Ubuntu Linux Server
Structure and Config

intERLab at AIT
Network Management Workshop
March 11 – Bangkok, Thailand
Hervey Allen

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

---

**Ubuntu**

<table>
<thead>
<tr>
<th>Release Name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warty Warthog</td>
<td>4.1</td>
</tr>
<tr>
<td>Hoary Hedgehog</td>
<td>5.04</td>
</tr>
<tr>
<td>Breezy Badger</td>
<td>5.10</td>
</tr>
<tr>
<td>Dapper Drake*</td>
<td>6.06</td>
</tr>
<tr>
<td>Edgy Eft</td>
<td>6.10</td>
</tr>
<tr>
<td>Feisty Fawn</td>
<td>7.04</td>
</tr>
<tr>
<td>Gutsy Gibbon</td>
<td>7.10</td>
</tr>
<tr>
<td>Hardy Heron**</td>
<td>8.04</td>
</tr>
</tbody>
</table>

*6.06 is "LTS".  **8.04 is "LTS", Planned for April 2008

<table>
<thead>
<tr>
<th>Release Name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>buzz</td>
<td>1.1</td>
</tr>
<tr>
<td>rex</td>
<td>1.2</td>
</tr>
<tr>
<td>bo</td>
<td>1.3</td>
</tr>
<tr>
<td>hamm</td>
<td>2.0</td>
</tr>
<tr>
<td>slink</td>
<td>2.1</td>
</tr>
<tr>
<td>potato</td>
<td>2.2</td>
</tr>
<tr>
<td>woody</td>
<td>3.0</td>
</tr>
<tr>
<td>sarge</td>
<td>3.1</td>
</tr>
<tr>
<td>etch</td>
<td>4.0</td>
</tr>
<tr>
<td>lenny</td>
<td>tba</td>
</tr>
</tbody>
</table>

---

**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:

- **Ubuntu**
  1. main
  2. restricted
  3. universe
  4. multiverse

- **Debian**
  1. stable
  2. testing
  3. unstable
Software Repositories

Ubuntu

**main**
- Core install of Ubuntu
- Fully supported by Ubuntu
- Freely redistributable and unencumbered, but may contain binaries.

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.

**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.

**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
    - 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)
- xservers-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...