

Re: Hacking a SunPCi card – anyone tried this?

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- *From:* Chris Jones <luginut808@xxxxxxxxxxxxxxxxxxxx>
 - *Date:* Fri, 18 Nov 2005 22:57:47 +0000
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Ken Taylor wrote:

> "Chris Jones" <luginut808@xxxxxxxxxxxxxxxxxxxx> wrote in message
> news:11nq77h99s39rab@xxxxxxxxxxxxxxxxxxxxxxxxxxxx
>> Hi all,
>>
>> I have access to, and the opportunity to play with, (though not at
>> present
>> ownership of) a large number of no–longer–required SunPCI cards. The
>> model
>> is Penguin, Bios V1.1.2 441B. These are basically an AMD x86 PC on a PCI
>> card which plugs into the bus of a SPARC based sun workstation, to allow
>> Sun users to run M\$ windows / PC programs without getting a separate box,
>> power supply, hard drive, network connection etc. The card has a 400MHz
>> AMD cpu, 2 DIMM banks, its own graphics chipset (SiS 5598), W48C67 clock
>> generation, ESS1869F audio chip, Winbond W83877TF peripherals, it has
>> USB1.1 I think, some slightly modified Award bios, a PIC16C64A programmed
>> by Sun, AFAIK to emulate a keyboard and mouse (to get the input from the
>> Sun keyboard and mouse and to provide this to the PC by emulating the
>> hardware. The sticker on the PIC says MSKB 18 (c)1998), and it has an
>> intel
>> 21554 PCI bus bridge, to allow the Sun to access the PC memory I think,
>> (or
>> vice versa?) which allows the PC to render its screen inside a window on
>> the sun desktop, although there is the option to use the internal
>> graphics
>> hardware on the SunPCI card and the VGA connector on the card edge. The
>> card seems to also have an IDE interface though the connector has not
>> been soldered on since the normal usage is to access the a file on the
>> Sun hard drive via some software on the Sun CPU over the PCI bus bridge
>> somehow.
>>
>> Anyhow, what I would like to be able to do is to make the card boot
>> without
>> the Sun workstation attached. It would be a nice little linux PC with
>> only
>> 25W maximum power consumption, and has USB so keyboard and mouse, network
>> and possibly even hard drive etc. could be attached, and could be used as
>> a

Re: Hacking a SunPCi card – anyone tried this?

>> VOIP box or for web browsing or whatever.
>>
>> Just applying power doesn't seem to do it – I tried plugging it into the
>> PCI
>> bus of an old PC and the fan worked but nothing else. I think either:
>> the PIC microcontroller or the Intel bus bridge IC might be holding the
>> SunPCi in reset, or the modified bios on the SunPCi card might be
>> unwilling to boot without some words of encouragement from a genuine Sun
>> workstation, or
>> something I haven't thought of.
>>
>> If I plug it into the Sun machine and run the software on the SPARC cpu
>> that
>> tells the SunPCI to boot, then from what I remember, the internal video
>> port of the SunPCI does become active and shows some text whilst the bios
>> boots properly and then when Win98 runs off the emulated hard drive, the
>> video is switched over to the window on the Sun desktop, so if it were
>> possible to boot the SunPCi without the Sun then I ought to see something
>> on the video port.
>>
>> I considered trying to find out about an open–source bios which could
>> replace the one on the board but it looks to me like these open BIOSs are
>> only available for specific motherboards.
>>
>> These cards are sitting in a pile at work and are causing me great
>> anguish because I can see that they are basically complete low power PCs
>> and they will sit there forever gathering dust unless I figure out how to
>> persuade
>> them to boot. Has anyone else played with one of these? (or ideally I'd
>> love it if one of the designers were lurking here and could give me a
>> quiet
>> hint...)
>>
>> Chris
>>
>
> Take a look here:
>
> <http://www.vdberg.org/~richard/Linux-on-SunPCi-mini-Howto/preface.html#OVERVIEW>
> as this due has set one up with Linux. The approach may give clues about
> how to make it do MS stuff if that's your thing.
>
> Cheers.
>
> Ken

Thanks, that is interesting, but it still is talking about using the card inside a Sun workstation. I don't want to use the card with a Sun workstation, I would like to be able to just solder on some power wires to an old PC power supply, and boot linux on the card by itself, the OS being loaded either by soldering on an IDE connector or from a USB drive.

Re: Hacking a SunPCi card – anyone tried this?

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I think if I had some kind of logic analyser able to monitor the accesses to the SunPCi card over the PCI bus of a Sun workstation, whilst the Sun is telling the card to boot up, this might enable me to figure it out. Unfortunately I don't have any such analyser.

Chris

• **Follow-Ups:**

- ◆ **Re: Hacking a SunPCi card – anyone tried this?**
◇ From: Ken Taylor

• **References:**

- ◆ **Hacking a SunPCi card – anyone tried this?**
◇ From: Chris Jones
- ◆ **Re: Hacking a SunPCi card – anyone tried this?**
◇ From: Ken Taylor

- Prev by Date: **Re: I've decided to become an electronic designer as a career choice: any advice?**
- Next by Date: **Re: using serial or parallel port for TTL input**
- Previous by thread: **Re: Hacking a SunPCi card – anyone tried this?**
- Next by thread: **Re: Hacking a SunPCi card – anyone tried this?**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**