EGI Hands On Training for AEGIS Users
Institute of Physics Belgrade

Hands-On Session: Linux shell environment

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e-infrastructure

Overview

- Introduction
- Navigating the file system
- Standard Linux commands
- Archive tools
- Data management
- Script language

Introduction (1)

- Created by Linus Torvalds with assistance from programmers around the world
- Linux is free of charge
- Runs on multiple hardware platforms
- Multi-user, Multitasking, Multiprocessor

Introduction (2)

- Review of all distros at:

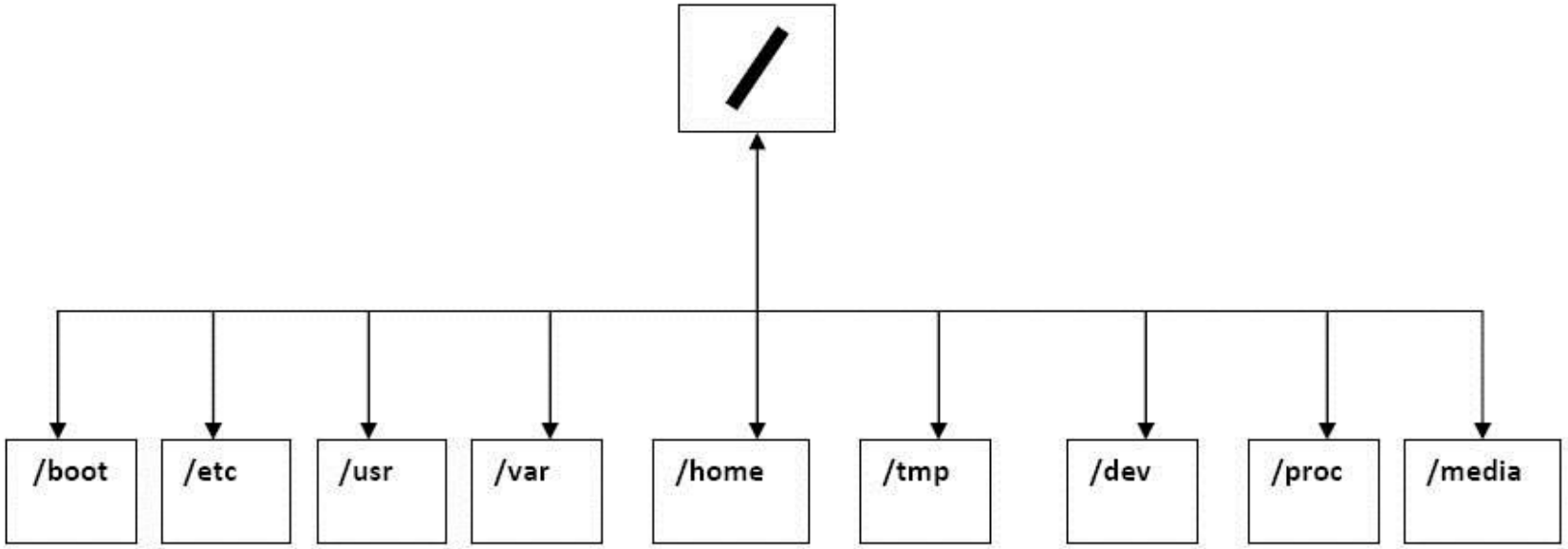
  http://en.wikipedia.org/wiki/File:Gldt.svg

Introduction (3)

- Main distributions : Debian, RHEL, Slackware

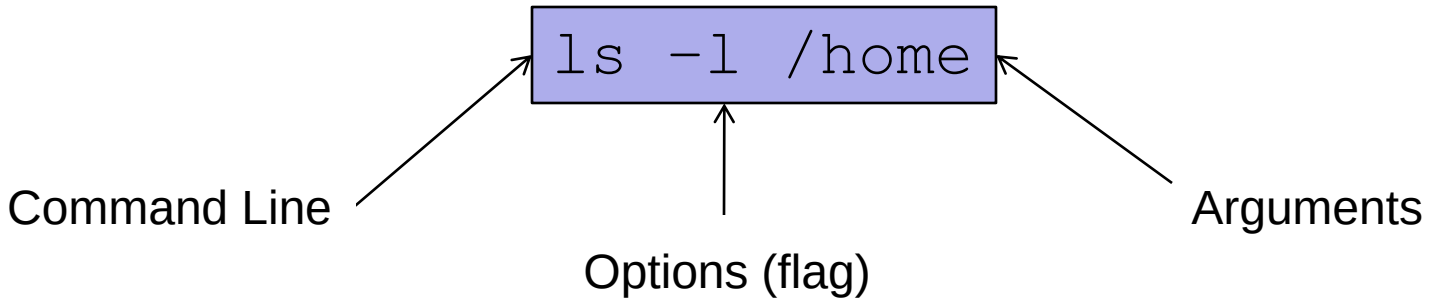
- Desktop Environments :
  - KDE
  - GNOME
  - Xfce and etc.

Navigating the file system(1)



Navigating the file system(2)

- Shell is interface betwean user and computer hardware. It`s main task is to execute user`s commands.
- To execute a command, type its name and arguments at the command line



Navigating the file system(3)

- **ls** - list directory contents
- List information about the FILEs (the current directory by default)
- ls [OPTION]... [FILE]...

- **pwd** - print name of current/working directory

Navigating the file system(4)

- **cd** - change directory

- absolute and relative path/addressing
  . - current folder
  . . - folder up
  ~ - home folder
  / - system root

Overview of commands:

touch	**mkdir**	**ls**	**cd**
mv	**rm**	**pwd**	**cp**
chmod	**chown**	**top**	**ps**
kill	**cat**	**less**	**scp**
grep	**tar**	**df**	**du**
man			

Standard Linux commands(1)

- **mkdir** – makes new directories
- mkdir <path/filename>

- **touch** – make a new empty file
- touch <path/filename>

Standard Linux commands(2)

- **cp** - copy files and directories
- cp <path/filename> <newpath/newfilename>
- cp –r

- **mv** – move (rename) files
- mv <path/filename><newpath/newfilename>

Standard Linux commands(3)

- **rm** – remove files or directories
- rm <path/filename>
- rm -r
- rm -f

Standard Linux commands(4)

- **chmod –** Change file/dir permissions
- chmod ugo+w <path/filename>

- **chown** - change file owner and group
- chown username:groupname <path/file>

Standard Linux commands(5)

- **top** - display Linux tasks

- **ps** - report a snapshot of the current processes.
- ps aux

- **kill** - Send a signal to a process

Standard Linux commands(6)

- **man** allows users to read extensive documentation for command
- **grep** - print lines matching a pattern
- **| (pipe)** – Pipe means by which the output from one process becomes the input to a second.

Standard Linux commands(7)

- **cat** - concatenate files and print on the standard output

- **less** - Less is a allows backward movement in the file as well the forward movement.

Standard Linux commands(8)

- **df –** check disk usage
- **du** - estimate file space usage

Standard Linux commands(9)

- Editors :
  - Vi/Vim
  - JOE
  - EMACS
  - NANO

Standard Linux commands(10)

- **joe** <filename>

- CTRL+k h – help on/off
- CTRL+c – exit
- CTRL+k s – save
- CTRL+k x – save and exit

Archive tools

- Most common arhive commands are:
  - tar
  - gzip
  - zip

Archive tools

- The Tar program provides the ability to create tar archives, as well as various other kinds of manipulation. For example, you can use Tar on previously created archives to extract files, to store additional files, or to update or list files which were already stored.

- tar [options] <arhive name>

Data management

- **scp** - secure copy (remote file copy program)
- scp -r : secure copy directories

- scp user@host.domain:path/file user1@host1.domain1:path1/file1

Script language

- A bash script is a file containing a list of commands to be executed by the bash shell. In bash script we can add any linux command
- Also user can use standard programing features like : variables, control structures (for, while, if)…

Script language

- **Variables –** User can use variables as in any programming languages. There are no data types. A variable in bash can contain a number, a character, a string of characters.
- **Conditionals** - Conditionals let you decide whether to perform an action or not, this decision is taken by evaluating an expression.

Script language

- The for **loop** is a little bit different from other programming languages. Basically, it let's you iterate over a series of 'words' within a string.

- The **while** executes a piece of code if the control expression is true, and only stops when it is false (or a explicit break is found within the executed code.

Script language

- As in almost any programming language, you can use **functions** to group pieces of code in a more logical way or practice the divine art of recursion.

Links

- http://wiki.ipb.ac.rs/index.php/Linux_Examples