



A Quick Survey of OSS Licenses, Tools, and Compliance

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Big Fat Disclaimer

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- ▶ 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?

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- ▶ 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

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- ▶ Basics
- ▶ Context
- ▶ License Types
- ▶ Compliance, Technology & Tools
- ▶ Final Thoughts
- ▶ Q&A



What is “Open Source Software”?

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- ▶ There are several, common definitions available, for instance:
 - ▶ <http://www.fsf.org/resources/resources/what-is-fs>
 - ▶ <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:

1. https://en.wikipedia.org/wiki/Free_and_open-source_software
2. https://en.wikipedia.org/wiki/The_Free_Software_Definition

What is a copyright?

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► To google!

cop·y·right

/'käpē, rīt/ 🔊

noun

noun: copyright; plural noun: copyrights

1. the exclusive legal right, given to an originator or an assignee to print, publish, perform, film, or record literary, artistic, or musical material, **and to authorize others to do the same.**
"he issued a writ for breach of copyright"
- a particular literary, artistic, or musical work that is covered by copyright.

adjective

adjective: copyright

1. protected by copyright.
"permission to reproduce photographs and other copyright material"

verb

verb: copyright; 3rd person present: copyrights; past tense: copyrighted; past participle: copyrighted; gerund or present participle: copyrighting

1. secure copyright for (material).

References:

1. <http://www.copyright.gov/circs/circ01.pdf>

What is a license?

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► To google again!

li·cense

/ˈlɪs(ə)ns/

noun

1. a permit from an authority to own or use something, do a particular thing, or carry on a trade (especially in alcoholic beverages).
"a gun license"
synonyms: permit, certificate, document, documentation, authorization, warrant;
More

verb

1. grant a license to (someone or something) to permit the use of something or to allow an activity to take place.
"brokers must be licensed to sell health-related insurance"
synonyms: permit, allow, authorize, grant/give authority, grant/give permission, grant/give a license; More

My first thought here, was do I really need to spell this out? However, I want to make it clear.

References:

1. https://en.wikipedia.org/wiki/Public_copyright_license
2. <https://www.smashingmagazine.com/2011/06/understanding-copyright-and-licenses/>

What is a copyright license?

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- ▶ 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:

1. https://en.wikipedia.org/wiki/Public_copyright_license
2. <https://www.smashingmagazine.com/2011/06/understanding-copyright-and-licenses/>
3. <http://www.gnu.org/licenses/copyleft.en.html>
4. <https://en.wikipedia.org/wiki/Beerware>

Copyrights vs patents

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- ▶ By creating a work, you **automatically** have a copyright
 - ▶ That 5th grade paper you wrote in History class.
 - ▶ You have a copyright on it.
 - ▶ Congratulations.
- ▶ Patents are **granted**
- ▶ And that's all I'll say about that.

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:

1. https://en.wikipedia.org/wiki/History_of_free_and_open-source_software#Launch_of_the_free_software_movement
2. http://www.freebsd.org/doc/en_US.ISO8859-1/articles/bsd-gpl/article.html
3. <https://opensource.org/history>
4. https://en.wikipedia.org/wiki/MIT_License
5. https://en.wikipedia.org/wiki/X_Window_System#History
6. https://en.wikipedia.org/wiki/BSD_licenses
7. <http://www.linuxjournal.com/content/cisco-settles-where-here>
8. <http://www.howtogeek.com/howto/31717/what-do-the-phrases-free-speech-vs.-free-beer-really-mean/>

History

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- ▶ Software started out “free” for the most part (50s & 60s)
- ▶ 1969 – IBM anti-trust case
- ▶ After that point, software became a separate product
- ▶ Gradually sharing source changed and became less frequent (70s & 80s)
- ▶ Some did not agree with these changes
- ▶ 1983
 - ▶ Richard Stallman releases the GNU manifesto
 - ▶ Announces GNU project
- ▶ 1986 - MIT releases X10R3 with new license
- ▶ 1989 – GNU General Public License v1 released

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 forced IBM to sell software separately
3. 1983 – Stallman's GNU Manifesto – Loosely marks the beginning of “Open Source”
 1. Response to some incidents, like printer that couldn't be fixed without source
 2. Access to Symbolics modifications to MIT's LISP machine
4. ~1986-1988 - MIT License
5. 1989 – GPLv1
6. 1990 – Modified BSD License (4 clause) original “BSD License”
7. Universities were some of most common early adopters
8. Software costs began to increase with the complexity of the software

Philosophy & Opinion

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- ▶ 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

Philosophy & Opinion (2)

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- ▶ Which version of free applies to "Open Source" for you?
 - ▶ Honestly, it doesn't matter. You still have to comply with the license
 - ▶ Personally, I focus on the 'practical' aspects of OSS rather than the moral
 - ▶ However, for many, the moral aspects are more important
 - ▶ Both have value

Understanding both sides, moral and practical, helps one to grasp the intent of the licenses

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“Keep in mind that source code that costs you nothing, regardless of license or pedigree, still costs you something to use.”

- ME

License Types

License Permissiveness

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- ▶ Licenses can be characterized by how 'permissive' they are
- ▶ Starting with "public domain" all the way to "all rights reserved"
- ▶ Permissive licenses
 - ▶ Generally don't require much from the user of the software
- ▶ "copyleft" licenses
 - ▶ Are intended to preserve the "freedom" described before
 - ▶ Require that source and modifications be passed on
 - ▶ Require using the same license for derivative works
 - ▶ Note: That last restriction, makes mixing licenses problematic

"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

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- ▶ 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

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- ▶ 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:

1. https://en.wikipedia.org/wiki/BSD_licenses

GNU General Public Licenses (GPL)

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- ▶ “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

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- ▶ 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

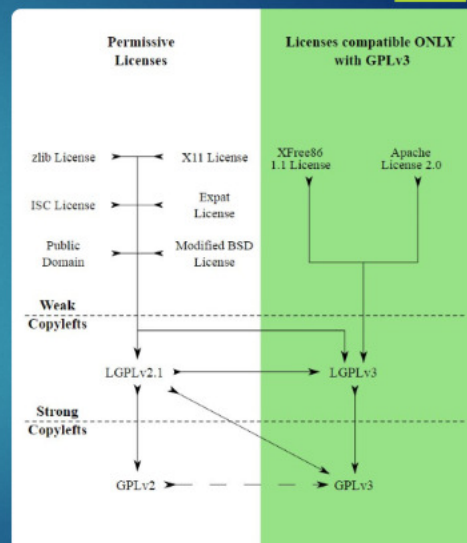
Reference:

1. <https://www.gnu.org/licenses/license-compatibility.html>

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



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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:

1. <http://techcrunch.com/2012/12/14/open-source-software-compliance-basics-and-best-practices/>
2. <https://spdx.org/>

Compliance

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- ▶ 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

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- ▶ 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

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- ▶ **"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

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- ▶ 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

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- ▶ 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

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- ▶ 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'.

Sean's recommendations

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- ▶ Know your source, where it came from, and the licenses that apply!
- ▶ Setup, document, and ADHERE to a formal process for OSS
- ▶ Keep good records, just in case
- ▶ Find tools that make the job easier

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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