



Basic Linux Commands & Installation



Why Linux ?

- Many users on the system with different privileges
- Each user has its own private space
- users, who and, w - prints a list of users logged into a system
/etc/passwd - information about user accounts
login name, full name, home directory etc
Superuser account - root or superuser
can modify any file, USE WITH CAUTION



What is Linux

- Linux is not to UNIX as Windows is to DOS
- UNIX not operating system, rather a specification
- UNIX - SCO, HP, Digital, BSD, and of course, Linux
- Various distributions - different organizations distributing Linux in their own way
- Redhat, Suse, Mandrake, Debian etc.
- Linux - truly GNU/Linux
- Linux - the kernel written by Linus Torvalds
- GNU - many utilities like gcc, gnu-make, gzip etc



The Shell

- Real power of Linux
- Command line interface
- Starter for text and GUI based apps

Benefits

Fast processing

More options per command

More command



The Shell . . . continued

- Examples
 - bash - GNU Bourne-Again Shell
 - csh - The C Shell
 - ksh - Korn Shell
 - zsh - Z Shel



Computing Basics

- Commands - words to tell the computer what to do
- Shell - the place where you can type commands
- Files - Structures to store logically continuous data

Listing Files - ls

Displaying Files - cat

Editing Files - vi

Deleting Files - rm

Copying and moving files - cp, mv



Computing Basics . . . continued

- Directories
 - Listing Directories - ls
 - Changing to a directory - cd
 - Creating a directory - mkdir
 - Deleting directories - rmdir, rm -r



Managing user accounts

- Adding new users -
useradd
- Removing users -
userdel
- Modifying user information -
usermod



Groups

- Logical collections of users
- Need for groups
- Managing groups
 - Adding new groups -
groupadd
 - Removing group -
groupdel
 - Modifying group -
groupmo



Access Privileges

- File attributes - owner, group, permissions
- Display file information: `ls -l`
- File permissions
 - Read access (mnemonic: r, binary weight: 4)
 - Write access (mnemonic: w, binary weight: 2)
 - Execute access (mnemonic: x, binary weight: 1)
- Managing file permissions
 - `chmod` - change file access permissions
 - `chown` - change file owner and group



Linux File System

- ext2 file system, ext3 journaling file system
- treats everything as a file
 - directories - files containing pointers to other files
 - hardware devices - as files under the directory /dev



Linux File System . . . continued

Standard directory structure

/ - the topmost

/dev - all the devices are accessible as files

/var - "variable" data such as mails, log files, databases

/usr - almost all the packages installed

/etc - configuration files

/home - home directories for all the users

/root - home directory of the privileged user root

/mnt - used to mount other directories/partitions



Concept of Mount

- Mounting a floppy
mount /dev/fd0
- Mounting a cd
mount /dev/cdrom
- Unmount
umount /dev/cdrom
- Ejecting a floppy or cd
eject



Linux Utilities - tar and zip

- tar - the archiving utility
 - to store and extract files from an archive known as tarfile
 - create a new archive
 - tar -cvf archive.tar <file1> <file2>
 - extract files from archive
 - tar -xvf archive.tar
- gzip and gunzip - compress or expand files
 - To compress (zip): gzip <filename>
 - To expand (unzip): gunzip <filename.gz>



Managing Software

- Tarballs - tarred gzipped files (extension .tar.gz) distribute source
- unzip and untar the package

```
gunzip <package.tar.gz>
tar -xvf <package.tar>
cd <package>
```
- configure the source code: ./configure
- compile the software: make
- Install - this requires root privileges: make install



Managing Software . . . continued

- RPM (Redhat package Manager) - precompiled binaries (extension .rpm)

popular distributions like redhat, suse, mandrake

Installing rpm -ivh <package name>

Upgrading rpm -Uvh <package name>

Uninstalling rpm -e <package name>



Commands

- You have already seen...
 - Commands - words to tell the computer what to do
 - Shell - the place where you can type commands
- Reading files
 - less, more
 - tail, head
 - cat, tac
- Wildcard Character



Command Concatenation

- Non-verboseness
- Concept of stdin, stdout and stderr
 - stdin : Standard Input Device
 - stdout : Standard Output Device
 - stderr : Standard Error Device



Command Concatenation

- Output redirection
example: `cat file.txt >output.txt`
- Input redirection
example: `head < file1.txt`
- Error msg redirection
example: `cat file.txt 2>error.log`



Linux Help System

- Offline Documentation `/usr/share/doc`
info command
 - Navigation - u - up, p - previous, n - next, b - beginning, e - end
 - Searching - / <keyword>
 - Quitting -



Linux Help System . . . continued

- man command
 - Keyword search - `man -k <keyword>`
 - Manual sections
 - Features
 - Command line parameters and options
 - Detail description
 - Bugs
 - Contact Information
 - Related command



Linux Help System . . . continued

- whatis
Syntax: whatis keyword ...
 - apropos
Syntax: apropos keyword ...
- Both commands are similar
apropos internally uses whatis database
/var/cache/man/whatis databas



VI Editor

- Most of Vim was written by Bram Moolenaar <bram@vim.org>.
- Posix standard
- IEEE standard 1003.2 Part 2: Shell and utilities
- Textual description of how Vi is supposed to work
- VI Modified - vi



VI Editor . . . continued

- Starting Vi Editor
 - vi
 - vi filename
 - vi -R filename
- Getting out of Vi Editor :q
- Vi editor modes
 - Command mode
 - Insert mode
 - Ex mod



VI Editor . . . continued

- Vi Help System
 - F1 key
 - :help
 - vimtuto



VI Editor . . . continued

- VI functionalities
 - ✓ Searching string
 - ✓ Replace with search



Thank you

