Success story

The main characters:

Hostap, Openap, Prism 2 pcmcia cards, 1 USRobotics 2450 Access Point,
1 Centennial SRAM 2MB 5 volts pcmcia card, and a sleepless mind.

All began with a journey on the Internet.
I found some info about the Openap project, but it was
too complex for me, and at that time I had no interest for
the wireless world.

Some time later, a friend of mine asked me to configure
a couple of Intel Pro/Wireless 2011b Access Points, the only to my
knowledge capable of providing both bridging and access point services
at the same time.

It was a nightmare, also because those devices were built
by Symbol, and the documentation on the configuration file uploadable
into the devices taken from the Intel site was full of errors.

But I am a bonehead, and after some sleepless nights,
I could understand the logic and make it happen, thanks
also to Symbol's very accurate documentation.

There were however some big issues:

1) The price: about $500 per unit.
2) Intel is dropping the product, and the Symbol equivalent is even
   more expensive.

So Openap came back up into my mind.
I knew linux enough to accept the challenge, so I began
to collect information.

I borrowed a Prism 2 card from a friend of mine and started
to play. Luckily (or unfortunately), the first issue that
became clear in my mind was that it was necessary to update
the firmware into the card in order to make it compatible
with the access point mode managed by Hostap/Openap.

Guess what, I killed the card right away.
This stopped my fight. I cut the cover of the pcmcia
card in the desperate attempt to find a reset jumper,
but as most of you know, if was perfectly useless.
I saved the card, though a part of me was suggesting
to throw it away, and picked up the phone to apologize
with my friend for the death of his card.

After roughly 1 month, during a trip on the net, I
landed on the Hostap Mail list, and was very pleased to
hear about a "genesis mode" that could bring my card back to life. It
was existing, but who knew enough about it, did
not explain exactly how to use it, also because it involved

the utilization of hardware procedures dangerous for
the card and for the pc hosting the card.

So I jumped on top of my mouse and started to surf again.
My lucky star kissed me on my eyes, since after a very short time, I
found the info I needed at the following address:

http://www.dslreports.com/forum/remark,6169125~root=wlan~mode=flat

and the information was:

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You will need Prism DOS based utility which is even harder to get. I
used the DOS utility to resurrect a dead Prism 2 card after a bad flash.

The following is a link to old Hawking WE110P driver package includes
DOS utilities (see romcode directory). This is the only place I found
these utilities. I think it was left there by mistake (lucky for me)

»www.hawkingtech.com/download/we110.exe
<http://www.hawkingtech.com/download/we110.exe>[</url?url=Oi8vd3d3Lmhhd2
tpbmd0ZWNoLmNvbS9kb3dubG9hZC93ZTExMC5leGU=&board=wlan>]

Unfortunately there is no documentation. I figured out the use of these
utilities for a dead card of my own but I cannot guarantee that it will
work for you.

There are some .bat files that you can use for "model" only as they are
basically crafted for hawking cards. **Do not use them!**

First make a bootable DOS floppy. Copy the romcode directory contents to
the floppy and boot from the floppy.

Legacy.exe is needed to get PCMCIA card services installed. You must run
this after booting. It will hopefully recognize your PCMCIA chipset and
card. If not you cannot recover on that PC.

You also need to know if your card is a 3v or 5v card. I believe Linksys
cards are 5v. There are really few 3v PCMCIA cards around. Proxim
RangeLan-DS cards are 3v for example.

Flash.exe is the DOS flash utility. If you just run the program with -?
option you can get some information on options.

flash.exe -?

The .hex files are firmware files. The ones in the directory they are
for Prism 2 cards only. While you can find Primary and Secondary
firmware for Prism 2.5 and Prism 3.0 cards by searching the internet, I
have not seen any RAM resident Initial firmware for Prism 2.5/3.0. I am
not sure if the initial firmware would work for Prism 2.5/3.0. I have
not tried. (I might try one day because it is ram resident and should
not harm). You said you had Linksys v1 card. So, it should be Prism 2

card (Linksys v2.5/3.0 are Prism 2.5/3.0 respectively)

The .pda files are manufacturer related card information (like MAC
address etc). If you have a working card you can retrieve PDA
information using the Windows Flash Utility.

I assumed my PDA information on the card was still OK and just uploaded
the firmware and it worked for me. You might need a valid PDA from a
working like card and override the MAC address with -m (or -MP or -MI
options) to the correct one.

To resurrect the card you need to download ram resident initial firmware
to the card. Since this step does not require any working firmware on

the card it should work.   Initial firmware files are I*.hex. Since I
remembered the primary firmware version of my dead card was P40003C0.HEX
before the upgrade I used I40003C0.HEX as initial firmware to download.
The command was:

flash -5v -i I40003C0.HEX

Again voltage is important. At this point the LED on card would become
active again. First sign of life! If it does not work unplug the card
and try again using the other initial firmware. In my experience most
Prism 2 cards use P4*.HEX firmware so this will most likely work.

Next, you need to download Primary (P*.HEX) and Secondary (S*.HEX)
firmware to the card flash using the initial firmware just downloaded.
Again there are two types of Primary firmware on the floppy. If you used
I4*.HEX you should use P4*.HEX. If you used I1*.HEX you should use
P1*.HEX.

flash -5v -g -d P40003C0.HEX
flash -5v -g -d S10007C6.HEX

After this you can remove the card.

Use vendor supplied firmware upgrade utility to to bring secondary
firmware up to date. Or search the internet for later secondary
firmware.

You could use later secondary firmware with DOS based utility but I
suggest you use either vendor firmware upgrade utility or proceed with
Windows based utility for that because I know it does model checking
with firmware and will not allow Prism 2.5/3.0 firmware on Prism 2 card
or vice versa. You can find this by searching as well.

As final remark, I'll just write down the Prism 2 secondary firmware
files that I found available on the Internet.

S10006C2.HEX - Very old. Do not use (Upgrade immediately)
S10007C6.HEX - Very old. Do not use (Upgrade immediately)
S10008C2.HEX - Very old. Do not use (Upgrade immediately)
S10008C3.HEX - Good. Most Prism 2 cards.
S1010304.HEX - Recommend for Windows XP. Not recommended for Linux
HostAP use.
S1010409.HEX - Hard to find. (I believe it has functionality comparable
to Prism 2.5/3.0 card firmware SF010409.HEX)

Good luck!
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Unfortunately, it did not work for me, but it was not useless!!!
I posted the information above on the Hostap list, and I was very
pleased to hear that it helped someone.
In particular Pavel Roskin gave me the right input suggesting to
visit <http://home.eunet.cz/jt/wifi/> and download the latest release
of the flash.exe program.

Keep always clear in mind that when you get a new card,
the first things to do are:

1) Backup the cis using flash.exe -legacy -3(or 5)v -cd file.cis
2) Backup the pda using Winupdate from Intersil
   (http://intersil.accent-graphics.net/design/prism/software-
   o/PrismTestUtil322.exe)   using the function "Export Pda".
3) Backup the whole firmware image using Winupdate using the function
   "Export Entire Firmware Image".

   If you break the card WITHOUT backing it up before programming it,
   you can dump the files above from an identical good card and use
   them. The only thing to change is the mac address into the pda
   file. You can usually read it from a label on the card itself.

SRAM story.

   While I was still sad for the pcmcia cards dead, I started
   another trouble. The destiny made me find a Centennial SRAM 2MB 5
   volts pcmcia card. I downloaded a 2MB openap image from
   http://tools.collegeterrace.net/openap-ct, and tried to
   write it into the sram card using the dd command under Linux.
   Unfortunately, I used the wrong device, and the result was that I
   erased the CIS into the sram card. But I did not understand this.
   I wrote the openap image into the sram, but if I ejected it, after
   reloading the sram its content was different from the source.
   I stopped using linux, and downloaded the Memory Card Explorer
   Demo working under Windows:
   http://www.synchrotech.com/support-download/mced3161.zip
   Same results, the card was not recognized properly and did not
   keep the programming.

To make the picture even darker, in the mean time I had killed
2 more cards, including a USRobotics 2445 card (coming from the
USR 2450 AP).

After a deep meditation session, I started to make any kind of
tests, and these are the results:

I figured out that though the sram card was not working, I could
still read the cis using flash.exe. I dumped it into a file,
and wrote the cis back into the sram with linux using the
information I found: dd if=filename.cis   of=/dev/mem0a
I ran again the Memory Card Explorer and this time all worked!!!
The card was now recognized properly and kept the programming.
I was ready to re-program the access point.

Yes, but how could I bypass the 5 volts limitation ????
I searched on the USR 2450 motherboard 1 pin carrying 5 volts, and
connected this pin to the pin feeding the pcmcia card at 3.6
volts. See the picture below.

3.jpg

When I finished, I powered everything off and disconnected the pin
carrying 5 volts before inserting the pcmcia wireless card.
After setting the serial port of my pc to 4800 n81, I could successfully see
the openap image booting from the sram card. The boot procedure was exactly
as described at http://opensource.instant802.com/getting_started_flash.php.
Last issue: the broken pcmcia wireless cards.
With the new flash.exe program I started to do miracles.
First I resurrected the dead generic prism 2 card using the firmware
found into the following file:
http://home.eunet.cz/jt/wifi/floppy_flash.img
using the information above.

Then I resurrected a dead USR 2445 card (coming from the USR 2450 AP)
having broken PDA, primary and secondary firmware.
What I did is to perform a "cold programming" not using at all the
information coming from the card.

Steps:

1) Find a compatible PDA and change mac add and voltage if necessary
   (8002.pda).
2) Find a compatible initial firmware (i10003c0.hex).
3) Find a compatible primary firmware (p10003c0.hex).
4) Find a compatible secondary firmware(s1010409.hex).
5) Download the latest flash.exe.

Then run in sequence:
A) flash -legacy -3v -on -i i10003c0.hex
B) flash -legacy -g -pf -p 8002.pda -spi -hf -3v -on -d p10003c0.hex C)
flash -legacy -g -pf -p 8002.pda -spi -hf -3v -on -d s1010409.hex D)
flash -legacy -g -p 8002.pda -spi -hf -3v -on

And finally check the results with flash -legacy -3v -s

The last broken card had everything broken: CIS, PDA, primary and
secondary firmware. Luckily I had a firmware dump of that card made with
Winupdate (imagedump.hex), so what I did was:

A) flash -legacy -3v -on -i i10003c0.hex
B) flash -legacy -g -pf -p 8002.pda -spi -hf -3v -on -d imagedump.hex

It fixed the CIS, so after this I could run the procedure in 4 steps
above.

If the procedures do not work, perhaps your card works at 5 volts,
so try to change -3v with -5v.
Try more than once. If the hardware is still good, you should succeed.

I hope the information above will help someone.

Interesting links:

http://www.rflinx.com/ - Site where you can find very cheap 2.4GHZ
amplifiers

http://www.ralphfowler.com/dwl900.html Good info about dlink
dwl-900ap+

http://www.teletronics.com/tii/products/wireless_lan.html - Good
shop for Prism based devices

http://www.pcengines.ch/cflash.htm - Good shop for compact flash to
ide adapters allowing bootstrap!!!

http://www.synchrotech.com/products/card-rw_06.html - Good shop for
pci cards with embedded pcmcia carrier.

http://www.lillicomputers.net/dept.asp?dept_id=08 - Good shop for
ITX form factor motherboards

http://www.pccard.co.uk/copy/aboutmce.php - Good software to program
SRAM-FLASH cards under Windows