


System Administration


1. System Administration

1.1 Introduction

CSCI 330
UNIX and Network
Programming



Linux Administration



1.2 Linux System Administration

Linux System Administration

- User Management
 - adduser, sudo
- Software Management
 - apt-get, synaptic
- File system Management
 - fdisk, mkfs, mount, fsck
- Demonstration: customize a new system
 - install some software
 - add a new disk

1.3 User Configuration

User Configuration

- user info is stored in file /etc/passwd
 - userid, user name, group, home directory, shell
 - passwords are stored in separate file: /etc/shadow
- group info is stored in file /etc/group
 - groupid, group name
 - additional group members
- to find out group info, use: groups user-id

Example:

```
% groups student
student adm cdrom sudo dip plugdev lpadmin sambashare
```

1.4 Steps to create a new user

Steps to create a new user

1. add info to /etc/passwd
2. add info to /etc/shadow
3. add info to /etc/group
4. create home directory
5. add default content to home directory
6. set password

- common Debian utilities:

`adduser, deluser`

`addgroup, delgroup`

1.5 Demonstration: adding a new user

Demonstration: adding a new user

Video

1.6 Linux “Users and Groups” utility

Linux “Users and Groups” utility

- to create and manage users and groups



1.7 sudo

sudo

- execute commands as super user “root”
 - will be prompted for password
- /etc/sudoers
 - lists designated users/groups
 - group “sudo”
 - user “student” belongs to “sudo” group
 - lists allowed commands
 - root can do anything
- Example:

```
% sudo chown user:group file
% sudo -s
```

1.8 Software Management

Software Management

- applications are bundled into package file:
 - tar
 - original (tape) archive format
 - rpm
 - Redhat package manager format
 - download & install via: yum
 - deb
 - Debian package format
 - download & install via: apt-get
- tarball**
- know dependencies among applications**

1.9 deb Package Management

deb Package Management

- Basic utilities:
 - dpkg – package manager
 - ➔ • apt-get – package handling utility
- User friendly interfaces
 - aptitude – command line frontend
 - synaptic – GUI frontend
- Software Manager
 - unified web-based application store

1.10 apt-get configuration

apt-get configuration

`/etc/apt/sources.list`

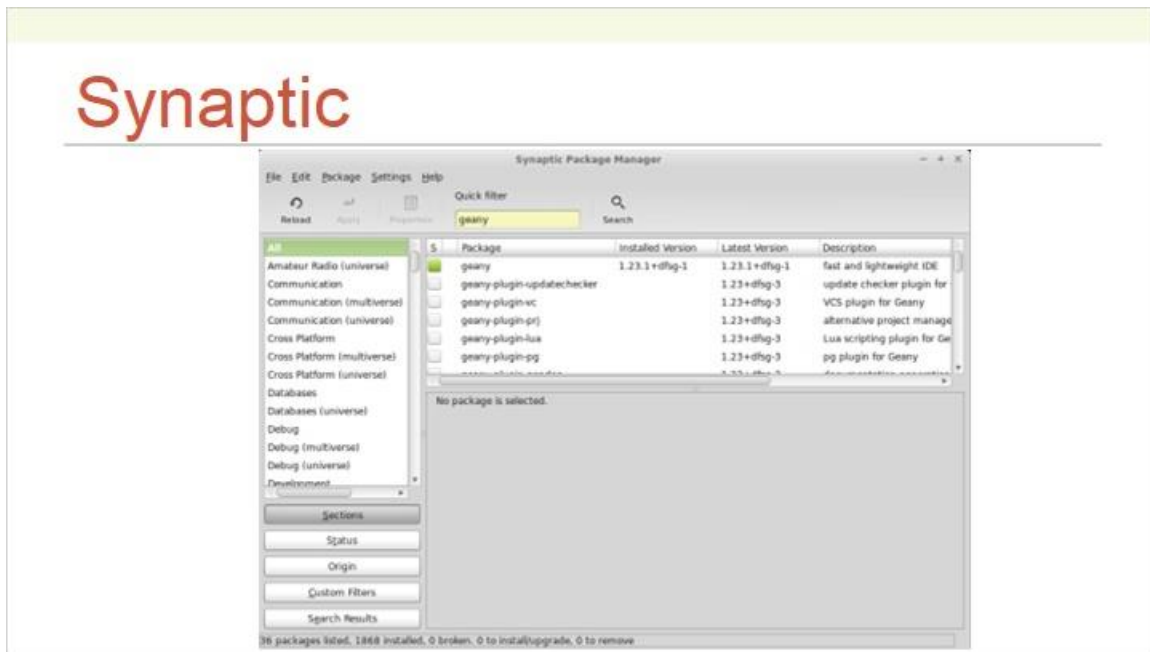
- contains locations of package files
- for different categories

1.11 apt-get sub-commands

apt-get sub-commands

- update
 - re-synchronize package listing
- install
 - installs new package(s)
- upgrade
 - install newest version of installed packages
- remove, purge
 - un-installs package(s) (deletes config files)
- dist-upgrade
 - installs latest version of system
- clean
 - empties local cache of downloaded packages

1.12 Synaptic



1.13 Update Manager



1.14 Software Manager



1.15 File System Management

File System Management

- logical file system top: root “/”
- constructed from one or more physical file systems that reside on physical devices
- potential devices:
 - hard drive
 - removable drive
 - main memory
 - remote device

1.16 File System commands

File System commands

- `df`
 - displays make up of logical file system
- `fdisk`
 - prepare partitions on physical medium
- `mkfs`
 - create file system on physical device
 - select file system type, ex.: `ext4`
- `mount`
 - add additional physical into logical file system
 - undone via: `umount`
 - made permanent with entry into `/etc/fstab`

1.17 Steps to enable new hard drive

Steps to enable new hard drive

- find device name: `fdisk -l`
- edit partition table: `fdisk /dev/sdb`
 - create partition `/dev/sdb1`
- create file system: `mkfs -t ext4 /dev/sdb1`
- mount file system:
 - `mkdir /mnt/extra`
 - `mount /dev/sdb1 /mnt/extra`
- see file systems: `df`

1.18 Demonstration: add new disk

Demonstration: add new disk



1.19 Summary

Summary

- User Management
 - adduser, sudo
- Software Management
 - apt-get, synaptic
- File system Management
 - fdisk, mkfs, mount, df

