

Linux Laptop — Aspire

Howard Gibson

2011 July 20

Contents

1	Introduction	1
1.1	Objective	1
1.2	Copyright	1
2	Hardware	1
2.1	Laptop	1
2.2	CPU	2
2.3	Memory	2
2.4	Video Card	2
2.5	Monitor	2
2.6	Hard Drive	2
2.7	Floppy Drives	2
2.8	DVD	2
2.9	Sound Card	2
2.10	Modem	2
2.11	Keyboard	3
3	Installation	3
3.1	Planning	3
3.2	Security	3
3.3	Partitioning	3
3.4	Installation	4
3.5	Booting for the First Time	5
3.6	Logging in for the first time	6
3.7	Additional Software	6
3.8	Fortune Cookie	6
3.9	Logging in through GDM and KDM	7
3.10	Modem Setup	8

A Booting with GRUB	8
B Network Configuration	9

1 Introduction

1.1 Objective

- Provide detailed instructions on the current Linux installation on my laptop. This is a rescue procedure, in case I have to re-install Linux.
- Provide new Linux users with a general example of how a Linux machine is installed and configured.

The OS is Fedora Core 14, downloaded from the Fedora website 2011Apr18.

The install date was 2011 May 15.

The first thing I ever tried to install on this machine was Fedora Core 3. It worked, but the video card was not recognized and the various battery functions did not work. My screen resolution was 1024x768. Everything else worked fine. My next attempt was Fedora Core 5 which worked completely. It is risky to install Linux on a brand, new machine. It helps if the machine uses hardware that has been around a year or two, and you use a recent version of Linux.

I now have a new(er) laptop. I am setting this machine up for a friend or relative that needs a decent computer. The keyboard of this thing is not very good, but the CPU, monitor and drive works fine. A non-touch typist will never know.

1.2 Copyright

This document is copyright © 2011 by Howard Gibson. You may post this on web pages and bulletin boards free of charge. All other rights are reserved.

2 Hardware

The computer is an Acer 3623NWXMi which came with something called Linpus Linux (<http://www.linpus.com>). This turned out to be a very basic flavour of Linux with just the kernel installed. There was no X Window System, and no easy way to reset root's password and secure the machine. This OS was *not* suitable for Linux beginners.

I purchased the machine at Wintronic Computes Plus.

<http://www.wintroniccomputers.plus>

The machine seems to be well equipped, with a 56KB modem, a network card, wireless, and a CD/DVD burner.

2.1 Laptop

Acer Aspire 3623NWXMi, serial number KXAA60C07060302421KS00.

2.2 CPU

Intel (R) Celeron (R) processor, 1.5GHz, 400MHz FSB, 1MB cache

2.3 Memory

It came with 256MB. I have increased this to 766MB.

2.4 Video Card

Intel (R) Graphics Media Accelerator (GMA) 900 with 128MB RAM and a refresh rate of 70Hz.

2.5 Monitor

14.1" WXGA wide TFT LCD supporting 1280x800 pixel resolution.

2.6 Hard Drive

40GB HTS424040M9AT00-(PM)

2.7 Floppy Drives

None. Oh well.

2.8 DVD

8X CD/DVD Burner

2.9 Sound Card

The install program detected an Intel Corp 82801FB/FVM/FR/FW/FRW (ICH6 Family) AC'97 Audio Controller. This is described in the literature as Sound Blaster Pro compatible.

2.10 Modem

Ambit Conexant MDC1.5 Modem WinXP/2K Driver

I have had problems with this. It is a winmodem, requiring drivers. I have installed hsfmodem-7.47.00.02, and this worked on Fedora Core 6, as long as I did not try to run Xen. I needed a special kernel for it, which provided a larger buffer or something.

Fortunately, I do not use the modem much, anymore.

2.11 Keyboard

An 88/89 key keyboard. The pointing device is a touch pad with a four way scroll button. The scroll button is supported by Linux and/or the X Window System. It is extremely difficult to not multiple click the mouse button.

3 Installation

3.1 Planning

This machine was purchased as a portable workstation, to be used when I am away from my main computer. In many ways, this is not a demanding requirement. I need adequate capability in terms of graphics, disk space and processing power. I wanted it to be cheap, and I wanted some way to exchange information with my main computer.

3.2 Security

When this was my personal laptop, I started off not having a `/home` partition. If they re-install the OS, they lose any sensitive data I may have left on the machine. From Fedora Core 9 on, I was able to install a separate, encrypted `/home` partition. This provides good security, and it renders a stolen machine unuseable.

The downside of an encrypted `/home` partition and a crappy keyboard is that it can render my unstolen machine unuseable. This is why I bought the new one.

I am installing this thing as a primary desktop. The user will have to be careful not to lose it.

3.3 Partitioning

I want to allocate hard drive space as follows...

Partition	Memory	Filesystem
root	20GB	ext3
swap	2GB	swap
<code>/home</code>	12GB	ext3
<code>/usr/local</code>	6GB	ext3
Total	40GB	

A 20GB root partition allows a reasonably complete OS installation over the next few years. The 6GB `/usr/local` partition allows the user to install add-on software once. It will be there when the upgrade the OS. I will create a symbolic link to `/usr/local` called `/opt`.

Once upon a time, you needed a separate `/boot` partition. If I had an older computer, I would have needed to keep `/boot` entirely within the first 512MB of the hard drive. That was a long time ago.

If I allow a swap partition smaller than my RAM, the installation program complains.

3.4 Installation

The original as-purchased Linpus machine booted up into a root shell. I had to change the boot configuration to make it boot off the CD/DVD.

The Fedora Core 14 DVD gives you the option of checking the install media. I remember the old Red Hat CDs doing this. My earlier Red Hat and Fedora installs have been CDs and DVDs from various editions of the *Red Hat Bible*, which did not include this. The check took about ten minutes.

Fedora runs a series of install windows as you set up the install.

I was given a choice between installing Fedora Core, or upgrading an existing installation. I tried to upgrade from Fedora Core 6 to Fedora Core 9, and the results would not boot. I did not bother trying to debug it. I prefer to reformat the root partition and reinstall.

Note how I selected the “Custom” install. One anything other than “Custom”, Red Hat and Fedora reformat every partition on the hard drive. This is unacceptable most of time on my machines.

Always set Linux machines to Greenwich Mean Time (UTC).

1. The first install screen is just a logo screen. I hit “Next”.
2. In the language screen, I selected “English (English)” and hit “Next”.
3. For the keyboard, I select “U.S. English”.
4. I was what type of storage device my installation would involve, “Basic Storage Device”, or “Specialized Storage Device”. I selected Basic.
5. The system examined my storage devices. ¹
6. I named my laptop “Aspire”. This window contains a “Configure Network” button. I hit it, and it found my wireless network. I selected the “Wireless” tab, and I clicked on “Edit”. I was able to select my home wireless network, and type in the encryption key. It did not test this immediately.

¹ I was upgrading a Fedore Core 10 machine with an encrypted partition. I was prompted for the encryption key. When I typed that in, I was informed that I cannot upgrade it, because it is too old. I can be only two releases out of date. I have to replace the OS. I prefer to do it this way, anyway. I hit “Continue”.

7. For time zone, my city is “America/Toronto”. My system clock uses UTC. I make damn sure about the UTC.
8. I entered a root password.
9. For installation, I selected “Create custom layout”.
10. For my 2011May15 install, I deleted all the partitions. In the future, the `/home` and `/usr/local` partitions will survive re-installations. I followed my partitioning scheme, described above. I forced all partitions to be primary.

Device	Size (MB)	Mount point	Type	Format?
<code>sda1</code>	20000	<code>/</code>	ext4	yes
<code>sda2</code>	12000	<code>/home</code>	ext4	yes (this time)
<code>sda3</code>	2000	<code>/</code>	swap	yes
<code>sda4</code>	4153	<code>/usr/local</code>	ext4	yes (this time)

Next time, I will *not* reformat `/home` or `/usr/local`.

11. The system now formatted my hard drive. This took only a couple of minutes.
12. I left the boot loader screen at default. The boot loader is installed in `/dev/sda`. I do not want a boot loader password.
13. I was prompted for software installation. The default is Office and Productivity. I added Software Development and Web Server. I did not click “Fedora 10 - i386” or “Fedora 10 - i386 - Updates”. I did click “Customize now”.
14. In the customization screen, I made sure I installed everything except the extra languages in Language support. It not bother with the optional packages.
15. The installation started at 4:30pm.

3.5 Booting for the First Time

Welcome It starts off with another Welcome screen.

License Agreement The license is no longer displayed on screen. It does indicate where on the Fedora website the license can be found.

Create User I created a user, me!

Date and Time I verified the date.

Hardware Profile I sent the hardware profile as asked. Fedora Core 9 was insistent. I do not know about 10. Also, it turns out I was not connected to the network at the time the hardware profile was sent. Who knows what happened?

The display automatically found video card and monitor and set itself up at 1280×800 pixels.

There was no sound card setup, but it works.

3.6 Logging in for the first time

I logged in as me, and found myself in the Gnome desktop.

3.7 Additional Software

The first thing I did was create a symbolic link to ensure that any installed in `/opt` wound up in `/usr/local`.

```
# rmdir /opt
# ln -s /usr/local /opt
```

This stuff was missing from my Fedora Core 14 installation.

Package	What is it?	How it was installed
fortune	Fortune cookie	yum
acroread	Official PDF reader	downloaded from Adobe
xpdf	Small, fast PDF reader	yum
fvwm	Fast, stable window manager	yum
audacity	audio editor	yum
Adobe flash	Flash media player	downloaded from Adobe
seamonkey	Everything from Mozilla	yum
sylpheed	email	yum
freeciv	Free Civilization game	yum
wesnoth	Another cool game	yum
FlightGear	flight simulator	yum
latex	L ^A T _E X Typesetting	Package manager
xfig	graphics for L ^A T _E X	yum
xdvi	L ^A T _E X viewer	yum

The Adobe program was downloaded with permissions set to read and write only. I had to turn on execute permissions to make it install.

L^AT_EX was used to generate these notes.

Xfig is a cool graphics program even if you do not use L^AT_EX.

3.8 Fortune Cookie

It ain't *NIX if there is no joke printed at the opening of each command shell. I installed `fortune-mod` as noted above.

I activated it by adding the following lines to `/etc/profile`

```
FORTUNE=/usr/local/games/fortune
if [ -x ${FORTUNE} ]; then
    ${FORTUNE}
fi
```

3.9 Logging in through GDM and KDM

Fedora installs GDM as the graphical login tool. The login window shows a user list. A user list is a bad idea most of the time. On any system, it allows unauthorized people to see your user list. This is half of what a cracker needs to hack into your system. If your user list is large, a lot of people are going to need more time to scroll through the list and find themselves.

I searched the internet for a solution to this. I found a bug report on the GDM site stating that this is a do-not-use-GDM issue and that they need to fix it.

The solution, meanwhile, is to run KDM. Create or edit the following file with the following data...

```
[root@rev RevLinux]# cat /etc/sysconfig/desktop
DISPLAYMANAGER=KDE
[root@rev RevLinux]#
```

This makes KDM the default login window. KDM still displays a user list, but it still displays the last user.

1. Log in, selecting KDE as your desktop.
2. Click on the Fedora logo, select Computer, and System Settings.
3. Scroll down to *System Administration*
4. Select *Login Screen*.
5. Click on the *User* tab.
6. Verify that *Show List* is OFF.
7. Click on the *Convenience* tab.
8. Under Preselect User, select "None".
9. Click on *Apply*. You will be prompted for root's password.

The rest of this menu is eye candy. Have fun.

Gnome is taking their damn time fixing this. This was identified as a do-not-run issue on Fedora Core 9.

3.10 Modem Setup

I have not setup the modem yet.

The computer comes with a win/linmodem which appears to be integrated with the sound card. It has a Conexant chip (NEE Rockwell). I downloaded a driver from <http://www.linuxant.com>.

For Fedora Core 6, I did the following...

I need `hsfmodem` for Fedora Core 5, and Kernel version 2.6.15-1.2054_FC5, which is a 1.2MB download from the site. The MD5 checksum is...

```
57fb5b4cc74231c4736ca15a980b123b.
```

When I installed the driver rpm, the computer rebooted.

I ran `wvdialconf create` to set up the modem, and I determined that the modem was `/dev/ttySHSF0`. That last character is zero, not 'Oh'.

I ran `minicom -e` to configure the modem, and it worked!

A Booting with GRUB

I had to boot Linux into Single user mode. It is not obvious how to do this. This information comes from the Red Hat Linux 7.2 Bible, by Christopher Negus. The publisher is Hungry Minds.

When you turn the machine on, you can either select the system you want to boot, or you can wait for the default. This gives you the standard boot. If you want to do a non-standard boot, you must edit the boot process.

Select the kernel image you want booted, and hit the letter `e`. You will see something like the following on your screen...

```
GRUB version 0.90 (639K lower / 65530K upper memory
```

```
root (hd0,1)
kernel /boot/vmlinuz-2.43.7-10 ro root=/dev/hda3 hdc=ide-scsi
initrd /boot/initrd-2.4.7-10.img
```

There are some help notes immediately after this that I don't feel like typing in. The above notes from from the Linux Bible, not from my Red Hat 7.3 laptop. I also cannot remember the value for upper memory.

The only line you should modify is the kernel one, which selects the boot image.

Position the cursor on the kernel line and press `e`.

To boot in single user mode, add the text `linux 1`.

Hit the letter `b` to boot the machine.

B Network Configuration

Fedoras Core 5 can do the network configuration at install time. The following notes describe the resulting file setup, which I used to have to enter manually. This stuff is still worth knowing.

I went into
`/etc/sysconfig/network`, and I set it up as follows..

```
NETWORKING=yes
HOSTNAME=aspire.eol.ca
```

The boot scripts in `/etc/rc.d` read this file and use the information to set the hostname at booting.

I set up `/etc/hosts` as follows..

```
127.0.0.1 aspire.eol.ca aspire
127.0.0.1 localhost.localdomain localhost
```

The domain `aspire.eol.ca` is a figment of my imagination. Back then, I connected to the Internet using my main computer and its 56K modem.