



A Mainframe on Your Desk (or in your notebook)

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Disclaimers:

1. YMMV

2. I am fairly new to Linux

3. I have only installed on Ubuntu and Xubuntu

4. The windows version of Hercules will not be covered

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This preliminary version may not be distributed except as permission has been given.

The final version will be freely distributable, so long as credit is given.

Install Hercules

Just use your distributions high level installer.

Synaptic Package Manager

adept

apt-get

etc

You will probably need to install a telnet daemon too
Search for telnetd in your package manager. It may
also require ssl to install. I chose telnetd-ssl

Walk First, Run later

There is a preconfigured stage 1 image for the 31 bit version of Linux/390

<http://www.debian-administration.org/articles/484/print>

I did not get this to work until the third attempt.
Some problems may have been my inexperience
but I think there are some changes to the procedure
above that are a good idea, such as increasing the storage.

Linux/390 – 31 bit distro

•**sudo mkdir /hercules**

•**sudo chmod 775 /hercules**

•**sudo chgrp admin /hercules**

•**cd /hercules**

•**mkdir linux31**

•**cd linux31**

•**wget <http://people.debian.org/~mdz/hercules/Debian-3.0rl.3390>**

•**wget <http://people.debian.org/~mdz/hercules/hercules.cnf>**

Customization

- **cp hercules.cnf linux31.cnf**
 - **cp -p Debian-3.0r1.3390 Debian.3390**
 - **dasdinit -bz2 dsk301.3390 3390 DSK301 250**
 - Create a startup commands file:
 - echo iodelay 800 > hercules.rc
 - echo pause 5 >> hercules.rc
 - echo ipl 300 >> hercules.rc
-

Customize configuration file

- **Edit your configuration file `linux.cnf`:**
- **Change `MAINSIZE` to 96 (or more)**
- **Change `XPNDSIZE` to 96**
- **Change `PANRATE` to `SLOW`**
- **Comment out the card reader (line starting `000C`)**
- **Add new disks (after line beginning `0300`)**
 - `0301 3390/hercules/linux31/dsk301.3390`**
 - `0302 3390/hercules/linux31/dsk302.3390`**
- **Uncomment the network interface (lines**

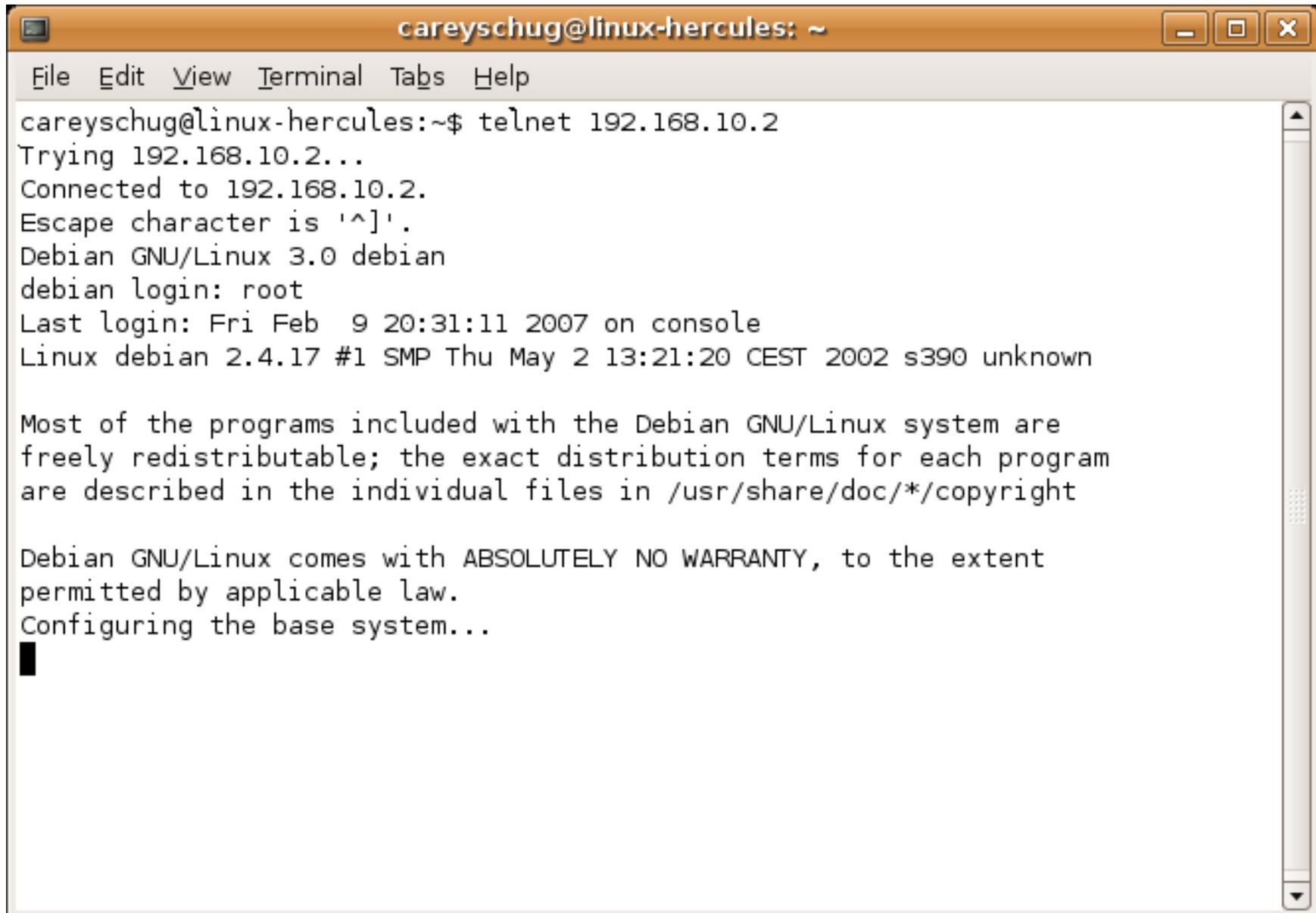
Create startup script

- **Create a new file “herc” with the following:**
 - **iptables -t nat -A POSTROUTING -j MASQUERADE**
 - **echo "1" > /proc/sys/net/ipv4/ip_forward**
 - **hercules -f ./linux31.cnf**

Bring up Linux/390

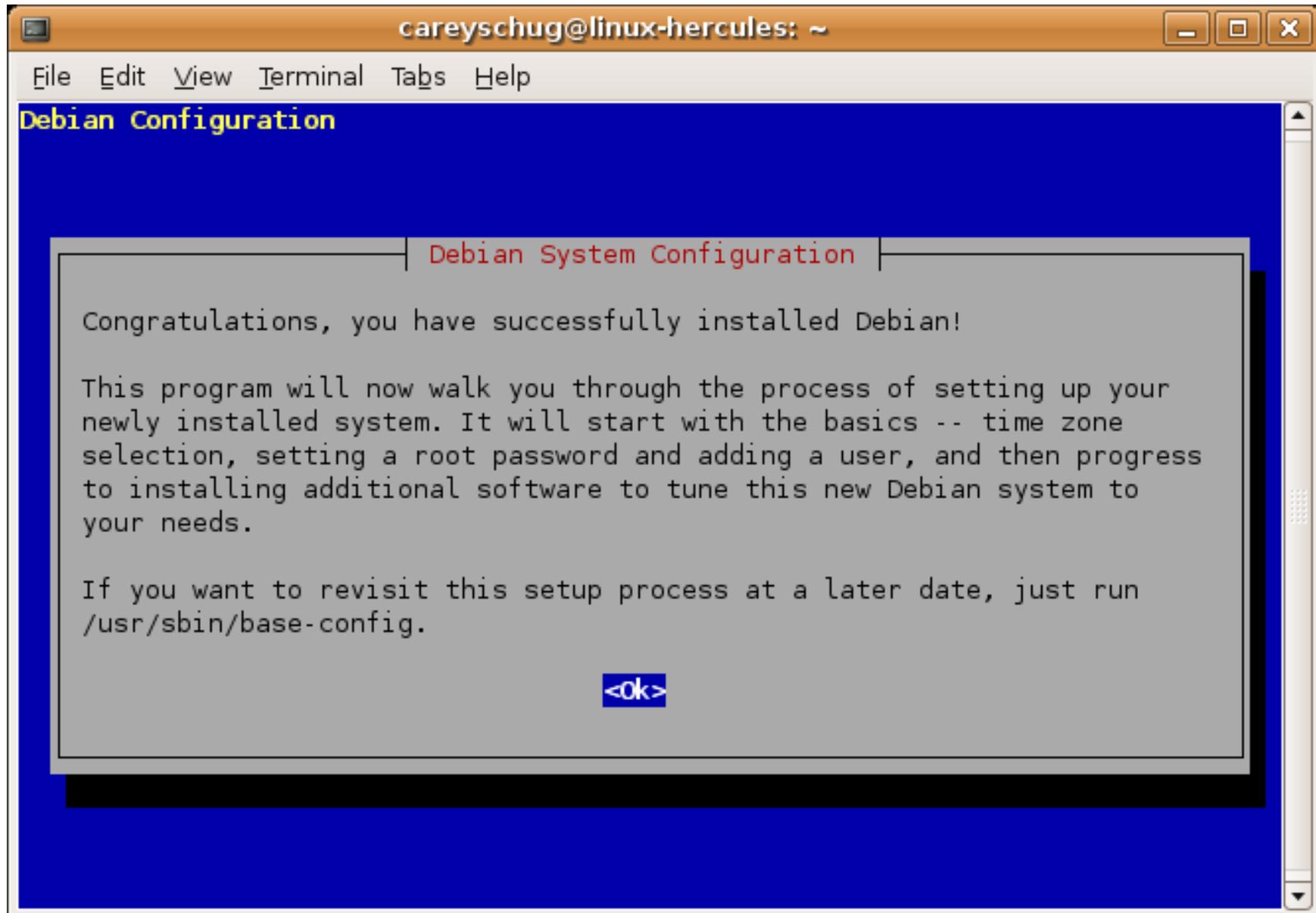
- **For now with a Linux kernel 2.26+ you must to su to root**
 - **su -**
- **Bring up your Linux/390 image:**
 - **./herc**
- **After you get the logon prompt, go to another terminal session:**
 - **telnet 192.168.10.2**
- **When you get the login prompt, enter “root”**

Part 2 of install



```
careyschug@linux-hercules: ~  
File Edit View Terminal Tabs Help  
careyschug@linux-hercules:~$ telnet 192.168.10.2  
Trying 192.168.10.2...  
Connected to 192.168.10.2.  
Escape character is '^]'.  
Debian GNU/Linux 3.0 debian  
debian login: root  
Last login: Fri Feb  9 20:31:11 2007 on console  
Linux debian 2.4.17 #1 SMP Thu May 2 13:21:20 CEST 2002 s390 unknown  
  
Most of the programs included with the Debian GNU/Linux system are  
freely redistributable; the exact distribution terms for each program  
are described in the individual files in /usr/share/doc/*/copyright  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Configuring the base system...  
█
```

Start Configuration



The image shows a terminal window titled "careyschug@linux-hercules: ~". The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The main content area has a blue background and displays the following text:

```
Debian Configuration
```

```
Debian System Configuration
```

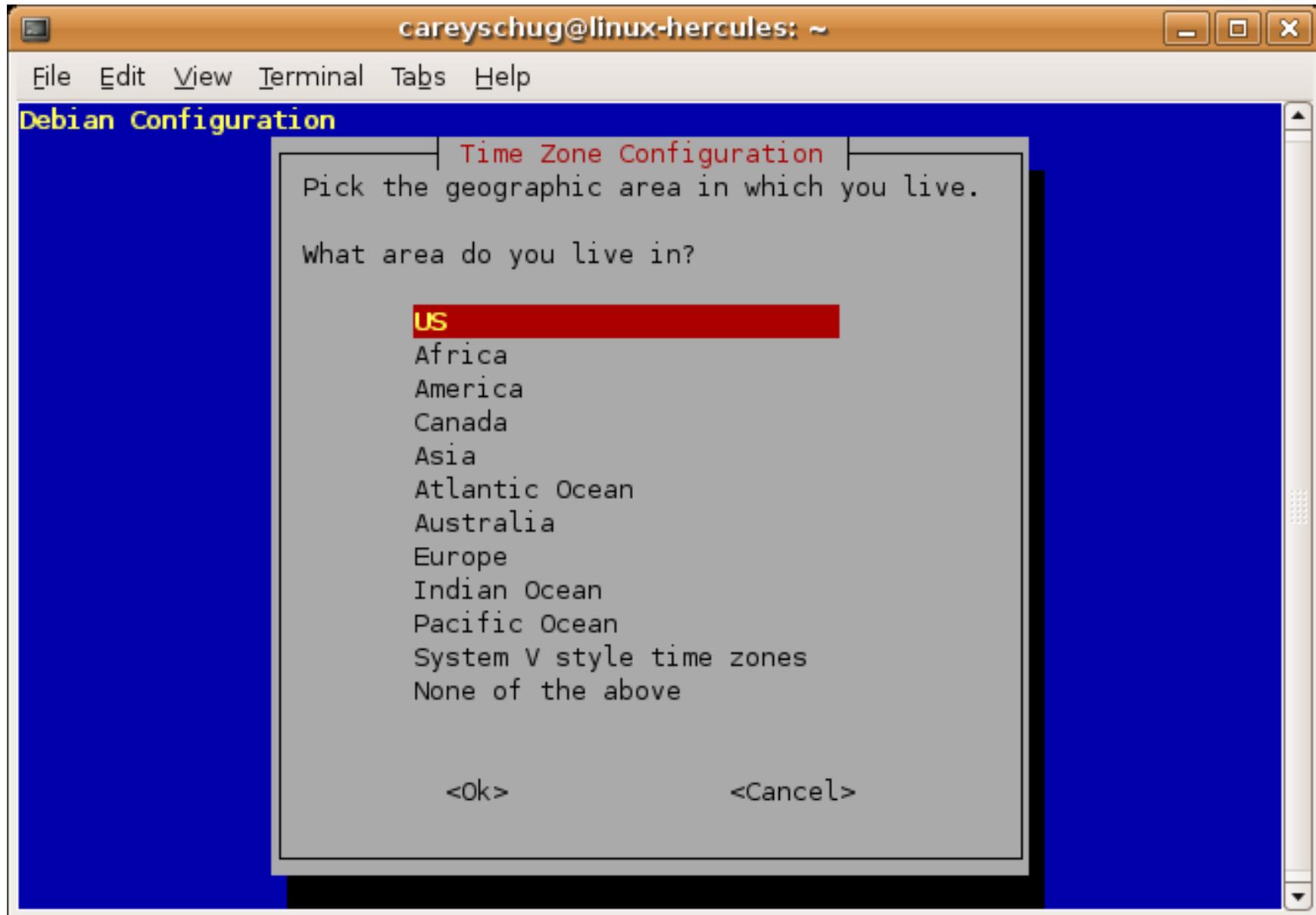
```
Congratulations, you have successfully installed Debian!
```

```
This program will now walk you through the process of setting up your  
newly installed system. It will start with the basics -- time zone  
selection, setting a root password and adding a user, and then progress  
to installing additional software to tune this new Debian system to  
your needs.
```

```
If you want to revisit this setup process at a later date, just run  
/usr/sbin/base-config.
```

```
<ok>
```

User Cursor keys or type first letter to select from lists,
It isn't necessary to tab to the <ok> button,
but if you want to go back, then tab to the <cancel> button.



Further Configuration choices

- timezone
- md5 passwords
- shadow passwords
- Set root password
- create unprivileged account

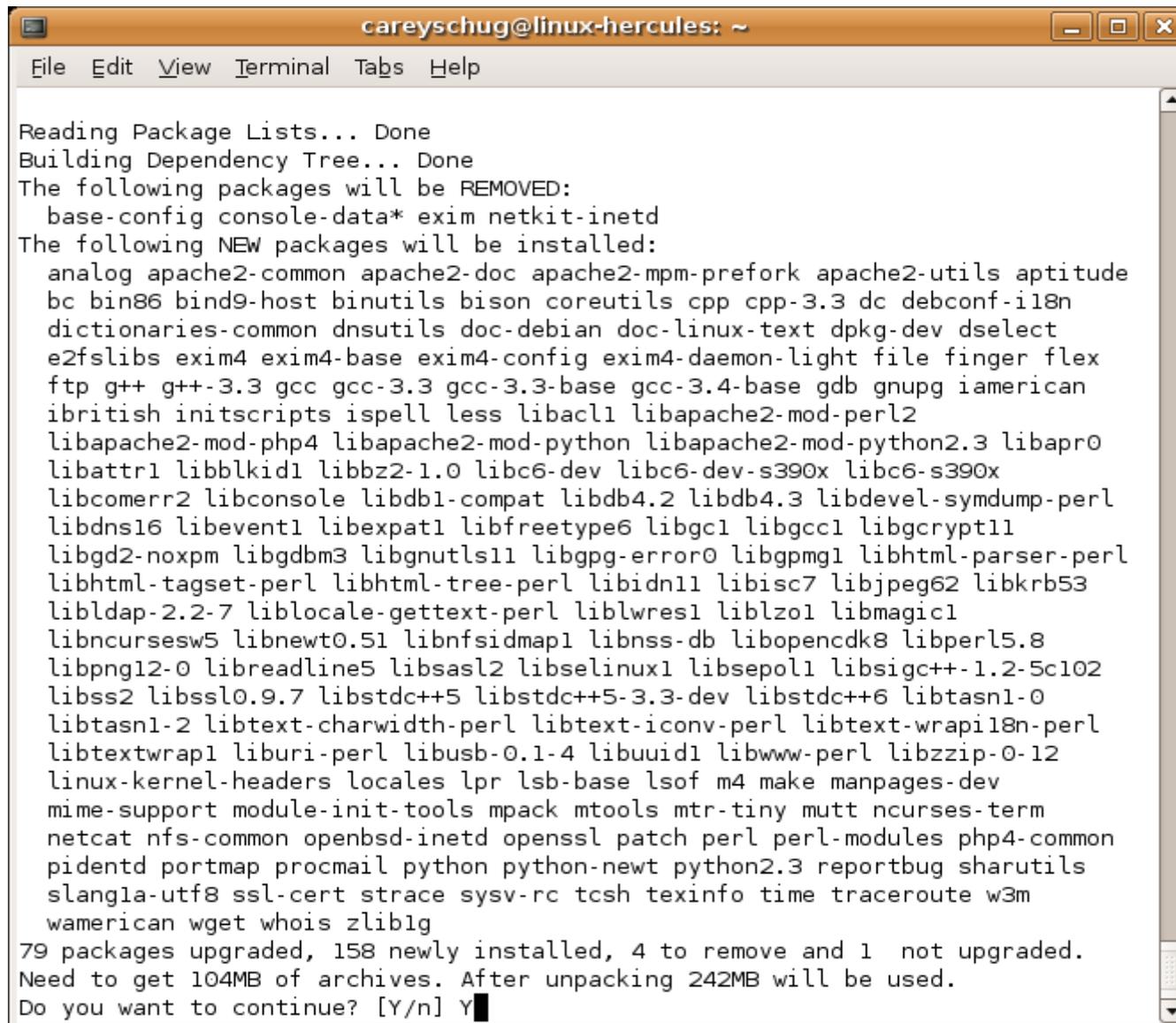
Start another session and define the nameserver.

- logon as the unprivileged user
- su to root
- echo nameserver 10.10.10.10 > /etc/resolv.conf
- logoff

Return to previous terminal session

- Choose media (http, ftp, etc)
- Choose repository types (universe, etc)
- Choose notification of security updates
- run `tasksel` to choose additional packages
- run `dselect` to fine tune package choices

Confirm installation choices

A terminal window titled 'careyschug@linux-hercules: ~' with a menu bar containing 'File', 'Edit', 'View', 'Terminal', 'Tabs', and 'Help'. The terminal output shows the results of a package management operation, including a list of packages to be removed and a long list of new packages to be installed. At the bottom, it asks for confirmation to continue, with 'Y' entered.

```
careyschug@linux-hercules: ~
File Edit View Terminal Tabs Help

Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be REMOVED:
 base-config console-data* exim netkit-inetd
The following NEW packages will be installed:
 analog apache2-common apache2-doc apache2-mpm-prefork apache2-utils aptitude
 bc bin86 bind9-host binutils bison coreutils cpp cpp-3.3 dc debconf-i18n
 dictionaries-common dnsutils doc-debian doc-linux-text dpkg-dev dselect
 e2fslibs exim4 exim4-base exim4-config exim4-daemon-light file finger flex
 ftp g++ g++-3.3 gcc gcc-3.3 gcc-3.3-base gcc-3.4-base gdb gnupg iamerican
 ibritish initscripts ispell less libacl1 libapache2-mod-perl2
 libapache2-mod-php4 libapache2-mod-python libapache2-mod-python2.3 libapr0
 libattr1 libblkid1 libbz2-1.0 libc6-dev libc6-dev-s390x libc6-s390x
 libcomerr2 libconsole libdb1-compat libdb4.2 libdb4.3 libdevel-symdump-perl
 libdns16 libevent1 libexpat1 libfontconfig1 libgcc1 libgcc1 libgcrypt11
 libgd2-noxpm libgdbm3 libgnutls11 libgpg-error0 libgpmg1 libhtml-parser-perl
 libhtml-tagset-perl libhtml-tree-perl libidn11 libisc7 libjpeg62 libkrb53
 libldap-2.2-7 liblocale-gettext-perl liblwres1 liblzo1 libmagic1
 libncursesw5 libnewt0.51 libnfsidmap1 libnss-db libopencdk8 libperl5.8
 libpng12-0 libreadline5 libsasl2 libsasl2-modules libsepol1 libsigc++-1.2-5c102
 libssl0.9.7 libstdc++5 libstdc++5-3.3-dev libstdc++6 libtasn1-0
 libtasn1-2 libtext-charwidth-perl libtext-iconv-perl libtext-wrapi18n-perl
 libtextwrap1 liburi-perl libusb-0.1-4 libuuid1 libwww-perl libzip-0-12
 linux-kernel-headers locales lpr lsb-base lsof m4 make manpages-dev
 mime-support module-init-tools mpack mtools mtr-tiny mutt ncurses-term
 netcat nfs-common openbsd-inetd openssl patch perl perl-modules php4-common
 pidentd portmap procmail python python-newt python2.3 reportbug sharutils
 slangla-utf8 ssl-cert strace sysv-rc tcsh texinfo time traceroute w3m
 wamerican wget whois zlib1g
79 packages upgraded, 158 newly installed, 4 to remove and 1 not upgraded.
Need to get 104MB of archives. After unpacking 242MB will be used.
Do you want to continue? [Y/n] Y
```

Finishing Automatic Install (highlights)

- Some packages failed to install the first time, I just chose retry and they seemed to work. Maybe they were probably missing pre-reqs
- Upgrade glibc
- Defer configuring mail till later
- Switch to new NSS
- I don't think any locales need be selected

Access from another computer

If vv.xx.yy.zz is the IP of the computer running Hercules, enter the following where you want to telnet from.

No, I don't know how to do this on Windows (TM).

```
route add -net 192.168.10.0 255.255.255.0 netmask -gw  
vv.xx.yy.zz
```

To make this automatic each time you boot:

```
echo route add -net 192.168.10.0 255.255.255.0  
netmask -gw vv.xx.yy.zz >> /etc/rc.local
```

Activate swap space - 1

- Edit /boot/parmfile:
 - Change “DASD=300” to “DASD=300-31F”
- Rebuild boot process
 - zipl
- Reboot system
 - shutdown -i6 now
- Logon as unprivileged user and su to root

Activate swap space - 2

- Format swap space (not all dialog shown)
 - `dasdfmt -b 4096 -l DSK302 -m 1 -n 302`
 - `fdasd /dev/dasd/0302/device`
 - `n` (add new partition, take defaults)
 - `t` (set partition 1 type to swap)
 - `w` (write new partition table)
- Set swap signature
 - `mkswap /dev/dasd/0302/part1`

Activate swap space - 3

- Keep a backup of your fstab
 - `cp -p /etc/fstab /etc/fstab.save`
- Add entry to end of fstab
 - `/dev/dasd/0302/part1 none swap sw 0 0`
- Activate swap
 - `swapon -a`
- Verify
 - `free`

Automate swap reset – 1 (optional)

- Shutdown
 - shutdown -h now
- Go back to Hercules console, when it loads a wait state, exit Hercules
 - quit
- Save the minimal sized swap image:
 - cp -p dsk302.3390 save.dsk302.3390

Automate swap reset – 2 (optional)

- Edit startup script we created before (“herc”), add the following at the beginning and at the end:
 - `cp -p save.dsk301.3390 dsk301.3390`
- Reboot system to continue configuration
 - `./herc`

Suggested Packages to Install

- apt-get remove exim
- apt-get install exim4
- apt-get install regina-rexx
- apt-get install ksh (and/or other shells)
- apt-get install inetutils-tracepath
- apt-get install putty-tools (secure shell, etc)
- apt-get install sudo

Future additions to this presentation-1

- fine tune 31 bit linux:
 - Better method of resetting swap space?
 - savecore?
 - set up a dump volume

Future additions to this presentation-2

- Set up VM/370 with MVS3.8 and maybe VSE guests
- Install of 64 bit Linux/390