

Introduction to Linux

Linux workshop #1

Summary

- Linux family
- Debian
- FHS
- Server installation
- Package Management
- Users
- Network
- Remote access



Linux families

- **Debian:** most famous fully open-source operating system. Very good reputation as server (security, stability)
- **CentOS:** non-commercial derivate of RHEL.
- **Gentoo:** source distribution. Famous for its customizability and its resiliency. Prerequisites : good understanding of Linux and free time.
- Two main package types : **DEB, RPM**
- There are plenty of other Linux systems. Most of them are based on the previous distributions.
<http://distrowatch.com/>
(Linux, BSD)

Debian

- Three releases: **Stable – Testing – Unstable**
- Production environnements: **stable.**
- Security and safe updates only
- <http://www.debian.org/>
- ISO : **netinstall**
- Appr. 150Mb



debian

FHS

- /bin/: basic commands for all users
- /boot/: boot files (ramdisk, kernel, bootloader)
- /dev/: devices (cdrom, hd, tty...)
- /etc/: (editing text configuration) configfiles
- /home/: users personal folders
- /lib/: software libraries
- /mnt/: mounting point
- /media/: mount point dedicated to removable devices
- /opt/: optional software
- /proc/: virtual FS containing hw infos, processes infos, kernel infos
- root/: root home folder
- /sbin/: commands only available to the root user
- /tmp/: temporary files
- /usr/: unix system resources
- /var/: variable files (db, logs, mailbox)
- /srv/: services files
-

Server installation

- **Custom partition layout, LVM for scalability if necessary**
- Partition 1: /boot
- Partition 2: swap
- LVM, VG1:
- LV1: /var, LV2: /var/log, LV3: /tmp, LV4: /home, LV5:/usr, /srv

- **Minimal installation**
- Advanced options > Expert install menu
- Possibility to skip steps
- Clean install
- No GUI: useless for server environment
- No useless pieces of software / services

Package Management

- **aptitude**: front end, better dependencies management
- **apt-get**: advanced packaging tool command
- **dpkg**: install a packet
- **Source**: `./configure, make, make install ...`

- Repositories: `/etc/apt/sources.list`

- Before downloading a software tarball, **check the repositories** (versions, dependencies are automatically handled)

Exercise 3

Add an user:

- `useradd / adduser (interactive)`
- `userdel`

User, group and password files:

- `/etc/passwd`
- `/etc/shadow`
- `/etc/groups`

When you do not know / can't remember something:

- RTFM => `man` command (manual)

Network

- Everything is contained in **/etc/network/interfaces**
- Syntax:
 - **## Loopback ##**
 - auto lo
 - iface lo inet loopback
 - **## DHCP ##**
 - auto eth0
 - allow-hotplug eth0
 - iface eth0 inet dhcp
 - **## STATIC ##**
 - auto eth1
 - allow-hotplug eth1
 - iface eth1 inet static
 - address 192.168.11.100
 - netmask 255.255.255.0
 - gateway 192.168.11.1
 - dns-domain example.com
 - dns-nameservers 192.168.11.1

SSH

- In order to **remotely access** your system, you can install SSH
- SSH : **Secure SHell**
- Encrypted channel
- Configuration file: **`/etc/ssh/sshd_config`**
- **Protocol 2**
- **PermitRootLogin no**
- **X11Forwarding no**

Get your root back

- Grub menu
- Select the recovery mode entry, type “e” (edit)
- Linux kernel line, add “**init=/bin/sh**” and “**rw**” instead of “ro”

```
GNU GRUB  version 0.95  (638K lower / 128960K upper memory)

root (hd0,0)
kernel /boot/vmlinuz-2.6.15-1-686 root=/dev/sda1 ro
initrd /boot/initrd.img-2.6.15-1-686
savedefault
boot
```

- Boot and reset the password with **passwd** command
- Of course you need to have a physical/console access to the machine
- This is not the only way (mount+chroot, mount+alter shadow/passwd file)

Questions



Links

- <http://www.cyberciti.biz/>
- <http://lwn.net/>
- <http://distrowatch.com/>
- <http://www.debian.org/>

Thank you