SheevaPlug Development Kit - Writing Jaunty Filesystem on the NAND flash

Rev 1.1

SheevaPlug - Writing Jaunty Filesystem on the NAND flash

Introduction

This document shows the steps to copy the jaunty filesystem jffs2 image onto the NAND flash on the KW-6281(A0) based SheevaPlug board. The jaunty filesystem can then be updated and various packages can be installed. Packages are installed in the Ubuntu based jaunty filesystem using *'apt-get'* command. Snippets of the logs of installed packages are shown in Appendix C.

Note: It is very important to prepare the Linux host system and the Windows host system in order to bring up the SheevaPlug Development kit successfully. Please refer to the *'SheevaPlug Development Kit README-Rev1.1.pdf'* for preparing the host systems.

Following images are used in the procedures described below:

1. **uImage.sheeva.20090319** – Compressed Linux kernel
2. **ubuntu-9.0.5.Release.jffs2** – jaunty Filesystem

1. Configuring the Console

Connect the USB to mini-USB console cable in the mini-USB connector on the SheevaPlug.

1.1. Preparing Minicom as the Board Console (Linux)

Below are the configuration settings for minicom:

1. Login as root.
2. Execute minicom -s.
3. From the menu select Serial port setup.
4. Set Serial device field to /dev/ttyS0. (assuming development board connected to Com1)
5. Set Bps/Par/Bits field to 115200 8N1.
6. Set Hardware Flow Control to No.
7. Set Software Flow Control to No.
8. Select Exit.

1.2. Preparing a Terminal as the Board Console (Windows)

Use the **CDM 2.04.16_SHEEVA** package at *../SheevaPlug_Host_SWsupportPackage/WindowsHost/WindowsHost/ WindowsTeraTermUSBDriver/* to install the mini-USB-to-USB debug console driver. Below are the configuration settings for Terminal:

1. Use the Windows HyperTerminal or TeraTerm.
2. Set the properties Connect using field to COM1 or any other available COM port on your machine. (assuming development board connected to COM1).
3. Set the Configure properties as follows:
    1. Bits per sec field to *115200*
    2. Parity to *None*
    3. Stop bit to *1*
    4. Flow Control to *None*

2. Writing jffs2 image to NAND Flash:

On the console of the debug board follow the steps below to write the image to the NAND flash. Initially boot the debug board from NFS location where uImage and jffs2 images are stored.

1. At the Linux prompt, check for the NAND flash partition. You should see 3 partitions after issuing the command below.
   -sh-3.2# cat /proc/mtd

2. Confirm that the NAND erase and write binaries are included. These should be found in the 'usr/sbin' directory on giving the commands below.
   -sh-3.2# find . -name flash_eraseall
   -sh-3.2# find . -name nandwrite

3. Erase the partitions on the NAND **excluding** the U-Boot partition (which is usually **mtd0**). In case you erase partition 'mtd0', refer to the document ***'SheevaPlug-devkit Board Bring-up using JTAG-Rev1.1.pdf'***, to bring up the SheevaPlug board.
   -sh-3.2# flash_eraseall -j /dev/mtd1
   -sh-3.2# flash_eraseall -j /dev/mtd2

4. Write the uImage to the NAND flash using the command below.
   -sh-3.2# nandwrite –p /dev/mtd1 uImage.sheeva.20090319

5. Write the filesystem jffs2 image onto the NAND flash. Note the number of blocks that are used by the data. This is the length of the image which will be needed in the boot arguments (similarly you can choose to utilize the NAND flash space up to 506 MB) while editing the bootargs command in U-Boot.
   -sh-3.2# nandwrite /dev/mtd2 ubuntu-9.0.5.Release.jffs2

6. Create a mount directory and mount the jffs2 image on the NAND flash mtdblock2.
   -sh-3.2# mkdir mnt1
   -sh-3.2#
   -sh-3.2#
   -sh-3.2# mount -t jffs2 /dev/mtdblock2 /mnt1

7. Restart the system and enter the U-Boot prompt by stopping the autoboot.

8. At the U-Boot prompt, change the following parameters.
   a. *Marvell>> setenv bootargs 'console=ttyS0,115200 mtdparts=nand_flash:0x400000@0x100000(uImage)ro,0x1fC00000@0x500000(rootfs)rw root=/dev/mtdblock2'*
   b. *Marvell>> saveenv*
   c. *Marvell>> setenv bootcmd 'nand read.e 0x800000 0x100000 0x400000; bootm 0x800000'*
   d. *Marvell>> saveenv*

9. Reboot the system and the system should boot from NAND flash.

10. The login and password to access the prompt are:
    a. Login – root
    b. Password – nosoup4u

Appendix A

U-Boot environment before boot from NAND flash

This appendix provides the U-Boot environment dump before SheevaPlug board has been configured to boot from NAND flash. Please set the bootargs, bootcmd, bootargs_root, rootpath, console, image_name and bootargs_end as shown below.

```
          __  __                          _ _
                __  __                              _ _
         |  \/  | __ _ _ ____   _____| | |
         | |\/| |/ _` | '__\ \ / / _ \ | |
         | |  | | (_| | |   \ V /  __/ | |
         |_|  |_|\__,_|_|    \_/ \___|_|_|
 _   _     ____                 _
| | | |   | __ )  ___   ___ | |_
| | | |___|  _ \ / _ \ / _ \| __|
| |_| |___| |_) | (_) | (_) | |_
 \___/    |____/ \___/ \___/ \__|
 ** MARVELL BOARD: SHEEVA PLUG LE

U-Boot 1.1.4 (Dec 11 2008 - 12:29:14) Marvell version: 3.4.11

U-Boot code: 00600000 -> 0067FFF0  BSS: -> 0069292C

Soc: 88F6281 A0 (DDR2)
CPU running @ 1200Mhz L2 running @ 400Mhz
SysClock = 400Mhz , TClock = 200Mhz

DRAM CAS Latency = 5 tRP = 5 tRAS = 18 tRCD=6
DRAM CS[0] base 0x00000000   size 256MB
DRAM CS[1] base 0x10000000   size 256MB
DRAM Total size 512MB  16bit width
Flash:  0 kB
Addresses 8M - 0M are saved for the U-Boot usage.
Mem malloc Initialization (8M - 7M): Done
NAND:512 MB

CPU : Marvell Feroceon (Rev 1)

Streaming disabled
Write allocate disabled


USB 0: host mode
PEX 0: interface detected no Link.
Net:   egiga0 [PRIME], egiga1
Hit any key to stop autoboot:  3     0
Marvell>> set ipaddr 10.81.24.224
Marvell>> set serverip 10.81.24.163
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> print ethaddr
```

```
ethaddr=00.50.43.01.c0.C6
Marvell>> bubt u-boot-rd88f6281Sheevaplug_400db_nand.bin
Using egiga0 device
TFTP from server 10.81.24.163; our IP address is 10.81.24.224
Filename 'u-boot-rd88f6281Sheevaplug_400db_nand.bin'.
Load address: 0x2000000
Loading:
* ##################################################################
      ############################
done
Bytes transferred = 470808 (72f18 hex)

**Warning**
If U-Boot Endiannes is going to change (LE->BE or BE->LE), Then Env
parameters s
hould be overriden..
Override Env parameters? (y/n) y
Erase Env parameters sector 655360...
Erase 0 - 655360 ...
Copy to Nand Flash...
done
Marvell>> setenv ethaddr 00.50.43.01.c0.C6
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> reset
€


          __  __                                 _ _
         |  \/  | __ _ _ _____    _____| | |
         | |\/| |/ _` | '__\ \ / / _ \ | |
         | |  | | (_| | |   \ V /  __/ | |
         |_|  |_|\__,_|_|    \_/ \___|_|_|
 _   _     ____                  _
| | | |   | __ )  ___   ___ | |_
| | | |___|  _ \ / _ \ / _ \| __|
| |_| |___| |_) | (_) | (_) | |_
 \___/    |____/ \___/ \___/ \__|
 ** MARVELL BOARD: SHEEVA PLUG LE

U-Boot 1.1.4 (Mar  2 2009 - 12:16:00) Marvell version: 3.4.16

U-Boot code: 00600000 -> 0067FFF0  BSS: -> 006CEE60

Soc: 88F6281 A0 (DDR2)
CPU running @ 1200Mhz L2 running @ 400Mhz
SysClock = 400Mhz , TClock = 200Mhz

DRAM CAS Latency = 5 tRP = 5 tRAS = 18 tRCD=6
DRAM CS[0] base 0x00000000   size 256MB
DRAM CS[1] base 0x10000000   size 256MB
DRAM Total size 512MB  16bit width
Flash:  0 kB
Addresses 8M - 0M are saved for the U-Boot usage.
Mem malloc Initialization (8M - 7M): Done
```

```
NAND:512 MB

CPU : Marvell Feroceon (Rev 1)

Streaming disabled
Write allocate disabled


USB 0: host mode
PEX 0: interface detected no Link.
Net:   egiga0 [PRIME], egiga1
Hit any key to stop autoboot:  3     0
Marvell>> set ipaddr 10.81.24.224
Marvell>> set serverip 10.81.24.184
Marvell>> set rootpath '/home/nand/e-nas-gen-rootfs_plugtop'
Marvell>> set image_name uImage.sheeva.20090319
Marvell>> set console
Marvell>> set bootargs
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> set console 'console=ttyS0,115200
mtdparts=nand_mtd:0x100000@0x000000(u-boot),0x400000@0x10000
0(uImage),0x1f800000@0x500000(rootfs)rw'
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> set bootargs_root 'root=/dev/nfs rw'
Marvell>> set bootcmd 'tftpboot 0x2000000 $(image_name);setenv bootargs
$(console) $(bootargs_root) nfsroot=$(serverip):$(rootpath)
ip=$(ipaddr):$(serverip)$(bootargs_end); bootm 0x2000000'
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> reset
```

Appendix B

U-Boot environment after boot from NAND flash

This appendix provides the U-Boot environment dump after SheevaPlug board has been configured to boot from NAND flash. Please set the bootargs and bootcmd as shown below.

```
          __  __                                  _ _
         |  \/  | __ _ _ ____      _____| | |
         | |\/| |/ _` | '__\ \ / / _ \ | |
         | |  | | (_| | |   \ V /  __/ | |
         |_|  |_|\__,_|_|    \_/ \___|_|_|
 _   _     ____                  _
| | | |   | __ )  ___   ___ | |_
| | | |___|  _ \ / _ \ / _ \| __|
| |_| |___| |_) | (_) | (_) | |_
 \___/    |____/ \___/ \___/ \__|
  ** MARVELL BOARD: SHEEVA PLUG LE

U-Boot 1.1.4 (Jan 20 2009 - 12:05:46) Marvell version: 3.4.11

U-Boot code: 00600000 -> 0067FFF0  BSS: -> 0069292C

Soc: 88F6281 A0 (DDR2)
CPU running @ 1200Mhz L2 running @ 400Mhz
SysClock = 400Mhz , TClock = 200Mhz

DRAM CAS Latency = 5 tRP = 5 tRAS = 18 tRCD=6
DRAM CS[0] base 0x00000000   size 256MB
DRAM CS[1] base 0x10000000   size 256MB
DRAM Total size 512MB  16bit width
Flash:  0 kB
Addresses 8M - 0M are saved for the U-Boot usage.
Mem malloc Initialization (8M - 7M): Done
NAND:512 MB
*** Warning - bad CRC or NAND, using default environment


CPU : Marvell Feroceon (Rev 1)

Streaming disabled
Write allocate disabled


USB 0: host mode
PEX 0: interface detected no Link.
Net:   egiga0 [PRIME], egiga1
Hit any key to stop autoboot:  3
Marvell>>
Marvell>> setenv bootcmd 'nand read.e 0x800000 0x100000 0x400000; bootm
0x800000'
```

```
Marvell>> setenv bootargs 'console=ttyS0,115200
mtdparts=nand_flash:0x400000@0x1
00000(uImage)ro,0x1fc00000@0x500000(rootfs)ro root=/dev/mtdblock2'
Marvell>> saveenv
Saving Environment to NAND...
Erasing Nand...Writing to Nand... done
Marvell>> reset
```

Appendix C

Boot SheevaPlug from NFS

This section provides the information on the settings needed on the Linux host and the SheevaPlug U-Boot to boot SheevaPlug from NFS.

A] Linux Host Settings

On the Linux host follow the steps below:

1. Copy the *'uImage.sheeva.20090319*' to the **'tftpboot'** folder.
   [root@localhost SheevaPlug]# cp –a uImage.sheeva.20090319 /tftpboot

2. Edit the NFS exports script residing in the /etc folder.
   [root@localhost SheevaPlug]# pwd
   /home/SheevaPlug
   [root@localhost SheevaPlug]# vi /etc/exports

3. Add the following lines to the 'exports' script and save.
   */home/ *(rw,sync,no_root_squash)*
   */tftpboot/ *(rw,sync,no_root_squash)*

4. Restart the 'NFS' server.
   [root@localhost SheevaPlug]# /etc/init.d/nfs restart
   Shutting down NFS mountd: [OK]
   Shutting down NFS daemon: [OK]
   Shutting down NFS quotas: [OK]
   Shutting down NFS services: [OK]
   Starting NFS services: [OK]
   Starting NFS quotas: [OK]
   Starting NFS daemon: [OK]
   Starting NFS mountd: [OK]
   [root@localhost SheevaPlug]#

B] SheevaPlug U-Boot Settings

On the SheevaPlug reference board follow the steps below to boot from NFS.

```
Marvell>> set ipaddr 10.81.xxx.yyy
Marvell>> set serverip 10.81.xxx.zzz
Marvell>> set rootpath /home/Ubuntu-SheevaPlug
Marvell>> set image_name uImage.sheeva.20090319
Marvell>> set console 'console=ttyS0,115200
mtdparts=nand_flash:0x100000@0x000000(u-boot),0x400000@0x10000
0(uImage),0x1f800000@0x500000(rootfs)rw'
Marvell>> set bootargs_root 'root=/dev/nfs rw'
Marvell>> set bootargs_end ':::DB88FXX81:eth0:none'
```

```
Marvell>> set bootcmd 'tftpboot 0x2000000 $(image_name);setenv bootargs
$(console) $(bootargs_root) nfsroot=$(serverip):$(rootpath)
ip=$(ipaddr):$(serverip)$(bootargs_end); bootm 0x2000000'
Marvell>> saveenv
```

Appendix D

Installing Packages in the Jaunty Filesystem

1. Installing samba

```
root@debian:~#
root@debian:~#
root@debian:~# apt-get install samba
Reading package lists... 0%Reading package lists... 0%Reading
package lists... 1%Reading package lists... 8%Reading package
lists... 15%Reading package lists... 22%Reading package lists...
26%Reading package lists... 26%Reading package lists... 26%Reading
package lists... 26%Reading package lists... 28%Reading package
lists... 34%Reading package lists... 40%Reading package lists...
46%Reading package lists... 52%Reading package lists... 58%Reading
package lists... 65%Reading package lists... 71%Reading package
lists... 77%Reading package lists... 82%Reading package lists...
87%Reading package lists... 92%Reading package lists... 96%Reading
package lists... 97%Reading package lists... 97%Reading package
lists... 99%Reading package lists... 99%Reading package lists...
Done
Building dependency tree... 0%Building dependency tree... 0%Building
dependency tree... 0%Building dependency tree... 50%Building
dependency tree... 50%Building dependency tree... 75%Building
dependency tree
Reading state information... 0%Reading state information...
3%Reading state information... Done
samba is already the newest version.
The following packages were automatically installed and are no
longer required:
  libx11-data libxcb1 libxau6 libxdmcp6 libxcb-xlib0 libx11-6
Use 'apt-get autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.
root@debian:~#
root@debian:~#
root@debian:~#
```

2. Checking for Updates

```
root@debian:~#
root@debian:~#
root@debian:~# apt-get update
0% [Working]            Get:1 http://ports.ubuntu.com jaunty
Release.gpg [189B]
            0% [1 Release.gpg 0/189B 0%]
99% [Working]             Get:2 http://ports.ubuntu.com jaunty
Release [74.6kB]
             3% [2 Release 2623/74.6kB 3%]
29% [2 Release 21603/74.6kB 28%]                                  99%
[Working]             99% [2 Release gpgv 74637]
```

```
99% [Working]              99% [Waiting for headers]
Get:3 http://ports.ubuntu.com jaunty/main Packages [1260kB]
                          5% [3 Packages 0/1260kB 0%]5% [3 Packages
0/1260kB 0%]5% [3 Packages 0/1260kB 0%]5% [3 Packages 0/1260kB 0%]
7% [3 Packages 20480/1260kB 1%]                                  15% [3
Packages 135168/1260kB 10%]26% [3 Packages 278528/1260kB 22%]55% [3
Packages 663552/1260kB 52%]                                     86% [3
Packages 1077248/1260kB 85%]                                      99%
[Working]
214kB/s 0s99% [3 Packages bzip2 0] [Waiting for headers]
214kB/s 0s
Get:4 http://ports.ubuntu.com jaunty/restricted Packages [1221B]
99% [3 Packages bzip2 0] [Waiting for headers]
214kB/s 0s99% [3 Packages bzip2 309248] [Waiting for headers]
214kB/s 0s99% [3 Packages bzip2 635904] [Waiting for headers]
214kB/s 0s99% [3 Packages bzip2 894976] [Waiting for headers]
214kB/s 0s
Get:5 http://ports.ubuntu.com jaunty/universe Packages [4347kB]
23% [3 Packages bzip2 894976] [5 Packages 4071/4347kB 0%]
214kB/s 20s24% [3 Packages bzip2 1174528] [5 Packages 61011/4347kB
1%]         214kB/s 20s29% [3 Packages bzip2 1254400] [5 Packages
352256/4347kB 8%]        214kB/s 18s36% [3 Packages bzip2 1254400]
[5 Packages 761856/4347kB 17%]       214kB/s 16s44% [3 Packages
bzip2 1254400] [5 Packages 1179648/4347kB 27%]      214kB/s 14s51%
[3 Packages bzip2 1254400] [5 Packages 1593344/4347kB 36%]
214kB/s 12s58% [3 Packages bzip2 1254400] [5 Packages 2007040/4347kB
46%]      214kB/s 10s61% [3 Packages bzip2 1454080] [5 Packages
2185311/4347kB 50%]      214kB/s 10s65% [3 Packages bzip2 1619968]
[5 Packages 2401391/4347kB 55%]       214kB/s 9s68% [3 Packages
bzip2 1799168] [5 Packages 2569291/4347kB 59%]       415kB/s 4s71%
[3 Packages bzip2 1944576] [5 Packages 2721131/4347kB 62%]
415kB/s 3s74% [3 Packages bzip2 2115584] [5 Packages 2895872/4347kB
66%]       415kB/s 3s77% [3 Packages bzip2 2270208] [5 Packages
3094891/4347kB 71%]       415kB/s 3s81% [3 Packages bzip2 2434048]
[5 Packages 3277391/4347kB 75%]       415kB/s 2s84% [3 Packages
bzip2 2579456] [5 Packages 3493888/4347kB 80%]       415kB/s 2s88%
[3 Packages bzip2 2699264] [5 Packages 3706631/4347kB 85%]
415kB/s 1s92% [3 Packages bzip2 2765824] [5 Packages 3919872/4347kB
90%]       415kB/s 1s94% [3 Packages bzip2 2989056] [5 Packages
4049731/4347kB 93%]       415kB/s 0s97% [3 Packages bzip2 3175424]
[5 Packages 4181131/4347kB 96%]       415kB/s 0s99% [3 Packages
bzip2 3325952] [5 Packages 4346111/4347kB 99%]       415kB/s 0s
Get:6 http://ports.ubuntu.com jaunty/multiverse Packages [153kB]
97% [3 Packages bzip2 3338240] [6 Packages 0/153kB 0%]
415kB/s 0s99% [3 Packages bzip2 3469312] [6 Packages 146092/153kB
95%]         415kB/s 0s99% [3 Packages bzip2 3470336]
415kB/s 0s99% [3 Packages bzip2 3731456]…..
..
..
..
..
..            99% [6 Packages bzip2 0]                          99% [6
Packages bzip2 234496]99% [6 Packages bzip2 372736]99% [6 Packages
bzip2 372736]99% [6 Packages bzip2 372736]99% [6 Packages bzip2
372736]99% [6 Packages bzip2 372736]99% [6 Packages bzip2 487424]99%
```

```
[6 Packages bzip2 640000]                                    100% [Working]
Fetched 5836kB in 1min4s (89.8kB/s)
Reading package lists... 0%Reading package lists... 0%Reading
package lists... 1%Reading package lists... 13%Reading package
lists... 22%Reading package lists... 26%Reading package lists...
26%Reading package lists... 26%Reading package lists... 26%Reading
package lists... 29%Reading package lists... 40%Reading package
lists... 49%Reading package lists... 61%Reading package lists...
72%Reading package lists... 81%Reading package lists... 91%Reading
package lists... 97%Reading package lists... 97%Reading package
lists... 98%Reading package lists... 99%Reading package lists...
99%Reading package lists... Done
root@debian:~#
root@debian:~#
root@debian:~#
```

3. Installing vim

```
root@debian:~#
root@debian:~#
root@debian:~# apt-get install vim
Reading package lists... 0%Reading package lists... 0%Reading
package lists... 48%Reading package lists... Done
Building dependency tree... 0%Building dependency tree... 0%Building
dependency tree... 50%Building dependency tree... 50%Building
dependency tree... 79%Building dependency tree
Reading state information... 0%Reading state information...
2%Reading state information... Done
The following packages were automatically installed and are no
longer required:
  libx11-data libapr1 libxcb1 libxau6 libxdmcp6 ssl-cert libxcb-
xlib0 libx11-6
  libpq5
Use 'apt-get autoremove' to remove them.
The following extra packages will be installed:
  vim-runtime
Suggested packages:
  ctags vim-doc vim-scripts
The following NEW packages will be installed:
  vim vim-runtime
0 upgraded, 2 newly installed, 0 to remove and 34 not upgraded.
Need to get 6656kB of archives.
After this operation, 26.7MB of additional disk space will be used.
Do you want to continue [Y/n]? y
0% [Working]            Get:1 http://ports.ubuntu.com jaunty/main
vim-runtime 2:7.2.079-1ubuntu1 [5809kB]
            0% [1 vim-runtime 0/5809kB 0%]
0% [1 vim-runtime 43483/5809kB 0%]
3% [1 vim-runtime 208463/5809kB 3%]
9% [1 vim-runtime 601203/5809kB 10%]
20% [1 vim-runtime 1357483/5809kB 23%]29% [1 vim-runtime
1967763/5809kB 33%]40% [1 vim-runtime 2668563/5809kB 45%]60% [1 vim-
runtime 4034287/5809kB 69%]68% [1 vim-runtime 4575323/5809kB 78%]
```

```
87% [Working]             Get:2 http://ports.ubuntu.com jaunty/main
vim 2:7.2.079-1ubuntu1 [847kB]
             87% [2 vim 0/847kB 0%]                        100%
[Working]              Fetched 6656kB in 5s (1298kB/s)
Selecting previously deselected package vim-runtime.
(Reading database ... 11606 files and directories currently
installed.)
Unpacking vim-runtime (from .../vim-runtime_2%3a7.2.079-
1ubuntu1_all.deb) ...
Adding `diversion of /usr/share/vim/vim72/doc/help.txt to
/usr/share/vim/vim72/doc/help.txt.vim-tiny
 by vim-runtime'
Adding `diversion of /usr/share/vim/vim72/doc/tags to
/usr/share/vim/vim72/doc/tags.vim-tiny by vim-
runtime'
Selecting previously deselected package vim.
Unpacking vim (from .../vim_2%3a7.2.079-1ubuntu1_armel.deb) ...
Setting up vim-runtime (2:7.2.079-1ubuntu1) ...
Processing /usr/share/vim/addons/doc

Setting up vim (2:7.2.079-1ubuntu1) ...

root@debian:~#
root@debian:~#
root@debian:~#
```

4. Installing gdb

```
root@debian:~#
root@debian:~#
root@debian:~# apt-get install gdb
Reading package lists... 0%Reading package lists... 100%Reading
package lists... Done
Building dependency tree... 0%Building dependency tree... 0%Building
dependency tree... 50%Building dependency tree... 50%Building
dependency tree... 80%Building dependency tree
Reading state information... 0%Reading state information...
3%Reading state information... Done
The following packages were automatically installed and are no
longer required:
  libx11-data libxcb1 libxau6 libxdmcp6 libxcb-xlib0 libx11-6
Use 'apt-get autoremove' to remove them.
The following extra packages will be installed:
  libexpat1
Suggested packages:
  gdb-doc
The following NEW packages will be installed:
  gdb libexpat1
0 upgraded, 2 newly installed, 0 to remove and 34 not upgraded.
Need to get 3003kB of archives.
After this operation, 6423kB of additional disk space will be used.
Do you want to continue [Y/n]? y
0% [Working]            Get:1 http://ports.ubuntu.com jaunty/main
libexpat1 2.0.1-4 [119kB]
```

```
            0% [1 libexpat1 0/119kB 0%]                                  1%
[1 libexpat1 43483/119kB 36%]                                 Get:2
http://ports.ubuntu.com jaunty/main gdb 6.8-3ubuntu2 [2884kB]
                                4% [2 gdb 4828/2884kB 0%]
8% [2 gdb 136228/2884kB 4%]                                  12% [2 gdb
269088/2884kB 9%]                                 18% [2 gdb
432608/2884kB 14%]23% [2 gdb 574228/2884kB 19%]28% [2 gdb
743588/2884kB 25%]34% [2 gdb 931928/2884kB 32%]
40% [2 gdb 1102748/2884kB 38%]48% [2 gdb 1337808/2884kB 46%]54% [2
gdb 1531988/2884kB 53%]                                    61% [2 gdb
1739308/2884kB 60%]                                         299kB/s
3s70% [2 gdb 2010868/2884kB 69%]
299kB/s 2s76% [2 gdb 2181688/2884kB 75%]
299kB/s 2s84% [2 gdb 2410908/2884kB 83%]
299kB/s 1s90% [2 gdb 2597788/2884kB 90%]
299kB/s 0s97% [2 gdb 2797808/2884kB 97%]
299kB/s 0s100% [Working]
299kB/s 0s
Fetched 3003kB in 8s (338kB/s)
Selecting previously deselected package libexpat1.
(Reading database ... 10231 files and directories currently
installed.)
Unpacking libexpat1 (from .../libexpat1_2.0.1-4_armel.deb) ...
Selecting previously deselected package gdb.
Unpacking gdb (from .../gdb_6.8-3ubuntu2_armel.deb) ...
Setting up libexpat1 (2.0.1-4) ...

Setting up gdb (6.8-3ubuntu2) ...

Processing triggers for libc6 ...
ldconfig deferred processing now taking place
root@debian:~#
root@debian:~#
root@debian:~#
```

5. Installing tftp

```
root@debian:~#
root@debian:~#
root@debian:~# apt-get install tftp
Reading package lists... 0%Reading package lists... 0%Reading
package lists... 48%Reading package lists... Done
Building dependency tree... 0%Building dependency tree... 0%Building
dependency tree... 50%Building dependency tree... 50%Building
dependency tree... 78%Building dependency tree
Reading state information... 0%Reading state information...
2%Reading state information... Done
The following packages were automatically installed and are no
longer required:
  libx11-data libapr1 libxcb1 libxau6 libxdmcp6 ssl-cert libxcb-
xlib0 libx11-6
  libpq5
Use 'apt-get autoremove' to remove them.
The following NEW packages will be installed:
```

```
  tftp
0 upgraded, 1 newly installed, 0 to remove and 34 not upgraded.
Need to get 19.4kB of archives.
After this operation, 86.0kB of additional disk space will be used.
0% [Working]            Get:1 http://ports.ubuntu.com
jaunty/universe tftp 0.17-17ubuntu1 [19.4kB]
            0% [1 tftp 0/19.4kB 0%]                       100%
[Working]              Fetched 19.4kB in 0s (32.9kB/s)
Selecting previously deselected package tftp.
(Reading database ... 13131 files and directories currently
installed.)
Unpacking tftp (from .../tftp_0.17-17ubuntu1_armel.deb) ...
Setting up tftp (0.17-17ubuntu1) ...
root@debian:~#
root@debian:~#
root@debian:~#
```