Why should you care about open-source licenses

Oleksii Borysenko
Developer Advocate, Code Exchange Lead, Cisco
At Cisco, I have been developing and maintaining a platform for code exchange. Code Exchange (https://developer.cisco.com/codeexchange/) is an aggregator of open-source projects.
The session includes the following items:

• Choose the license for your project from scratch
• Which license should choose for easy use project as part of proprietary software
• Multi-licensing
• How to manage the project with different licenses
• Compatibility of licenses
• Organize licensing if the project contains forks of other projects or uses project code with different licenses
• Tools for managing open-source license
Disclaimer:

• Information in this session should not be considered legal advice.
Developers do not often pay attention to licenses when using various open-source projects. We can often use projects/part of a project or functions for our applications and programs without thinking about how it might affect the future. Do you need to keep the copyright? What are requirements and obligations of different licenses? In this session, I want to highlight the issue of choosing licenses for the project and the specs of using projects with different types of licenses.
Open-source license

A license for open-source projects is a legal contract that regulates the relationship between one or more authors and the user. It includes the following information:

• Description of the terms of use of the project or code, including usage in commercial programs.
• Definition of what can and cannot be done with the software components, the obligations, and the features of usage.
• Regulation of the responsibility of the authors and contributors to the project.
Open-source license

So, if you start from the end, we have ready-for-use projects or proprietary software that uses open-source licenses. But you check the license and find license issues, license conflicts, or use projects without a license.

What problem can effect this?

• You need to replace and to redevelop a part of the source code
• Negative press coverage for non-compliance
• Loss of reputation with open-source community and customers
• Change the license of your derived work
• Be able to disclosure corresponding source codes by request
The following diagram shows statistics date for the licenses that are used on the Cisco Exchange platform. The data includes published use cases as of August 2022.

<table>
<thead>
<tr>
<th>License</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other+Cisco Sample Code license</td>
<td>32.46</td>
</tr>
<tr>
<td>MIT</td>
<td>25.81</td>
</tr>
<tr>
<td>Apache-2.0</td>
<td>16.94</td>
</tr>
<tr>
<td>BSD3-Clause</td>
<td>14.96</td>
</tr>
<tr>
<td>GPLv3</td>
<td>8.16</td>
</tr>
<tr>
<td>BSD2-Clause</td>
<td>0.63</td>
</tr>
<tr>
<td>MPL2.0</td>
<td>0.32</td>
</tr>
<tr>
<td>AGPLv3</td>
<td>0.24</td>
</tr>
<tr>
<td>GPLv2</td>
<td>0.16</td>
</tr>
<tr>
<td>LGPLv3</td>
<td>0.08</td>
</tr>
<tr>
<td>LGPLv2.1</td>
<td>0.08</td>
</tr>
<tr>
<td>EPL-1.0</td>
<td>0.08</td>
</tr>
<tr>
<td>Artistic-2.0</td>
<td>0.08</td>
</tr>
</tbody>
</table>
Licenses can be divided into:

- Copyleft (GPL, Mozilla Public License, Eclipse, CC-SA, Microsoft Public License, etc.),
- Permissive (Apache, MIT, BSD, etc.).

Copyleft can also be divided into “weak” and “strong”:

- "strong" include GNU, GNU Affero General Public License.
- "weak" — for example, Eclipse, GNU Lesser General Public License (LGPL).
License text

Most open-source licenses contain specific obligations concerning information and documentation. For example, many licenses require that the respective license text to be delivered with the software when it is distributed.
Cisco AnyConnect Secure Mobility Client
Version 4.10.0511

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Installed Modules:
VPN, System Scan, Roaming Security, Network Visibility, Customer Experience Feedback

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit:
https://www.openssl.org
This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)
This product includes software written by Tim Hudson (tjh@cryptsoft.com)

This product incorporates the curl HTTP library:
Copyright (c) 1996 - 2019, Daniel Stenberg, (daniel@haxx.se).

End User License Agreement
Cisco Online Privacy Statement and the AnyConnect Supplement
FastEasyMapping

The MIT License (MIT)

Copyright (c) 2014 Lucas Medeiros.
Modified for performance improvements by Yuri Kotov, Dmitriy Zen.

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The above copyright notice and this
Let’s consider popular open-source license

GNU General Public License
The GPL is generally considered an "aggressive" license, which sometimes is incompatible with other copyleft licenses.

In addition, this license is often called a viral license because it is transferred from project to project.

If you use GPL-licensed projects in your software, then all your software is considered a "work based on" the GPL. Copyright and patent usage rights are unregulated. Who then monitors that GPL projects remain copyleft? Various associations and unions do this, but in addition, individual contributors and free software evangelists (Harald Welte) also act as plaintiffs in cases of violation of the license agreement. Besides Free Software Foundation (FSF) — this organization owns the rights to parts of the GNU systems project.
GNU General Public License

Exceptions to the GNU Lesser General Public License
Until 1999, the license was called the GNU Library General Public License. GNU LGPL was created not to violate the principles of free software, so that developers can use this license for their libraries and scripts. In addition, other developers and companies can use the relevant projects with the LGPL license without effecting the license of the main/compiled project or derivative work (including commercial ones).

Projects using the GNU GPL include:
Linux Kernel
WordPress (GNU GPL-2.0)
Solidity The Smart Contract Programming Language (GNU GPL v3.0)
Grafana (GNU Affero General Public License v3.0)
Signal (GNU Affero General Public License v3.0)
Apache 2.0

Unlike other permissive licenses, it has clause 3 (3. Grant of Patent License.), which refers to patents. The Clause governs the disposal of patents: participants grant permission to use any of their patents that may relate to their contribution.

The popularity of this license is constantly growing, not least because this type of license has been chosen as mandatory for projects by the Cloud Native Computing Foundation.
The license allows you to do whatever you want to with the code; the only requirement is keeping the original license and attribution information. If choosing among permissive licenses for your project, I will choose and recommend MIT.

In a nutshell, it is straightforward, does not require additional NOTICE files, and you can use copyrights of any organization and trademark.

Automatically apply the specific license

There are projects and resources that automatically apply the specific license to code/content that you created by using the related project.

For example:

The ISC License is the default license used when setting up a new NPM package with the npm init command.

The ISC License (ISC) is functionally identical to the MIT License, but with some wording seemed unnecessary removed.

CodePens are automatically MIT licensed.
Projects without a license

If the project is published without a license, the project cannot be used.

By default, the software is protected by exclusive copyright, and without a license, its usage is illegal, even if the project is published. The license grants permission to use, to copy, to distribute, or to modify the software without risk of infringement if the terms are met.
Compatibility of licenses

Black Duck Audit Services found that 53% of audited codebases in 2021 contained open-source code with conflicting licenses. 20% had open-source projects without licenses or custom licenses. In general, 97% of commercial code contains various parts and open-source projects. Most licenses protect and insure authors from possible lawsuits or damages that may be caused during the use of open-source components and projects in commercial products.
Compatibility of licenses
Add multiple licenses to a GitHub project

For multi-licensing in GitHub, you must name your license file with the keyword `License` or `COPYING`; for example, `License.BSD`, `License_MIT`, and so on. Add related license text inside this file and place the license file or files in the root directory of your project.

An excellent example of how to organize multiple licenses can be found at RocksDB.
Add multiple licenses to a GitHub project
Multi-licensed project with forks

The project includes a fork or part of another project with different licenses.

- **Project 1**: GNU LGPLv2.1 License
- **Project 2**: BSD 2-Clause License
- **Fork 1**: MIT License
- **Project 3**: Apache 2.0 License
Multi-licensed project with forks

When your open source project contains forks of other projects or uses project code with different licenses and copyrights, create a separate directory where you place the licenses of the projects that are used in your project. Refer to the following examples:

Kubernetes -
https://github.com/kubernetes/kubernetes/tree/master/LICENSES

Elasticsearch client -
https://github.com/elastic/elasticsearch/tree/main/client/rest/licenses

CockroachDB -
https://github.com/cockroachdb/cockroach/blob/master/LICENSE
Multi-licensed project with forks

The following diagram shows an example of organizing information about licenses that are used in different parts of Elasticsearch:
License and copyright information

```python
# Copyright (c) 2019 Cisco Systems
# Licensed under the MIT License

from django.apps import AppConfig

class AppConfig(AppConfig):
    name = 'app'
```
About changing the license

Can a project be relicensed under a different license?

Yes, but the license change must be agreed upon by all project contributors, or if you are the sole author of a project and have accepted no contributions from third parties, you are free to relicense your project whenever or however you wish. This can even include changes solely to the README file. You can the most easily make the changes at the beginning of the project, when you are the only sole contributor. You can even change the license to a proprietary license, but such a change is not retroactive. Accordingly, all previous versions and releases can be used with the licenses in place at that time.
About changing the license

Facebook was using a BSD license plus their custom Additional Grant of Patent Rights. License was changed to MIT on September 26, 2017, and the Patent grant was deleted.
About changing the license
Open Source Policies in Commercial Companies

Some companies create their licensing policies. The policies describe procedures and requirements for publishing projects. In addition, there are also requirements for project licenses that can be used in the company. There may also be lists of valid and invalid licenses (for example, block, allow list).
Open Source Policies in Commercial Companies

I give an example of a list of licenses with a level of risk relative to use in proprietary software. The greater the risk, the greater the problem of using adequately licensed components in your proprietary (commercial) software.

<table>
<thead>
<tr>
<th>Risk</th>
<th>License</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Microsoft Reciprocal License (MS-RL)</td>
</tr>
<tr>
<td></td>
<td>GNU Lesser General Public License (LGPL) 2.1, 3.0</td>
</tr>
<tr>
<td></td>
<td>GNU General Public License (GPL) 2.0, 3.0</td>
</tr>
<tr>
<td>Low</td>
<td>MIT License</td>
</tr>
<tr>
<td></td>
<td>Apache License 2.0</td>
</tr>
<tr>
<td></td>
<td>2-Clause BSD License, 3-Clause BSD License</td>
</tr>
<tr>
<td>Medium</td>
<td>Microsoft Public License (MS-PL)</td>
</tr>
<tr>
<td></td>
<td>Eclipse Public License (EPL)</td>
</tr>
<tr>
<td></td>
<td>Artistic License (Perl)</td>
</tr>
</tbody>
</table>
Open Source Policies in Commercial Companies

For StackOverflow users, it will be interesting to know that according to the Terms of Service, all content created on the platform (including questions and answers) is licensed under Attribution-ShareAlike 4.0 International (CC BY-SA 4.0,). Using StackOverflow snippets can be a problem for your company's legal department.
## Tools for managing open-source license

<table>
<thead>
<tr>
<th>Tools</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossa</td>
<td><a href="https://fossa.com/">https://fossa.com/</a></td>
</tr>
<tr>
<td>Mend.io</td>
<td><a href="https://www.mend.io/open-source-license-compliance/">https://www.mend.io/open-source-license-compliance/</a></td>
</tr>
</tbody>
</table>
Thanks

https://twitter.com/alex_dev_k
https://github.com/oborys