

Linux Basics Tutorial version 2.0

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for

Western PA Linux Users Group

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About this tutorial

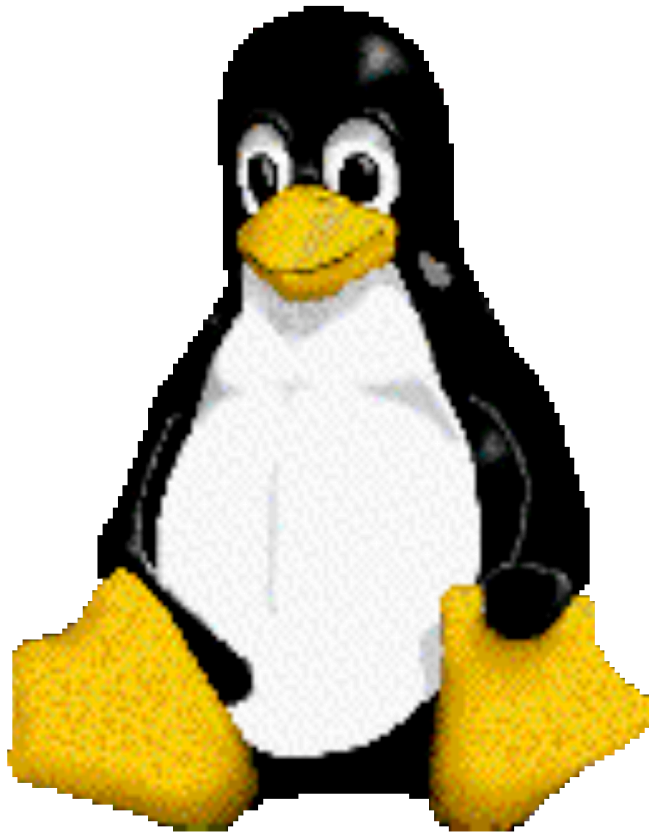
Yet Another Linux Basics tutorial...

- _ RedHat does it in four 8 hour days, the compressed version is one 8 hour day
- _ Novell does it in 5 hours
- _ This is the attempt to teach you THE BASICS in 2.5 hours without vendor bias

This is a work in progress.

If this is too slow or fast let me know!

What is Linux?



A Fully-Functional Multi-User Multi-Process Unix-like Open Source Operating System comprised of Linus Torvalds' kernel, many GNU tools, and software from many many more contributors worldwide

The myths

You have to be a programmer to use Linux.

Linux is only for servers.

There's no software for Linux.

You can't use Windows software anymore.

Windows is everywhere and Linux is nowhere.

Linux is something new – it's not going to last.

Root and Users



Demo of Knoppix

We will take a look at [Knoppix Linux](#) which boots from any modern Intel-based PC with a cdrom without installing anything on your hard drive

Desktop Usage

Why pay \$\$\$ for software when you could be
using

<http://www.openoffice.org>

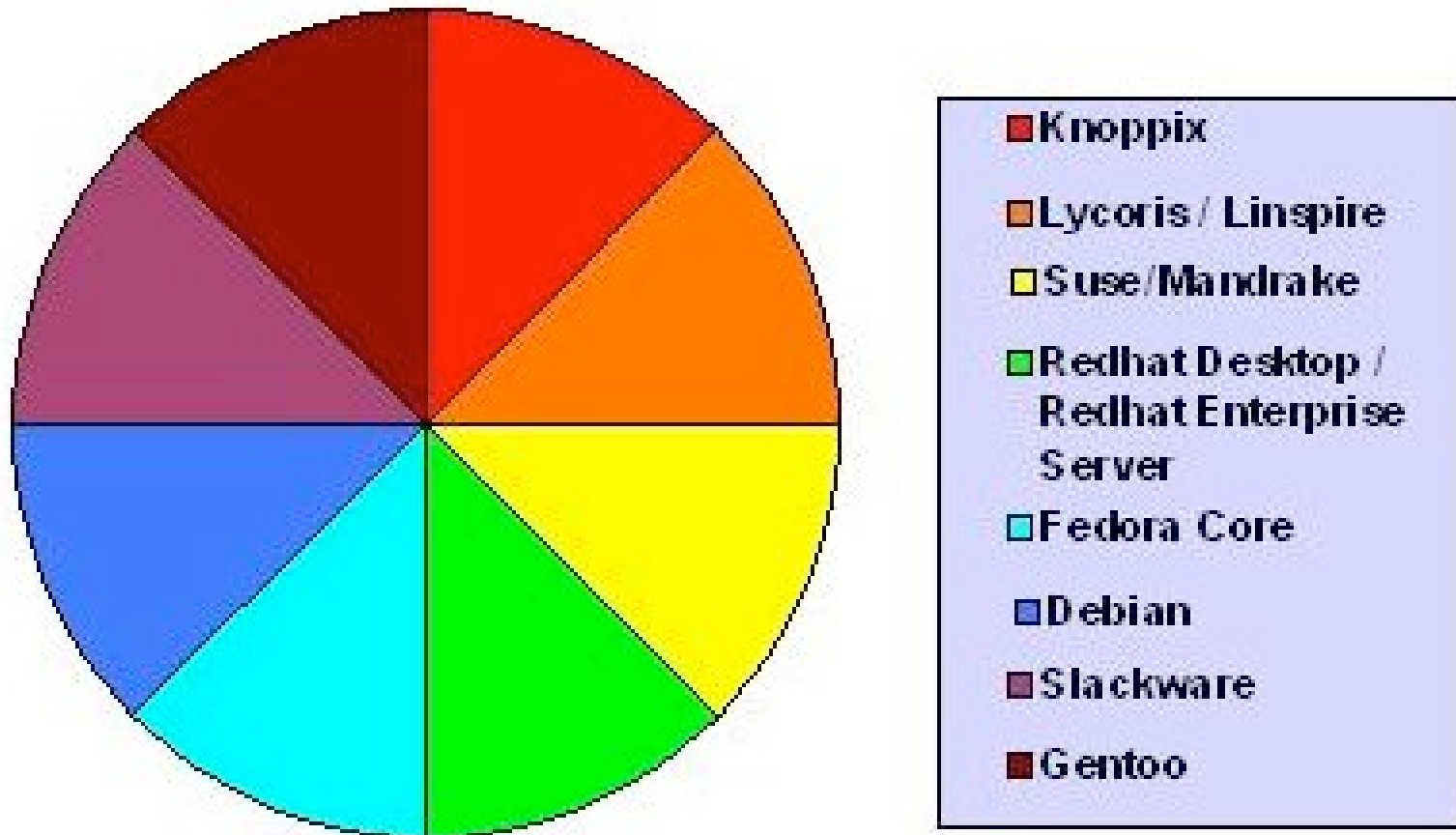
<http://www.mozilla.org>

<http://www.gimp.org>

What's my version of Linux?

- _ uname -r is the version of the Linux kernel
- _ distro version numbers never match

Wheel of Distros



Hacker Friendly and User Friendly Distros

Grabbing your distro...

- _ distrowatch.com Boasts that there are 304 Linux distros in their database
- _ Online and local retailers like amazon.com will sell Linux distros still in the box and books that include a copy of the author's favorite distro
- _ Once you've made a choice you can download the cdrom image or install floppies from the distributor's website or a mirror
- _ Don't have a cdrw? [cheapbytes](http://cheapbytes.com) Can help you out.

Shameless plug...

LUGs are another great way to get started with Linux.

<http://www.wplug.org>

Installfests, General Users Meetings, Tutorials such as this, Mailing Lists, and more!

Books you should read

Linux Administration Handbook
by Evi Nemeth, Garth Snyder, Trent Hein, Trent R.
Hein

Linux Companion for System Administrators
second ed
Jochen Hein

RHCE Linux Exam Cram
second ed
Kara J. Pritchard

Good commands that you need to memorize, today!

File Commands: ls, cd, cp, mv, rm, mkdir, rmdir

text reading: cat, more, less

text tools: awk, grep, sed

text editors: vi, emacs, pico, gedit

time: date, cal, uptime

More commands...

Location: find, locate, which, whereis
file extraction: tar, unzip, gunzip
Processes: top, ps, lsof, kill, fg, bg
User tools: passwd, w, who, finger, talk
environment: printenv, setenv, echo

More commands...

Internet: lynx, pine, whois, finger

Service control: chkconfig, init.d, service

Printing: lpr, lpq

Networking: ifconfig, route, traceroute, dig, ping

And some more commands

disk usage: du, df, quota

partitions: fdisk, fsck, mkfs, tune2fs, mount

Shutting down and Rebooting

`/etc/shutdown -h now`

`/etc/poweroff`

`/etc/shutdown -t60 -r`

`/sbin/reboot`

Output redirection

```
echo "this" > foo
```

```
echo "that" >> foo
```

```
cat foo
```

```
this
```

```
that
```

Pipes and More

The pipe |
cat /etc/passwd | grep

The semicolon ;
mkfs /dev/hdb1 ; mkfs /dev/hdb2

The slashdot ./
./myscript

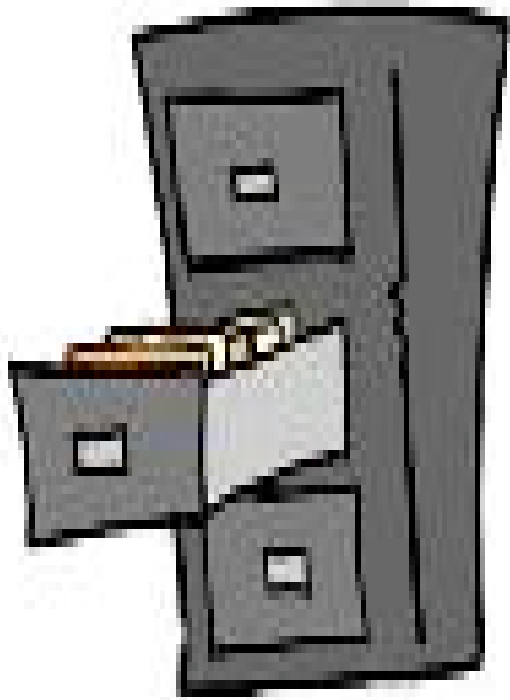
Getting Help

commands:man, info, {cmd} -help, apropos

Some distros have additional online documentation
in html form

<http://ldp.wplug.org>

It all starts with /



/bin

/boot

/dev

/etc

/home

/lib

/mnt

/opt

/proc

/root

/sbin

/tmp

/usr

/var

Partitions

/boot

/usr

/opt

/home

/var

/tmp

<swap>

/

Installing software

Software you install often lands in `/usr/bin`
`/usr/local/bin` or `/opt`

Don't look in the “Start menu” because chances
are, it ain't there!!!

Installing Packages

Debian Packages - dpkg

Red Hat Packages – rpm

rpm -Uvh package.rpm

rpm -ivh package.rpm

rpm -aq | grep package

rpm -e package

Tar files

To extract a tar.gz file: `tar -zxvf {filename}`

To extract a .tar file: `tar -xvf foo.tar`

To create a .tar file: `tar -cvf /foodir foo.tar`

once you've extracted the tar file look for a readme.

Perhaps there's an executable installation file

Or a Makefile

Perhaps it's source you need to compile yourself

Security starts with you and your users!

Don't login as root, su instead.

No account or password sharing
logout or use xlock

Select GOOD passwords

Npasswd will help you pick good ones, respect it!

Protect your /etc/shadow

John the Ripper or crack will tell you if your passwords are good enough!

You can implement kerberos and secure cards.

File permissions

To check the permissions use “ls -l”
utilize groups

```
chown {username} {filename}  
chown :{groupname} {filename}
```

chmod to change permissions

```
chmod a+rwx {filename}
```

```
chmod u+r {filename}
```

```
chmod o-x {filename}
```

```
chmod 700 {filename}
```

Start with a minimal configuration!

Don't install all the whistles and bells.
Only install what you need now.

Educate yourself about the services
you are running!

No one should use telnet or ftp, use ssh/scp instead

Use `chkconfig -list`

check <http://www.cert.org> for vulnerabilities

turn off any services that are vulnerabilities until
you can update or patch!

Update your packages!

Up2date from RHN is depreciated!

Use apt-get or yum instead

SUSE YOU – YAST Updater

Whole presentations on Linux security can and have been done

http://www.wplug.org/meetings/one-meeting?wp_meeting_id=3001

How to stay out of trouble

- _Always shut down safely
- _Do not do everything as root
- _Put your files in /home
- _Take the time to understand what you are doing
- _Backups!

Files you never want to rm

- _ anything in /dev
- _ anything in /proc
- _ don't get tempted by /proc/kcore
- _ anything in /boot
- _ /lib/kernel/modules/{the kernel you want to use}
- _ contents of /etc, /bin, /usr/bin, /usr/lib
- _ you may remove the contents of /tmp but not /tmp itself!

Get into trouble

Things you can try...

It won't boot!

Get out your Knoppix CD

This process seems hung
ctrl+C or ctrl+Z, failing that try to kill it

See if you can jump to another virtual console
ctrl+alt+f2

Exit the GUI by Alt+Backspace

Today's Handouts

Linux command line

<http://www.satlug.org/present/presentation-03.00.html>

What is Linux?

<http://web.mit.edu/jonas/www/faim/whatislinux.pdf>

Special Thanks

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Bill Moran

David Ostroske

OK this is really the end

yup, that's all folks