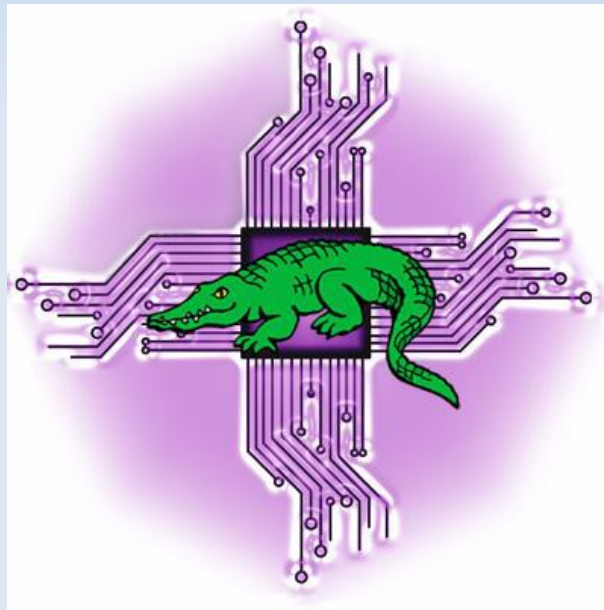


Why Linux Is The Future of Computing

Presentation to La Trobe Valley Miniconf.



July 19th, 2014

<http://levlafayette.com>

The Computer Revolution

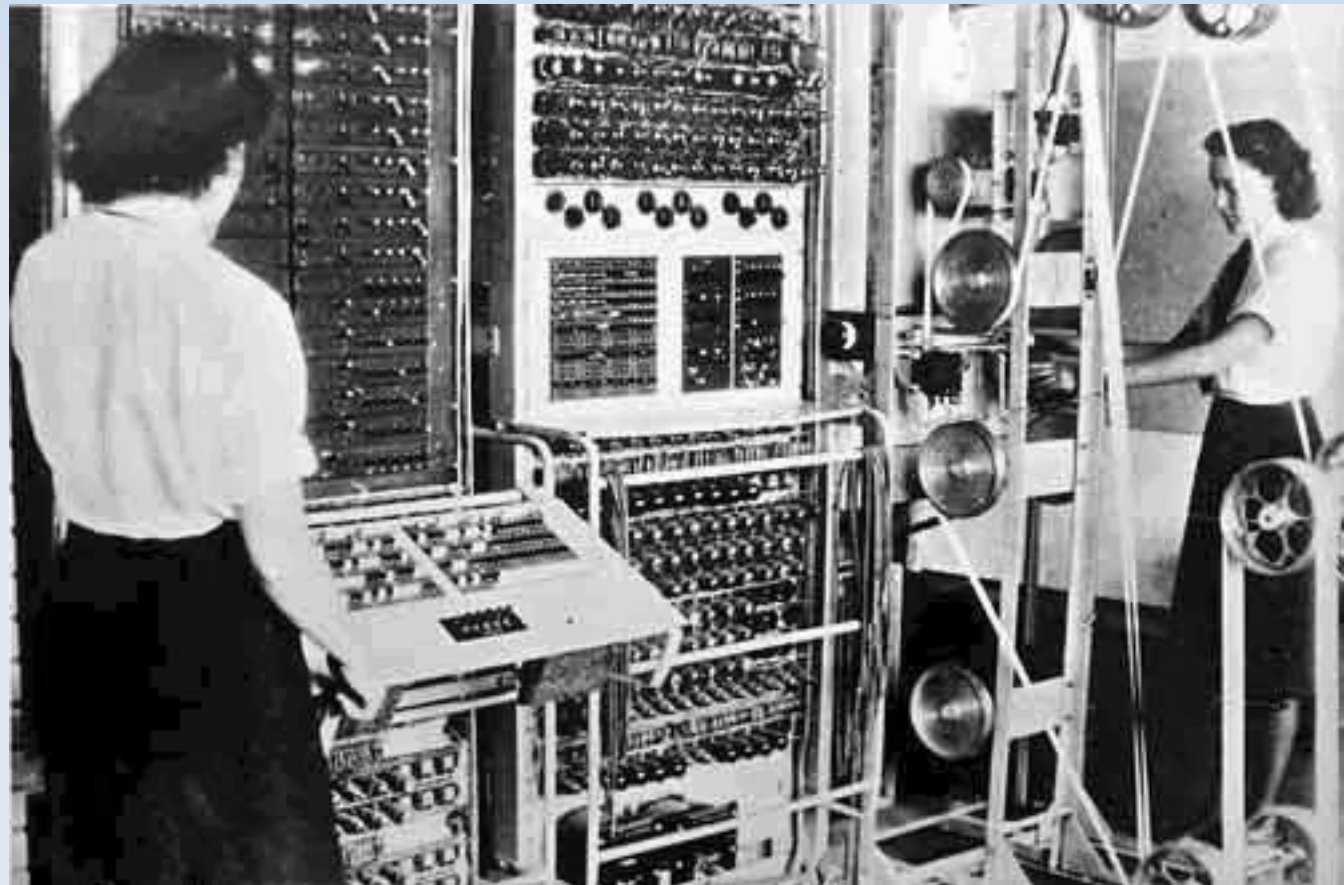
The electronic networked computer is the single most important technology of the contemporary age. Like all great transformative technologies it is a combination of existing technologies synthesized into a new and improved system.

First generation computers; 1939-1955.

Second generation computers (transistors); 1955-1970

Third generation computers (integrated Circuit); 1971-

Fourth generation computers (Internet, multiprocessor (1993-..)



What Is Linux Anyway?

Linux is a Unix-like kernel for an operating system first released in 1991. The Linux kernel is *usually* bundled with the GNU operating system utilities.

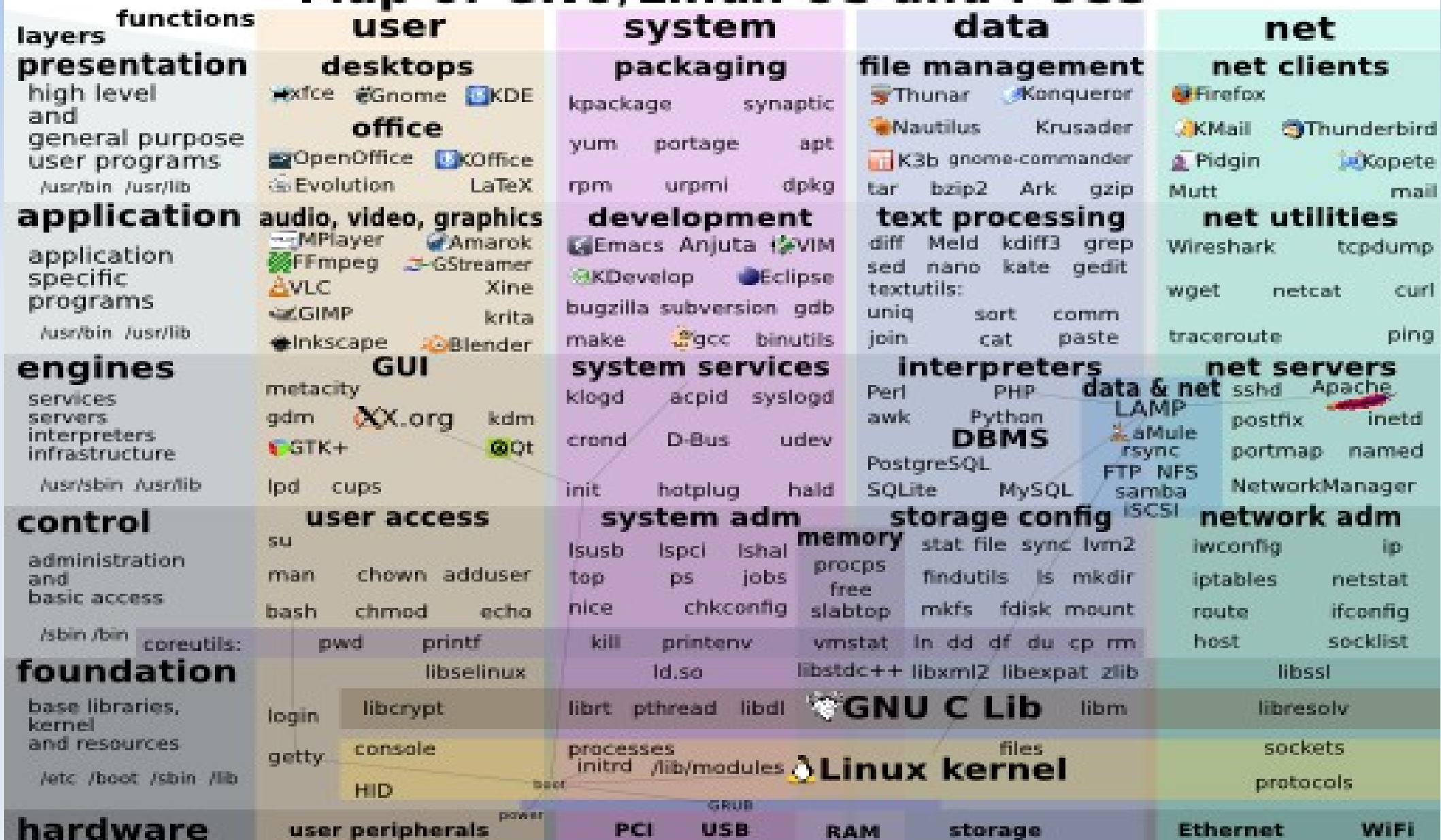
GNU Linux is a Free and Open Source operating system. The source code may be viewed, modified, copied, and distributed. Many applications also use this sort of license (or something very close) but are not Linux specific. This includes L

ibreOffice, Firefox, Apache webserver, database systems (e.g., Postgres, MySQL), compiler suites (GCC). GNU Linux is typically accessed through bundles of packages known as distributions. Distributions may include different package managers, different desktop environments etc.



A GNU Linux FOSS Map

Map of GNU/Linux OS and FOSS



Distribution of Computer Systems

The distribution of computer systems can be distinguished by functional market share. This includes mobile devices (phones and tablets), laptops and desktop systems, server systems, computational peripherals, and supercomputers.

Mobile devices: According to IDC Android Linux has an overwhelming majority of the mobile phone market as of 2013Q4 (c78%, IOS 18%, Windows 4%). According to Strategy Analysis tablets are between IOS and Android as of 2013Q1 (IOS 48%, Android 43%, MS-Windows 8%)

Laptops and Desktops: According to Net Applications, MS-Windows has an overwhelming market share as of May 2014 (c91%, OS X 7%, Linux 2%)

Server Systems: Based on W3Techs Feb 2014 of Internet servers (web, mail and DNS servers), Linux is dominant (c65%, MS-Windows 33%)

Supercomputers: Based on the Top500 Linux has an overwhelming majority (97%, UNIX 2.4%, MS-Windows 0.4%)

When Mark Shuttleworth launched the Ubuntu distribution in 2004 he also introduced “bug #1” for resolution: “ Microsoft has a majority market share“. In 2013 this bug was closed. <https://bugs.launchpad.net/ubuntu/+bug/1>

Why Linux Succeeds

Linux succeeds because of four interrelated reasons:

1) It is derived and mostly compatible with Unix operating systems. Unix dates back from 1972, itself a C-based rewrite from Multics, a project that was initiated in 1964. Despite being relatively new (1991), GNU Linux comes with the experience of around fifty years of computer development.

2) With this experience and development, it is technically superior. It is scalable, stable, secure, and efficient.

3) It uses the GPL, a FOSS license. Software development is very similar to academic research; short-term inspiration and long-term success depends on a thorough and critical process of open peer review.

4) Because of the FOSS license it has a powerful community of enthusiasts, professionals, and supportive businesses.

Linux and The Future

Computational devices are becoming more powerful (roughly doubling in processing and storage capacity every two years, an observed metric that has been true since 1958 (*Moore's 'Law'* from the 1965 publication)). A typical home computer desktop by 2020 will have 16 TB of storage, 128 GB of RAM, 100 BIPS of manycore processing.

Computing is becoming increasingly ubiquitous; “the Internet of things”, expansion of machine-to-machine communication, and expansion of computational devices (e.g., 3D printing). ABI Research estimates 30 billion devices connected by 2020.

This situation will mean that the key features of Linux, both technical and social, will be in increasing demand. However, expectations exist for monopolistic attempts to truncate this potential (e.g., software patents, anticompetitive practices, technological blocks etc).

Linux and The Future

