Freescale Semiconductor
Application Note

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Genesi Pegasos II Debian Linux

by *Maurie Ommerman*
CPD Applications
Freescale Semiconductor, Inc.
Austin, TX

This application note is the fourth in a series describing the Genesi Pegasos II system, which contains a PowerPC™ microprocessor, and the various applications of the system.

Contents

1 Introduction

This application note describes the Debian Linux Operating System and many of the commands. Linux has a variety of ways to accomplish most tasks. This document will show only one way to perform the actions described here. There are other ways. Also, there is usually a GUI way to accomplish most tasks, however, this paper presents command line methods for most tasks. GUI are nice, but they hide what is really happening. When the network is set up with a GUI, how the files are actually affected is not seen, but using the line commands allows feedback on exactly what is happening. This is not a complete guide to Debian Linux, but is a collection of useful things to help both the experienced and novice become quickly adept at using Debian Linux.

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2 Terminology

The following terms are used in this document.

CUPS	Common Unix Printing System Architecture
Debian	One of the versions of Linux
IDE	A type of hard drive, which allows up to 2 drives on each channel
Linux OS	Linux operating system
SCSI	A type of hard drive, which allows up to 8 drives on each channel
Shell	A software construct to allow separate users and jobs within the same user to have a separate environment to avoid interfering with each other
USB	Universal serial bus
Yellow Dog	One of the versions of Linux

3 Starting Debian Linux

Use the boot option 2 for the 2.4 kernel and option 3 for the 2.6 kernel, option 4 for the 2.6.8 kernel. Normally, option 4 is preferred, but there are some circumstances where option 2 is better, for example when recovering a crashed 2.6 kernel, and accessing files on partitions /dev/hda2 and /dev/hda3 (see Section 7.5, “The Utility parted, the Partition Table Editor”).

During boot up there are lots of messages. After boot is complete, read some of these messages with the `dmesg` command and also in the /var/log directory. In fact, the /var/log directory contains many useful logs, including the XF86 logs.

3.1 Boot Problems

The following information requires root user and the dpkg package. See Section 7.12, “Managing Packages, dpkg, dselect, and apt-get,” for more information.

If boot hangs on the MTA initialization, be patient, after about 5 minutes it will continue. This appears to happen only during the first boot up after system changes, then after that it boots through this quickly.

These problems should not occur, since lwresd and bind9 are not supplied with the system, however if they are present and cause the problems, then remove them as shown below.

If boot hangs on the lwresd, light weight resolver deamon (a cache name server), during initialization and is not resolved within 5 minutes, then there is a serious problem. Boot into option 2 as root user, then shut down. Then boot into option 3 to disable lwresd with the following command:

```
dpkg -P lwresd
```

The command `-P` indicates purge and `dpkg` is the Debian package manager.

Then reboot into option 3.

If core.nnn files are in the / directory, shut down the DNS, the dynamic name resolver, which is not in use, with this command:

```
dpkg -P bind9

cd /

rm -P core.*
```

3.2 Types of Virtual Terminals

There are several virtual terminals available by using the Alt+Ctrl+Fn combination. F7 is the graphics window. F1, F2, F4, F5, F6, and F8 are text windows. Switch between them by pressing this Alt+Ctrl+Fn combination. There is no window associated with F3.

3.3 Login Screen Options

These are pictures of the optional choices during a login session. Figure 1 shows the Debian default greeting screen.

Figure 1. Debian Default Greeting Screen

Before logging in, choose which window manager to use as the default: Gnome, KDE, Failsafe Gnome (no initialization scripts, used to fix start up scripts), or Failsafe Terminal. Figure 2 shows these menu choices.

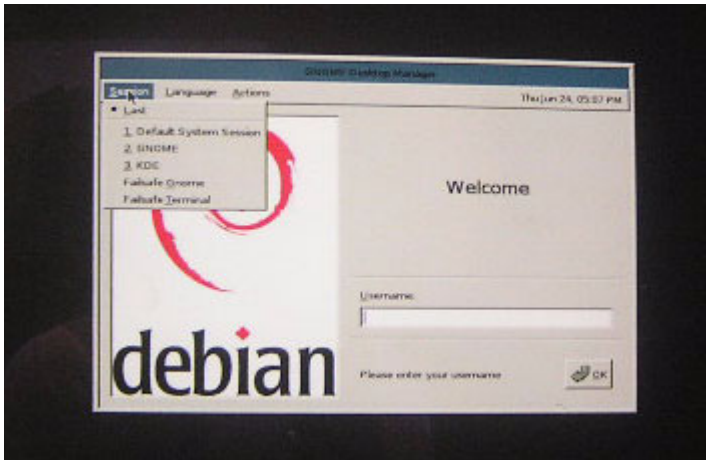

Figure 2. Window Manager Chooser

The Language menu shown below in Figure 3 has a pulldown list, but English is the only choice available.

Figure 3. Language Chooser

The Action Menu shown in Figure 4 allows four choices: XDMCP to login to a remote machine such as a Solaris or another Pegasos, Configure the Login Manager, Reboot, or Shutdown the system.

Figure 4. Action Menu

There are several looks to the graphics login screen. Access this facility by clicking the Action menu and then selecting Configure Login Manager.

Figure 5 shows the resulting screen display.

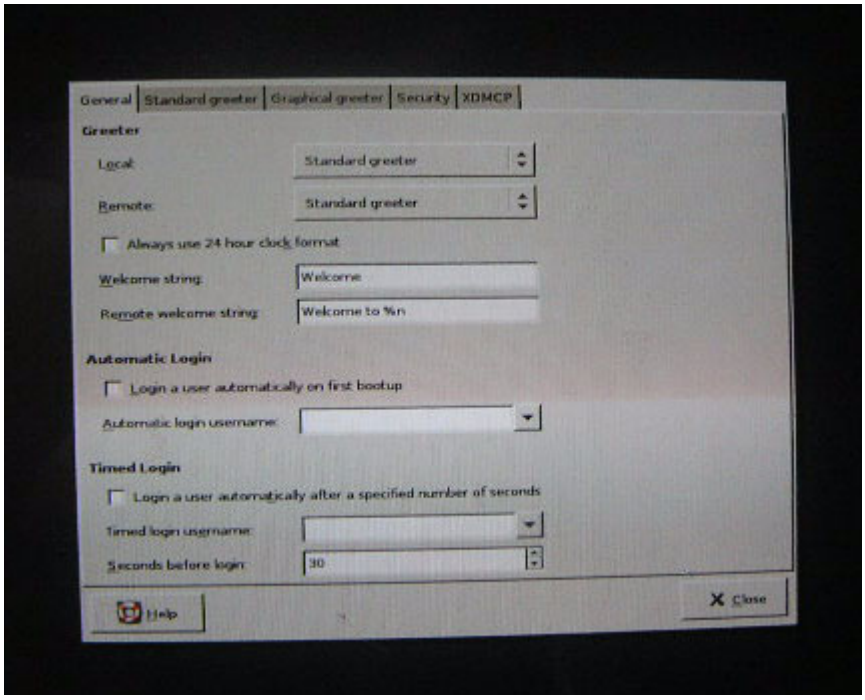

Figure 5. The Login Manager Main Screen

Use this login manager interface to configure the screen display.

The following display with the pretty flower picture in Figure 6 is one of the optional displays.

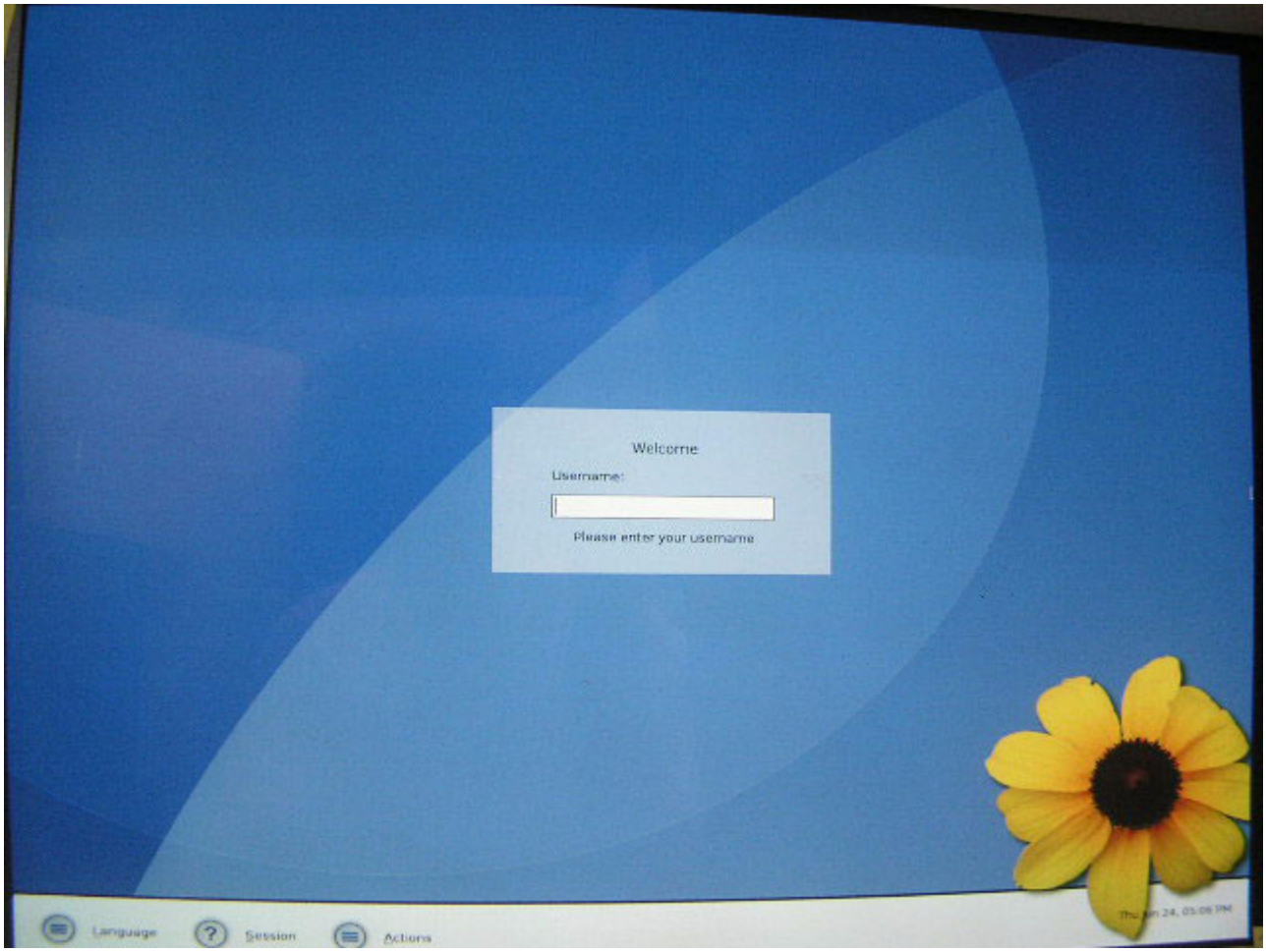

Figure 6. One of the Other Optional Login Screens

4 Logging in as a Normal User

The graphics login windows shown in Figure 1 through Figure 6 allow the choice of window managers, actions, and languages (the only available language is English).

4.1 Users

The only users available on this system are root and guest. Login as `guest`, with password `guest`, then open a terminal window for the next steps. See Section 5.1, "The Gnome Window Manager," or Section 5.2, "The KDE Window Manager," for more information. To open the terminal window, click on the terminal icon, which is on the top menu bar in Gnome and on the bottom menu bar in KDE.

4.2 Changing Password

To change the password, use the `passwd` command as shown in the example below:

```
guest@debian:~$ passwd
Changing password for guest
(current) UNIX password:
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
```

4.3 Changing Users

The `su` (switch user) command allows one to change users. Both of these forms create a new shell for the new user and the previous shell is preserved.

- `su <username>`
  - This form does not have the '-' character. It changes to the new user name, however, it keeps the environment of the current user. That means that all permissions will be associated with this new user, but the home directory and all the environment remain with the old user. The command `su` followed by no user name changes to the root user.
  - The system asks for the password for this user before making the change to the new user.

    The root user can change, `su`, to any other user without giving the password.
- `su - <username>`
  - This form does have the '-' character. This changes to the new user name, and it changes the environment to the new user, that is it will invoke the .login, .bashrc, and other log in files. All actions are now performed by the new user with the new users environment. Entering `su -` followed by no user name changes to the root user.
  - The system asks for the password for this user before making the change to the new user.

    The root user can change, `su`, to any other user without giving the password.
- The `exit` command returns to the previous user, restoring the previous shell. The current shell is destroyed.

An example is shown below.

User guest wishes to switch to user fae, see Section 7.2, "Create New Users," to create a user called fae.

Entering `su fae`, followed by fae password, switches to the new user, fae. However, it continues to stay in old user, guest, home directory, specifically, `cd` will change to /home/guest, not /home/fae. Creating new files gives ownership of those files to fae, but writes them to /home/guest, if fae has permission to write into /home/guest. The user can do a cd /home/fae to get to the fae's home directory.

Entering `su - fae` followed by fae password, switches to the new user, fae, and changes the environment to the new user fae, therefore, the `cd` command will move to /home/fae.

User guest wishes to switch to user root and gain root environment.

Entering `su -` followed by the root password changes to the root user. Note that no user name is given, root is the default user name for the `su` command.

Typing `exit` returns to user guest.

4.4 Checking Disk Space

The command, `df` checks disk space. The most useful forms are listed here:

`df -k` displays all the mounted volumes

```
guest@debian:~$ df -k
Filesystem           1K-blocks      Used Available Use% Mounted on
/dev/hda5             21170868   6549832  14621036  31% /
tmpfs                   127144         0    127144   0% /dev/shm
guest@debian:~$
```

`df -k .` displays only the mounted volumes for this user.

```
guest@debian:~$ df -k .
Filesystem           1K-blocks      Used Available Use% Mounted on
/dev/hda5             21170868   6549832  14621036  31% /
guest@debian:~$
```

4.5 Remote Access to Other Computers

`telnet <remote>` gives the user a window to a remote computer. The command <remote> can be the IP address, or the name of the machine. An example of the screen text display is shown below:

```
guest@debian:~$ telnet 10.82.124.139
Trying 10.82.124.139...
Connected to 10.82.124.139.
Escape character is '^]'.
Debian GNU/Linux testing/unstable debian
debian login: guest
Password:
Last login: Mon Jun 28 19:29:57 2004 from 10.82.124.62 on pts/4
Linux debian 2.6.4-pegasos #1 Mon Mar 22 12:47:08 CET 2004 ppc GNU/Linux
guest@debian:~$
```

`ssh <remote>` is a secure shell, similar to telnet. Below is an example using this command:

```
guest@debian:~$ ssh 10.82.124.139
```

```
The authenticity of host '10.82.124.139 (10.82.124.139)' can't be established.
RSA key fingerprint is 76:d9:a1:e4:d7:44:e7:77:3c:55:03:83:c0:3a:c1:46.
Are you sure you want to continue connecting (yes/no)? y
Warning: Permanently added '10.82.124.139' (RSA) to the list of known hosts.
Password:
Linux debian 2.6.4-pegasos #1 Mon Mar 22 12:47:08 CET 2004 ppc GNU/Linux

Last login: Mon Jun 28 19:30:36 2004 from 10.82.124.139
guest@debian:~$
```

`ftp <remote>` gives the user the capability of transferring files between the local computer and a remote computer. This example shows the screen display:

```
guest@debian:~$ ftp 10.82.124.139
Connected to 10.82.124.139.
220 debian FTP server (Version 6.4/OpenBSD/Linux-ftpd-0.17) ready.
Name (10.82.124.139:guest): guest
331 Password required for guest.
Password:
230- Linux debian 2.6.4-pegasos #1 Mon Mar 22 12:47:08 CET 2004 ppc GNU/Linux
230 User guest logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for '/bin/ls'.
total 4
-rw-r--r--    1 guest    guest         298 May 28 15:34 minicom.log
-rw-r--r--    1 guest    guest       12163 May 27 10:36 out.ps
-rw-r-----    1 guest    guest      153600 May 27 15:46 ppc_tools.tar
drwxr-xr-x    3 guest    guest        4096 May 26 19:58 test-sim
226 Transfer complete.
ftp>
ftp> quit
guest@debian:~$
```

Use the `man` command on each of these remote access commands to get more information.

`/sbin/ifconfig` displays the IP address of the local machine (see Section 7.11, “Networking”). The example below shows the use of this command:

```
guest@debian:~$ /sbin/ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0B:2F:41:86:69
          inet addr:10.82.124.139  Bcast:10.82.127.255  Mask:255.255.252.0
          inet6 addr: fe80::20b:2fff:fe41:8669/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1892257 errors:0 dropped:0 overruns:0 frame:0
          TX packets:11961 errors:0 dropped:0 overruns:0 carrier:0
          collisions:232 txqueuelen:1000
          RX bytes:140759707 (134.2 MiB)  TX bytes:1077938 (1.0 MiB)
          Interrupt:9 Base address:0x1300

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:6423 errors:0 dropped:0 overruns:0 frame:0
          TX packets:6423 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:415496 (405.7 KiB)  TX bytes:415496 (405.7 KiB)

guest@debian:~$
```

4.6 Other Useful Commands

These are a few simple, very useful commands. Experiment with these commands to learn more about Linux. Entering the command `ls /bin` displays all the user commands in the system. The screen displays this text when the command is used:

```
guest@debian:~$ ls /bin
arch    discover       ip              mount       run-parts  uname
ash     dmesg          kernelversion   mountpoint  sed        uncompress
bash    dnsdomainname  kill            mt          setpci     vdir
cat     echo           ln              mt-gnu      setserial  zcat
chgrp   ed             loadkeys        mv          sh         zcmp
chmod   egrep          login           netstat     sleep      zdiff
chown   false          ls              pidof       stty       zegrep
cp      fgconsole      lsb_release     ping        su         zfgrep
cpio    fgrep          lsmod           ping6       sync       zforce
csh     fuser          lsmod.modutils  ps          tar        zgrep
dash    grep           lspci           pwd         tcsh       zless
date    gunzip         mkdir           rbash       tempfile   zmore
dd      gzexe          mknod           readlink    touch      znew
df      gzip           mktemp          rm          true
dir     hostname       more            rmdir       umount
guest@debian:~$
```

Some of these helpful commands are described below:

netstat Print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships

The most useful use for netstat is to look at listeners; this is the way in which the printer, localhost:631, is contacted.

netlist -l -n

Active Internet connections (only servers)

Proto Recv-Q Send-Q Local Address Foreign Address State

tcp 0 0 127.0.0.1:932 0.0.0.0:* LISTEN

tcp 0 0 0.0.0.0:37 0.0.0.0:* LISTEN

udp 0 0 0.0.0.0:111 0.0.0.0:*

..... removed lines (note the next entry is the printer server at localhost:631

udp 0 0 0.0.0.0:631 0.0.0.0:*

udp6 0 0 :::53 :::*

Active UNIX domain sockets (only servers)

Proto RefCnt Flags Type State I-Node Path

unix 2 [ACC] STREAM LISTENING 244929 /var/run/apache2/cgisock

..... removed lines

uunix 2 [ACC] STREAM LISTENING 3334 /tmp/.gdm_socket

@

`ls` lists all the files in the current directory.

`ls -l` lists all the files in the current directory and gives the file size and other statistics.

`pwd` shows the current directory.

`cd` returns to the home directory

`cd <directory name>` goes to the directory named.

`whoami` gives the current user.

`grep <something> filename` finds all the occurrences of <something> in the filename. The command <something> can be any string of characters. An example using the `grep` command is shown below where `init` is the string and `initabYD` is the filename:

```
guest@debian:~$ grep init initabYD
# inittab       This file describes how the INIT process should set up
#   0 - halt (Do NOT set initdefault to this)
#   6 - reboot (Do NOT set initdefault to this)
id:3:initdefault:
# System initialization.
si::sysinit:/etc/rc.d/rc.sysinit
```

Using the meta character `*` searches all files in the current directory. Quotation marks enclosing a string allow the use of a space between characters in the string. An example using both an `*` and the quotation marks follows:

```
guest@debian:~$ grep "6 -" init*
initab.ps:36 -594 translate
initab.ps:36 -594 translate
initabYD:#   6 - reboot (Do NOT set initdefault to this)
guest@debian:~$
```

`find . | xargs grep <something>` finds all the occurrences of <something> in all files in all subdirectories as well.

`find . -name <name>` finds all files in all subdirectories of <name>. An example of this command follows:
`find . -name newfile`

`man <command name>` gives a short tutorial on the <command name> and displays it to the screen. A command example follows: `man ls`

`man <command name> | col -b > j` sends the display to the file, j, which can then be printed or edited. Use this command to get a tutorial for all the commands listed here and in the /bin directory.

`cat <file name>` displays the contents of the file on the screen.

`cat -n <file name>` displays the contents of the file on the screen and numbers each line.

`mkdir <dir name>` creates a directory of name <dir name> in the current directory.

`rmdir <dir name>` removes a directory.

`rm <file name>` deletes a file.

`uname -a` gives the name of the running Linux system.

`ps -ef` displays all active processes and their IDs.

4.7 Using a USB Memory Stick

This section describes the instructions to activate a memory stick for both a text user and window user interface.

4.7.1 Text User

The USB memory stick is available to the text user, the non-window user, by using the `mount` command. Perform this command as the root user.

Plug the memory stick into the bottom USB connection on the front panel.

`mount -t vfat /dev/sda1 /usb` mounts the memory stick in the /usb directory. `vfat` is a windows file system type.

`cd /usb` gives the memory stick contents.

`umount /usb` unmounts the memory stick, then it can be removed.

Do not remove the USB memory stick before unmounting it.

4.7.2 Gnome or KDE Window User

Just plug in the memory stick in the bottom USB connection on the front panel. Gnome or KDE automatically mounts it and a USB icon appears in the display window. Navigate to the /usb directory or just double click the icon to access the contents of the file.

Right click on the USB icon and choose Unmount Volume to remove it.

Do not remove the USB memory stick before unmounting it.

5 Window Managers

There are two window managers, Gnome and KDE. They perform similar functions using a GUI interface with menus and various GUI applications. These two window managers run under the control of a GDM, GUI Display Manager. The X11 window manager is a GDM and lives in /etc/xinit.d. It can be stopped and started with the commands:

```
/etc/init.d/gdm stop

/etc/inti.d/gdm start

/etc/init.d/gdm restart
```

The GDM uses the /etc/X11/XF86Config-4 file.

5.1 The Gnome Window Manager

A snapshot program, which is available in the Actions Menu, can be used to take snapshots of the screen. One cannot take screen shots of menus, so all menu pictures are taken with a digital camera.

The Gnome Window Manager is a facility that runs on top of the X window system. It is chosen at the login screen in the sessions menu. Figure 7 shows the Gnome Window Manager screen display.

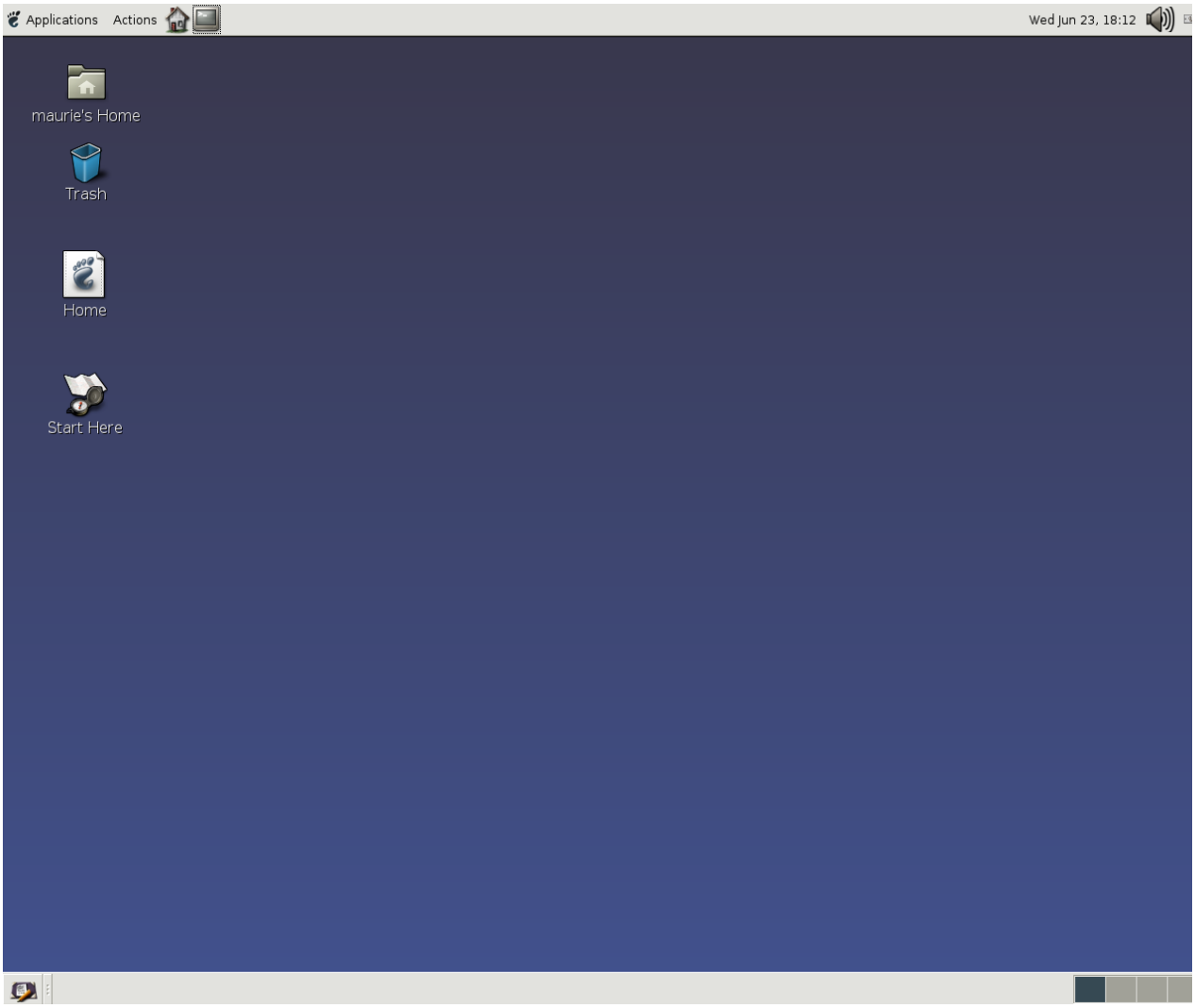

Figure 7. The Main Gnome Window

There are four icons on the top left of the screen that can be used to open a file: a local file explorer; the Trash files; the Home window which opens konqueror, the file explorer; and the Start Here icon which opens a window for configuring a session.

Note that next to the menus are three icons as shown in Figure 8.

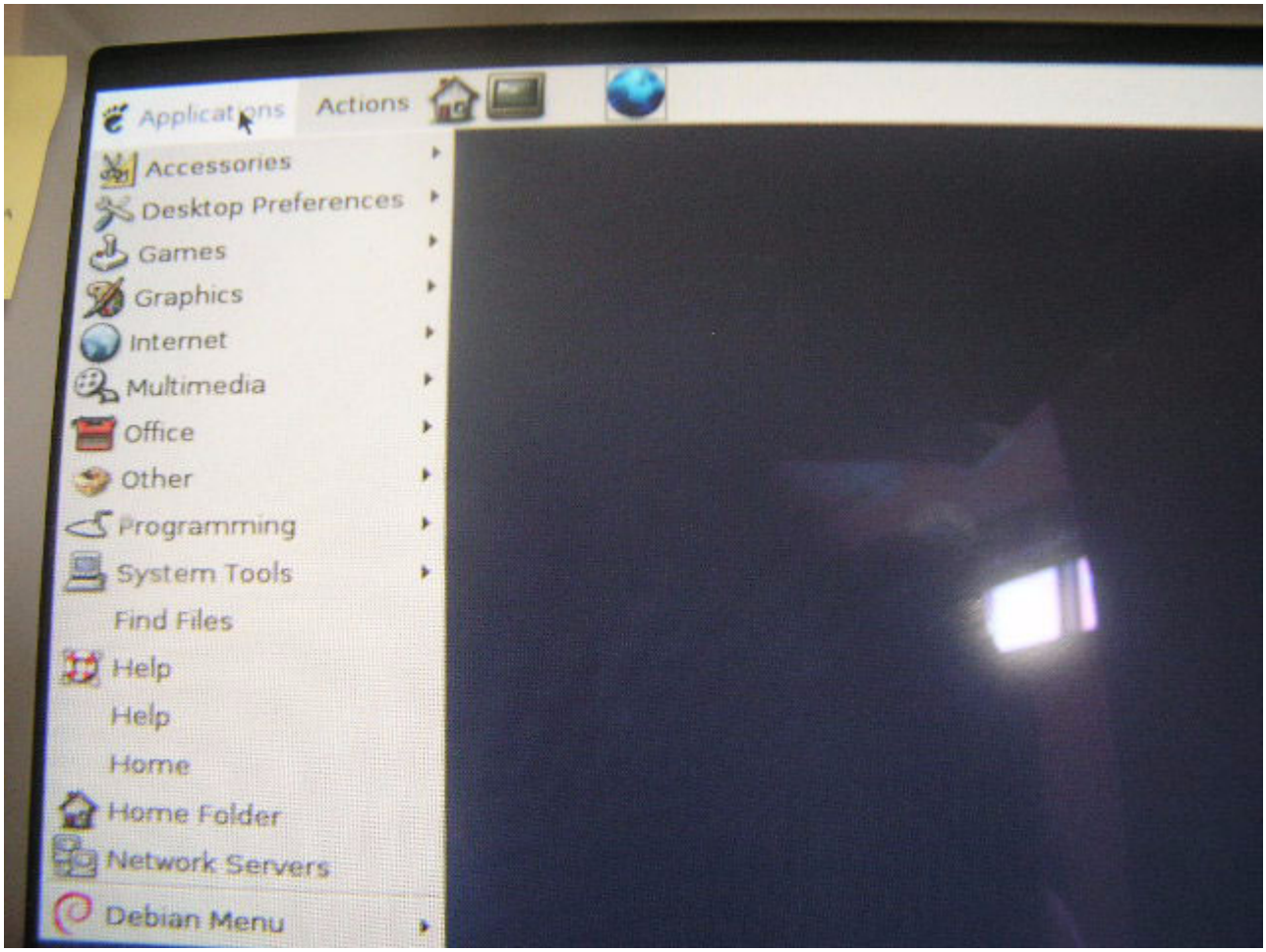

Figure 8. The Applications Window

By clicking on the applications menu, the user is presented with a variety of menu items.

There are three icons on the menu bar, the one which looks like a house opens a file browser, the monitor window opens a terminal session, and the world icon opens an internet browser. To add items to the menu bar, right click the mouse in the menu bar, choose add to panel, and then choose applications.

By clicking on the Actions menu, which Figure 9 shows, the user can choose to Run Application, Search for Files, Take Screenshot, Lock Screen, or Log Out.

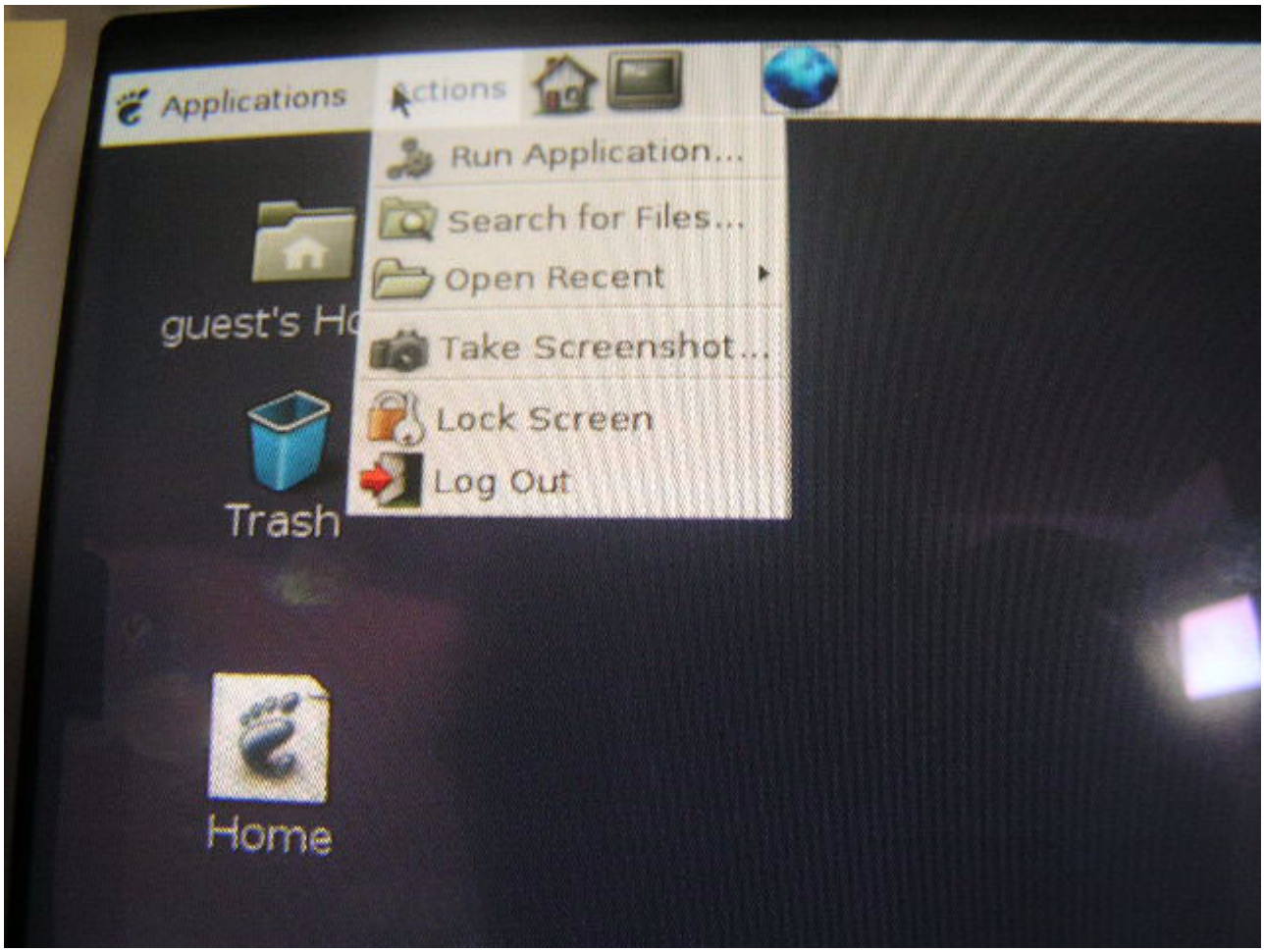

Figure 9. The Actions Menu

5.2 The KDE Window Manager

Screen shots can be taken with the snapshot program, which is available in the main menu. Choose graphics, more programs, then snapshots (KSnapshot). Unfortunately, one cannot take screen shots of menus, so these pictures are taken with a digital camera.

The KDE Window Manager is a facility that runs on top of the X window system. It is chosen at the login screen in the sessions menu.

The presentation of KDE is different from Gnome mainly in the location of the menu bar, which is on the bottom. Figure 10 also shows an open terminal window. To add items to the menu bar, right click in the bar, chose add, add application button, then choose an application to add. The other icons can open applications directly. The left most button that looks like a K is the main menu button. On the right hand side of the menu bar are icons for the K Organizer tool, the Klipper a clipboard tool, and the system clock.

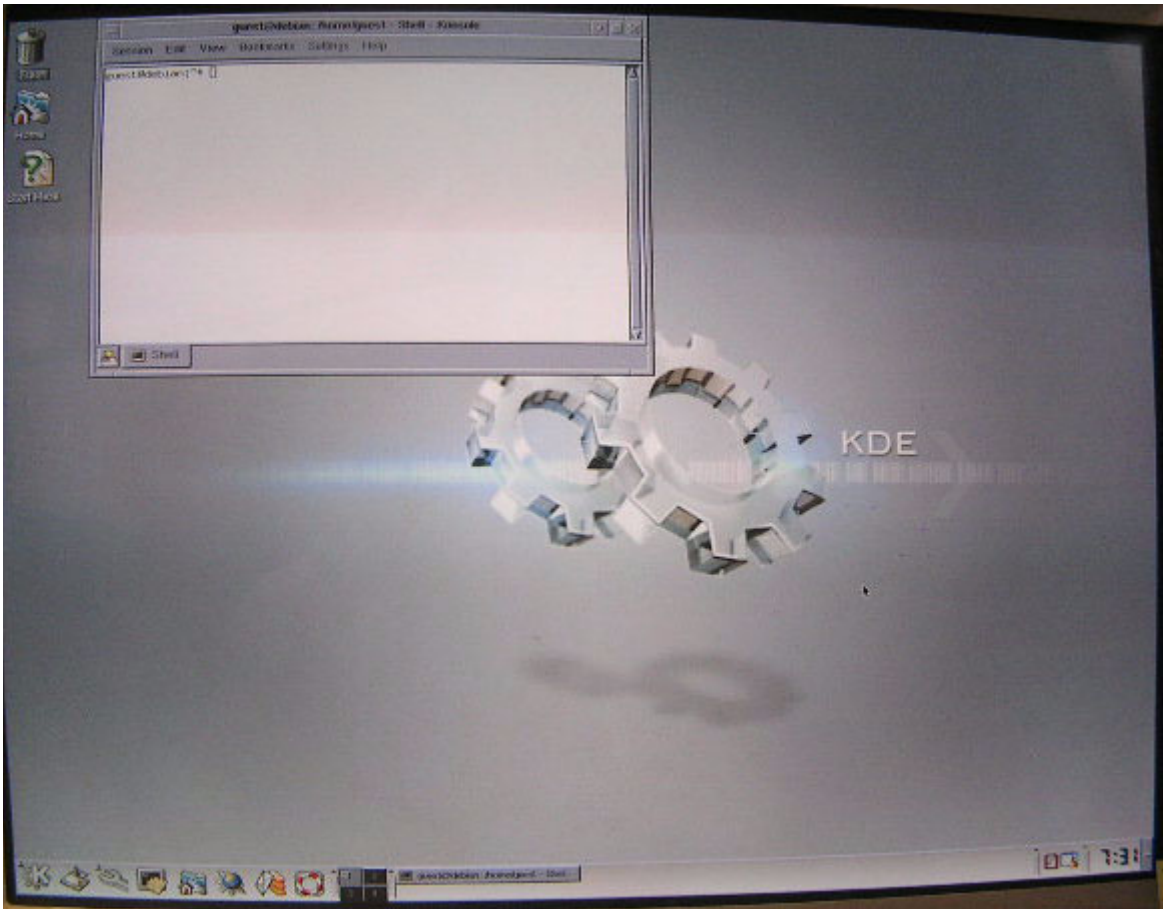

Figure 10. The Main KDE Window

Figure 11 shows the Main menu list display for KDE window manager. Menus are placed in categories and by choosing a category, more menus are presented. The three black squares numbered 2,3,4, and white square numbered 1, allow the user to choose up to four windows with different applications.

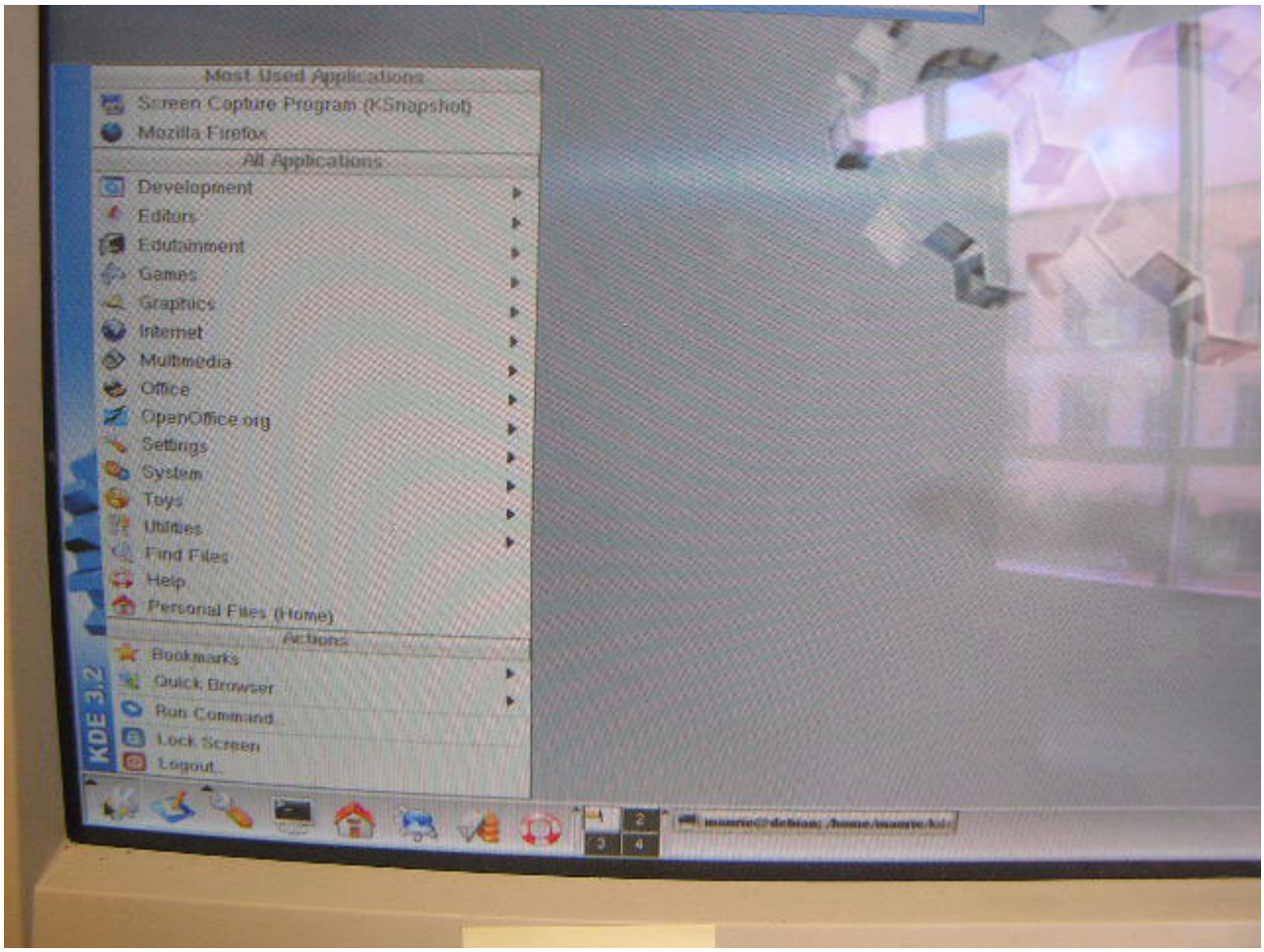

Figure 11. The Main Menu List

6 Other User Applications

6.1 Office

Any application of Office, similar and compatible with Microsoft Office, can be accessed directly from the main menu items in either Gnome or KDE. If the Office product fails to open, that is the Office window does not open, then there may be an error. Open a terminal window and at the prompt, type `oocalc`, which is one of the Office applications. After this command, any errors display and once they are fixed, the application will open correctly.

6.2 Internet Browser

Open the Mozilla Firefox application using the main menu, go to internet, then Mozilla Firefox. Place an icon in the Gnome menu bar by right clicking in the menu bar, and choosing add to panel, launcher from menu, internet, and

then Mozilla Firefox. In the KDE menu bar, do the same operation, however, choose add, then find the application, which in this case is Mozilla.

By default, Mozilla uses a direct connection to the internet. In locations where proxies are needed, set up the proxy by using the Mozilla menu tools, then options, and then connection. Choose manual proxy configuration to set the appropriate proxy statements.

7 Root User

Change to root user after logging on as guest or another user. Do not log in as root user because root privilege grants unlimited access and unlimited opportunity to mess up the root file system beyond repair. Login as a normal user and change to root user with the command:

```
su -
```

The password is `moto`.

Root user commands are in the /sbin directory. For a complete listing of root user commands use the command `ls /sbin | more` as shown in the example below:

```
guest@debian:~$ ls /sbin | more
MAKEDEV
amiga-fdisk
backlight
badblocks
blkid
blockdev
bootlogd
cfdisk
clock
ddisk
debugfs
depmod
depmod.modutils
dhclient
discover-modprobe
dosfsck
dumpe2fs
e2fsck
e2image
e2label
fblevel
```

```
findfs

fnset

fsck

fsck.cramfs

...More....
```

This example is truncated. For the complete list of root user commands follow the example command shown above.

NOTE

Exit from the root user as soon as the tasks that require root privileges are completed.

7.1 Change the Password

The first step to take when the Genesi Pegasos II system is acquired is to change the root password. The command is `passwd`. To change to the new password, a prompt will ask for the new password twice. Once accepted, this new password gives access to root privileges again. An example of the screen text follows:

```
guest@debian:~$ su -

Password:

root@debian:~# passwd
```

NOTE

Here, since the command does not specify a user name, the command initiates a root password change.

```
Enter new UNIX password:

Retype new UNIX password:

passwd: password updated successfully
```

In the following example, because a user name is specified after the password command, the password for that user is changed:

```
root@debian:~# passwd guest

Enter new UNIX password:

Retype new UNIX password:

passwd: password updated successfully
```

7.2 Create New Users

Users exist in a running Linux, which has a root file system, in the case of Debian on Pegasos II, it is /dev/hda4. The Freescale application note AN2738, *Genesi Pegasos II Firmware* discusses the firmware boot command, which passes the argument root=/dev/hda4. Thus the root file system for Debian Linux is partition 3 (since partitions start at 0, but Linux designates them starting at 1), which is /dev/hda4. The root file system, shown in Figure 12 has all the directories necessary for Linux.

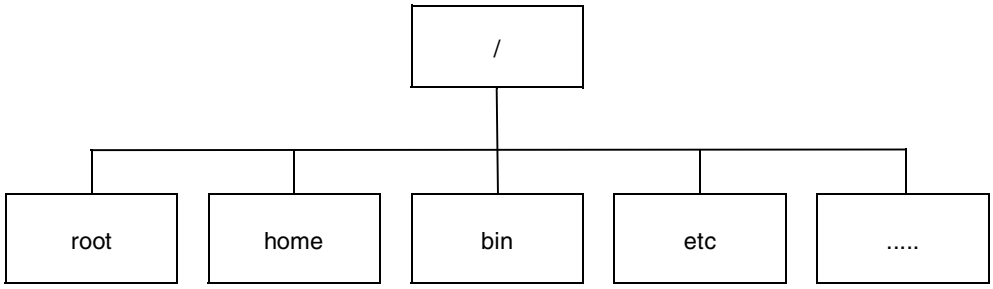

Figure 12. Root File System

A user is a member of the club, that is, they can login and use the Linux resources. The /etc/passwd file denotes all users, encrypted passwords, and initial shell, which is owned by the user, root, but available to be read by any user. One way to see who is able to log onto the system is to read this file. However, a shadow password file can be created to blunt this possibility. Only root can create new users; each user owns their own home directory. Each user has their home directory in /home. However, a root user has the home directory of /root. Figure 13 shows the home, root, and etc directories.

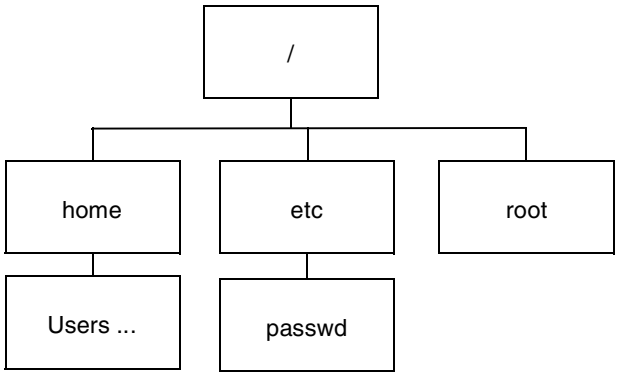

Figure 13. Home, Root, and Etc Directories

As an example for the following users, with these passwd file entries:

```
user1:x:501:501::/home/user1:/bin/bash

guest:x:502:502::/home/guest:/bin/bash

user2:x:503:503::/home/user2:/bin/bash

user3:x:514:514::/home/user3:/bin/bash
```

Figure 14 shows the arrangement of home directories.

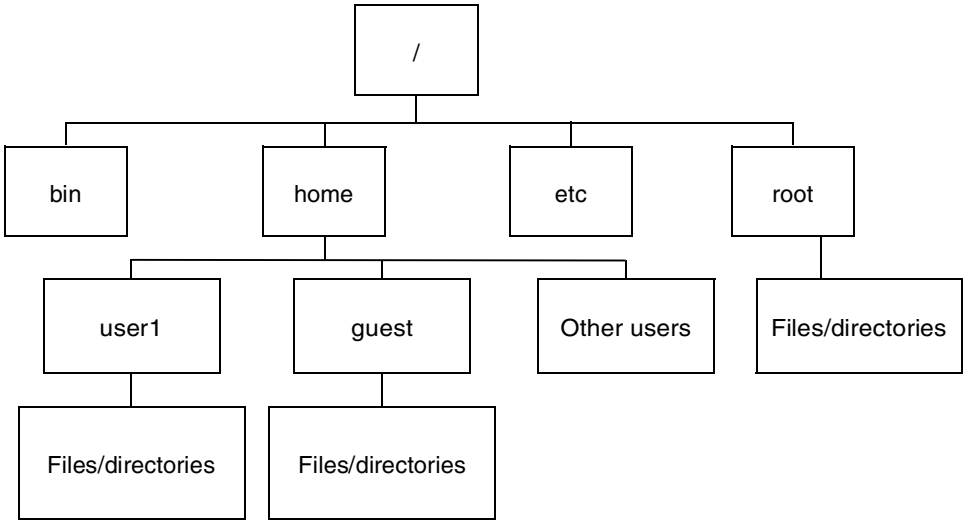

Figure 14. Home Directories

Thus when creating a new user, add an entry to the /etc/passwd file, create a new directory in the /home, and set up an environment, usually consisting of several hidden files, .bashrc and other files that begin with the '.' character. These hidden files are copied from /etc/skel.

Every user has a user name, a password, an environment, a user ID, and a group ID. Looking at the example passwd file above, user1 is ID 501 and group 501, guest is ID 502 and group 502. Normally, user IDs and group IDs are assigned sequentially. These IDs are used to determine whether the user has permission to access files. Permission values are denoted by 3 octal digits, uuu,ggg,aaa, where uuu is the user set, ggg is the group set, and aaa is the all other set. Each group of 3 octal digits represents the permissions write, read, execute. Thus a permission set of 640 indicates that the user (owner of the file) has a permission set of 5, which is octal 110, indicating read and write, groups set is 4, octal 100 indicating read only, and all other users have 0, indicating no access. Thus users can be grouped together to share certain files. An example setting a users group is included in Section 7.3, "Using Sound." Use the `groups` command to see which users groups are set as shown in the example below:

```
fae@debian:~$ groups
fae audio
```

To see file permissions use `ls -l`

```
guest@debian:~$ ls -l
total 200
drwx------    3 guest    guest        4096 May 26 19:29 Desktop
drwxr-xr-x    4 guest    guest        4096 May 27 15:49 fae-training-04
-rw-r--r--    1 guest    guest       26447 May 26 17:27 installed_packages
-rw-r--r--    1 guest    guest         298 May 28 15:34 minicom.log
-rw-r--r--    1 guest    guest           0 Jun 28 19:34 out.ps
-rw-r-----    1 guest    guest      153600 May 27 15:46 ppc_tools.tar
```

```
drwxr-xr-x    3 guest    guest        4096 May 26 19:58 test-sim
guest@debian:~$
```

Hidden files beginning with a '.' can be seen using the `ls -a` command. Below is an example:

```
guest@debian:~$ ls -a
.               .firefox          .kde            .xine
..              .fonts.cache-1    .kderc          .xmms
.ICEauthority   .gconf            .mcop           .xsession-errors
.Trash          .gconfd           .metacity       Desktop
.bash_history   .gnome            .mozilla        fae-training-04
.bash_profile   .gnome2           .nautilus       installed_packages
.bashrc         .gnome2_private   .qt             minicom.log
.cddbslave      .gphoto           .recently-used  out.ps
.dmrc           .gstreamer        .ssh            ppc_tools.tar
.esd_auth       .gtkrc-1.2-gnome2 .viminfo        test-sim
guest@debian:~$
```

Now create new users with these commands:

`adduser <user name>` creates a /home directory, sets up the environment, and prompts for an initial password.

`deluser <user name>` removes all the information for this user.

For example:

```
root@debian:~# adduser fae
Adding user fae...
Adding new group fae (1001).
Adding new user fae (1001) with group fae.
```

These initial environment files are copied from /etc/skel.

```
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for fae
Enter the new value, or press ENTER for the default
        Full Name []: fae user
        Room Number []: 1
        Work Phone []: 234-5678
        Home Phone []: same
        Other []:
```

```
Is the information correct? [y/N] y
root@debian:~# deluser fae
Removing user fae...
done.
```

7.3 Using Sound

The sound device is owned by the group, audio. So, all users who wish to use sound must be a member of the audio group. Use the command adduser, as in the example below, to add fae to the audio group:

```
root@debian:~# adduser fae audio
Adding user fae to group audio...
Done.
```

Accessing various sound utilities is available from the main menu, then choose desktop preference, and then sound.

Accessing multimedia sound players are available from the main menu, then choose multimedia.

There are several MP3 and CD players as well as the xine player for non-copyrighted DVD viewing. If zine does not work with a DVD and issues the message that the DVD device is unavailable, fix it with this command:

`ln -s /dev/cdrom /dev/dvd` which creates a soft link from the CD-ROM device to the DVD device, so xine can find the DVD player.

If KDE cannot start the sound server, it is likely that the Gnome window sound server still has control of the sound device. Release it from Gnome and then use it in KDE.

`su -` change to root user with the `su -` command.

`ps -ef | grep esd` finds the job number for the Gnome sound server, which is named esd. It displays the job number of esd.

```
guest@debian:~$ ps -ef|grep esd
guest     1290     1  0 Jun24 ?        00:00:00 /usr/bin/esd -nobeeps
guest     5718  5671  0 20:06 pts/4    00:00:00 grep esd
guest@debian:~$
```

`kill -9 <esd id>` kills the Gnome sound server.

```
guest@debian:~$ kill -9 1290
guest@debian:~$
```

Logout and relogin under KDE and the KDE sound server will be able to find the sound device.

7.4 Naming Conventions of Devices, /dev/sda1, /dev/hda1, etc

Most devices on Debian Linux are accessed through a special facility known as the /dev facility. It is a directory in root, which is the '/' directory. There are many devices defined here. Below is an example using the commands `ls /dev`

```
guest@debian:~$ ls /dev
MAKEDEV      hdd15       pts    ptyw7    sdg12       ttyUSB2  ttyw0
adb          hdd16       ptya0  ptyw8    sdg13       ttyUSB3  ttyw1
admmidi0     hdd17       ptya1  ptyw9    sdg14       ttyUSB4  ttyw2
```

and many more. The special MAKEDEV is a script that can recreate the /dev directory if it should become corrupted.

All devices are a set of keywords and a number. For example, hard drives on the IDE channel are designated, hd<*n*>, where *n* is a letter designating the channel. Thus hda is the hard drive on IDE channel zero master position, hdb is IDE channel zero slave position, hdc is IDE channel one master position, etc. Each partition is then indicated by a number. Thus hda1 is the first partition on this hard drive.

sda indicates an SCSI device. The USB devices are on the SCSI bus, therefore, they are designated as sda0, unused, sda1, the bottom front connector, sda2 and sda3 the rear connectors.

7.5 The Utility parted, the Partition Table Editor

The utility `parted` is the partition table editor for the Genesi Pegasos II system and is similar to the earlier utility, fdisk, used on many MAC and X86 linux systems. parted understands more partition types then fdisk and indeed may create a partition table that is not compatible with fdisk. Therefore, all hard drives must be partitioned with parted for use on the Genesi Pegasos II system.

Since `parted` works on an entire drive, the argument to parted is a drive designator.

```
root@debian:~# parted /dev/hda
GNU Parted 1.6.9
Copyright (C) 1998, 1999, 2000, 2001, 2002, 2003 Free Software Foundation, Inc.
This program is free software, covered by the GNU General Public License.
This program is distributed in the hope that it will be useful, but WITHOUT ANY
WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A
PARTICULAR PURPOSE.  See the GNU General Public License for more details.
Using /dev/hda
(parted)
```

To see what commands are available in parted, type the m character, which stands for menu. There are several commands listed below.

```
(parted) m
  check MINOR                   do a simple check on the filesystem
  cp [FROM-DEVICE] FROM-MINOR TO-MINOR      copy filesystem to another partition
  help [COMMAND]                prints general help, or help on COMMAND
```

```
mklabel LABEL-TYPE            create a new disklabel (partition table)
mkfs MINOR FS-TYPE            make a filesystem FS-TYPE on partititon MINOR
mkpart PART-TYPE [FS-TYPE] START END      make a partition
mkpartfs PART-TYPE FS-TYPE START END      make a partition with a filesystem
move MINOR START END          move partition MINOR
name MINOR NAME               name partition MINOR NAME
print [MINOR]                 display the partition table, or a partition
quit                          exit program
rescue START END              rescue a lost partition near START and END
resize MINOR START END        resize filesystem on partition MINOR
rm MINOR                      delete partition MINOR
select DEVICE                 choose the device to edit
set MINOR FLAG STATE          change a flag on partition MINOR
```

The p command is useful for showing the partition table. This corresponds to the partition table shown in the Freescale application notes AN2736, *Genesi Pegasos II Boot Options* and AN2738, *Genesi Pegasos II Firmware.* Hence, the partition table can be accessed with parted in Debian linux and in the firmware.

```
(parted) p
Pralloc = 0, Reserved = 2, blocksize = 1, root block at 114660
Disk geometry for /dev/hda: 0.000-38166.679 megabytes
Disk label type: amiga
Minor    Start       End     Filesystem  Name                 Flags
1          3.999    107.973  affs1       boot
2        107.974    611.850  asfs        MOS                  boot
3        611.851   3615.117  asfs        MOS-DATA
4       3615.117   4618.872  linux-swap  swap                 hidden
5       4618.872  25621.743  ext3        debian               hidden
6      25621.743  38166.679  ext3        YDL                  hidden


(parted) q
Information: Don't forget to update /etc/fstab, if necessary.
```

The q command quits parted and gives a reminder that if any partitions were changed, the /etc/fstab file may also need to be changed, since it is used during boot up to mount partitions.

7.6 Mounting Partitions

In order to use any partitions on a hard drive, they must be mounted. The df command shows which hard drives are mounted. The mount command with no arguments shows all mounted devices.

The command, `mount -r -t <type> /dev/<designator> <directory>` mounts a partition or other device onto an existing directory in the root file system. the -r parameter indicates read only, the -t indicates the type of file system, and /dev/<designator> is the device, and <directory> is the mount point.

The beginning of the file system is the root, which is designated as '/'. Thus to move to the root of the top level directory, cd /. All directories must start at '/'. Remember that there is also a /root directory, which is the home directory for the root user, but the root of the directory is '/'. In order to mount any new partitions, they must start in some directory in the existing root directory. The default directory /mnt is available for mounting partitions, however, a partition may be mounted on any directory. Once a partition is mounted, then that mount point's, i.e. directory address, previous contents are no longer viewable, they still exist, but they have been covered up by the mounted partition, also called a mounted volume. This is one way to hide the contents of a partition from other users.

Thus to mount the second partition, which is partition 1 (counting from 0) is the /dev/hda2 on linux.

`mount -r -t asfs /dev/hda2 /mnt/temp2` mounts the second partition onto the mount point /mnt/temp2 as a file system type asfs.

To mount the fourth partition (counting from zero), which is the /dev/hda5 on linux use either of these commands:

```
mount -r -t ext3 /dev/hda5 /mnt/temp5
```

```
mount -r /dev/hda5 /mnt/temp5
```

In this case, ext2 and ext3 are the native linux partition types and one does not need to designate the type for either of these.

In both cases, whatever files were on /mnt/temp5 previous to the mount will now be covered and un-seeable. Once the `umount` command reverses the mount, the previous /mnt/temp5 will be visible.

```
umount /mnt/temp5
```

NOTE

The mount point is unmounted, not the partition.

7.7 Fixing the X Windows Configuration File

7.7.1 Fixing the Video Resolution

There are several problems that can cause video disturbances and here are a few solutions.

7.7.1.1 Debian 2.4 Kernel (Firmware Option 2)

The Kernel 2.4 reacts differently than the Kernel 2.6 when starting the graphics window using XF86Config-4. The display may not work at all or it will be blurry and difficult to read. This appears to be related to the HorizSync and VertRefresh lines in the XF86Config-4 file. By commenting out these two lines as in the following example, Kernel 2.4 will display properly, however, one large display mode may result.

```
Section "Monitor"
         Identifier      "Generic Monitor"
         Option          "DPMS"
         HorizSync       31-89
         #VertRefresh     55-160
         #vendorname "[Generic Monitor]"
         modelname "[Generic Monitor]"
EndSection
```

And in this mode, the Debian window manager and KDE window manager will work correctly. On some monitors, by commenting out all the Modes lines other resolutions may be available.

7.7.1.2 Debian 2.6 Kernel (Firmware option 3)

If there is only one large display resolution on the graphics terminal or no display at all, change to root user and then edit the /etc/X11/XF86Config-4 file. Go to www.monitorworld.com and search for the monitor information to get the horizontal frequency and vertical refresh frequency. If not available at this web site, then do a Google search for the monitor information.

Modify the XF86config-4 file in the lines that start with Monitor by adding these two lines:

```
HorizSync <the correct frequency>
VertRefresh <the correct frequency>
```

Here is an example with the NEC MultiSync XP21. Look it up on the www.monitorworld.com web site and find that the horizontal frequency is 31-89 KHz, and the vertical frequency is 55-160 Hz. Add these two lines to the monitor section of the /etc/X11/XF86Config-4 file: HorizSync 31-89 and VertRefresh 55-160

The monitor section of the file now looks like this:

```
Section "Monitor"
        Identifier      "Generic Monitor"
        Option          "DPMS"
        HorizSync       31-89
        VertRefresh     55-160
        vendorname "[Generic Monitor]"
        modelname "[Generic Monitor]"
EndSection
```

Save the file and go to an alternate screen, by pressing Alt+Ctrl+F5. Then type this command:

```
/etc/init.d/gdm restart
```

7.7.2 Fixing the Mouse

If the mouse does not track correctly or if it works in only a small area of the screen, then the mouse information in the /etc/X11/XF86Config-4 file is wrong. Edit it again and search for Configured Mouse or Generic Mouse. For a thumb roller mouse, one of the items in the file should be Option “Protocol” “ImPS/2”.

For a non-thumb roller mouse, then one of these items should be Option “Protocol” “PS/2”.

If one mouse is set to ImPS/2 and the other set to PS/2, then either mouse should work with the system.

7.7.3 Fixing the Keyboard

If the keyboard does not work correctly, that is, strange characters appear when the keys are pressed, the keyboard may be configured for a non United States keyboard.

Edit /etc/X11/XF86Config-4 again and search for Generic Keyboard. Ensure that Option “XkbLayout” is set to “us”.

7.8 Accessing the Boot Partition 0

The boot partition 0 is the first partition on the hard drive, which from the application note AN2736, *Genesi Pegasos II Boot Options*, is an affs, amega fast file system. By mounting it from Linux, all the files are accessible. Assuming that there is a /mnt/temp1 directory, or by creating one, mount the partition with this command:

`mount -r -t affs /dev/hda1 /mnt/temp1` where -r indicates mount in read only mode, so this partition cannot be accidently written into, and -t indicates file system type, in this case, affs, amiga fast file system.

Change to that directory.

```
cd /mnt/temp1
```

Use the command `ls` to see the files on this partition

```
guest@debian:~$ su -
Password:
root@debian:~# mount -r -t affs /dev/hda1 /mnt/temp1
root@debian:~# cd /mnt/temp1
root@debian:/mnt/temp1# ls
boot.img      menu               vmlinuz-2.4.24-pegasos  vmlinuz-2.6.4-pegasos
bootpeg2.img  update-2004.04.05  vmlinuz-2.4.25-powerpc
root@debian:/mnt/temp1#
```

Table 1 shows the use for these files:

Table 1. Description of Files in the /boot partition 0 (/dev/hda1)

Name	Type	Source	Use
boot.img	bootpegasos2ram.img	amiga	rom image
bootpeg2.img	bootpegasos2ram.img	amiga	rom-image
menu	forth type file	open firmware	boot choice program
update-2004.04.05	powerpc executable	unknown	unknown
vmlinuz-2.4.24-pegasos	powerpc executable	linux	2.4.24 kernel for debian
vmlinuz-2.4.25-powerpc	powerpc executable	linux	2.4.25 kernel for yellow dog
vmlinuz-2.6.4-pegasos	powerpc executable	linux	2.6.4 kernel for debian

The `umount /mnt/temp1` command unmounts the partition.

7.9 Accessing the MorphOS Partitions

This facility is only available in the 2.4 Debian Linux, since the sfs file system modules are not available in the 2.6 Debian Linux kernel. Create two directories on /mnt named temp2 and temp3.

```
mkdir /mnt/temp2
```

```
mkdir /mnt/temp3
```

Mount the two MorphOS partitions.

`mount -r -t asfs /dev/hda2 /mnt/temp2`, where asfs indicates amiga smart file system.

```
mount -r -t asfs /dev/hda3 /mnt/temp3
```

Use the `ls` command, to see the files on these partitions.

NOTE

These files can be read and edited, and specifically the pdf files referenced in Freescale application note AN2738, *Genesi Pegasos II Firmware* and the *SmartFirmware User Manual* available on the MorphOS partition can be read, edited, and copied.

To access the files now on these two partitions, use the command `cd /mnt/temp2` to see the /dev/hda2 partition files.

Some of the files are listed below:

```
guest@debian: cd /mnt/temp2
guest@debian: ls


Apps
Apps.info
Barfly
```

```
Barfly.info
C
Classes
Classes.info
Devs
Devs.info
Docs
Docs.info
Fonts
```

Only the first few files are shown above.

The pdf files in the Docs directory display with the command `cd Docs` as in the example below:

```
guest@debian:cd Docs
guest@debian:ls
Audio.pdf
Audio.pdf.info
FrontPanel.pdf
FrontPanel.pdf.info
ModeEdit.pdf
ModeEdit.pdf.info
MorphOS-dev.pdf
MorphOS-dev.pdf.info
PegasosFirmware.txt
PegasosFirmware.txt.info
PegasosSpecs.pdf
PegasosSpecs.pdf.info
SFUserManual.pdf
SFUserManual.pdf.info
SmartFirmware.pdf
SmartFirmware.pdf.info
```

Finally, list the files on /dev/hda3 with these commands:

```
guest@debian: cd /mnt/temp3
ls
AmiNetRadio
AmiNetRadio.info
AmiNetRadio.readme
```

```
Demos
Demos.info
Developer
Developer.info
Docs.info
Dopus5
Dopus5.info
Games
Games.info
Icons
```

Only the first few files are shown above.

7.10 Printers

The print server and client are CUPS, Common Unix Printing System Architecture.

7.10.1 Installing a Printer

Open the Mozilla browser. In the browse window, type, http://localhost:631, then enter. The printer deamon uses port 631. Follow these instructions:

NOTE

If an error message appears because the localhost will not connect, the message may say something about the server being busy or down. In this case, there may be a problem with the /etc/local/hosts file. The localhost IP and/or name may be incorrect.

The host name is delineated in two special files in the /etc directory: hosts and hostname. The hostname must correspond to the host name for the local host in the hosts file and hostname file.

/etc/hosts

```
127.0.0.1         <hostname>.localhost.localdomain
```

/etc/hostname

```
<hostname>
```

In addition, the localhost line must also be present. Optionally, other host names listed in this file are used for remote access.

An example of the hosts and hostname file for the pegasos machines is shown below.

```
Linux debian 2.6.8-pegasos #1 Wed Aug 18 16:40:30 CEST 2004 ppc GNU/Linux
guest@debian:~$ cat /etc/hosts
127.0.0.1       localhost
```

```
127.0.0.1       debian.localdomain debian
```

NOTE

If the following line appears

```
127.0.0.1 debian localhost.localdomain
```

it is wrong, and either it should be commented out, or the previous line should be used instead.

```
guest@debian:~$ cat /etc/hostname

debian

guest@debian:~$
```

- Choose manage printers
- Look at available printers
- Choose add a printer
- Use root user and password
- Enter the name, location, and description (such as Cannon400-bw in room b2455)
- Enter device (for example, AppSocket/HP jetDirect)
- Choose the network protocol (for example, LaserJet Series cups v1.1)
- Specify device URI (for example, socket://IP:9100, where IP is a valid IP address, or socket://10.82.119.224:9100)
- Specify the driver (for example, Cannon400, HP 4SI/4SI MX driver or Raw Print Queue)

7.10.2 Other Operations with a Printer

Once the ‘manage a printer’ screen displays, choose to print a test page, delete a printer, or execute other tasks associated with printers.

7.10.3 Using a Printer

The `lp <file>` command sends a file to a printer.

The `lpstat -t` command displays the status of the printer.

`enscript` formats a file for fancy printing, such as more than one page per physical page, rotated page, and other things.

As an example of printing, create a file with any editor and call it test.prt. `The lp test.prt` command sends it to the printer.

`lp -d <printer name> test.prt` sends it to a specific printer instead of the default printer.

Creating and printing a post script file:
`man enscript | col -b > j` captures the man page for enscript and formats it for printing and stores the results in the file, j.
`enscript -c -2r -o out.ps j` formats the man page for a post script file printing two pages per physical page, rotated.

`gv out.ps` is a utility to view post script files.

`lp out.ps` prints it to a post script file.

`lpstat -a` shows the status of the print job.

7.10.4 Using the Printer Icon

The printer icon starts a GUI printer configuration manager. It asks the same questions as the Mozilla browser for http://localhost:631 in a different order.

7.10.5 Stopping, Starting, and Statusing a Printer

The CUPS facility is controlling the printer. To access the printer driver use the CUPS command `/etc/init.d/cups [status | start | stop ].`

7.11 Networking

Managing a network on Debian Linux consists of a few commands and defining a configuration file.

7.11.1 Kernel 2.4 versus Kernel 2.6

There is a major difference between the 2.4 and the 2.6 kernel in networking. The 2.4 kernel uses the /etc/modules files to start modules at boot time. It requires the module, via-rhine, to start networking daemons. In the released 2.4 kernel system (option 2 of the firmware boot menu), this module is not started, and hence, networking will not start in the 2.4 kernel. To solve this problem, add via-rhine to the /etc/modules file. The example below shows the entry, via-rhine, installed. If it is not installed, then edit the file /etc/modules and add the entry, while logged in as root user.

```
guest@debian:/etc$ cat modules
# /etc/modules: kernel modules to load at boot time.
#
# This file should contain the names of kernel modules that are
# to be loaded at boot time, one per line.  Comments begin with
# a "#", and everything on the line after them are ignored.

ide-cd
ide-detect
via-rhine
guest@debian:/etc
```

To start networking, either reboot, which will start via-rhine automatically, or manually start it.

```
modprobe via-rhine
```

The `modinfo <module name>` command displays information about any module.

```
root@debian:~# modinfo via-rhine
filename:    /lib/modules/2.4.25-powerpc/kernel/drivers/net/via-rhine.o
description: "VIA Rhine PCI Fast Ethernet driver"
```

```
author:       "Donald Becker <becker@scyld.com>"

license:      "GPL"

parm:         max_interrupt_work int, description "VIA Rhine maximum events handled per
interrupt"

parm:         debug int, description "VIA Rhine debug level (0-7)"

parm:         rx_copybreak int, description "VIA Rhine copy breakpoint for
copy-only-tiny-frames"

parm:         backoff int, description "VIA Rhine: Bits 0-3: backoff algorithm"

parm:        options int array (min = 1, max = 8), description "VIA Rhine: Bits 0-3: media
type, bit 17: full duplex"

parm:        full_duplex int array (min = 1, max = 8), description "VIA Rhine full duplex
setting(s) (1)"
```

NOTE

Kernel 2.6 does not need or use via-rhine.

7.11.2 Networking for both the Kernels, 2.4 and 2.6

`The command ifconfig` indicates what ethernet connections and associated IP addresses are assigned to this local computer. Each ethernet connection has a name of eth<*n*>, where *n* is the ethernet number. eth0 is assigned to the ethernet port physically located farthest from the mouse port and next to the video port. See the Freescale application note AN2666, *Genesi Pegasos II Setup.*

If no IP is assigned to any ethernet port, then `ifconfig` shows only `lo`, which is the loop back port. Otherwise, `ifconfig` displays ethernet configurations. Since `ifconfig` is an administrative tool, it is in /sbin and only the root user has a path to /sbin. Therefore, a normal user can use the explicit path /sbin/ifconfig. For more information on `ifconfig` , see Section 12 “Network Controls for Linux” in Freescale application note AN2578, *Creating a Linux ‘Out of the Box Experience’ on a Sandpoint Platform*. Below is an example using the explicit path:

```
guest@debian:~$ /sbin/ifconfig

lo        Link encap:Local Loopback

          inet addr:127.0.0.1  Mask:255.0.0.0

          inet6 addr: ::1/128 Scope:Host

          UP LOOPBACK RUNNING  MTU:16436  Metric:1

          RX packets:471 errors:0 dropped:0 overruns:0 frame:0

          TX packets:471 errors:0 dropped:0 overruns:0 carrier:0

          collisions:0 txqueuelen:0

          RX bytes:38976 (38.0 KiB)  TX bytes:38976 (38.0 KiB)
```

The file /etc/network/interfaces is the file that defines the ethernet ports. There are two types of ethernet methods of obtaining an IP address.

1. DHCP dynamically attains an IP from a DHCP server.
2. Static statically assign an IP address.

The /etc/network/interfaces file below shows both methods. However, the static method is commented out in this file, so it will use the DHCP method.

```
guest@debian:~$ cat /etc/network/interfaces
auto lo
iface lo inet loopback

# This entry was created during the Debian installation
auto eth0
iface eth0 inet dhcp
#auto eth0
#iface eth0 inet static
#       address 10.61.32.234
#       netmask 255.255.255.0
#       gateway 10.61.32.1
```

The command `ifup eth0` starts the eth0 network.

Correspondingly, code `ifdown eth0` shuts down the eth0 network.

Now `ifconfig` returns this display:

```
guest@debian:~$ /sbin/ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0B:2F:41:86:69
          inet addr:10.82.124.139  Bcast:10.82.127.255  Mask:255.255.252.0
          inet6 addr: fe80::20b:2fff:fe41:8669/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:24599 errors:0 dropped:0 overruns:0 frame:0
          TX packets:674 errors:0 dropped:0 overruns:0 carrier:0
          collisions:58 txqueuelen:1000
          RX bytes:1836316 (1.7 MiB)  TX bytes:94163 (91.9 KiB)
          Interrupt:9 Base address:0x1300

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:471 errors:0 dropped:0 overruns:0 frame:0
          TX packets:471 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:38976 (38.0 KiB)  TX bytes:38976 (38.0 KiB)
```

`eth0 has been assigned the ip address 10.82.124.139.`

7.12 Managing Packages, dpkg, dselect, and apt-get

System programs managed by the kernel and invoked to perform services system wide are managed by the Debian Package Manager, dpkg. This is similar to the Red Hat Package Manager, RPM, used by Red Hat and Yellow Dog on Mac. See Freescale application note AN2802, *Genesi Pegasos II Yellow Dog Linux 4*.

`dpkg` is a medium-level package manager.

`dselect` is the dpkg frontend.

`apt-get` is the command-line interface to obtain packages.

Use the `man` command to obtain additional information on these commands.

7.12.1 The dpkg Command

The command, `dpkg --get-selections` displays all the packages currently on the system and the status of that package, whether it is installed, deinstalled, or scheduled to be purged.

```
root@debian:~# dpkg --get-selections > currentPackages.txt
root@debian:~#
A partial listing of the output is shown below:
a2ps                                            install
aalib1                                          install
.......................
amiga-fdisk                                     install
amor                                            install
ant                                             install
antlr                                           install
apt                                             install
apt-utils                                       install
.....................
printfilters-ppd                                install
printtool                                       deinstall
procmail                                        install
........
```

As discussed in Section 3.1, “Boot Problems,” the `-P` parameter deinstalls or purges installed packages.

`dpkg -P lwresd` is a command example.

A listing of all available packages is in the file /var/lib/dpkg/available. To see, edit, or list these packages go to this file. For example, to see the information on vim, the vi editor, edit the file and search for vim.

The information on the vim package is shown below:

```
Package: vim-vimoutliner
Priority: optional
```

```
Section: editors
Installed-Size: 192
Maintainer: Matej Cepl <matej@ceplovi.cz>
Architecture: all
Source: vimoutliner
Version: 0.3.2a-1
Replaces: vimoutliner
Depends: vim (>= 6.0), perl, python
Filename: pool/main/v/vimoutliner/vim-vimoutliner_0.3.2a-1_all.deb
Size: 45776
MD5sum: edcde46df5586c7d7b416c2603272ca0
Description: a script for building an outline editor on top of Vim
Vimoutliner provides commands for building using the Vim text editor as an
outline editor. For more explanation on what outlines are and what they are
good for see the script's webpage at
http://www.vimoutliner.org and the general discussion of outlines on
http://www.troubleshooters.com/tpromag/199911/199911.htm.
```

7.12.2 The dselect command

The command `dselect` is a front end to dpkg, which gives an interactive way to use dpkg.

```
root@debian:/# dselect
 * 0. [A]ccess     Choose the access method to use.
   1. [U]pdate     Update list of available packages, if possible.
   2. [S]elect     Request which packages you want on your system.
   3. [I]nstall    Install and upgrade wanted packages.
   4. [C]onfig     Configure any packages that are unconfigured.
   5. [R]emove     Remove unwanted software.
   6. [Q]uit       Quit dselect.

Move around with ^P and ^N, cursor keys, initial letters, or digits;
Press <enter> to confirm selection.    ^L redraws screen.

Version 1.10.21 (powerpc).
Copyright (C) 1994-1996 Ian Jackson.
Copyright (C) 2000,2001 Wichert Akkerman.
```

```
This is free software; see the GNU General Public Licence version 2

or later for copying conditions.  There is NO warranty.  See

dselect --licence for details.

E.g., choose {S}elect and you can scroll through all the packages available on this
system.

Choose [Q] to quit.
```

7.12.3 Obtaining Packages

The packages are kept in a data base on the local machine. To obtain packages from the Debian server use the `apt-get` command or download them from the web site at www.debian.org by going to the Debian packages page.

7.12.3.1 Dependency Failures

Obtaining packages may produce dependency failures because the system has been updated in the archives at www.debian.org and new packages may depend on these new features. It is a good idea to update to the current system level before installing new packages.

```
root@debian:/etc/apt# apt-get update

Get:1 http://http.us.debian.org testing/main Packages [2888kB]

Hit http://people.debian.org ./ Packages

Hit http://people.debian.org ./ Release

Hit http://www.tux.org sid/main Packages

Ign http://www.tux.org sid/main Release

Hit http://www.tux.org sid/non-free Packages

Ign http://www.tux.org sid/non-free Release

Get:2 http://http.us.debian.org testing/main Release [84B]

Get:3 http://http.us.debian.org testing/contrib Packages [53.0kB]

Get:4 http://http.us.debian.org testing/contrib Release [87B]

Get:5 http://http.us.debian.org testing/main Sources [1164kB]

Get:6 http://http.us.debian.org testing/main Release [83B]

Get:7 http://http.us.debian.org testing/contrib Sources [26.9kB]

Get:8 http://http.us.debian.org testing/contrib Release [86B]

Fetched 4132kB in 16s (247kB/s)

Reading Package Lists... Done

root@debian:/etc/apt# apt-get build-dep dome

Reading Package Lists... Done

Building Dependency Tree... Done

The following NEW packages will be installed:
```

```
  build-essential debootstrap grep-dctrl sysutils
The following packages will be upgraded:
```

A list of the packages will be supplied and then they will be installed.

7.12.3.2 Downloading from the Website

Navigate from www.debian.org, packages, then select stable or testing, then choose from a list for the category, then choose the package, then select download, then choose a server, finally, the download proceeds. Then the user can install the package from the local directory that was used for the download.

As an example, here is how to download the package bugsx, which is in the stable, mathematics category.

Navigate from www.debian.org to packages, stable, mathematics, bugsx.

Download from the web browser to the local directory and then install it.

```
root@debian:/home/guest# dpkg -i bugsx_1.08-6_powerpc.deb
```

Selecting previously deselected package bugsx.

```
(Reading database ... 130610 files and directories currently installed.)
Unpacking bugsx (from bugsx_1.08-6_powerpc.deb) ...
Setting up bugsx (1.08-6) ...
```

If there are any dependencies, download each of them, one at a time.

Look at the installed packages again with dpkg.

```
root@debian:/home/guest# dpkg --get-selections
.........
bugsx                                           install
..........
```

7.12.3.3 The apt-get Command

The command `apt-get` builds the dependency tree and downloads all the packages automatically.

If using a proxy, then create a file in /etc/apt to specify the proxy parameters.

A typical proxy server uses this file format:

Acquire::http::Proxy "http://yourusername.yourpassword@wwwgate0.mot.com:1080";

Alternatively, an environment variable can be set up to perform the same action.

```
export http_proxy=http://username:password@wwwgate0.mot.com:1080
```

Substitute the correct proxy name for the wwwgate0.mot.com.

An example of this file follows:

```
root@debian:/etc/apt# cat apt.conf
```

```
Acquire::http::Proxy "http://guest:internet@wwwgate0.mot.com:1080";
```

Alternatively, use this command:

```
export http_proxy=http://guest:internet@wwwgate0.mot.com:1080
```

Now to install the mathematics package evolver, use the following example:

```
root@debian:/home/guest# apt-get install evolver
Reading Package Lists... Done
Building Dependency Tree... Done
Suggested packages:
  evolver-doc geomview
The following NEW packages will be installed:
  evolver
0 upgraded, 1 newly installed, 0 to remove and 340 not upgraded.
Need to get 678kB of archives.
After unpacking 2871kB of additional disk space will be used.
Get:1 http://http.us.debian.org testing/main evolver 2.20-1 [678kB]
Fetched 678kB in 3s (199kB/s)
Selecting previously deselected package evolver.
(Reading database ... 130605 files and directories currently installed.)
Unpacking evolver (from .../evolver_2.20-1_powerpc.deb) ...
Setting up evolver (2.20-1) ...
root@debian:/home/guest#
root@debian:/home/guest# dpkg --get-selections
.........
evolver                                         install
..........
```

7.12.3.4 Possible apt-get problems

1. The update does not seem to generate any results and/or apt-get install can't find any packages.

   Answer: Look at: /etc/apt/sources.list

   And these lines need to be active, that is, not commented out or missing:

   deb http://http.us.debian.org/debian/ testing main contrib

   deb-src http://http.us.debian.org/debian/ testing main contrib

2. Other packages have unresolvable dependencies preventing your current package from installing.

   Answer: Remove all the packages that have unresolved dependencies.

   apt-get remove <package name> e.g. apt-get remove swfplayer

The user can see all the packages by doing a dselect update, ‘dselect select’.

dselect has many options.

8 References

The following Freescale documents describe the various applications of the Genesi Pegasos II system.

- AN2666, *Genesi Pegasos II Setup*
- AN2736, *Genesi Pegasos II Boot Options*
- AN2738, *Genesi Pegasos II Firmware*
- AN2739, *Genesi Pegasos II Yellow Dog Linux 3*
- AN2744, *PMON Module, an Example of Writing Kernel Module Code for Debian 2.6 on Genesi Pegasos II*
- AN2743, *Software Analysis on Genesi Pegasos II Using PMON and AltiVec*
- AN2748, *Genesi Pegasos II Kernel and NFS Facility*
- AN2749, *Genesi Pegasos II Using sim_G4plus*
- AN2750, *Genesi Pegasos II Analysis and Optimization of Code with sim_G4plus*
- AN2801, *Upgrade or Restore Firmware and Hard Drive on Genesi Pegasos II*
- AN2802, *Genesi Pegasos II Yellow Dog Linux 4*
- AN2578, *Creating a Linux ‘Out of the Box Experience’ on a Sandpoint Platform*

For assistance or answers to any question on the information that is presented in this document, send an e-mail to risc10@freescale.com.

9 Document Revision History

Table 2 provides a revision history for this application note.

Table 2. Document Revision History

Revision	Date	Substantive Change(s)
1	03/04/2005	Added boot option 4 for the 2.6.8 kernel in Section 3, “Starting Debian Linux.” Added more descriptions of helpful commands in Section 4.6, “Other Useful Commands.” Added localhost connection error note to Section 7.10.1, “Installing a Printer.” Added Section 7.12.3.4, “Possible apt-get problems.” Minor editing.
0.2	11/04/2004	Added additional printer information in Section 7.10, “Printers.” Added alternative method using `export` command in Section 7.12.3.3, “The apt-get Command.”
0.1	08/31/2004	Minor editing.
0	07/14/2004	Initial release.

How to Reach Us:

Home Page:
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USA/Europe or Locations Not Listed:
Freescale Semiconductor
Technical Information Center, CH370
1300 N. Alma School Road
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+46 8 52200080 (English)
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+33 1 69 35 48 48 (French)
support@freescale.com

Japan:
Freescale Semiconductor Japan Ltd.
Technical Information Center
3-20-1, Minami-Azabu, Minato-ku
Tokyo 106-0047 Japan
0120 191014
+81 3 3440 3569
support.japan@freescale.com

Asia/Pacific:
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