COSC 4397/6397 Network Systems Labs (Spring 2008)
Project 1
Installing Debian on the Compaq Armada 110

Objective
This assignment is designed to teach you to install Linux, configure and manage the
network

Description
In this assignment, you will install the latest testing branch of Debian on a Compaq Armada
110 laptop
computer issued to you for the course. You will have to connect the laptop to a network,
download and
configure a kernel, and set up basic system services. This project should be accomplish
individually.

Installing
You will be issued a copy of the Debian 4.2 stable release netinst CD
1. Boot from the CD (you may need to configure the BIOS to do this)
2. Hit enter at splash
3. Proceed following the instructions from the installer, until you hit the "partition disks"
screen
4. In "partition disks" screen, choose: "Guided - use entire disk"
5. For partitioning schema, choose: "All files in one partition"
6. Proceed following the instructions from the installer, until you hit the "configure time
zone" screen. the time zone is central.
7. Then you need to setup the root password. never forget your root password!
8. Use whole disk for installation(erase anything)
9. For disk layout, follow the recommended option.
11. Install grub at main mbr
10. Choose NOT to install extra software from online mirrors. (since you will update from
testing sources later.)
11. Choose laptop and standard system for software package selection.
12. After the installation is finished, remove the cd and reboot.
13. Login to root account
14. wget http://songweilab.com/network-lab/debian-install/sources.list #testing branch
source list
15. cp -f sources.list /etc/apt
16. apt-get update
17. apt-get -y install ntpdate # Y/Yes all the way
18. ntpdate pool.ntp.org #incorrect time may affect the update of debian packages.
19. apt-get update
20. apt-get -y dist-upgrade #upgrade to test branch. Yes/OK all the way. This may take a
while
21. reboot the system.
22. login to root
23. apt-get update
24. apt-get -y install gcc tcpdump less ssh svn eclipse openoffice.org apache telnet nmap
wireshark dhcpd
25. Optional: install a flull fledged X-windows system. If you feel comfortable with command
line, you don't need to.
    apt-get -y install xorg gnome
26. Optional: install a lightweighted X-windows system. If you feel comfortable with
command line, you don't need to.

26.1 apt-get -y install xorg fluxbox xterm
26.2 X software:
      apt-get -y install iceweasel #Firefox for debian
      apt-get -y install scite # If you don't know vi or emacs, this is your text editor.
26.3 configure & use fluxbox
  echo "fluxbox" > .xinitrc
  mkdir .fluxbox
  wget http://songweilab.com/network-lab/debian-install/menu
  To start X windows: cd ~;startx
  In fluxbox, right click to see the menu.
  start any other application with "run" menu iterm, or in xterm.

Networking

Use command line!!!
1. Find your network cards. Run ifconfig -a to obtain a list of your network adapters. The Compaq
Armada has a built-in ethernet card, which should show up as eth0. If the wireless pcmcia card
is inserted, and pcmcia is enabled, you may also see an eth1 adapter which is the wireless card.
2. For wireless adapters, there is an extra step of having to connect to the wireless access point and
manage encryption before negotiating IP configuration. The iwconfig command handles basic
wireless configuration tasks. On the UH campus, the wireless network is called UHWireless. This is
the network's essid. On an unencrypted network like UH has, this is all you need before
continuing to step four. (all together, the command is iwconfig eth1 essid UHWireless)
3. If you have a wireless network that require encryption, you will need to specify an encryption
key. iwconfig can accomplish this as well. (e.g. iwconfig eth1 essid example key 1234567)
4. Now you have configured your network card, you need to enable it. Simply issue "ifconfig eth1 up" to the command line
5. For regular ethernet adapters, (and wireless adapters once they have been connected to a
network in the above steps) all you have to do is specify a proper IP address for the network
your computer is on.
6. If the network is managed, it will typically have a dynamic host control protocol (dhcp) server
and automatic configuration will work. Several programs are available for using dhcp in Linux.
The most common of these is dhclient. A simple dhclient -i eth1 will cause dhclient to grab
an IP address on the eth1 interface from the network's
dhcp server.

Exercise
● Summarize problems and fixes (if any) you have encountered in installing and configuring your laptop.
● After starting your system, record the list of modules currently loaded in the kernel
(hint: use lsmod). [will there be any change before and after inserting the pcmcia

card?]
● The following problem is reported by one student while trying to set up a Linux system. After setting up the IP address of a Linux box A to 129.7.248.61 and subnet mask to 255.255.255.192 using IP configure, a student found out machines on his subnet can ping Host A but not ones outside his subnet. Furthermore, host A cannot reach machines outside his subnet. What are the possible problems with the configuration? What tools do you use to diagnosis it?
References:
1. The Linux Wireless LAN Howto, http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/