

Compact Flash (CF) Support on DVEVM

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ABSTRACT

The TMS320DM6446 device has a rich set of peripherals; however, many of these peripherals are multiplexed with each other, and only one is available at a time.

Perhaps the best example of a multiplexing scenario found on the TMS320DM6446 device is the asynchronous external memory interface (EMIFA). The pins that make up this interface are multiplexed to service NAND flash, NOR flash, CF, hard disk drive (HDD), Multi-Media Card (MMC), Secure Digital (SD), and Smart Media peripherals. By default, the digital video evaluation module (DVEVM) software enables the HDD, but CF support may be enabled as well.

This application report outlines the necessary steps for enabling CF support on the DVEVM. The lessons learned in this process can be extended to other peripherals; however, this document focuses strictly on the case of enabling CF support.

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1 Building Linux™ Kernel With CF Support

This section assumes that you are familiar with the *DVEVM Software Setup* section from the *DVEVM Getting Started Guide* ([SPRUE66](#)) that is included in the DVEVM kit. It also uses the same directory structure defined in that document. The following steps demonstrate the process to build a Linux kernel with CF support.

1. Go to the directory where the Linux Support Package (LSP) is found, on the host Linux workstation.

```
host $ cd /home/user/workdir/lsp/ti-davinci
```

2. Bring up the Linux kernel configuration utility.

```
host $ make ARCH=arm CROSS_COMPILE=arm_v5t_le- xconfig
```

Mounting CF Partition

3. Go to *System type and features* → *TI DaVinci Implementations* and check the *DaVinci CF Card Support* box (see [Figure 1](#)).

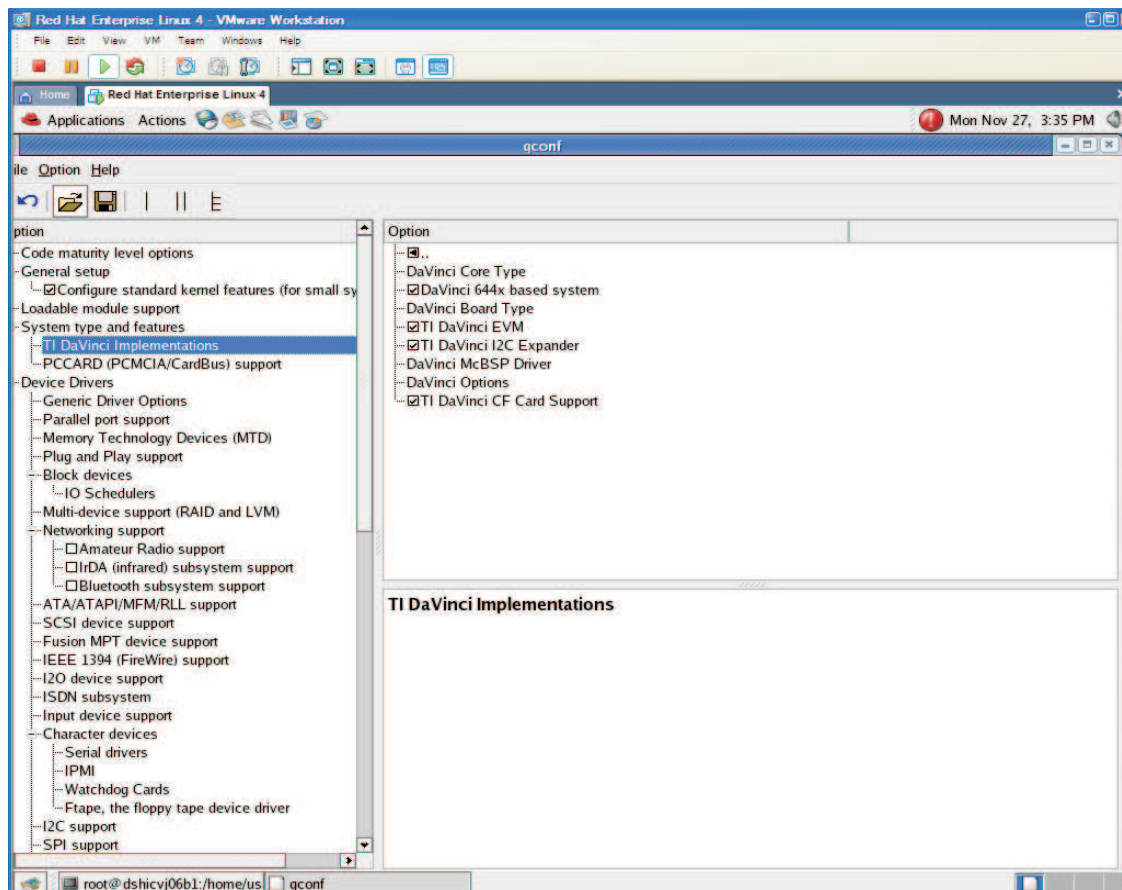


Figure 1. Xconfig Application Showing How to Enable CF Support

4. Save the settings and exit the xconfig application.
5. If not already logged in as *user*, log in as *user* prior to building Linux kernel in the next step (similar to the steps in the *DVEVM Getting Started Guide*).

```
host $ su user
```

6. Perform a make clean.

```
host $ make clean
```

7. Build the Linux kernel.

```
host $ make ARCH=arm CROSS_COMPILE=arm_v5t_le- uImage
```

You now have a Linux kernel with a CF driver support instead of ATA HDD support.

2 Mounting CF Partition

This section requires that you complete [Section 1](#).

1. Log in as *user* on the host machine. Copy the Linux kernel image with CF support to the TFTP directory and change the permissions to the image file.

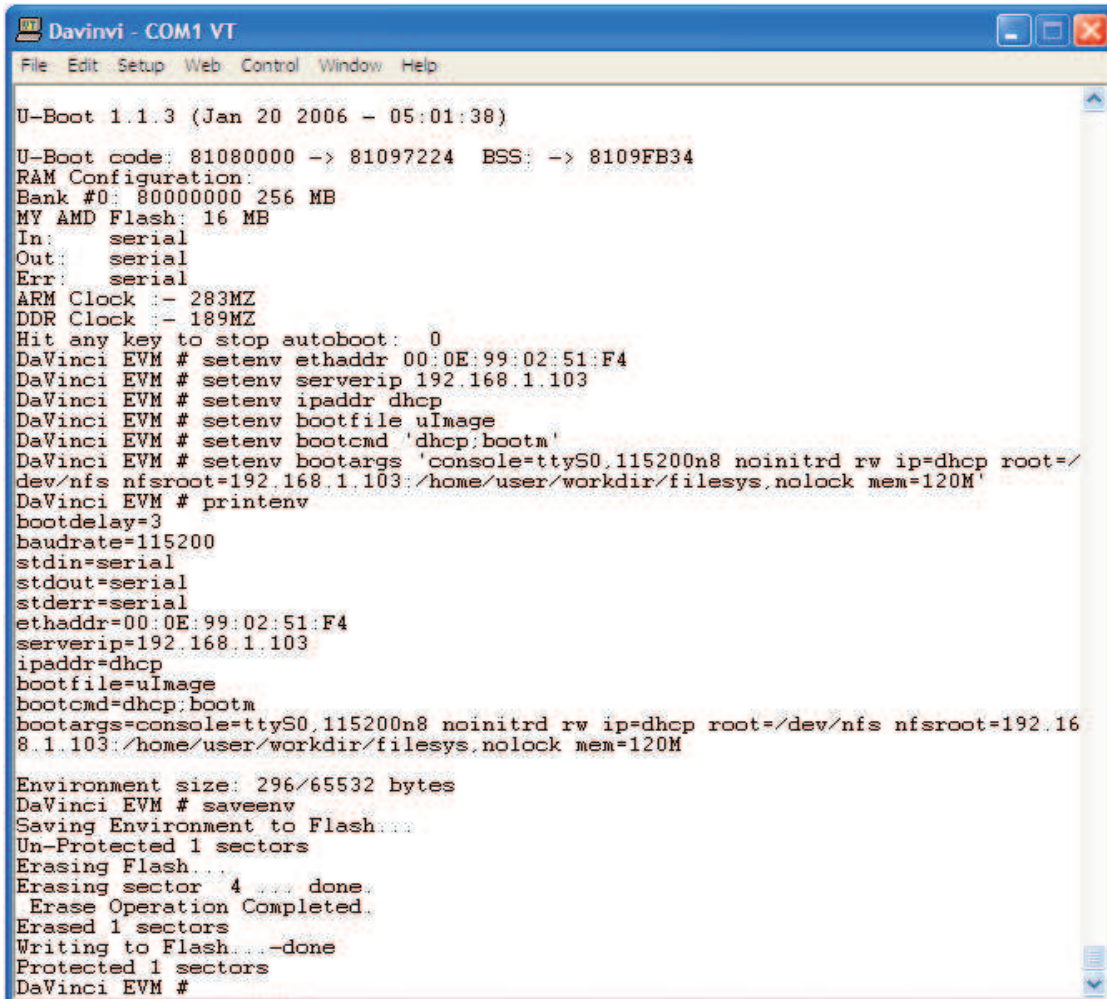
```
host $ cp ~/workdir/lsp/ti_davinci/arch/arm/boot/uImage /tftpboot
host $ chmod a+r /tftpboot/uImage
```

- Configure the u-boot parameters such that the DVEVM uses the TFTP service to load the Linux kernel from the host machine and the NFS service to mount the file system from the host machine as shown in Figure 2. Note that all the remaining steps in this section take place on the terminal applications window instead of the host workstation. With the terminal application running, power on the DVEVM and press any key on your terminal window to stop the u-boot's autoboot sequence. At the u-boot prompt, type the following commands:

Note: Replace 00:0E:99:02:51:F4 with the MAC address found on your DVEVM board and all instances of 192.168.1.103 with the IP address on your host workstation.

```

EVM # setenv ethaddr 00:0E:99:02:51:F4
EVM # setenv serverip 192.168.1.103
EVM # setenv ipaddr dhcp
EVM # setenv bootfile uImage
EVM # setenv bootcmd 'dhcp;bootm'
EVM # setenv bootargs 'console=ttyS0,115200n8 noinitrd rw ip=dhcp root=/dev/nfs
nfsroot=192.168.1.103:/home/user/workdir/filesys,nolock mem=120M'
EVM # saveenv
  
```



```

Davinvi - COM1 VT
File Edit Setup Web Control Window Help

U-Boot 1.1.3 (Jan 20 2006 - 05:01:38)

U-Boot code: 81080000 -> 81097224 BSS: -> 8109FB34
RAM Configuration:
Bank #0: 80000000 256 MB
MY AMD Flash: 16 MB
In: serial
Out: serial
Err: serial
ARM Clock :- 283MZ
DDR Clock :- 189MZ
Hit any key to stop autoboot: 0
DaVinci EVM # setenv ethaddr 00:0E:99:02:51:F4
DaVinci EVM # setenv serverip 192.168.1.103
DaVinci EVM # setenv ipaddr dhcp
DaVinci EVM # setenv bootfile uImage
DaVinci EVM # setenv bootcmd 'dhcp;bootm'
DaVinci EVM # setenv bootargs 'console=ttyS0,115200n8 noinitrd rw ip=dhcp root=/
dev/nfs nfsroot=192.168.1.103:/home/user/workdir/filesys,nolock mem=120M'
DaVinci EVM # printenv
bootdelay=3
baudrate=115200
stdin=serial
stdout=serial
stderr=serial
ethaddr=00:0E:99:02:51:F4
serverip=192.168.1.103
ipaddr=dhcp
bootfile=uImage
bootcmd=dhcp;bootm
bootargs=console=ttyS0,115200n8 noinitrd rw ip=dhcp root=/dev/nfs nfsroot=192.16
8.1.103:/home/user/workdir/filesys,nolock mem=120M

Environment size: 296/65532 bytes
DaVinci EVM # saveenv
Saving Environment to Flash...
Un-Protected 1 sectors
Erasing Flash...
Erasing sector 4 ... done.
Erase Operation Completed.
Erased 1 sectors
Writing to Flash...-done
Protected 1 sectors
DaVinci EVM #
  
```

Figure 2. Tera Term Capture Showing u-boot Configuration for Loading Kernel via TFTP

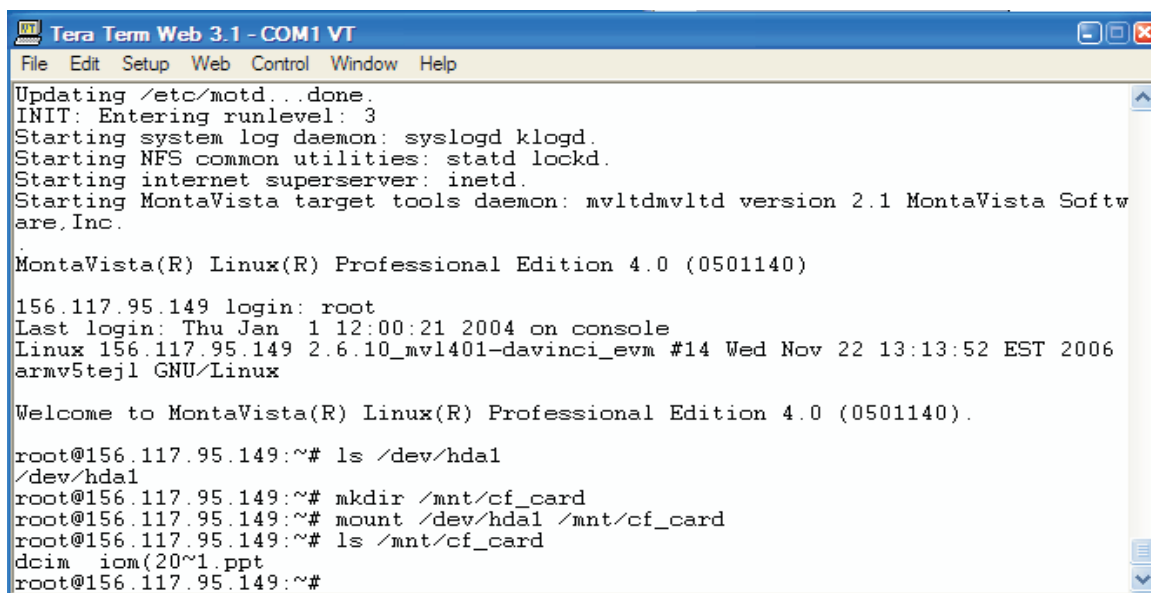
- Turn off the DVEVM and insert the CF card.

Reference

- Turn on the DVEVM and log in as root on your terminal window. The DVEVM should be running the Linux kernel with CF support from the host workstation's /tftpboot directory. To verify this, invoke the following command on the terminal application window and make sure this device is found, see [Figure 3](#).

```
$ ls /dev/hda1
```

- Create a mount directory for the CF.
- Mount the directory.
- You should now be able to see the contents of the CF card.



```

Tera Term Web 3.1 - COM1 VT
File Edit Setup Web Control Window Help
Updating /etc/motd...done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd klogd.
Starting NFS common utilities: statd lockd.
Starting internet superserver: inetd.
Starting MontaVista target tools daemon: mvltdmvltd version 2.1 MontaVista Software, Inc.
.
MontaVista(R) Linux(R) Professional Edition 4.0 (0501140)
156.117.95.149 login: root
Last login: Thu Jan  1 12:00:21 2004 on console
Linux 156.117.95.149 2.6.10_mvl401-davinci_evm #14 Wed Nov 22 13:13:52 EST 2006
armv5tej1 GNU/Linux

Welcome to MontaVista(R) Linux(R) Professional Edition 4.0 (0501140).
root@156.117.95.149:~# ls /dev/hda1
/dev/hda1
root@156.117.95.149:~# mkdir /mnt/cf_card
root@156.117.95.149:~# mount /dev/hda1 /mnt/cf_card
root@156.117.95.149:~# ls /mnt/cf_card
dcim  iom(20~1.ppt
root@156.117.95.149:~#

```

Figure 3. Tera Term Capture Showing Mounted CF Card

3 Reference

- DVEVM Getting Started Guide* ([SPRUE66](#))

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