Ubuntu Linux Server

Structure and Config

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What's Our Goal?

- A bit of Debian & Ubuntu philosophy
- Differences from the Red Hat world
  - Package system
  - Debian's *root* philosophy
  - Tools you may need
  - Installing your environment
  - How the OS and services start/stop
Some Practical Matters

- Please do not change the root or inst passwords.
- Questions are encouraged :-)
- Questions?
Who We Think We Are Teaching

A class that has already experienced or used Linux or UNIX in the real world.

We're assuming an intermediate to advanced level of knowledge.

Are we right?
Some Philosophy

• Debian's conservative model
  – Very different from Fedora Core
• Releases and Repositories
• Ubuntu's benefactor: Mark Shuttleworth
• Desktop vs. Server vs. LTS versions
• The connection with Debian
• Restricted software and Ubuntu
<table>
<thead>
<tr>
<th>Release Name</th>
<th>Version</th>
<th>Release Name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warty Warthog</td>
<td>4.1</td>
<td>buzz</td>
<td>1.1</td>
</tr>
<tr>
<td>Hoary Hedgehog</td>
<td>5.04</td>
<td>rex</td>
<td>1.2</td>
</tr>
<tr>
<td>Breezy Badger</td>
<td>5.10</td>
<td>bo</td>
<td>1.3</td>
</tr>
<tr>
<td>Dapper Drake*</td>
<td>6.06</td>
<td>hamm</td>
<td>2.0</td>
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<tr>
<td>Edgy Eft</td>
<td>6.10</td>
<td>slink</td>
<td>2.1</td>
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<tr>
<td>Feisty Fawn</td>
<td>7.04</td>
<td>potato</td>
<td>2.2</td>
</tr>
<tr>
<td>Gutsy Gibbon</td>
<td>7.10</td>
<td>woody</td>
<td>3.0</td>
</tr>
<tr>
<td>Hardy Heron**</td>
<td>8.04</td>
<td>etch</td>
<td>4.0</td>
</tr>
</tbody>
</table>

*6.06 is “LTS”
**8.04 is “LTS”, Planned for April 2008
The World of Ubuntu

Start here: http://www.ubuntu.com/

Server
- “Gutsy Gibbon” 7.10 (18 month support)
- “Dapper Drake” 6.06 LTS (5 years support)

Desktop
- Current are 6.06 LTS and 7.10.

Kubuntu (KDE), Edubuntu (Educational)
What's Different

• Software management
  - dpkg
  - apt (this is what we'll use)
  - apt-cache
  - aptitude
  - synaptic
  - meta-packages
  - repositories
What's Different cont.

- **Startup scripts**
  - In `/etc/init.d/` (System V)
  - Upon install services run!

- **Controlling services**
  - `update-rc.d`
  - `sysvconfig`
  - `rcconf`
  - `rc-config`
What's Different cont.

• Make and GCC
  – Not installed by default. Why?
  – 18,500+ packages
  – To get “apt-get install build-essential”

• Installation
  – Installer *really* wants to be on the net
  – Your language/location choices determine which Ubuntu mirror will be used at install.
What's Different cont.

- The use of *root* is discouraged by default and *sudo* is used instead.
- You can do *apt-get dist-upgrade* to move between major and minor releases.
- Sources in `/etc/apt/sources.list` (how you install from cd/dvd).
# Software Repositories

Defines what is available to you – i.e. where apt will look. There are four major categories:

<table>
<thead>
<tr>
<th>Ubuntu</th>
<th>Debian</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. main</td>
<td>1. stable</td>
</tr>
<tr>
<td>2. restricted</td>
<td>2. testing</td>
</tr>
<tr>
<td>3. universe</td>
<td>3. unstable</td>
</tr>
<tr>
<td>4. multiverse</td>
<td></td>
</tr>
</tbody>
</table>
Software Repositories
Ubuntu

main

• Core install of Ubuntu
• Fully supported by Ubuntu
• Freely redistributable and unencumbered, but may contain binaries.
Software Repositories cont.

**restricted**

- Commonly used software, but is not licensed as completely free.
- Supported by Ubuntu as best as possible.
- Includes binary drivers for specific hardware.
- Open source versions used first.
Software Repositories cont.

universe

• Contains remaining open source software that may be available under “less open licenses.”

• Built against libraries and tools in “main”, thus it should install and be stable.

• No guarantee of regular updates, but they are provided as made available.
Software Repositories cont.

**multiverse**

- Contains software that is “not free.”
- You must determine if you meet licensing requirements.
- Unsupported and updates/upgrades are not provided.
- Use “at your own risk.”
What's the Reality?

For “simple” servers “main” and “restricted” are enough.

For servers with more complex configurations (like in this class), then “universe” is a must and “multiverse” may be needed as well.

Stability: you must pay attention to multiverse installed software.
Additional Repositories

On some occasions you may need to add third-party repositories for specific software. These may move to multiverse at some point.

Examples Include:

• Skype
• PPTP
• IE emulators (your author uses for testing)
Additional Repositories

Backports

• See http://www.backports.org/

• Be careful with these. Newer software that is “backported” to run on older versions of Ubuntu (or Debian...).

• Can cause problems if you wish to do a distribution upgrade.
Repository Philosophy

Ubuntu 7x vs. Debian

• Fundamental change in philosophy:
  - Firefox, Thunderbird, OpenOffice, kernel, proprietary binary drivers, etc...
  - Ubuntu repository vs. Debian for Firefox
    • main vs. “iceweasel” now in stable
      http://web.glandium.org/blog/?p=97
  - Ubuntu licensing issues
Specifying Repositories

/etc/apt/sources.list

- We'll hand edit this file. If you use a GUI, then Synaptic can do this for you.

- This file contains a number of additional items...

- Understanding the configuration is critical to understanding your config.
/etc/apt/sources.list

Includes

• Repositories
• Location: i.e. local mirrors, cd/dvd-rom, local server (noc in classroom or country-specific server), ftp, etc.
• Security update repositories
• third-party repositories
• backports
Critical Reads

man apt-get
man sources.list

Some people like aptitude. That's fine, but watch out for dependency issues!
Meta Packages

- **Annoying to new users**
- **Provide all packages for subsystems**
- **Initial documentation**
  https://help.ubuntu.com/community/MetaPackages

**Examples include:**
- `build-essential` (libc, g++, gcc, make)
- `ubuntu-desktop` (xorg, gnome)
- `xserver-xorg-video-intel`
There's more...

But, hopefully enough to get us started...

**Some Resources**

- www.ubuntu.com
- ubuntuforums.org
- www.debian.org
- ubuntuguide.org

**GIYF (Google Is Your Friend)**
Packages & Exercises

We'll reinforce some of these concepts using exercises and by installing Ubuntu...