



SA 108: The Ultimate IBM and Lotus on Linux Workshop for Windows Admins

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- Regulatory compliance expert in the field
- Written multiple articles on compliance and eDiscovery
- Speaker at 20+ Lotus® related conferences/LUGs
- Co-authored two IBM® Redbooks on Linux®
- Designed disclosure response solutions for Fortune® 100, medium-sized, and small established regulated firms
- IBM Champion for Collaboration Solutions
- Linux aficionado





What's your Linux experience?



- Course will cover as much information as possible in the time allotted
- More demos and live code than static content
- Attendees are encouraged to ask questions
- Take copious notes
- Although most will not be experts when finished...
 - You should have a significantly higher level of confidence
 - Be proficient in many aspects
 - Comfortable enough to try Linux in your work place, or at home

Your Moment of Zen...

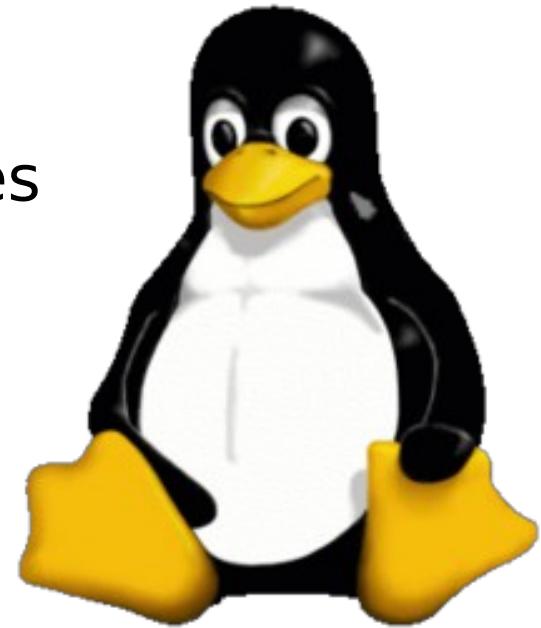
M W L U G
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PITTSBURGH
AUGUST 15-17, 2012



THOMAS SALUR



- Introduction
- Basic Theory and Installation
- Commands to Improve Your Life
- Editing Files with vi
- Scripting Primer
- Package Management Techniques
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- Never need to worry about drive letters
- Can mount most every subdirectory anywhere
 - Path remains the same
- Common top-level directories
 - opt - option programs
 - var - variable files (e.g. log files)
 - home - user directories and writable space
 - tmp - temporary files written here
 - root - administrator's (root's) secure space
 - usr - "everything else"; user accessible files, exe
 - etc - configuration files
 - boot - boot loader



- Bin - Essential command binaries
- Dev - Device files
- Lib - Essential shared libraries and kernel modules
- **Media - Contains mount points for replaceable media**
 - Primarily on desktop systems
- Mnt - Mount point for mounting a file system temporarily
- Proc - Virtual directory for system information (2.4 and 2.6+ kernels)
- Sbin - Essential system binaries
- Sys - Virtual directory for system information (2.6+ kernels)
- Srv - Data for services provided⁸ by the system



- Bourne Again SHell
- Most common shell on servers and desktops
 - Easiest to use, with great additions
- Learn some of the features to make things easy
 - Auto-fill; command and file completion
 - Configuration files
 - Store customized short cuts
 - Functions
 - Shell settings
 - File structure
 - Displaying hidden files -- “ls -a” | “ls -al”
 - Navigation -- view application specific configuration files



- Disk drives are stored differently than Windows
- Structure is intuitive
 - SCSI - /dev/sda, /dev/sdb
 - IDE - /dev/hda, /dev/sdb
- Partitions appended numerically
 - /dev/hda1, /dev/sda1, /dev/sda2
- Commands
 - mount, df -h
 - less /etc/fstab
- Tools: partman, cfdisk



- To setup multiple partitions on your desktop, acquire the Ubuntu alternate installer
- Creating an LVM? Absolutely enter a value for label
 - Ensure it is descriptive, covering what the data will be there later
 - E.G. volgrp01-home, volgrp02-vmware
 - *You will thank me for this one tip later*
 - Red Hat's Disk Druid is much better with LVMs
 - Adjust *typical usage* for each partition
 - Standard = one inode per 1kB block
 - news = one inode per 4kB block
 - largefile = one inode per 1MB block
 - largefile4 = one inode per 4MB block



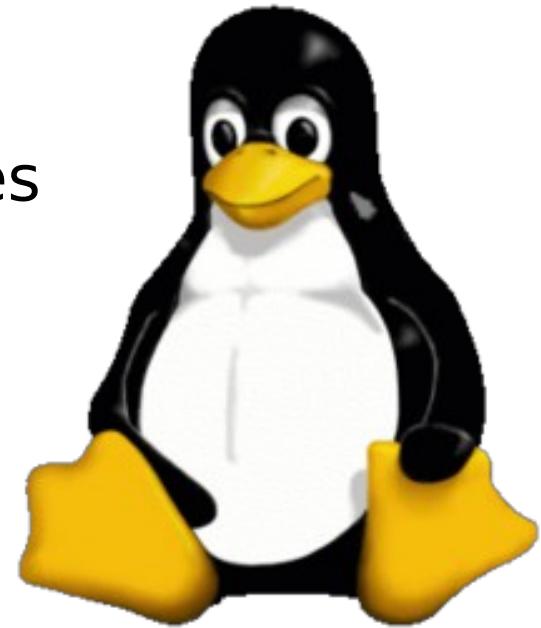
- /boot = 200MB
- Create an LVM or two for the rest
- Use multiple swap partitions
- Tip: Always keep the filesystems $\geq 10\%$ to avoid fragmentation, else drive performance will degrade



- All NICs are mapped to a device, prefaced with type
 - e.g. eth0, wlan0
- Main files
 - Ubuntu
 - /etc/network/interfaces
 - Red Hat
 - /etc/network/<x>
- DNS is stored in the resolver
 - /etc/resolv.conf
- /etc/hosts
- Advanced Tool: route
 - RTFM before use



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- Includes a plethora of free tools, many are useful
- Administration privileges: `sudo` or `su -` and use root
- What is my partition block size?
 - `#tune2fs -l /dev/sda1 | grep -i 'block size'`
- Abridged list of my most frequently used commands

`less`

`top`

`tar`

`ifconfig`

`rpm`

`ssh/scp`

`cp`

`mv`

`man`

`chmod`

`chown`

`rm`



Some additional applications that may be valuable, or assist with learning

	Package Names	
iostat (not installed by default)	vmstat	pmap
uptime	mpstat	cal
netstat	iptraf	grep
whatis	which	gzip



- ImageMagick: converts any image file to any format
 - `$man imagemagick` to get list of tool names
- Webmin is a great all-around administration portal
 - <http://webmin.com>
 - More challenging on Ubuntu 12, but not necessary for a desktop
 - Use primarily on servers
- To convert text files that do not wrap properly
 - `$sudo apt-get install dos2unix`

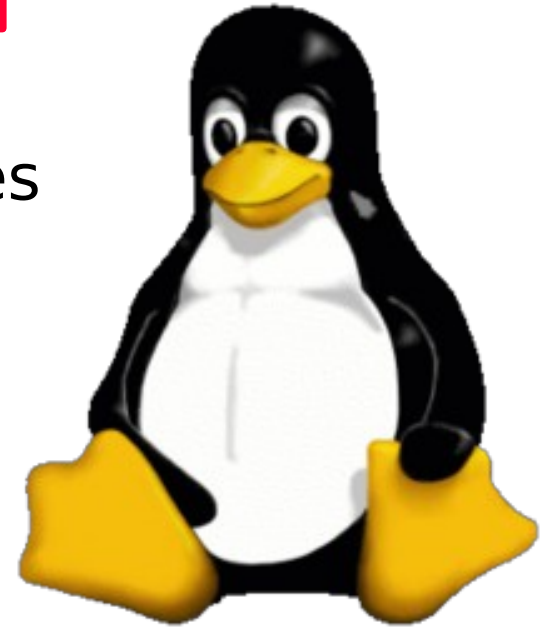


- Getting help
 - `$man <command>`
 - `$whatis <command>`
 - `$which <command>`
- Tar is very unforgiving; be certain you type the syntax correctly
 - This is your only warning
 - First argument **must** be either: [a, c, t, x]

User Management Options			
Scope	Create	Remove	Profile Edits
User	<code>#useradd</code>	<code>#userdel</code>	<code>#usermod</code>
Group	<code>#groupadd</code>	<code>#groupdel</code>	<code>#groupmod</code>

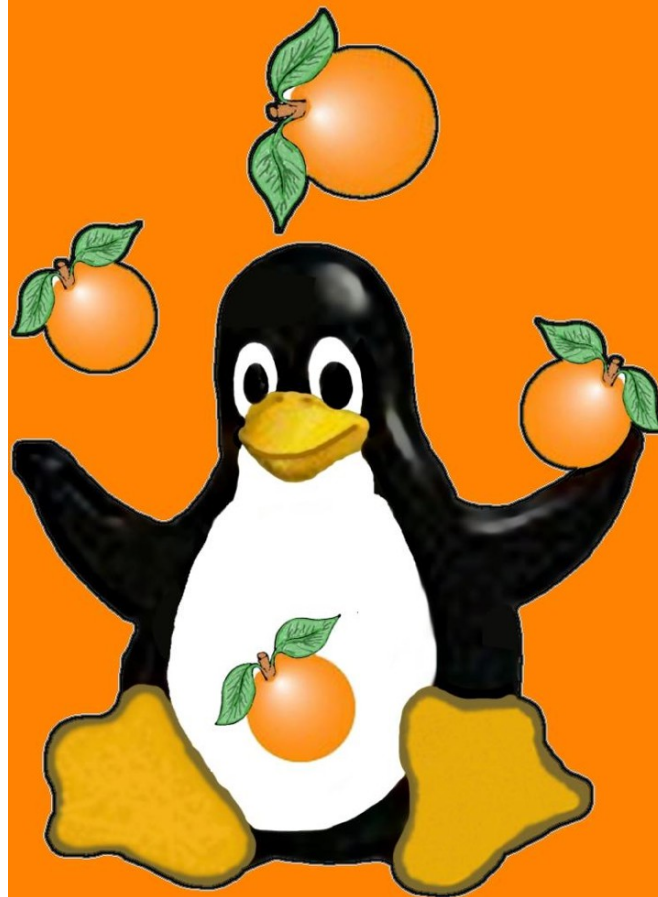


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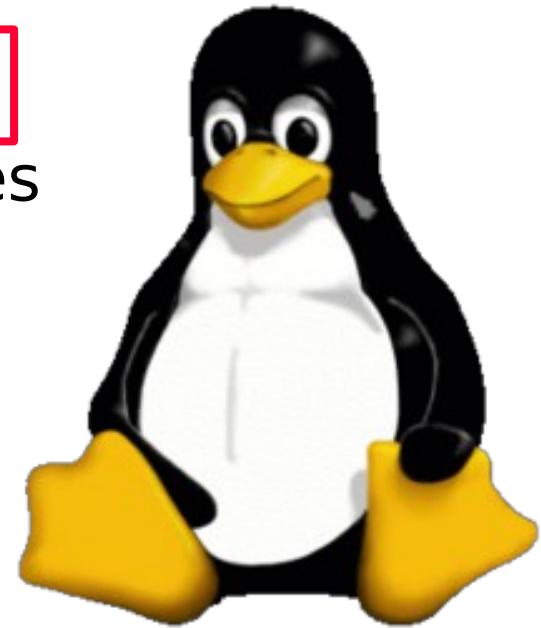


- Excellent for shell scripting, modifying INI files
 - Avoid updating your resume with it
- Most distros map vi to vim (vi Improved)
- Two modes: edit (insert) and navigate
- Safe learning available `$vimtutor`
- Leaving insert mode: depress Esc
- Entering insert mode: depress i
- When you leave insert mode, the same keys navigate
- Useful features: `.`, `<n>x`, `<n>Shift-G`, `dd`, `dw`, `:wq`





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- For BASH scripts, must include `#!/bin/sh` on first line
- Use `vi` (or your other favorite editor) to create
- Set to executable status with `chmod` when done
- Append `“.sh”` to easily identify the script
- Use `#` in first column to create comments after row one in the file



- Example to make a quick backup of files

```
#!/bin/sh
# Create a tar file from home, dump to USB HD along with a TOC for the archive
# -----
tar cvzf /media/WD_1.5TB_EXT4/t60p/backups/09.mar.2010.home.tgz /home/bill
tar tvzf /media/WD_1.5TB_EXT4/t60p/backups/09.mar.2010.home.tgz >
/media/WD_1.5TB_EXT4/t60p/backups/09.mar.2010.home.toc
```



- Examples to mount and unmount filesystems located on a second HD

```
#!/bin/sh
# Mount the pieces of SDB
# sudo -i
mount /dev/LVM/home /home/sdb.home/
mount /dev/LVM/local /local
mount /dev/LVM/opt.ibm /opt/sdb.ibm/
# mount -t ext3 /dev/sdb1 /sdb/boot/
# mount -t ext3 /dev/sdb1 boot/
# mount -r -n -t ext3 /dev/sdb1 boot
# mount -r -n -t ext3 /dev/sdb2 boot
# mount -r -n -t ext3 /dev/sdb5 boot
# mount -r -n -t ext3 /dev/sdb6 boot
# mount -r -n -t ext3 /dev/sdb6 root
# mount -r -n -t ext3 /dev/sdb7 boot
mount -r -t ext3 /dev/sdb7 /sdb/boot
mount -r -t ext3 /dev/sdb6 /sdb/root
```

```
#!/bin/sh
# Umount the pieces of SDB
# sudo -i
umount /dev/mapper/LVM-home
umount /dev/mapper/LVM-local
umount /dev/mapper/LVM-opt.ibm
umount /dev/sdb7
umount /dev/sdb6
```



Scripting with scp is easy to do

- Edit `.bashrc` or `.bash_profile`
- Create an *alias* to save time accessing servers

```
#alias la='ls -A'  
#alias l='ls -CF'  
alias ll='ls -l'  
alias sshess='ssh -p 12345  
FooGetsInNotYou@roma.testdomain.com'  
alias sstest='ssh bill@server2.test.com'
```




Alias takes static commands, as it uses a literal
How do you pass an argument to an alias in your
.bashrc file?

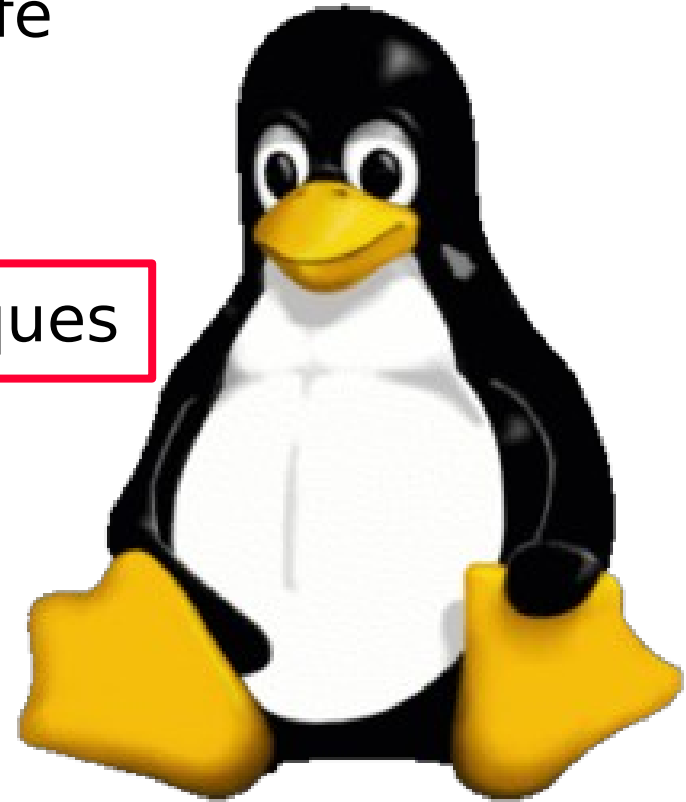


Use a function

```
function scpess () { scp -P 12345 $1  
FooGetsInNotYou@roma.testdomain.com:/dl/dom  
ino85 ; }
```



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- Red Hat – RPM – The industry standard
 - Installs local tools, helps manage them
 - Red Hat Package Manager
 - Rpm -q
 - Rpm -qi
 - Rpm -ivh <package_name>.rpm
 - Use wildcards to precisely install multiple files
 - Rpm - e <package_name>
- Remote Management
 - Yum – Yellowdog
 - Update applications, pull down from server
 - RHN – Red Hat Network



- Ubuntu – Debian based package management
 - Dpkg
 - Local packages
 - `$ sudo dpkg -i <package_file>`
 - `$ dpkg-deb` or `dpkg -I <package_file>`
- Remote management
 - Apt-get
 - `$ sudo apt-get remove -purge 2.6.27-7-*`
- If new, then the GUI for desktop can be beneficial
 - Just point and click to install
 - Use the Ubuntu Software Center to remove



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 - Red hat Package Manager
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- Lotus application installation uses the tools we discussed in this session
 - Tar
 - Ssh
 - Gunzip
 - Rpm
 - Vi
- The rest is easy... just tab and type
- All the IBM software programs, when installed on Linux use most of these basic tools to get started
 - Even if the installation requires a browser



Demo Time



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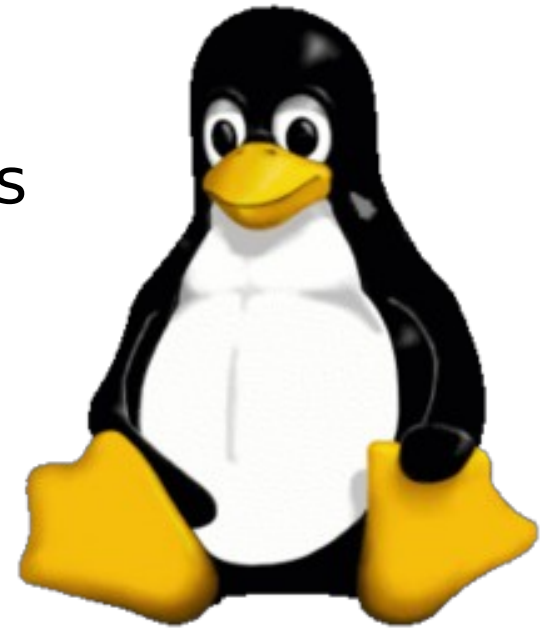


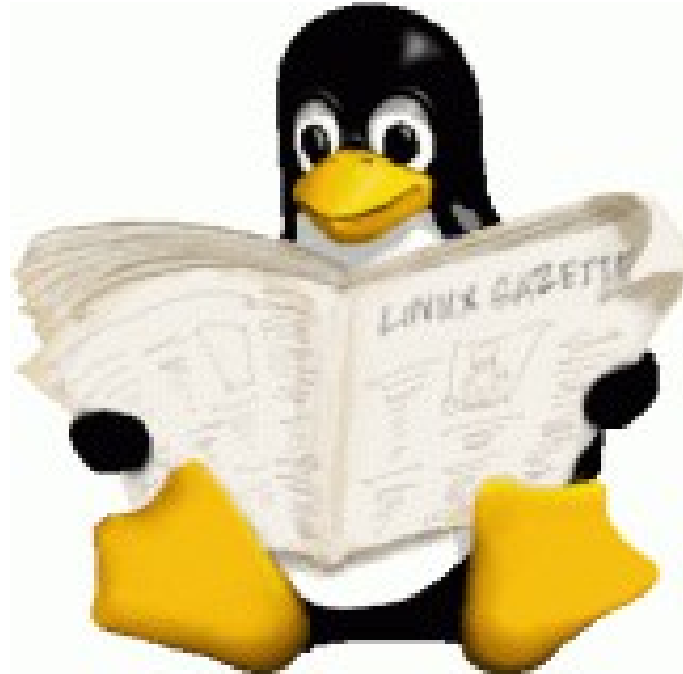


Quiz Time...



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- Bill Mal's Linux Section -- <http://www.billmal.com/billmal/billmal.nsf/dx/linux-links.h>
- IBM's Linux Portal: <http://ibm.com/linux>
- Linux: The Era of Open Innovation
 - <http://www-03.ibm.com/ibm/history/ibm100/us/en/icon>
- TCO IBM/Linux versus Microsoft
 - ftp://ftp.software.ibm.com/pub/lotusweb/competitive/Linux-Windows_TCO_Presentation.pdf
- Fun -- Tux in Kernel Code <http://www.100mb.nl/>





- Red Hat Versus Free Linux Cost Analysis

<http://tinyurl.com/8le8ewo>

- Installing VMware Workstation 8.x on Ubuntu 12.04

[http://askubuntu.com/questions/116565/unable-to-install-](http://askubuntu.com/questions/116565/unable-to-install-vmware-workstation-8-x-on-ubuntu-12-04)

- Manually uninstalling VMware

[http://kb.vmware.com/selfservice/microsites/search.do?la](http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&search=uninstall+vmware+workstation)

- Installing Lotus Notes on Ubuntu 12.04

[http://usablesoftware.wordpress.com/2012/05/04/install-lo](http://usablesoftware.wordpress.com/2012/05/04/install-lotus-notes-on-ubuntu-12-04/)

- Problems launching VMware on Ubuntu, post reboot?

[http://raywoodcockslatest.blogspot.com/2010/05/resuming](http://raywoodcockslatest.blogspot.com/2010/05/resuming-vmware-workstation-on-ubuntu-12-04/)



Running Linux inside of Windows, natively





- Get the files: <http://cygwin.net/>
- Install the base first,
 - Then go back to the same server and install additional files
 - Timeouts are tricky and you can waste time otherwise
- Base install, then the following programs
- Admin -> cron
- Archive -> unzip, zip
- Devel -> bashdb (optional, but select if you want to try BASH scripting at some point, as it can help with debugging)



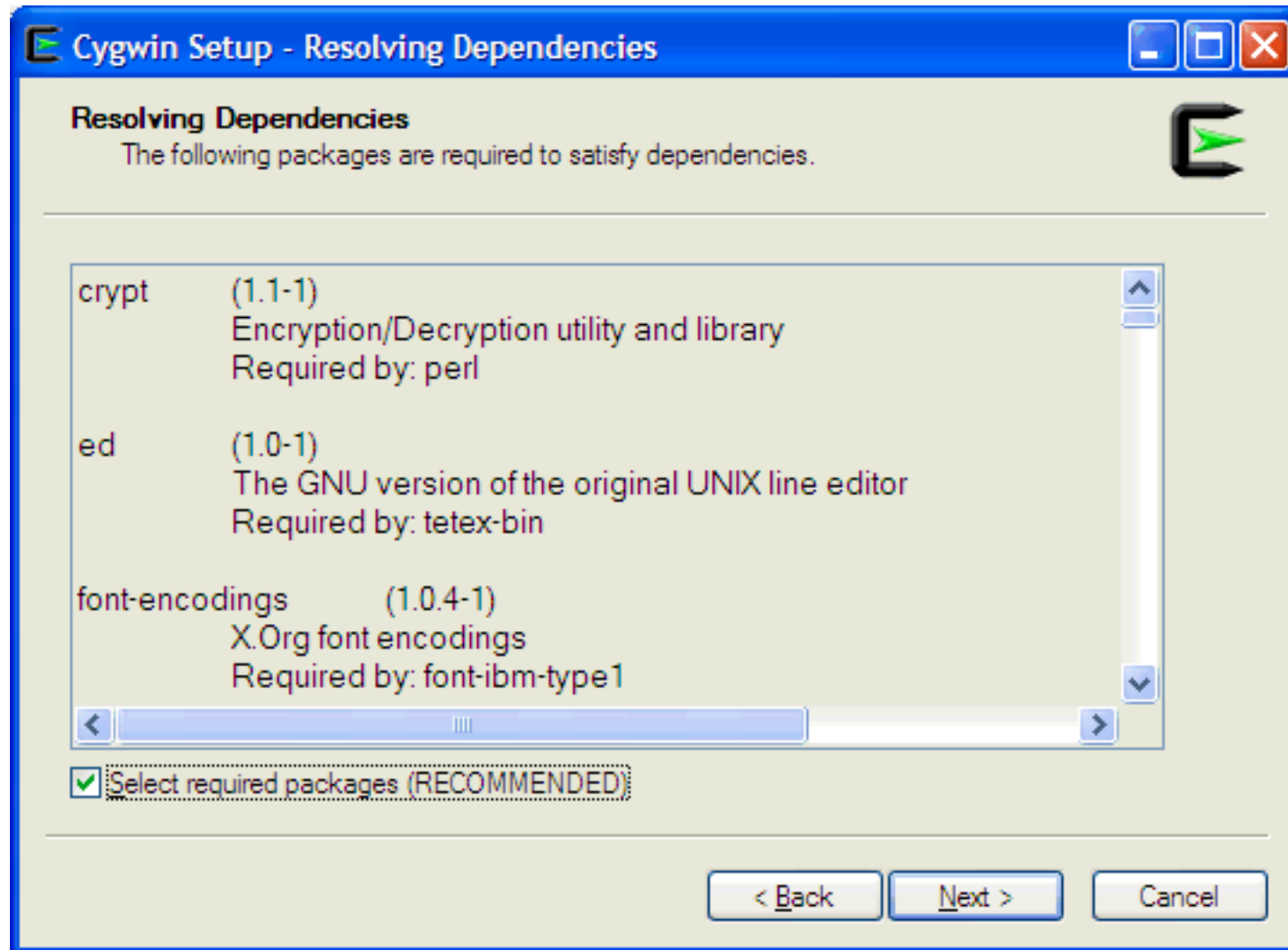
- GParted Partition Editor
- Dropbox
- Ubuntu restricted extras
- GIMP Image Editor
- Secure shell (SSH) server (if needed to put files locally from other areas)
- The Network Mapper – utility for network exploration or security auditing



- Editors -> vim, vim-common, xxd, and if you want to edit binary files, try bvi
- Graphics -> GraphicsMagick, ImageMagick, bmp2png
- System -> ping, util-linux
- Text -> a2ps, enscript (one of my favorite programs)
- Utils -> hdparm (only use in read mode, but provides useful info on your local HD), xtail

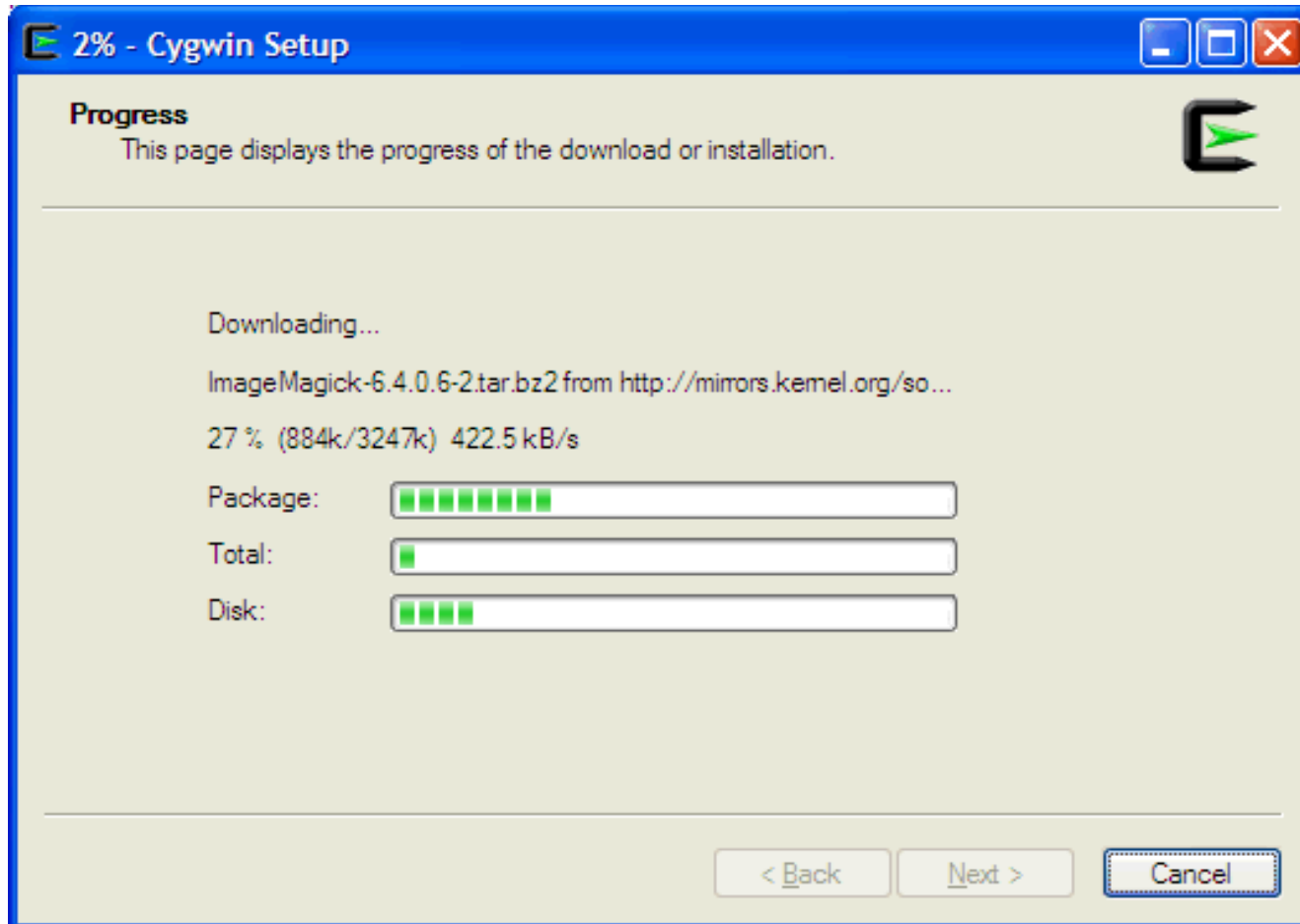


- If you encounter an installation program which requires an X Window environment,
 - Go back and install the X11 environment with Gnome or KDE
 - Otherwise, keep it simple.
- The nice thing about the installation program, is that once you run the first install, if your selected options require additional files that you omitted, you will be prompted accordingly: <next slide>
- Then it will install the newly selected files.





And unlike Windows, the histograms are actually accurate.





Cygwin Setup - Installation Status and Create Icons

Create Icons
Tell setup if you want it to create a few icons for convenient access to the Cygwin environment.

- Create icon on Desktop
- Add icon to Start Menu

Installation Status
Installation Complete

< Back Finish Cancel



- How can I help you?

