PCMCIA driver for Mx31

Freescale Semiconductor
Linux BSP

1. Hardware Operation

The detailed hardware operation of PCMCIA is detailed in the hardware documentation. The PCMCIA socket on the mx31 ADS board supports only 3.3 voltage cards. Most Compact Flash (CF) form factor cards operate at 3.3v, so these cards should work. Most PCMCIA form factor cards are 5v, so these will not work.

2. Software Operation

The MX31 PCMCIA driver sits beneath the PCMCIA subsystem layer of the linux kernel (see figure 2.1). The driver handles the details of the PCMCIA controller, while the PCMCIA subsystem layer understand and executes the PCMCIA protocol. Other driver such as PCMCIA IDE driver for Compact Flash (CF) card sits above the PCMCIA subsystem. It uses the service the PCMCIA subsystem provides and is exposed to application in user space by the /dev/hdax device node interface.

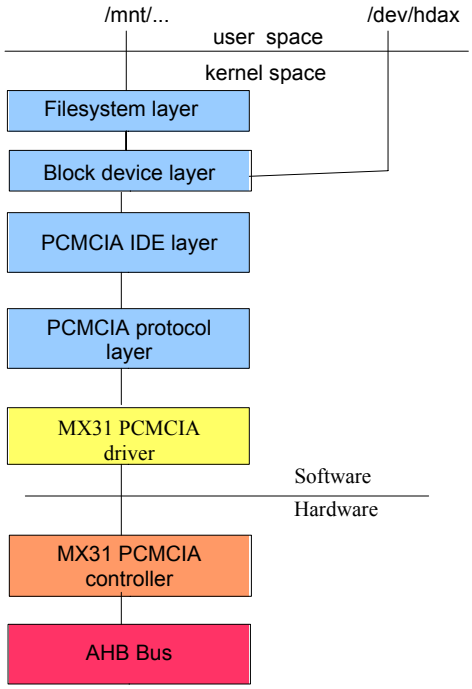

Figure 2.1

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3. Source Code Structure Configuration

Table 1 lists the source files contained in the source directorys:
linux/drivers/pcmcia
linux/include/asm-arm/arch-mxc.

Table 3.1 PCMCIA File List

pcmcia.h	Header file defining registers and bit settings
mx31ads-pcmcia.h	Header file defining structure
mx31ads-pcmcia.c	MX31ADS PCMCIA driver.

4. Linux Menu Configuration Options

Enable these kernel configuration options as either built-in to the kernel (Y) which is the preferred method, or as modules (M).

These options are all under “Bus support ---> PCCARD (PCMCIA/CardBus) support”:

```
Enable “PCCard (PCMCIA/CardBus) support”
      Under “PCCard (PCMCIA/CardBus) support”
            Enable “16-bit PCMCIA support”
                  Under “16-bit PCMCIA support”
                        Enable “Load CIS updates from userspace”
                        Enable “PCMCIA control ioctl”
            Enable “MX31ADS PCMCIA support”
```

You may also enable other PCMCIA –related options as needed such as below for Compact Flash (CF) card.:

```
Device drivers ---> ATA/ATAPI/MFM/RLL support --->Enhanced IDE/MFM/RLL
disk/cdrom/tape/floppy support ---> PCMCIA IDE support
File systems ---> DOS/FAT/NT filesystems ---> MSDOS fs support
File systems ---> DOS/FAT/NT filesystems --->VFAT (windows-95) fs
support
```

5. Board Configuration Options

6. Programming Interface

This driver implements all the low level functions that will be required by the Linux PCMCIA subsystem to interface with MX31ADS PCMCIA port.

The application interface to the PCMCIA driver is using standard filesystem interface such as open, close, read, write and ioctl function calls.

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7. Usage Example

1. After building the kernel with the proper PCMCIA configuration and deploying, boot the target, and log in as root.
2. Before using the PCMCIA subsystem, you must run the startup script:
   # /etc/rc.d/init.d/pcmcia start
3. Now, you can use the following commands to see the PCMCIA information
   # dump_cis
   # cardctl <option>
4. For Compact Flash (CF) card in VFAT format, you can mount it on with:
   # mount –t vfat /dev/hdax /mnt/cdrom
   And unmount it with :
   # mount –t /mnt/cdrom
5. To stop the PCMCIA subsystem, run:
   # /etc/rc.d/init.d/pcmcia stop

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