⩗ BROADCOM®

Open Source Software Legal Policy

Issue Date	*March 1, 2021*
Next Review Date	*March 1, 2023*
Document Owner/Contact	*Tony Falcone, Director and Managing IP Counsel, Intellectual Property & Licensing Division*
Function(s)	*All Functions*
Geography	*Global*

1.0 PURPOSE

Broadcom Inc. and its subsidiaries use open source software ("OSS") in many software and hardware products. OSS is any third-party software which does not require a fee. OSS can be an effective way to avoid building basic features from scratch and to interface with products and protocols. However, the use of OSS also carries contractual obligations and risks, which this Policy addresses. ***As described below, before distribution, you must submit OSS in Broadcom products or services to the Synopsis Blackduck Hub ("Hub") or similar tool for analysis and obtain legal approval; you should use OSS that requires the least restrictive "Permissive Licenses" where possible; you should only modify OSS that requires the more restrictive "Copyleft Licenses" in exceptional, pre-approved circumstances; and you should abide by all requirements in OSS licenses and Broadcom's policies for specific types of OSS described herein***. Questions should be sent to Broadcom's IP & Licensing team at opensource@broadcom.com.

2.0 SCOPE

This policy applies to everyone (employees and non-employees alike) who uses or is involved with OSS.

3.0 POLICY

A. Definitions

OSS is typically used in the following situations:
1. "**External**" is a product or project with OSS that is installed or executes on servers, PCs, or other devices that ***are not owned or controlled by Broadcom*** (e.g., customer or partner-owned servers, PCs, or devices). The "front-end" of a SaaS project often includes JavaScript, CSS, and HTML that is downloaded to and executed on an end-user's browser, and ***this SaaS front-end is considered External*** and not SaaS.
2. "**Internal**" means OSS that is used for ***Broadcom's internal private use only*** and does not execute outside of Broadcom or on servers/devices not controlled by Broadcom. Customers do not interact with such OSS through a computer network and this OSS does not support a Broadcom SaaS or cloud offering.
3. "**SaaS**" means a product or service in which OSS is installed or used on servers or other devices that ***are controlled by Broadcom in support of a Broadcom Software-as-a-Service (SaaS) or cloud offering***. This includes servers leased from infrastructure service providers.

B. Code Scanning and Legal Approval

Software for ***SaaS and External projects must be scanned*** for OSS through Hub or a similar tool and submitted for legal approval at least one (1) month prior to distribution. After scanning, ***you must obtain legal approval by answering questions in Hub or contacting opensource@broadcom.com***. If the OSS is solely for ***Internal use and not "Network Copyleft" (which is explained below), it does not need code scanning or legal approval*** provided you comply with this policy and OSS license terms.
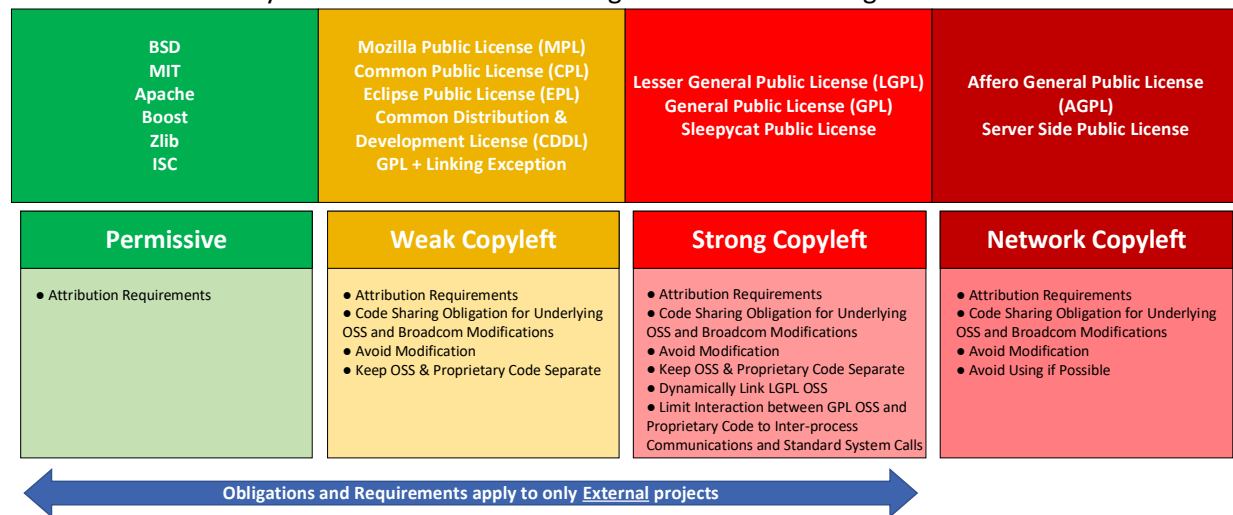
If you seek review at the outset and scan early, this will avoid delays and surprises. While scanning is a useful tool, you are required to independently track the OSS used in your products (with the applicable OSS name, version, and download location). OSS in third-party software used in Broadcom products should be scanned and approved through Hub or approved by opensource@broadcom.com.

C. License Compliance

You are obligated to ensure that:

1. Broadcom has the necessary legal rights to use the OSS you select;
2. Your use of OSS will not taint Broadcom proprietary code with code sharing obligations or otherwise negatively affect Broadcom's intellectual property rights; and
3. You will read and comply with the terms of the licenses for all OSS you use.

OSS licenses are usually classified into the four categories shown in the figure below.

BSD MIT Apache Boost Zlib ISC	Mozilla Public License (MPL) Common Public License (CPL) Eclipse Public License (EPL) Common Distribution & Development License (CDDL) GPL + Linking Exception	Lesser General Public License (LGPL) General Public License (GPL) Sleepycat Public License	Affero General Public License (AGPL) Server Side Public License
Permissive	**Weak Copyleft**	**Strong Copyleft**	**Network Copyleft**
● Attribution Requirements	● Attribution Requirements ● Code Sharing Obligation for Underlying OSS and Broadcom Modifications ● Avoid Modification ● Keep OSS & Proprietary Code Separate	● Attribution Requirements ● Code Sharing Obligation for Underlying OSS and Broadcom Modifications ● Avoid Modification ● Keep OSS & Proprietary Code Separate ● Dynamically Link LGPL OSS ● Limit Interaction between GPL OSS and Proprietary Code to Inter-process Communications and Standard System Calls	● Attribution Requirements ● Code Sharing Obligation for Underlying OSS and Broadcom Modifications ● Avoid Modification ● Avoid Using if Possible

← Obligations and Requirements apply to only <u>External</u> projects →

Except for the category of Network Copyleft OSS, (1) *the OSS obligations described below apply only to External projects* (including the front-end of SaaS) and not SaaS or Internal projects and (2) you can use and modify most OSS for SaaS or Internal projects without restrictions.

The least restrictive OSS license is the "Permissive" license, which requires only an attribution notice, typically including OSS license text and copyright notices. *In External projects, you should use only OSS with Permissive licenses where possible and this is the only OSS that you should typically modify*.

The other three OSS categories involve "Copyleft" licenses, which can require sharing your modifications to OSS with third parties and granting licenses from Broadcom for the entire modified OSS package. *In External projects, you should not modify Copyleft OSS except in exceptional, pre-approved circumstances*. Improperly mixing Broadcom code with Copyleft OSS could grant third parties rights in Broadcom code. It is important for you to comply with Broadcom's OSS obligations as summarized in the checklist below.

1. Permissive (e.g., BSD, MIT, Apache, Boost, Zlib, ISC, and WTFPL): The main requirement is *attribution of OSS*. See Annexes A and B for attribution instructions. If you modified Apache OSS, in the attribution document state that the OSS was modified, e.g., "Apache Tomcat has been modified."

2. **Weak Copyleft** (e.g., Mozilla Public License ("MPL"), Common Public License ("CPL"), Eclipse Public License ("EPL"), Common Distribution and Development License ("CDDL"), and GPL + Linking Exception):
(a) Follow *attribution* requirements, as with Permissive Licenses.
(b) *Do Not modify* Copyleft OSS if possible. Modification needs approval from opensource@broadcom.com. The OSS must remain in *separate source code files* from Broadcom proprietary source code files, with no intermixing or cutting and pasting into Broadcom source code files, and may be combined with Broadcom code only through compilation or runtime interpretation.
(c) *For all Copyleft OSS, upload OSS and approved OSS modifications in your products* (e.g., a jar file or tarball file) to https://broadcom.ent.box.com/f/1b887a53139447f59d8378f112c76712 so Broadcom can share such files upon request, as required by OSS licenses. You may need to log into box before uploading. Name the file: [Broadcom BU name]_[Product Name]_[Version No]_[OSS name]. Include source code, related documentation, and configuration files. Include a notice in modified source files that Broadcom made modifications, a brief description of the modification, and the modification date.
(d) There are two additional cases of Weak Copyleft. For OSS under the "Classpath Exception" GPL + linking exception, you must not combine or link this OSS with proprietary code except through linking to files that include the Classpath Exception (which is indicated in the source code file header). For OSS under the "GCC Runtime Library Exception" GPL + linking exception, you should not use a proprietary (non-GPL) plug-in with the GCC compiler when compiling your code.

3. **Strong Copyleft (Lesser General Public Licenses ("LGPL"), General Public License ("GPL")):**
(a) Follow the requirements for Weak Copyleft OSS in (a), (b) and (c) immediately above.
(b) *For OSS under LGPL, you must not combine or link this OSS with proprietary code except through dynamic linking at run-time*, and OSS should remain in separate files when installed. Recipients of Broadcom product code that links with a LGPL library should be able to replace the installed LGPL library with their own API-compatible version of the LGPL library.
(c) *GPL OSS must not be combined with or linked to* any proprietary code. You must not compile or combine any portion of GPL OSS with proprietary code to form an executable. If distributing with docker or a similar container system, GPL OSS must be in a separate docker image from proprietary code and distributed with a separate installation step or as a separate layer. Recipients of Broadcom code with GPL OSS should be able to replace the installed GPL OSS with their own version of the GPL OSS.
(d) Ensure that any communication or interaction between proprietary code and GPL OSS is limited to *inter-process communication* such as pipes, sockets, or the command-line interface, and standard system calls. All communications with GPL OSS in "kernel space" should be done solely through normal system calls and should remain at arms-length (e.g., they should not be exchanging complex internal data structures or be designed to run linked together in a shared address space).
(e) For OSS under LGPL or GPL, when uploading source code for sharing, include all the source code and build information needed to modify the OSS, including interface definition files and scripts used to control compilation and installation of the executable. Provide a README with instructions on recreating the binary corresponding to the copyleft OSS, including an identification of which compiler was used, where it can be acquired, and any other information on how you compiled the binary. Be sure to retain all license and copyright notices such as in README, LICENSE, or COPYING files.
(f) If recipients of a Broadcom product with LGPL or GPL OSS will not have access to the file system, with the uploaded file please also include a documentation file (such as a README file) with installation information, install scripts, etc., to aid the recipient in replacing the LGPL/GPL OSS with their own code.

4. **Network Copyleft (e.g., GNU Affero General Public License, Server-Side License for newer MongoDB components):** *Such OSS should be avoided*. If your External, SaaS, or Internal projects use or if you are thinking of using such OSS, please contact opensource@broadcom.com.

Annex C contains requirements for two forms of OSS, GPL/LGPL 3.0, which should be avoided where possible, and Linux OSS. Also, not all OSS falls into the four categories discussed above. Some OSS or freeware licenses are not Copyleft licenses, but have restrictions on platforms (Ms-LPL), commercial use (CC-BY-NC), modification (BCLA, certain Linux drivers), target devices (BCLA), or other uses (certain AWS or Facebook licenses). Please contact opensource@broadcom.com with any questions.

D. Software Development Tools

OSS testing or development tools that are not External will generally not need legal review. Some tools generate code for a final program or are incorporated into a final program (e.g., a tool's header files, skeleton files, and libraries). Such OSS will need scanning and approval under Section 3.B.

E. Contributing to an Open Source Project

With approval, you may contribute to or start OSS projects and open source Broadcom code. You must first obtain Business Unit GM approval and fill out a request form from opensource@broadcom.com.

Annex A: OSS Attribution (External projects only)

OSS licenses typically require attribution for External projects, which involves distributing the applicable OSS license text and copyright notices with External projects as set forth in the OSS license. You have an obligation to prepare and distribute such attribution notices. The required attribution notices must include not only the "top level" OSS you have added to your External project, but also the following:
1. OSS dependencies included and/or otherwise incorporated with the top-level OSS;
2. OSS in commercial software included in your External project; and
3. OSS in "shared components" developed by other Broadcom teams and included with your project.

While attribution is not usually required for OSS in the back-end of a SaaS project, attribution is required for front-end OSS that is downloaded to an end-user's browser such as JavaScript, HTML, and CSS code.

If you produce a shared component used in External projects, such as an engine or module used by other Broadcom products, you should produce an Attribution Document for your shared component which you should provide the Broadcom product teams using your shared component.

Your OSS Attribution Document (your collection of OSS attributions) should be distributed according to one of the following methods:
1. Part of the User Interface ("UI"). Embed the Attribution Document as part of the UI that is accessible by customers, such as part of the splash screen or "help" section. For hardware products with a Linux OS, you may make the Attribution Document available via a command line interface command that displays the attributions. For software products in which the end-user will typically have internet access, you may include a link in the UI to the Attribution Document hosted on an external website, such as a Broadcom customer support site or Box folder.
2. Readme file. Distribute the Attribution Document as a text file that is part of the download package for the binary. For hardware products that include a Linux OS (and some form of UI), you may include instructions to access a local "legal" directory with a copy of the Attribution Document or a command to display the Attribution Document.
3. With the Documentation. Place the Attribution Document as an Appendix to the product documentation or release notes that are distributed with the Broadcom product.

If you offer your External project as a binary download, include a copy of your OSS Attribution Document or a link to such document at the binary download site. Regardless of the distribution used, the Attribution Document should be provided privately, such as in the product documentation or a Box link provided to customers, rather than posted on a publicly searchable website.

Hub has a reporting tool called the Notices File report to help generate an Attribution Document for your project. If you have a project in Hub, you may consider using the Notices File report as follows:
1. Locate your project using the Projects tab on the Dashboard, select the name of the project to go to the Project Name page, and select the desired version of the project.
2. Select the Reports tab and click "Create" and "Notices File" and select the report format (text or HTML).
3. Click Create to run the report.

The resulting file will need polishing. For example, if Hub detected any incorrect OSS, or if there are any build tools that are included in your scan that aren't distributed, you will need to manually remove or change those entries. Please also remove the version numbers of the OSS in the Attribution Document. You may also choose to aggregate OSS entries according to license type, grouping multiple OSS components that share the same license and then listing the license text once.

Annex B: Additional OSS Attribution Text (External projects only)

In the text of the Attribution Document for all OSS External projects, include the following notice:

The following copyright statements and licenses apply to open source software ("OSS") distributed with the <Broadcom Entity Name> product (the "Licensed Product"). The Licensed Product does not necessarily use all the OSS referred to below and may also only use portions of a given OSS component.

To the extent required under an applicable open source license, Broadcom Inc. and/or its corporate affiliates ("Broadcom") will make source code available for applicable OSS upon request. Please send an inquiry to opensource@broadcom.com including your name, address, the product name and version, operating system, and the place of purchase.

To the extent the Licensed Product includes OSS, the OSS is typically not owned by Broadcom. THE OSS IS PROVIDED AS IS WITHOUT WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. To the full extent permitted under applicable law, Broadcom disclaims all warranties and liability arising from or related to any use of the OSS.

To the extent the Licensed Product includes OSS licensed under the GNU General Public License ("GPL") or the GNU Lesser General Public License ("LGPL"), the use, copying, distribution and modification of the GPL OSS or LGPL OSS is governed, respectively, by the GPL or LGPL. A copy of the GPL or LGPL license may be found with the applicable OSS. Additionally, a copy of the GPL License or LGPL License can be found at https://www.gnu.org/licenses or obtained by writing to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA.

Annex C: Additional Requirements for GPL/LGPL 3.0, Linux, and Containers (External projects only)

For External projects, follow these requirements for GPL/LGPL 3.0 and Linux OSS. LGPL should also be handled as Weak Copyleft and GPL and Linux should be handled as Strong Copyleft under Section 3.C.

GPL/LGPL 3.0

You should avoid using GPL/LGPL 3.0 OSS where possible. GPL/LGPL 3.0 OSS defines a class of "user products" to which special rules apply. This class includes consumer products such as cell-phones and set-top boxes and "anything designed or sold for incorporation into a dwelling." The presence of GPL or LGPL 3.0 in a hardware device classified as a "user product" means that you have to keep your product "open"—you must give an end-user the ability to swap out the GPL/LGPL 3.0-licensed OSS without hardware measures that render the device inoperable. Specifically, GPL/LPGL 3.0 code may be used in such products as follows:

1. Source code provided to those who request it under their copyleft rights must be accompanied by "Installation Information." The Installation Information needs to be sufficiently detailed that modified versions of the device object code can be uploaded to the device, and no special password or key may be used for unpacking, reading, or copying.
2. The devices must be able to run end-user modifications to object code with GPL/LGPL 3.0 OSS.
3. Broadcom's use of GPL/LGPL 3.0 OSS may limit Broadcom's rights to take legal action under anti-circumvention provisions of certain laws.
4. Broadcom only allows the use of GPL/LGPL 3.0 OSS where it is (1) distributed solely as software programs, independent of hardware; or (2) used with hardware devices that are not "user products."

Distributing Linux

When using Linux in an External project, Broadcom proprietary code should interface with the Linux kernel only through standard system calls through the defined public libraries (GNU C Libraries).

Creating Loadable Kernel Modules ("LKMs")

If functionality cannot be implemented in user space and you create an LKM:
1. The LKM should not contain copyrightable Linux kernel code.
2. The LKM should not utilize kernel functions marked with the GPL-only symbol.
3. If possible, the LKM functionality should be non-Linux specific (meaning it could communicate equally effectively with other operating systems).

Containers

If distributing code in or with containers such as Docker, please follow these requirements:
1. Distribution obligations must be met for all OSS in each layer in the container image, not just the final layer presented to the user, and even OSS that may be overwritten by another layer.
2. For pre-built container images, scan, inventory, and receive approval for all OSS in the image.
3. If you are distributing a Dockerfile with instructions for the customer to obtain container layers from third-party locations, submit your Dockerfile for approval with a list of all third-party dependencies.

4.0 RELATED POLICIES, PROCEDURES AND REFERENCE DOCUMENTS

There are no policies, procedures and reference documents (including external regulations) that are related to this policy.

5.0 KEY DOCUMENTS AND SYSTEMS

Synopsis Blackduck Hub ("Hub") *– software analysis tool used to scan open source software*

6.0 ROLES AND RESPONSIBILITIES

Any employee or contractor who uses OSS must comply with this policy. Anyone found to have violated this policy may be subject to disciplinary action.

7.0 PROCESS ASSURANCE

- Software for ***SaaS and External projects must be scanned*** for OSS through Hub or a similar tool and submitted for legal approval at least one (1) month prior to distribution.
- OSS used in your products must be independently tracked (with the applicable OSS name, version, and download location).

8.0 REVISION HISTORY

Revision	Date	Update Description
1.0	3/01/21	Policy Creation

Approved By: **Date:**

Mark Terrano Vice President and General Manager Intellectual Property and Licensing Division	DocuSigned by: *Mark Terrano* 596EDDB41261419...	3/01/21