVC/H.265**.
 - **Stretch to fit:** Enable if your phone has a 19.5:9 or 20:9 ultrawide aspect ratio and you want to eliminate black bars (or leave unchecked for pixel-perfect 16:9).
 - **Touch Mode:** Select **Trackpad Mode** for desktop navigation or **Touchscreen Mode** for direct tap interactions.
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3. iPad / iOS

Installation

- Download **Moonlight Game Streaming** from the [Apple App Store](#).

Controller Support

- Connect any MFi, PlayStation (DualShock 4 / DualSense), or Xbox Series/One controller via **Settings > Bluetooth**.
- Full L3/R3 clickable thumbsticks and analog triggers are supported natively by iOS.

iPad-Specific Tuning

1. Open Moonlight on the iPad and tap **Settings**:
 - **Resolution:** iPads have a 4:3 / 3:2 aspect ratio. You can pick:
 - `1920x1080` or `2560x1440` (standard 16:9 with letterboxing).
 - **Custom Resolution:** Enter your iPad's exact panel resolution (e.g. `2048x1536` or `2388x1668`) for a full-screen, edge-to-edge experience without black bars.
 - **Frame Rate:** If using an iPad Pro with ProMotion, select **120 FPS**.
 - **HDR:** If using an iPad Pro with an XDR Liquid Retina display, enable **HDR** in Moonlight settings for 10-bit color.
 - **Mouse & Keyboard:** iPadOS supports Bluetooth mice and magic keyboards. Enable **Optimize mouse for remote desktop** in settings for zero mouse acceleration.
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4. Google TV / Android TV (Chromecast, Shield TV, Smart TVs)

Installation

- Open the **Google Play Store** on your Google TV / Android TV interface.
- Search for `Moonlight Game Streaming` and click **Install**.

Controller Support

- Pair an Xbox or PlayStation controller directly to Google TV via **Settings > Remotes & Accessories > Pair accessory**.
- USB gamepads and 2.4GHz wireless dongles plugged into TV USB ports work out of the box.

TV-Specific Optimizations

1. Open Moonlight on your TV and open **Settings**:
 - **Resolution**: Select `1080p` (for Chromecast 4K or 1080p dongles) or `4K` (for NVIDIA Shield or high-performance TV SoCs).
 - **Frame Rate**: Set to `60 FPS`.
 - **Frame Pacing**: Set to **Prefer smoothest video**. This reduces micro-stutters caused by TV display buffer mismatches.
 - **Audio Configuration**:
 - Set to **Stereo** for TV speakers or soundbars.
 - Set to **5.1 Surround Sound** if your TV connects to an AV receiver or multi-channel eARC sound system.
 - **Network**: For optimal results with 4K streaming on TVs, use a 5GHz Wi-Fi band or an Ethernet adapter.

Available Applications

App Entry	Description	Ideal For
Steam Big Picture	Launches Steam directly in controller-friendly Big Picture UI	Gaming with Xbox / PS gamepads on TV or handheld
Desktop	Opens full Xfce Linux desktop on virtual display <code>:55</code>	Keyboard & mouse games, emulators, web apps

To add custom games, scripts, or emulators, navigate to <https://sunshine.drheck.dev/apps> and click [+ Add](#).

Essential Navigation Shortcuts

Action	Keyboard Shortcut	Gamepad Shortcut
Quit Stream	Ctrl + Alt + Shift + Q	Hold Start + Select + L1 + R1 for 3 seconds
Toggle Fullscreen	Ctrl + Alt + Shift + F11	—
Capture / Release Mouse	Ctrl + Alt + Shift + Z	—
Show Stream Stats (FPS, Ping, Loss)	Ctrl + Alt + Shift + S	—
Send Ctrl+Alt+Del	Ctrl + Alt + Shift + D	—

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