A Quick Survey of OSS Licenses, Tools, and Compliance

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Big Fat Disclaimer

- Dammit Jim! I am an **engineer**, not a lawyer!
- **Opinions** expressed here are my own
- These slides are intended to offer
  - A quick introduction to a large, complex topic
  - My personal understanding and practices
- Using these slides as a basis for any legal argument will:
  - Almost certainly not help you.
  - Probably make me laugh myself sick.
  - Seriously.
Who am I?

- I am an embedded Linux architect and Member of Technical Staff at Mentor Graphics. I have worked on embedded devices since 1996. I started working with Linux as a hobbyist in 1999 and professionally with embedded Linux in 2006. In OSS, I have been involved with the Yocto Project since its public announcement in 2010, have served on the YP Advisory Board for two different companies, and am currently a member of the OpenEmbedded Board.

- More importantly for this talk, as part of my work at Mentor, I define/capture/refine requirements for customers during services engagements.
Agenda

- Basics
- Context
- License Types
- Compliance, Technology & Tools
- Final Thoughts
- Q&A
What is “Open Source Software”?

- There are several common definitions available, for instance:
  - [http://www.tsf.org/resources/resources/what-is-fs](http://www.tsf.org/resources/resources/what-is-fs)
  - [https://opensource.org/osd](https://opensource.org/osd)
- Personally, I boil it down this way:
  - If I follow the rules, source that I can use for my own ends*

* - As with most things, the devil is in the details

Additional References:
2. [https://en.wikipedia.org/wiki/The_Free_Software_Definition](https://en.wikipedia.org/wiki/The_Free_Software_Definition)
References:
My first thought here, was do I really need to spell this out? However, I want to make it clear.

References:
What is a copyright license?

- So, looking back at our definitions, we "license" our copyrighted material for use with, potentially, some restrictions
- A license can require various things:
  - Attribution
  - Notice
  - Licensing of derivative works
  - Disclosure of original and derivative works
  - Beer

References:
Note: there are differences on how copyrights and patents are handled in each country. Some countries do not patent software.
Context

History, Philosophy, Politics, Business, and Religion... Oh My!
Context is important to understand some of the nuances associated with OSS and OSS licenses, how they came about, and how they have evolved

References:
3. https://opensource.org/history
7. http://www.linuxjournal.com/content/cisco-settles-where-here
History

1. 1950’s & 1960’s - Most companies were in the hardware business and didn’t see that software was valuable
2. 1969 – IBM anti-trust case
3. After that point, software became a separate product
4. Gradually sharing source changed and became less frequent (70s & 80s)
5. Some did not agree with these changes
6. 1983
   - Richard Stallman releases the GNU manifesto
   - Announces GNU project
7. 1986 - MIT releases X10R3 with new license
8. 1989 – GNU General Public License v1 released
10. 1989 – GPLv1
11. 1990 – Modified BSD License (4 clause) original “BSD License”
12. Universities were some of most common early adopters
13. Software costs began to increase with the complexity of the software
Many refer to "open source" as "free".
Unfortunately, this can lead to misunderstanding.
In English, there are a couple of meanings for the word, "free".
  - "Free", as in unrestricted, e.g. "free speech" or freedom
  - "Free", as in without cost, e.g. "free beer"
This distinction becomes important when we examine license types.
Understanding both sides, moral and practical, helps one to grasp the intent of the licenses.
"Keep in mind that source code that costs you nothing, regardless of license or pedigree, still costs you something to use.

- Me"
License Types
“copyleft” licenses attempt to preserve the ability of an end user to modify the source. It does this by requiring the use of the same license on derived products in order to use the software and requiring source disclosure with modifications.
X11 (MIT) License

- One of the earliest licenses for OSS
- Has become one of the most popular
- Vey permissive
- Requires a copyright notice and license to be included with software that includes the package

Found the typo of ‘vey’ and thought it would be funny to leave it in, as in, “Oh vey!”

Reference:
1. https://www.gnu.org/licenses/license-compatibility.html
BSD licenses are also permissive

- Named after the Berkley Software Distribution it was attached to
- Variants
  - 4-clause license (original “BSD License”)
  - 3-clause license (“Revised BSD License”, “New BSD License”, or “Modified BSD License”)
  - 2-clause license (“Simplified BSD License” or “FreeBSD License”)
- Essentially the 3-clause license is considered equivalent to the X11 license

Reference:
GNU General Public Licenses (GPL)

- "copyleft"
  - Intended from the start to preserve the ability of an end user to modify the software for their own ends
  - In order to allow for various versions of the GPL to work together, the GPL has a clause that allows for "any later version"
- Variants
  - GPLv1 – Generally seen as superseded by v2
  - GPLv2 – Most commonly used
  - GPLv3 - Added provisions to prevent HW lockout ("tivoization")

Reference:
1. https://www.gnu.org/licenses/license-compatibility.html
**Lesser GPL**

- Special version of the GPL that allows for system libraries to be used
- Requires disclosure of original library source and modifications
- Doesn’t propagate the license to derivative works in some situations
  - Explicitly allows dynamic linking
- Variants
  - LGPLv2
  - LGPLv3

**Reference:**
1. [https://www.gnu.org/licenses/license-compatibility.html](https://www.gnu.org/licenses/license-compatibility.html)
License compatibility

License compatibility revolves around being able to meet all the needs imposed by all licenses attached to a set of software.

General rule, the most restrictive license 'trumps' the more permissive one.

Graphic is from Wikipedia:
https://commons.wikimedia.org/wiki/File%3AQuick-guide-gplv3-compatibility.svg (see attribution below)

Reference:
1. https://www.gnu.org/licenses/license-compatibility.html
Compliance, Technology & Tools

References:
2. https://spdx.org/
Compliance

- Plan ahead for the use of OSS
- Ensure system design doesn't inadvertently require disclosure of code considered proprietary
- For the most part, read the license and follow the rules
- This implies that you know all the licenses in your software
  - This can be a daunting task with the number of OSS packages in use in any non-trivial product
- Two sides to the coin
  - License tracking and source identification
  - Generating OSS disclosures
Scanning

- **License scans**
  - Attempt to identify, usually through header blocks, what licenses apply
  - Assuming that you are obeying the restrictions in the licenses identified, this process demonstrates "good faith" effort

- **Source scans**
  - Attempt to identify when source has been included by accident or by intent that require disclosure of some sort or may be incompatible

- **Last step of these always involves a human**
  - Weed out the false positives
  - Determine what action, if any, to take
SPDX

- "The Software Package Data Exchange® (SPDX®) specification is a standard format for communicating the components, licenses and copyrights associated with a software package."
- This is becoming the default way for tools to exchange information about licenses
- When evaluating tools, make sure to consider if the tool understands and/or can generate this format
Tools

- There are a *ton* of tools out there to help with compliance
- Some go well beyond the tracking of licenses and source scanning
- Almost all take a lot of care and maintenance
  - These are generally complex, heuristic scanning tools
- Personally, I've found that the most useful tools are the ones that help me to track licenses and produce reports
  - An OSS project, called, fossology, does this well
  - Still takes a lot of setup and maintenance
A comment on enforcement

- When violations occur, mostly, it is assume to be unintentional
- Most copyright holders will work with an infringing party
- In most cases, addressing the infringement and complying with the license terms will satisfy the copyright holder
- Don’t rely on this
Final Thoughts
Common misconceptions

- I thought OSS was the same as "Public Domain"
- If I use any GPL code, my entire source base is at risk.
- License ‘X’ is better than license ‘Y’.
Although I had a reasonable understanding of OSS before, I learned a lot of the history behind the licenses while creating this presentation and broadened my understanding of FOSS in the process. This really is a large, complex topic and is worth continuing study.
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