Current Solutions from China and Enterprise

Introduction:

The cryptocurrency mining boom of the mid-2010's had a profound impact on the Chinese domestic market. Overnight small businesses sprung up to meet the demand for large ASIC and GPU mining farms that were increasingly more popular. This became an industrial undertaking with the development of custom power solutions with discontinued server power supplies and the modification of commercial video cards for optimal Hash Rate.

This industry has since pivoted to develop custom solutions for the Artificial Intelligence boom today. New innovative products like the 2080ti 22Gb and the 2080ti 44Gb were the initial push forwards in terms of hosting LLM's on home hardware. Later as V100's, Titan V's, and all the flavors of the Volta architecture began appearing on the market at reasonable prices. With the appearance of Ampere, Hopper, Ada, and now Blackwell architectures; small Chinese developers followed with new SXM adaptations.

This document will explore the current offerings on the Chinese market, that can still be ordered from a variety of websites. Additionally, we will explore a more sustainable and stable source of NVLink capable hardware that is reasonably priced and is independent of future tariffs for U.S. consumers.

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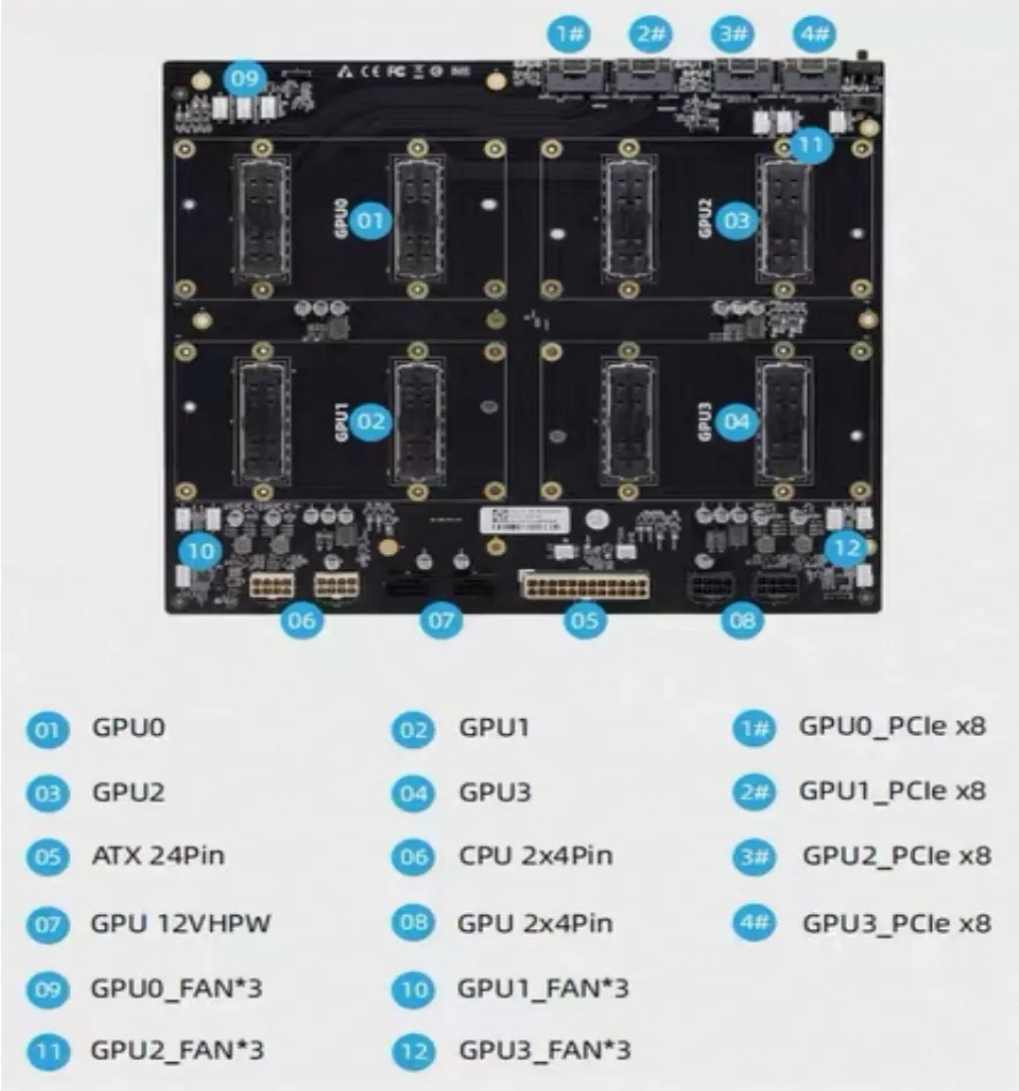
Current Chinese Offerings:

Quad SXM2 NVLink Adapter
Status: **Currently not on U.S. Market or Chinese Sites**
Article (https://blog.rexyuan.com/the-most-esoteric-egpu-dual-nvidia-tesla-v100-64g-for-ai-llm-41a3166dc2ac)



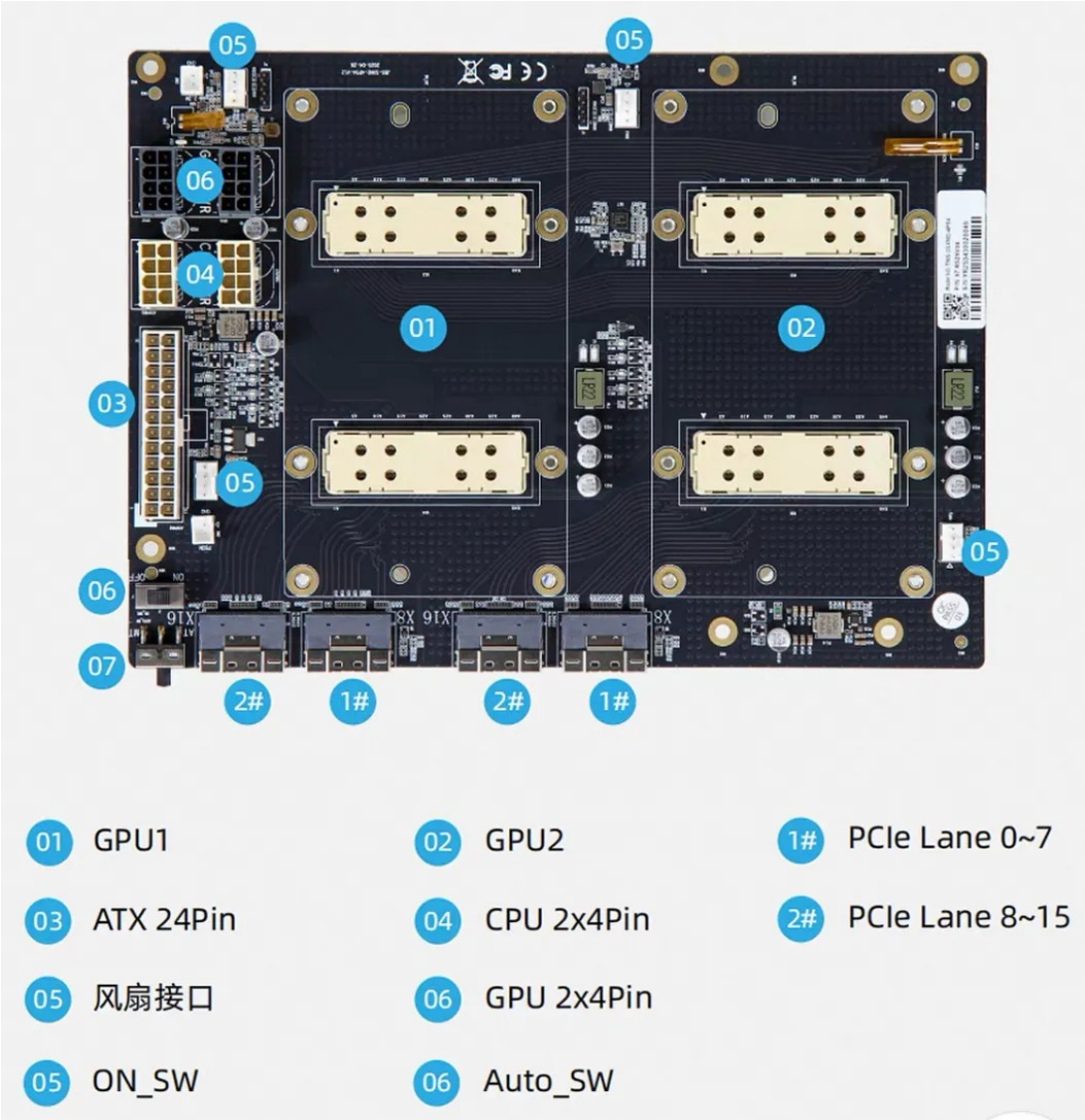
Dual SXM2 NVLink Adapter
Status: Currently on the U.S. Market $250-$400

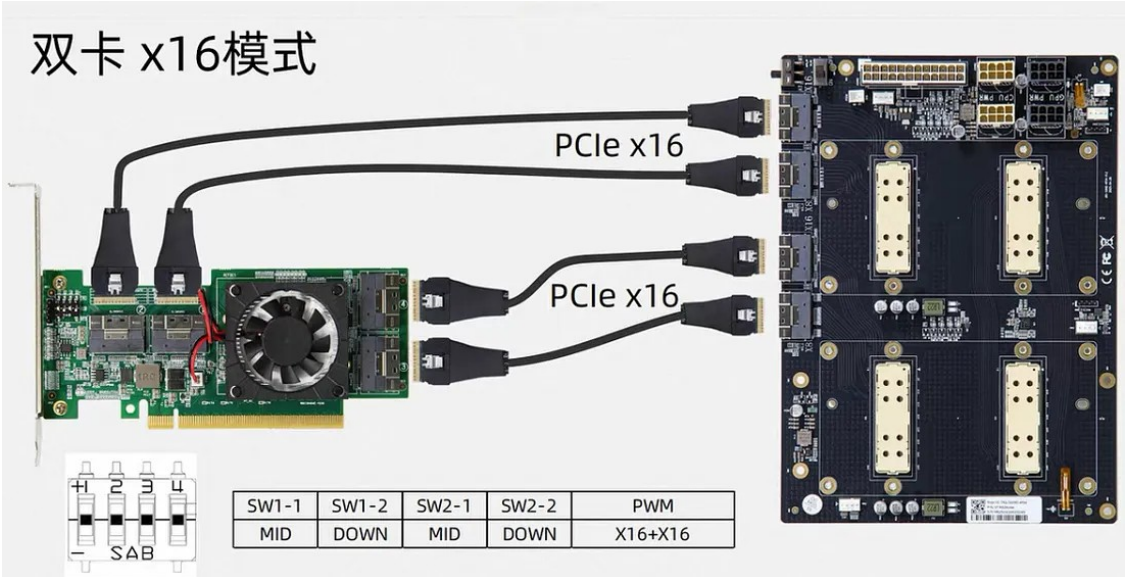
There are excellent and very affordable NVLink capable boards. This allows developers to utilize a part of P100 16 Gb, V100 16Gb or V100 32Gb SXM2 Modules. Fielding a combined **32gb** or **64gb** of NVLinked HBM2 memory with a cumulative bandwidth of **1800Gb/s**! These adapters allow the full power of the SXM2 V100 to be utilized. These SXM2 modules offer superior performance in every parameter to the subsequent Turing architecture. These boards use 2 PCIe power 12vdc and 2 EPS/CPU 12vdc Molex ports for maximum SXM2 power delivery.

This adapter is a simple dual SXM2 NVLink capable adapter. The output is 4 SFF-8654 ports, this allows for each SXM2 modules to access full PCIe 3.0X16 on the host motherboards. The module can be powered via the same PSU as the host system by engaging the **AUTO Switch**. **MANUAL Switch** allows for the addition of a second power supply via the 24-pin Molex connector.
Overall Awesome Entry to the AI and Scientific Compute market!

GitHub Link to the original Chinese Manual: (https://github.com/SKARN-eng/SKARN-Open-Source-Project-/blob/main/Chinese%20Dual%20SXM2%20NVLink%20Adapter%20Manual.pdf)

$250 Board no PLX-8749 PCIe Switch IC





$350-400 Board with PLX-8749 PCIe Switch IC

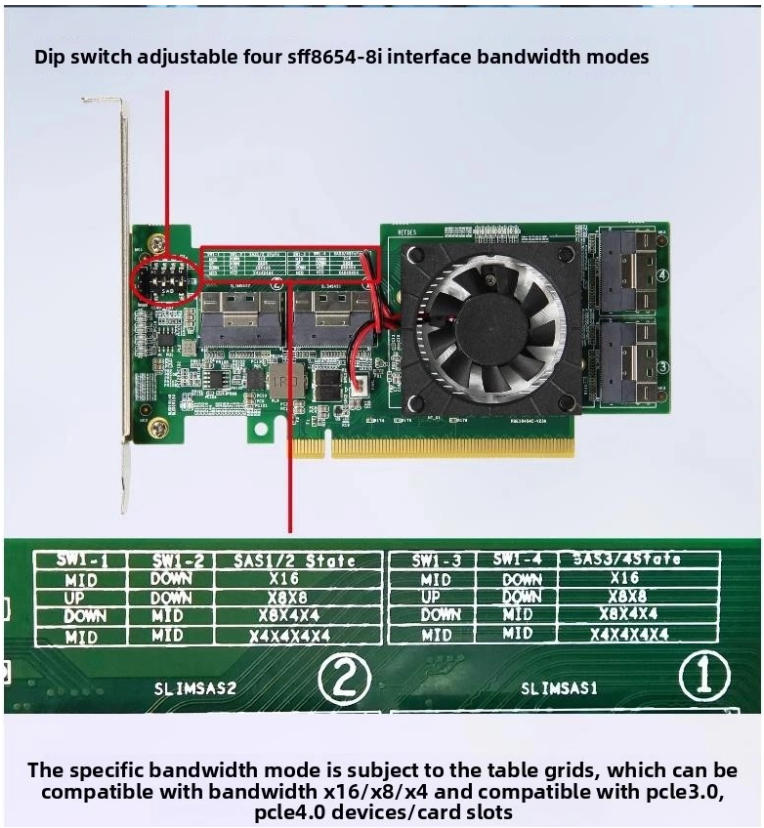
PCIe SFF-8654 Adapters for Chinese NVLink Adapter Boards
Status: Plentiful and Cheap $15-$130 Enterprise Solutions $100-$1000

The enterprise PCIe SFF adapters that use various PEX/PLX Switches for storage and PCIe. These are a bit more expensive but you will know 100% you are getting the best PCIe signal retention and switching speeds.
Enterprise 10GTek Link (https://www.10gtek.com/pcleswitchadapterforu.2ssd%28pexontroller%29)

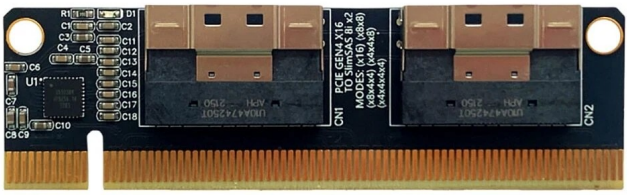
Chinese Adapters

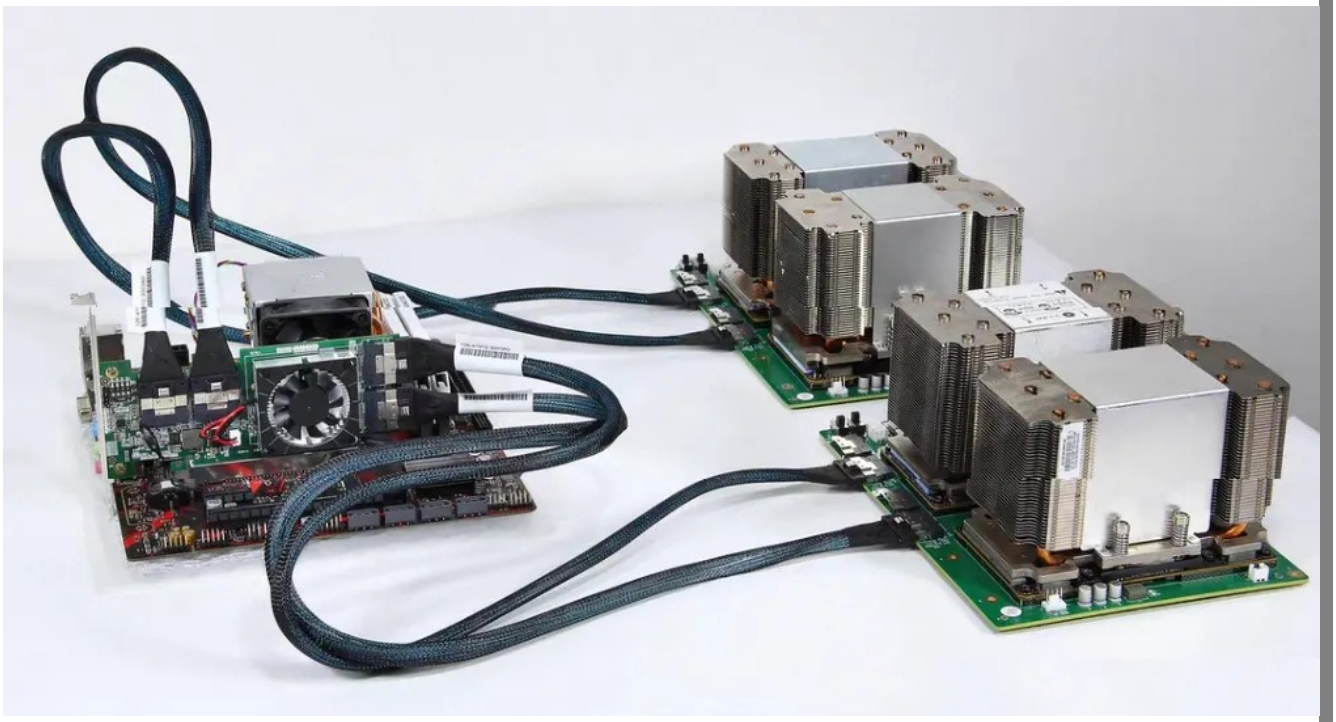
$120 Single PLX-8749 PCIe 3.0x16 to 4x SFF-8654 SlimSaS

Now on Amazon!
(https://www.amazon.com/PCIe-SFF-8654-Adapter-NVMe-PCIe4-0/dp/B0FGJ923MC?th=1)



$50 PCIe 3.0x16 2x SFF-8654 SlimSaS
Also on Amazon





Single PCIe 3.0, 4.0, and 5.0 to SXM2,4,5 Adapter Boards
Status: Plentiful and Cheap $20-$250 SXM2 $500-$1200 More Rare SXM4 and SXM5

These boards are interesting since they were the first Chinese adaptations early on during the Crypto boom and early AI innovations. These adapters comes from the simplest SXM2 adapter with PCIe dual 8 pin power 12vdc to SXM5 advanced PCB adapters.

$20-$100 Simple SXM2 Adapters

$500-$1200 SXM4 and SXM5 Single PCIe Adapter Boards

SXM4: Ampere Generation A100

SXM5: Hopper Generation H100.H200

Enterprise Solutions

New Old Stock Server
Status: Plentiful $800-$3000 SXM2

GIGABYTE T181-G20 1U DUAL SCALABLE 4x V100 SXM2 SOCKET SERVER
Ebay Link (https://ebay.us/m/MeHEK6)

Currently only $1200 for a whole server still in the box and arguably one of the best deals currently. I believe these are missing storage, cpu, and SXM2 V100's only. These SXM2 Trays are also cheap whenever they are found on Ebay or Amazon sub-$400. Ideally if this can be reconfigured to have all the GPU's on a single CPU, this would eliminate NUMA penalties if using CPU layer offloading.

Ewaste Tier Server Hardware

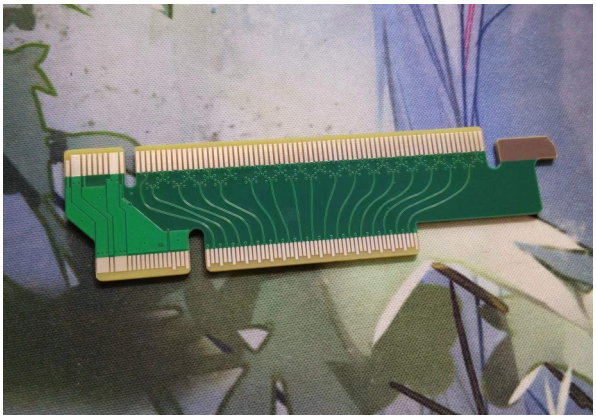
SXM2 Quad and Octa Trays
Status: Plentiful and Cheap $300-$2000
NO Brand Lock

$300-$800 Supermicro AOM-SXMV SXM2 Board (My Current Favorite)
This is an absolutely amazing board featuring No Brand Lock and also a simple CPU power solution. One limitation is that these boards have a Supermicro JPCie connection rather than simple PCIe 3.0x16.

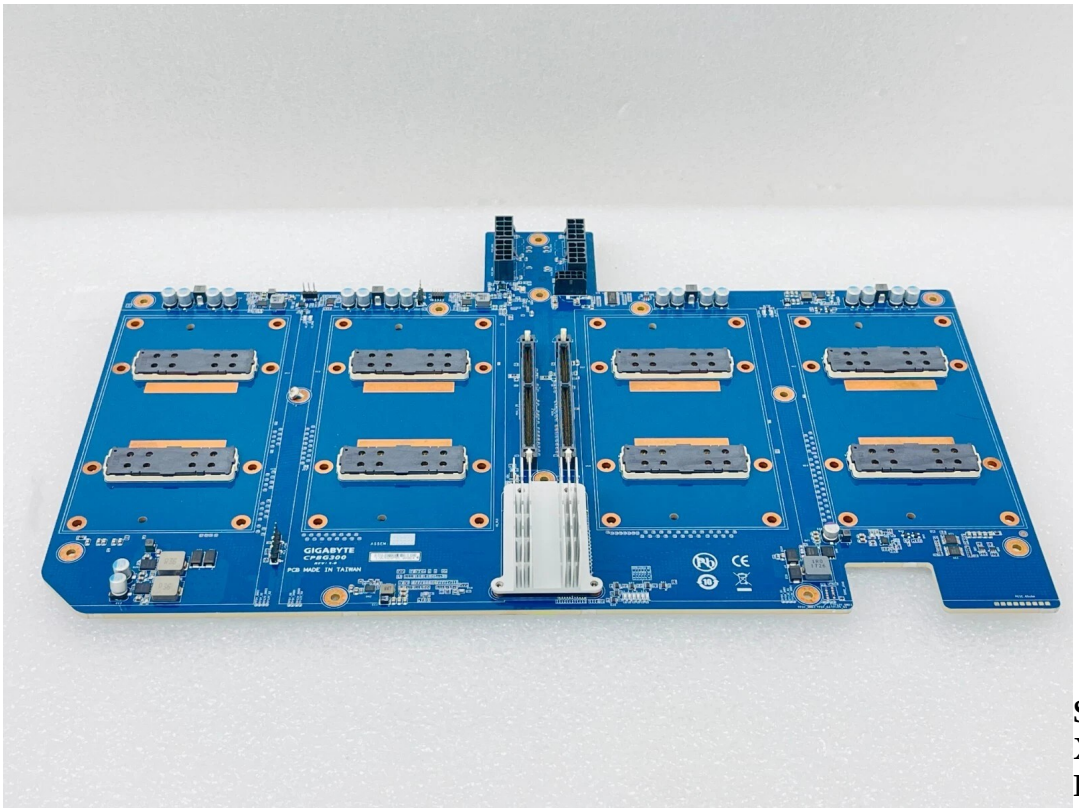
No Matter I have a solution for everyone.

You don’t need to make an account to view the drawings, download the BOM, Gerber File, Pinout Diagrams! This location also has an alternative version of this adapter that adapts JPCie to 2x SFF-8654.

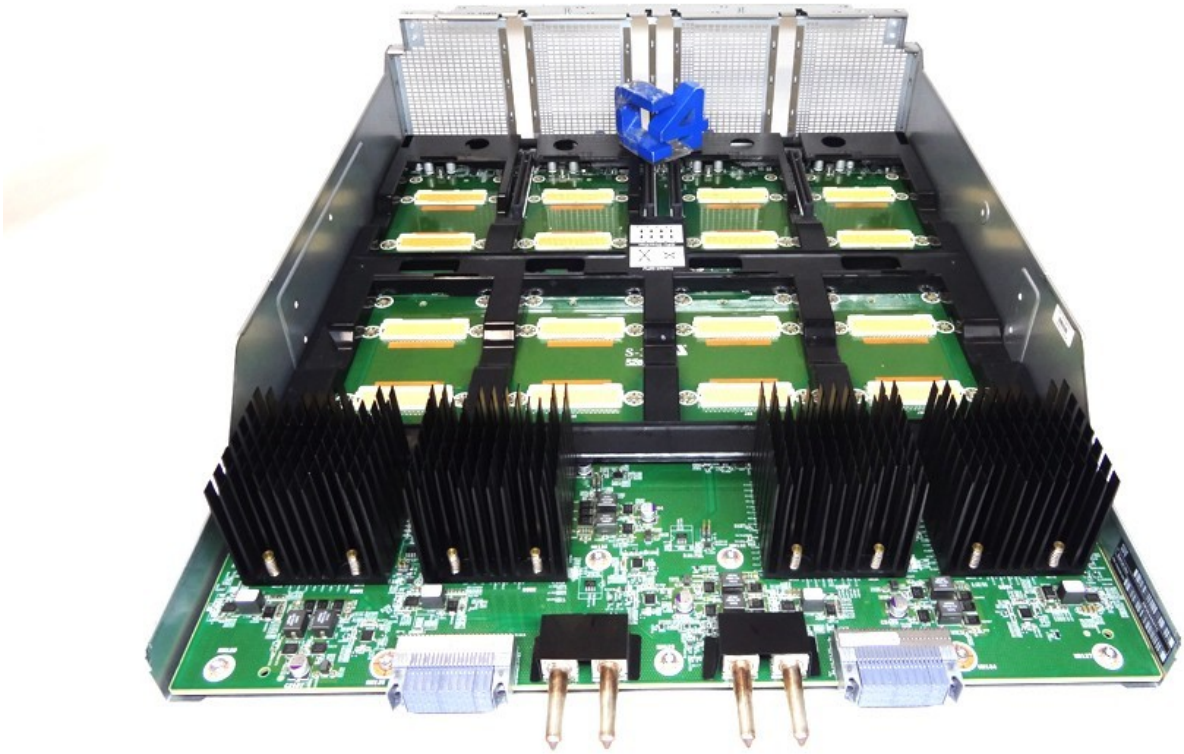
AOM-SXMV Adapter Chinese Gerber File (https://oshwhub.com/keiskeis/pcie-to-aom-sxmv-adapter-board)



$250-$500 GIGABYTE CPBG300 4x SXM2 SOCKET SERVER BOARD
Would be a good project for someone to get these boards figured out and adapters created. Would be a great AOM-SXMV alternative for a quad system. Likely Brand Locked.



$150-$600 XL270d HPE6500 Apollo 8x SXM2 Server Tray
Amazing value! I just purchased one on Ebay for $199 and will see if I can get this figured out for the community.



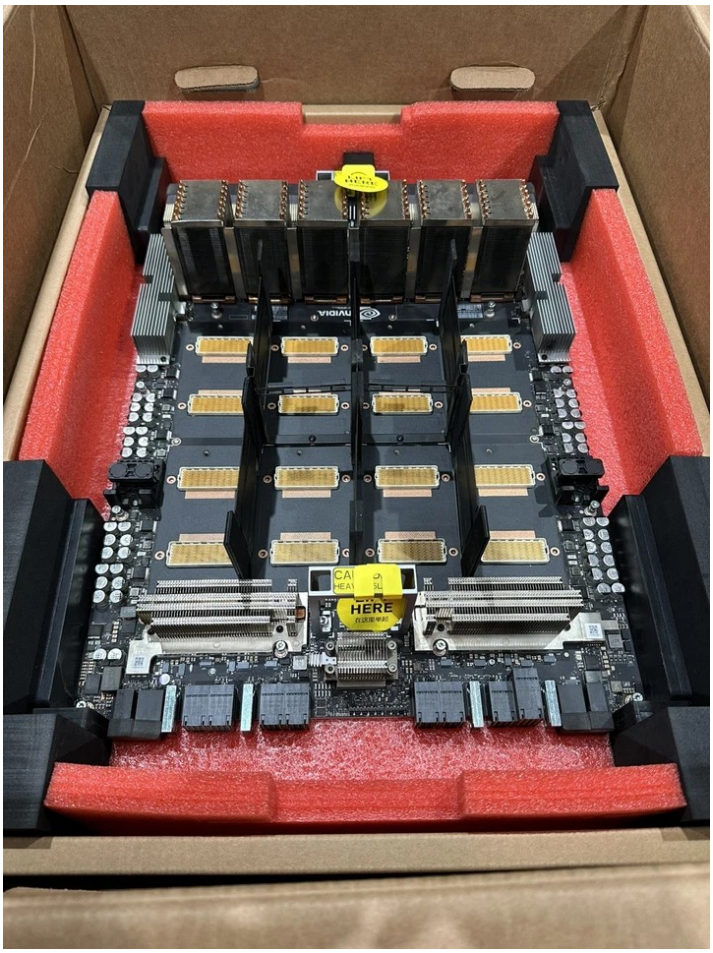
$3,000-$5,000 Dell NVLink SXM2 Board for C4140 C4130 96PWG SXM

I have heard of people using these in the past but only with Dell systems since there is likely a brand lock. Additionally these boards are still incredibly expensive, they will be a good project in the future if prices come down.

Nvidia Quad and Octa SXM4 and SXM5 Trays
Status: **Rare and Expensive $1,200(Broken)-$8,000**

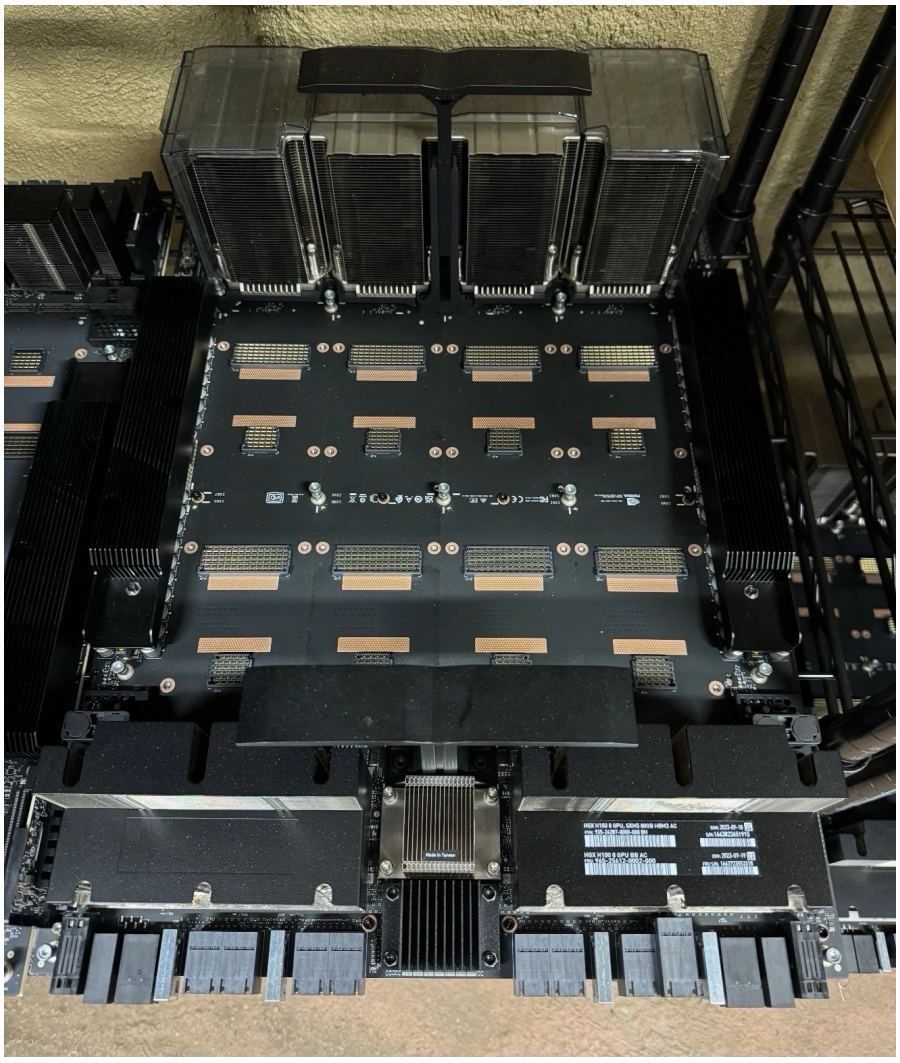
These boards are advanced Nvidia solutions for the high speed NVLink generations beyond the SXM3 and SXM2 socket. Starting with the Ampere architecture, the NVLink topology depends on NVSwitches that are a Nvidia secret. Thus stricter control over the manufacturing process of these SXM and SXM5 trays from the start. Hmm… if only someone could solder PCIe 5.0x16 pcb's to the underside of those massive ExaMAX connectors/ I hear these are 48VDC powered boards, not sure about a brand lock.

$8000 The Octa SXM4 A100 HGX Host Board

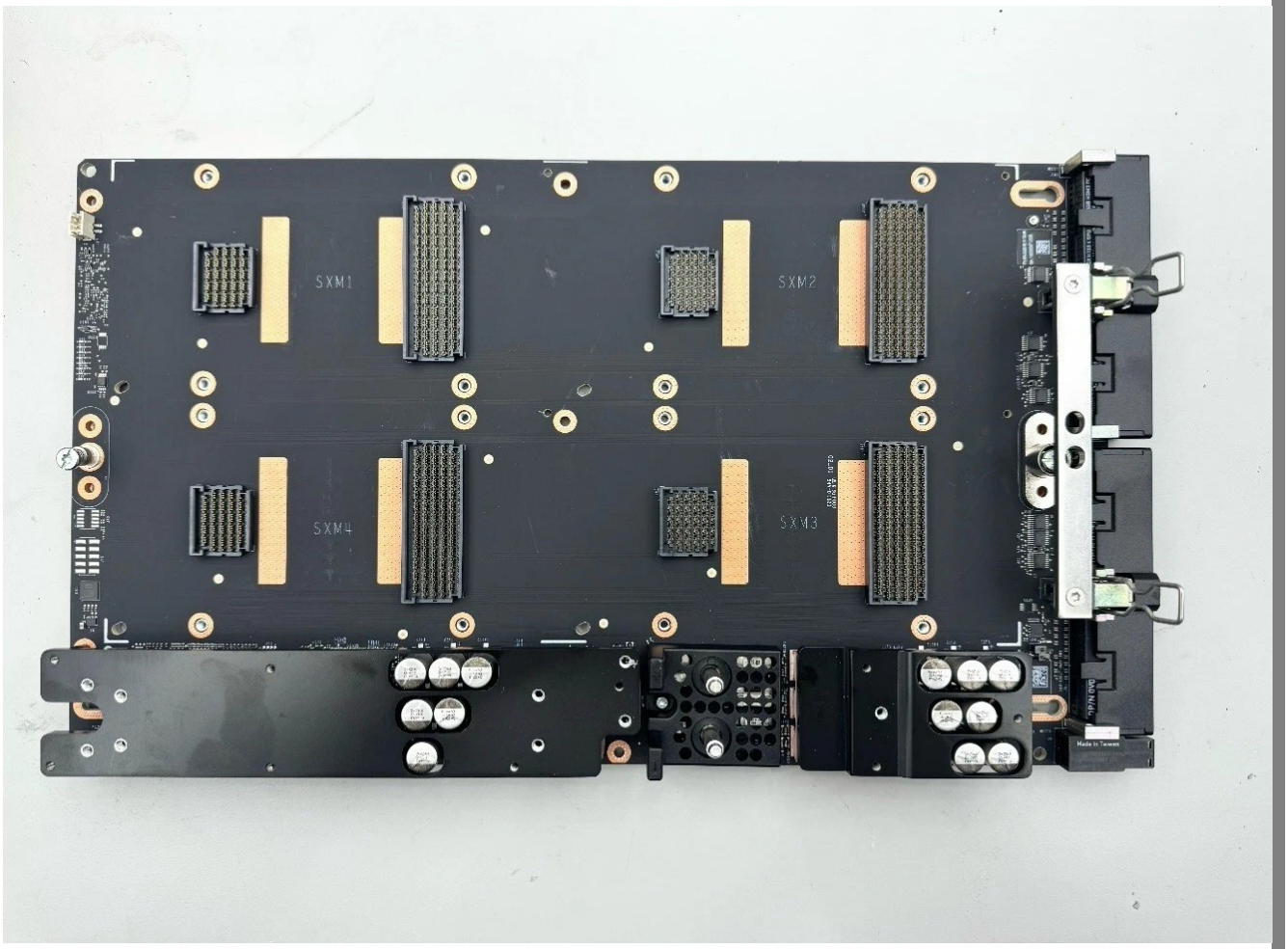


$800-$2000 Quad SXM4 Tray (Slight Damaged from Data-center Installs)

$1400 SXM5 Hopper Architecture HGX Tray (Broken)



$10,000-$20,000 Dell XE8640 4X GPU H100 80GB SXM5 Baseboard V0W6P PN 935-23087-0101-000 (Used)



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