Script

INTRO – 0:00 – 0:20

(Camera on you or voice-over with timelapse of printer starting)

Hey everyone, Today, I'm excited to show you a DIY Raspberry Pi 5 project that turns a standard 5.25-inch hot-swap drive bay into a standalone NAS enclosure. It's powered by the Radxa Penta SATA Hat, housed in a fully 3D-printed modular chassis I designed myself.

SECTION 1 – 0:20 – 1:20

(B-roll: show the Rosewill RSV-SATA-Cage-34, Pi 5, SATA Hat, printed parts)

At the heart of this build is the Rosewill RSV-SATA-Cage-34, a 4-bay hot-swap module originally meant for desktops or rackmounts. But instead of installing it inside a case, I designed an enclosure that houses the hot-swap bay itself — turning it into a compact, self-contained NAS unit. The design is flexible, so you can adapt it for almost any similar 5.25-inch cage, not just this model.

Combined with the Raspberry Pi 5 and Radxa Penta SATA Hat, this setup gives you up to five SATA drives in a surprisingly small form factor.

SECTION 2 – 1:20 – 2:45

(B-roll: timelapse of all 5 prints with short captions labeling each part)

The enclosure is made up of five printed parts: the **base**, **frame**, **rear plate**, **faceplate**, and **translucent insert**. All project files are provided and already include the **pre-configured supports** necessary for some of the parts — mainly the rear plate, frame, and faceplate.

The **frame** itself was too large for most printers, so I sliced it right through the middle. Once printed, the two halves are reattached using **M3x7 screws**. To print the frame correctly, you'll need at least a **256 mm print bed**.

All parts are optimized for FDM printing with no unnecessary supports, clean overhangs, and an easy fit. Once you have everything printed, it's time to move on to the assembly.

SECTION 3 – 2:45 – 5:45

(B-roll: real-time assembly with close-up shots of each step)

Let’s start putting everything together.

1. **Prepare your Raspberry Pi 5.** Flash a microSD card with **Pi OS Lite**, then insert it into the Pi.

2. **Mount the drives.** Screw each HDD or SSD into its respective bay in the hot-swap cage, then set them aside.

3. **Assemble the cables.** Prepare all the SATA and power cables according to your setup.

4. **Install the cables on the hot-swap bay.** Plug in everything before inserting it into the frame — it’s much easier that way.

5. **Insert the hot-swap bay into the frame.** Slide it in and secure it using **M3x5 screws**.

6. **Connect the PCIe cable.** Plug the PCIe ribbon from the Raspberry Pi 5 to the **Radxa Penta SATA Hat**.

7. **Mount the Pi inside the frame.** Use the long posts provided with the SATA Hat.

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 You can gently push the hat aside while screwing in the posts.
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8. **Attach the SATA Hat.** Secure it using the small **brass posts** included with the hat.

9. **Connect the SATA cords.** SATA Port 1 is the port **on the opposite side of the DC input**.

10. **Install the rear plate.** Use **M3x10 screws**, but hold the plate at a slight angle to connect both **DC cables** —

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  one goes to the hat, and the other to the bottom of the frame for the
**LEDs**.
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11. **Insert the translucent part.** This piece slides right into place and diffuses the front LEDs.

12. **Attach the faceplate.** Finally, secure it with **M3x10 screws**.

Once everything is together, the result is a clean, modular enclosure ready to power up your drives.

SECTION 4 – 5:45 – 6:30

(B-roll: final build showcase, lights on, drives spinning)

And here’s the finished build — a fully 3D-printed modular NAS enclosure powered by the Raspberry Pi 5 and the Radxa Penta SATA Hat. Compact, quiet, and completely customizable. If you’d like to print your own, the full project files and print settings are available on **MakerWorld** under a **personal-use-only license**.

In the next part of this video, we’ll power it up and go over the software setup.

OUTRO

(B-roll: logo overlay, finished NAS spinning drives, fade to your site)

You can find the full build details, print settings, and updates on my website — LaswitchTech.com I share all my open-source hardware and software projects there. Don’t forget to like, subscribe, and leave a comment if you’d like to see the software setup, power testing, or performance benchmarks in a future video.

Thanks for watching — and as always, happy printing!