

Free Software in the Real World

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Overview

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General Advantages of Free Software

- Obviously: Licensing costs are lower.
- Also: Long-term costs are lower.
- Free Software puts control in the hands of the user.
- Free software is infinitely flexible.
- Free software is trustworthy.
- The *Freedom* of Free Software is critical; hence I prefer *Free Software* to *Open-Source*

Lower Costs

- Licensing costs are low or nonexistent.
- But *upgrade* costs are also low or nonexistent!
- Support is available from a wide variety of suppliers; you can pick the best and cheapest.
- Free software generally runs well on older hardware than proprietary software.

Control

- *You* decide if and when to upgrade.
- *You* decide who you'll pay for technical support.
- *You* decide how to configure your systems.
- *You* can remove features you don't want.
- *You* can audit code (or pay to have it audited) before you trust the software.

Flexibility

- You have the source code, so you can tailor the software exactly to fit your needs.
- You can cut out unneeded parts to lower resource consumption.
- You can change behaviour if you need to.

Trustworthiness

- Nothing is hidden
- Anyone can audit the code
- Virtually impossible to hide "back doors" or conceal sloppy programming
- If the vendor disappears, you still have the software
- You know you can always access your data

Freedom: The Most Important Advantage

- No-one will demand auditing for license compliance
- No-one will take away your right to use the software
- No-one will hamper your ability to access your data
- You are free to use the software where, when and how you like

Case Study 1: MIMEDefang

- A GPL'd mail scanner with many uses; used chiefly to stop Microsoft-specific viruses.
- Only required because proprietary desktop mail software is *not* trustworthy!
- Used by hundreds of people in many different ways.
- Cost: License cost: 0
- Control: Filter rules are entirely up to the end-user.

Case Study 1: MIMEDefang (2)

- Flexible: Used to strip viruses, add disclaimers, stop spam, replace large attachments with URL's, ... A whole community of contributors has grown up.
- MIMEDefang is used on mail systems which handle from 100 to 1.5 million messages per day.
- Trustworthy: Source code is available for all to see.

Case Study 1: MIMEDefang (3)

- Originally written on contract for a client, MIMEDefang was fairly inefficient and not very powerful.
- If I had not insisted on GPL'ing the original MIMEDefang, it would have languished as a small, proprietary project.
- Instead, it has grown into a widely-used, scalable piece of software which has brought contracts my way.

Case Study 2: Embedded Linux

- Natural Resources Canada buries seismograms across Canada.
- They detect seismic waves from nuclear tests and report back to the UN in Geneva.
- Problem: Data flows back via satellite. Someone transmitting fake data could convince the Americans that the Chinese are conducting nuclear tests...
- That would be bad.

Embedded Linux (2)

- Solution: Authenticate (digitally sign) seismic data before it leaves the sealed seismogram.
- Hardware: Crypto card from Chrysalis-ITS.
- Software: Chrysalis supplies drivers for Windows NT and Linux.
- Windows is out of the question... embedded computer has 32MB of Flash and 16MB of RAM.

Embedded Linux (3)

- Roaring Penguin contracted to develop embedded Linux development system.
- I took Red Hat Linux 6.2, stripped it down, made some modifications and voila! An embedded kit.
- OS licensing costs: \$0
- Consulting costs equivalent to a few NT licenses. The system will be installed on about 100 embedded PC's. Huge savings.

Embedded Linux (4)

- Why was freedom important to this project?
 - I didn't have to ask Red Hat for permission to make changes to the software or copy it.
 - I didn't have to sign non-disclosure agreements or deal with lawyers to get software licenses.
 - When I needed to make changes to suit the embedded system, I had the source code.
- Freedom saved time, money and hassles. This is in addition to huge savings from no-fee copying.

Embedded Linux (5)

- Validating seismic information for nuclear test-ban treaties is about as "mission-critical" as you can get.
- Not only is Free Software appropriate for this task, it is the *best* choice.
 - Cheapest choice
 - Full source code available
 - No worries about "end-of-life" product support
 - Absolute transparency: No NSA "back-doors"

Case Study 3: Small Business

- Engineering startup needed engineering workstations.
- Sun workstations outrageously expensive.
- Linux PC's much cheaper (and faster!)
- Much electrical engineering software now available on Linux.
- Two heavy-duty Sun servers for software not available on Linux; accessible via X protocol.

Small Business (2)

- Some companies use Windows PC's with Windows-based X servers. Why???
- We saved the cost of a Windows license (\$140) plus X server (\$300) *per machine*, for a total savings of around \$11,000.
- No Cisco firewall for this company. A P-90 rescued from the president's basement served just fine.
- File servers, web server, mail server all Linux-based.

Small Business (3)

- Mail server uses Sendmail and Cyrus IMAP server. Features massive scalability and shared mailboxes.
- A consultant quoted the price for a Microsoft Exchange replacement: \$30,000. (Required new hardware plus client licenses.) And this would also reduce the e-mail capability of the engineers' Linux workstations.
- Needless to say, no Exchange migration.

Small Business (4)

- Setting up a new Linux PC takes administrator 30 seconds:
 - Say "Boot from Network" at BIOS prompt.
 - Central Red Hat kickstart server installs and configures Linux while administrator has coffee.
 - Come back, reboot and workstation is ready.
- No need to track licenses. We can install Linux on as many PC's as we like for free. Reduced clerical overhead means savings.

Free Software and Good Government

- The Government of Peru is considering mandating free software in public administration.
- The author of the bill, Dr. Edgar David Villanueva Nuñez, wrote an open letter defending his position.
- This letter should be required reading for anyone involved in public policy!
- http://www.pimientolinux.com/peru2ms/villanueva_to_ms.html

Good Government (2)

- Why is Peru considering this? Cost is a factor, but *not* the primary motivator.
- To quote Villanueva, the motivations are:
 - Free access to public information by the citizen.
 - Permanence of public data.
 - Security of the State and citizens.
- Let's examine these three issues.

Free Access to Public Information

- Information stored in proprietary undocumented formats is *not* entirely owned by you. You are dependent upon a third party for access to that information.
- Villanueva believes that public information must be stored in an open and documented format, accessible by software available to anyone.
- This freedom is critical to a democratic state.

Permanence of Public Data

- It is untenable for a government to rely on a single supplier of closed-source code for access to its own data.
- A state must not depend on a third-party supplier for maintenance of critical software. It must have source code to the software to guarantee to its citizens that it will always have access to the data. Otherwise, if a piece of software is discontinued, data can become obsolete and inaccessible.

Security

- It is untenable for a government to rely on closed-source software which it cannot audit. Such software may have bugs or deliberate back-doors which could compromise the integrity of the government.
- We already see problems with "spyware" on personal computers.

Security or Paranoia?

- James Allchin, a senior VP at Microsoft, *testified under oath* that Windows has security flaws which, if disclosed, could threaten the security of enterprise systems.
- In his testimony, he stated that revealing API information could threaten national security!
- Can a responsible government rely on this kind of software for anything important?
Clearly, **NO**.
- <http://www.eweek.com/article/0,3658,s%253D701%2526a%253D26875,00.asp>

Conclusions

- Free software allows unmatched flexibility for businesses and government.
- Free software encourages pooling of resources and sharing of development talent.
- Free software is trustworthy.
- Free software is durable and guarantees access to data.
- The huge savings from free software are simply icing on the cake.