Options to use APU4D4 as a NAS

jcarnat Oct 21st 2021

jcarnat

[Beginner]

Posts: 1

Oct 21st 2021

Hi,

I'm investigating into adding NAS services (samba, nextcloud) and extra storage to my APU4D4.

First question is about the case. If I plug a SATA disk to the SATA connector, how I am supposed to install the disk? It seems it won't fit inside the case1d4blku and I didn't see any holes to have the cable got out of it. Must I use another case? Any references for such cases?

Second question is about adding storage via miniPCI express connectors. Can I plug mSATA disks to connectors J14 and/or J15? Can I plug Mini PCI-Express SATA controller cards to J14 and/or J15 or can only J13 be used?

Thank you.

tuscha

[Beginner]

Posts: 2

Dec 2nd 2021

Hello to you!

- SATA connector: I am not aware of another case. So I think you are left with 3 options:

1. You can cram the SSD into the case. I did so, but the connector is not too happy about the strain. Also the SSD and cables touch some of the mainboard components - so be careful. Maybe use some double-sided tape and glue the SSD to the top part of the case.
2. Disassemble your SSD: Only using the SSD-board will save some space. Use electrical tape to protect mainboard and SSD-board. Glue/tape it to the top part of the case. Preserve the thermal pad that might sit on top of the SSD controller - mount the SSD board in a way that brings the thermal pad into contact with APUs metal case for passive cooling. Leaving out the thermal pad area from electrical tape then is required.
3. Using other cables might help as the official one isn't that great. Flexible SATA cables exists and using seperate SATA and power cables might be easier to work with. Examples from some German shops:

- Power Cable (https://www.reichelt.de/de/en/2-pin-female-sata-15-pin-metal-clip-20-cm-delock-85336-p212195.html?GROUPID=6092&START=0&OFFSET=16&LANGUAGE=EN&r=1)
- Flexible Sata Cable (https://www.delock.de/produkte/S_83838/merkmale.html?setLanguage=en)

But I have not tried 2 or 3, so double check.

- J13-J15: Take a look here (https://github.com/pcengines/apu2-documentation/blob/master/docs/APU_mPCIe_capabilities.md).

Regards

PS: Another idea is to mod the case: Drill new screw holes in it so you can increase the available height. Might not look too great but might work.

tuscha

[Beginner]

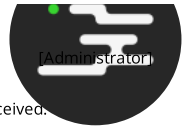
Posts: 2

Dec 2nd 2021

And since we now have a topic about additional storage in the APU:

- What options are there besides the external USB ports, SATA connector mSATA slot?
- Is there a carrier board for the mSATA slot that accepts 2 mSATA-SSDs?
- Can the SATA connector be split into multiple ones (while sharing the same bandwith ...)?

Dec 8th 2021



[Administrator]

Likes Received: 7
Posts: 24

tuscha wrote:

- *What options are there besides the external USB ports, SATA connector mSATA slot?*
- *Is there a carrier board for the mSATA slot that accepts 2 mSATA-SSDs?*
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1: There are mPCIe SATA controllers available. Some people have had success with ASM1061 based cards in the first mPCIe slot (but not in the second (https://github.com/pcengines/apu2-documentation/blob/master/docs/mpcie_modules.md#sata-controllers)). I'm planning to try one (with vertical ports) in my APU2 soon.
2,3: Look into SATA port expanders. Looking at the coreboot code (https://github.com/pcengines/coreboot/blob/b55d35dab717821dace97468c939808872e68c9d/src/southbridge/amd/pi/hudson/sata.c#L32) it looks like it should work but I'm not aware if anyone's tested it on an APU2/3/4.

> The post was edited 3 times, last by mkopec (Dec 8th 2021).

mkopec

[Administrator]

Likes Received: 7
Posts: 24

Feb 16th 2022

> 1: There are mPCIe SATA controllers available. Some people have had success with ASM1061 based cards in the first mPCIe slot (but not in the second (https://github.com/pcengines/apu2-documentation/blob/master/docs/mpcie_modules.md#sata-controllers)). I'm planning to try one (with vertical ports) in my APU2 soon.

I tested a module in my APU2C4, unfortunately it doesn't work well without BIOS modifications. Same issue as in https://github.com/pcengines/a...dules.md#sata-controllers (https://github.com/pcengines/apu2-documentation/blob/master/docs/mpcie_modules.md#sata-controllers)

v1k4

[Beginner]

Posts: 1

Aug 28th 2022

Here's my APU NAS project.

My goal was to have cheap, small and low power LXC/KVM/Docker setup mainly to be used as firewall, VPN gateway and NAS.

BOM:
-APU4D4 (FW v4.17.0.1)
-case1d4
-MINI PCIE to NVMe M.2 (https://www.aliexpress.com/item/1005001795282927.html (https://www.aliexpress.com/item/1005001795282927.html))
-Mini SATA to SATA (https://www.aliexpress.com/item/1005002165516219.html (https://www.aliexpress.com/item/1005002165516219.html))
-Power 2 pin female > 2 x SATA 15 pin (https://www.delock.com/produkt/85249/merkmale.html?f=s (https://www.delock.com/produkt/85249/merkmale.html?f=s))
-SATA cable 90dg angle
-SATA cable straight
-M3 standoffs and screws
-M2 standoffs and screws
-small aluminium flat bar (I used some random stuff I had laying around)
-OS Disk: SK Hynix HFM256GD3HX015N PCIe NVMe
-Data storage: 2pcs Samsung SM841N SATA SSD mirrored

Managed to get everything fit inside case1d4 without any major issues. Just needed to take the SSDs out from their case and build some mounting points. Shorter SATA cables would of been better, but those were what I had in hand.

It's running Proxmox 7 on Debian 11 and booting from NVMe.