Junior Level Linux Professional (LPIC-1)

- Trainer: Theodotos Andreou (B.Sc, CCNA, CEH, CMI, LPIC-1, LFCE)

- https://www.theo-andreou.org

- https://git.theo-andreou.org

- https://joindiaspora.com/u/theodotos

- theo@theo-andreou.org

- Matrix: @theodotos:matrix.org

- IRC: theodotos on #ubuntu-cy on Freenode
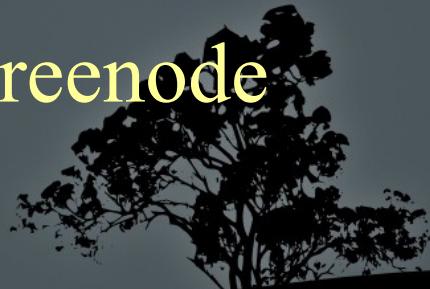
Introduction to Linux and LPIC-1

History of Linux

- Free Software (Free as in 'Freedom'):

    - **Freedom 0**: The freedom to run the program for any purpose.

    - **Freedom 1**: The freedom to study how the program works, and change it to make it do what you wish.

    - **Freedom 2**: The freedom to redistribute and make copies so you can help your neighbor.

    - **Freedom 3**: The freedom to improve the program, and release your improvements (and modified versions in general) to the public, so that the whole community benefits.

History of Linux

- Free Software Foundation – FSF
  - Founded by Dr Richard M. Stallman
  - Protect and Promotes Free Software
  - Develops GNU
  - Support the GNU License and derivatives

http://www.fsf.org/
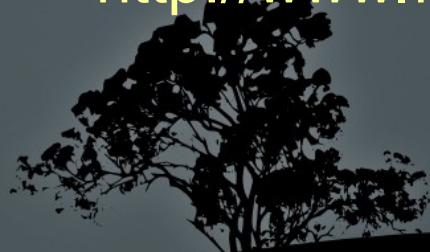
History of Linux

- 1983: **GNU Project (GNU's Not Unix!)**

  - Aims at the creation of a Free Operating System based on UNIX

  - Components of GNU:

    - Compilers (gcc)

    - Tools (GNU Binutils, Coreutils)

    - Shell (Bash Shell)

    - Library (GNU C Library)

    - GUI (GNOME)

    - Kernel?

http://www.gnu.org/

History of Linux

- GNU General Public Licence – GPL

  - Enforces the 4 Basic Freedoms

  - Derivatives must be distributed under the same terms (Copyleft)

  - The most popular Free Software License

http://www.gnu.org/licenses/gpl.html
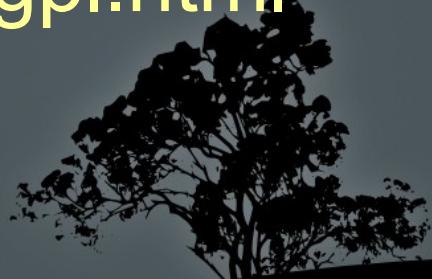
History of Linux

- 1991: Linux – The "Kernel"

  - Developed by Linus Torvalds

  - Developed by an indepedent community of enthousiasts over the Internet

  - Completed the missing piece from the GNU puzzle

  - The most popular Free Operating System

  - Today it is developed by the Linux Foundation (est. 2007)

  - Linux vs GNU/Linux

http://www.kernel.org/

History of Linux

- 1997: The Cathedral and the Bazaar

  - Authored by Eric S. Raymond

  - In the "Cathedral" model:

    - Code is distributed to everybody after the completion and not in-between

  - In the "Bazaar" model:

    - Code is available at every stage of the development

    - Model used during the Linux development

History of Linux

- Linus Law (Formulated by E.S.R):

  Given enough eyeballs, all bugs are shallow

History of Linux

- Open Source Software – OSS

  - The word«Free» is related to "Freedom" but also to "No cost" (Gratis)

  - The Free Software ideals were met with skepticism by businesses

  - 1998: Open Source Initiative – OSI

  - OSI adopted a more pragmatic approach to attract businesses.

http://www.opensource.org/
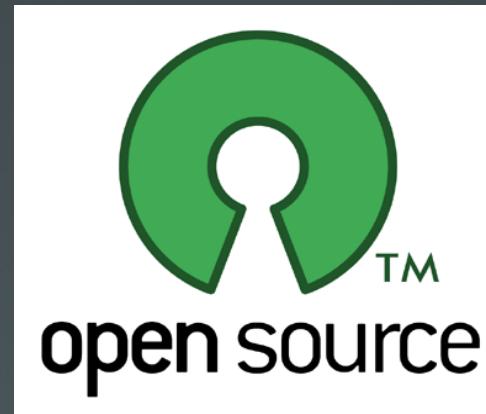
Linux Advantages

- Independence from traditional EULAs
- Right to copy
- Code Availability for customizations
- Stability
- Performance
- Security
- Rich application suite
- Cost

Linux Advantages

- Package Management

- Multilingual

- Protection from vendor lock-in

- Open Standards – Interoperability

- Support for a wide range of programming languages

- Privacy

- Supports many architectures (Intel, ARM, Mips, ...)

Linux cons

- Some notable proprierary apps are not available on Linux

- Hardware and Drivers support issues

- Too many options result in confusion

- Migration to Linux can be costly

http://en.wikipedia.org/wiki/Comparison_of_Windows_and_Linux

Distributions

- **Slackware**
- **Debian**
- **Red Hat**
- Ubuntu
- Fedora
- SUSE/openSUSE
- Mandriva

- Gentoo
- Arch
- PCLinuxOS
- Puppy
- Knoppix
- Sabayon
- CentOS
- ...

http://distrowatch.com/

Standards

- POSIX: Standard for UNIX systems

  - Linux is not 100% compatible with POSIX (hence the term "UNIX-Like")

- File System Hierarchy Standard (FHS)

- Linux Standard Base:

  - An effort by many distributions for a common base

Linux Adoptiom

- 68% of web servers

- Internet Services (email, dns, ftp etc)

- Governments

- Stock-Markets

- 100% of TOP500 super-computers

- Schools/Universities

- Research Institutions

- Non Profit/Non Government organizations

- Businesses

- Service Providers

- King of the cloud:

  - 92 % in AWS

  - ?? in GCP

  - 40% in Azure

- Mobile devices (Android)

- Embedded/IoT devices

- Movie Productions

- ChromeBooks

- Laptop/PCs

- International Space Station

http://en.wikipedia.org/wiki/Linux_adopters

Contributions to Linux

Support

- Red Hat (Red Hat Enterprise Linux)
- SUSE
- Canonical (Ubuntu)
- Community Support
    - Forums
    - Mailing Lists
    - IRC
    - NewsGroups

http://www.ubuntucy.org/

Documentation

- The Linux Documentation Project
  http://www.tldp.org/

- https://www.linux.com/tutorials

- https://access.redhat.com/documentation/en-us/

- http://www.debian.org/doc/

- https://help.ubuntu.com/

Resources about LPI

- Books:

    - LPIC-1 Linux Professional Institute Certification Study Guide: Exam 101-400 and Exam 102-400, 4th Edition

- http://www.linux-praxis.de/lpisim/lpi.html

- https://www.tuxcademy.org/media/lpic1/

- http://www.lpi.org/

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