Contributing to FreeBSD

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Abstract

This article describes the different ways in which an individual or organization may contribute to the FreeBSD Project.

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So you want to contribute to FreeBSD? That is great! FreeBSD *relies* on the contributions of its user base to survive. Your contributions are not only appreciated, they are vital to FreeBSD's continued growth.

Contrary to what some people might have you believe, you do not need to be a hot-shot programmer or a close personal friend of the FreeBSD core team to have your contributions accepted. A large and growing number of international contributors, of greatly varying ages and areas of technical expertise, develop FreeBSD. There is always more work to be done than there are people available to do it, and more help is always appreciated.

The FreeBSD project is responsible for an entire operating system environment, rather than just a kernel or a few scattered utilities. As such, our `TODO` lists span a very wide range of tasks: from documentation, beta testing and presentation, to the system installer and

highly specialized types of kernel development. People of any skill level, in almost any area, can almost certainly help the project.

Commercial entities engaged in FreeBSD-related enterprises are also encouraged to contact us. Do you need a special extension to make your product work? You will find us receptive to your requests, given that they are not too outlandish. Are you working on a value-added product? Please let us know! We may be able to work cooperatively on some aspect of it. The free software world is challenging many existing assumptions about how software is developed, sold, and maintained, and we urge you to at least give it a second look.

1. What Is Needed

The following list of tasks and sub-projects represents something of an amalgam of various `TODO` lists and user requests.

1.1. Ongoing Non-Programmer Tasks

Many people who are involved in FreeBSD are not programmers. The Project includes documentation writers, Web designers, and support people. All that these people need to contribute is an investment of time and a willingness to learn.

1. Read through the FAQ and Handbook periodically. If anything is badly explained, out of date or even just completely wrong, let us know. Even better, send us a fix (Docbook is not difficult to learn, but there is no objection to ASCII submissions).

2. Help translate FreeBSD documentation into your native language. If documentation already exists for your language, you can help translate additional documents or verify that the translations are up-to-date. First take a look at the Translations FAQ in the FreeBSD Documentation Project Primer. You are not committing yourself to translating every single FreeBSD document by doing this — as a volunteer, you can do as much or as little translation as you desire. Once someone begins translating, others almost always join the effort. If you only have the time or energy to translate one part of the documentation, please translate the installation instructions.

3. Read the FreeBSD general questions mailing list and the comp.unix.bsd.freebsd.misc newsgroup occasionally (or even regularly). It can be very satisfying to share your expertise and help people solve their problems; sometimes you may even learn something new yourself! These forums can also be a source of ideas for things to work on.

1.2. Ongoing Programmer Tasks

Most of the tasks listed here require either a considerable investment of time, or an in-depth knowledge of the FreeBSD kernel, or both. However, there are also many useful tasks which are suitable for “weekend hackers”.

1. If you run FreeBSD-CURRENT and have a good Internet connection, there is a machine `current.FreeBSD.org` which builds a full release once a day—every now and again, try to install the latest release from it and report any failures in the process.

2. Read the FreeBSD problem reports mailing list. There might be a problem you can comment constructively on or with patches you can test. Or you could even try to fix one of the problems yourself.

3. If you know of any bug fixes which have been successfully applied to -CURRENT but have not been merged into -STABLE after a decent interval (normally a couple of weeks), send the committer a polite reminder.

4. Move contributed software to `src/contrib` in the source tree.

5. Make sure code in `src/contrib` is up to date.

6. Build the source tree (or just part of it) with extra warnings enabled and clean up the warnings.

7. Fix warnings for ports which do deprecated things like using `gets()` or including `malloc.h`.

8. If you have contributed any ports and you had to make FreeBSD-specific changes, send your patches back to the original authors (this will make your life easier when they bring out the next version).

9. Get copies of formal standards like POSIX®. You can get some links about these standards at the FreeBSD C99 & POSIX Standards Conformance Project web site. Compare FreeBSD's behavior to that required by the standard. If the behavior differs, particularly in subtle or obscure corners of the specification, send in a PR about it. If you are able, figure out how to fix it and include a patch in the PR. If you think the standard is wrong, ask the standards body to consider the question.

10. Suggest further tasks for this list!

1.3. Work through the PR Database

The FreeBSD PR list shows all the current active problem reports and requests for enhancement that have been submitted by FreeBSD users. The PR database includes both programmer and non-programmer tasks. Look through the open PRs, and see if anything there takes your interest. Some of these might be very simple tasks that just need an extra pair of eyes to look over them and confirm that the fix in the PR is a good one. Others might be much more complex, or might not even have a fix included at all.

Start with the PRs that have not been assigned to anyone else. If a PR is assigned to someone else, but it looks like something you can handle, email the person it is assigned to and ask if you can work on it—they might already have a patch ready to be tested, or further ideas that you can discuss with them.

1.4. Pick one of the items from the “Ideas” page

The FreeBSD list of projects and ideas for volunteers is also available for people willing to contribute to the FreeBSD project. The list is being regularly updated and contains items for both programmers and non-programmers with information about each project.

2. How to Contribute

Contributions to the system generally fall into one or more of the following 5 categories:

2.1. Bug Reports and General Commentary

An idea or suggestion of *general* technical interest should be mailed to the FreeBSD technical discussions mailing list. Likewise, people with an interest in such things (and a tolerance for a *high* volume of mail!) may subscribe to the FreeBSD technical discussions mailing list. See The FreeBSD Handbook for more information about this and other mailing lists.

If you find a bug or are submitting a specific change, please report it using the send-pr(1) program or its WEB-based equivalent. Try to fill-in each field of the bug report. Unless they exceed 65KB, include any patches directly in the report. If the patch is suitable to be applied to the source tree put `[PATCH]` in the synopsis of the report. When including patches, *do not* use cut-and-paste because cut-and-paste turns tabs into spaces and makes them unusable. When patches are a lot larger than 20KB, consider compressing them (eg. with gzip(1) or bzip2(1)) and using uuencode(1) to include their compressed form in your problem report.

After filing a report, you should receive confirmation along with a tracking number. Keep this tracking number so that you can update us with details about the problem by sending mail to <`bug-followup@FreeBSD.org`>. Use the number as the message subject, e.g. `"Re: kern/3377"`. Additional information for any bug report should be submitted this way.

If you do not receive confirmation in a timely fashion (3 days to a week, depending on your email connection) or are, for some reason, unable to use the send-pr(1) command, then you may ask someone to file it for you by sending mail to the FreeBSD problem reports mailing list.

See also this article on how to write good problem reports.

2.2. Changes to the Documentation

Changes to the documentation are overseen by the FreeBSD documentation project mailing list. Please look at the FreeBSD Documentation Project Primer for complete instructions. Send submissions and changes (even small ones are welcome!) using send-pr(1) as described in Bug Reports and General Commentary.

2.3. Changes to Existing Source Code

An addition or change to the existing source code is a somewhat trickier affair and depends a lot on how far out of date you are with the current state of FreeBSD development. There is a special on-going release of FreeBSD known as "FreeBSD-CURRENT" which is made available in a variety of ways for the convenience of developers working actively on the system. See The FreeBSD Handbook for more information about getting and using FreeBSD-CURRENT.

Working from older sources unfortunately means that your changes may sometimes be too obsolete or too divergent for easy re-integration into FreeBSD. Chances of this can be minimized somewhat by subscribing to the FreeBSD announcements mailing list and the FreeBSD-CURRENT mailing list lists, where discussions on the current state of the system take place.

Assuming that you can manage to secure fairly up-to-date sources to base your changes on, the next step is to produce a set of diffs to send to the FreeBSD maintainers. This is done with the diff(1) command.

The preferred diff(1) format for submitting patches is the unified output format generated by `diff -u`.

```
% diff --u oldfile newfile
```

or

```
% diff --u --r --N olddir newdir
```

would generate a set of unified diffs for the given source file or directory hierarchy.

See diff(1) for more information.

Once you have a set of diffs (which you may test with the patch(1) command), you should submit them for inclusion with FreeBSD. Use the send-pr(1) program as described in Bug Reports and General Commentary. *Do not* just send the diffs to the FreeBSD technical discussions mailing list or they will get lost! We greatly appreciate your submission (this is a volunteer project!); because we are busy, we may not be able to address it immediately, but it will remain in the PR database until we do. Indicate your submission by including `[PATCH]` in the synopsis of the report.

If you feel it appropriate (e.g. you have added, deleted, or renamed files), bundle your changes into a `tar` file and run the uuencode(1) program on it. Archives created with shar(1) are also welcome.

If your change is of a potentially sensitive nature, such as if you are unsure of copyright issues governing its further distribution then you should send it to Core Team <core@FreeBSD.org> directly rather than submitting it with send-pr(1). The Core Team

<core@FreeBSD.org> reaches a much smaller group of people who do much of the day-to-day work on FreeBSD. Note that this group is also *very busy* and so you should only send mail to them where it is truly necessary.

Please refer to intro(9) and style(9) for some information on coding style. We would appreciate it if you were at least aware of this information before submitting code.

2.4. New Code or Major Value-Added Packages

In the case of a significant contribution of a large body work, or the addition of an important new feature to FreeBSD, it becomes almost always necessary to either send changes as uuencoded tar files or upload them to a web or FTP site for other people to access. If you do not have access to a web or FTP site, ask on an appropriate FreeBSD mailing list for someone to host the changes for you.

When working with large amounts of code, the touchy subject of copyrights also invariably comes up. Acceptable copyrights for code included in FreeBSD are:

1. The BSD copyright. This copyright is most preferred due to its "no strings attached" nature and general attractiveness to commercial enterprises. Far from discouraging such commercial use, the FreeBSD Project actively encourages such participation by commercial interests who might eventually be inclined to invest something of their own into FreeBSD.

2. The GNU General Public License, or "GPL". This license is not quite as popular with us due to the amount of extra effort demanded of anyone using the code for commercial purposes, but given the sheer quantity of GPL'd code we currently require (compiler, assembler, text formatter, etc) it would be silly to refuse additional contributions under this license. Code under the GPL also goes into a different part of the tree, that being `/sys/gnu` or `/usr/src/gnu`, and is therefore easily identifiable to anyone for whom the GPL presents a problem.

Contributions coming under any other type of copyright must be carefully reviewed before their inclusion into FreeBSD will be considered. Contributions for which particularly restrictive commercial copyrights apply are generally rejected, though the authors are always encouraged to make such changes available through their own channels.

To place a "BSD-style" copyright on your work, include the following text at the very beginning of every source code file you wish to protect, replacing the text between the %% with the appropriate information:

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THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

        $FreeBSD$
```

For your convenience, a copy of this text can be found in `/usr/share/examples/etc/bsd-style-copyright` .

2.5. Money, Hardware or Internet Access

We are always very happy to accept donations to further the cause of the FreeBSD Project and, in a volunteer effort like ours, a little can go a long way! Donations of hardware are also very important to expanding our list of supported peripherals since we generally lack the funds to buy such items ourselves.

2.5.1. Donating Funds

The FreeBSD Foundation is a non-profit, tax-exempt foundation established to further the goals of the FreeBSD Project. As a 501(c)3 entity, the Foundation is generally exempt from US federal income tax as well as Colorado State income tax. Donations to a tax-exempt entity are often deductible from taxable federal income.

Donations may be sent in check form to:

The FreeBSD Foundation

P.O. Box 20247,
Boulder,
CO 80308
USA

The FreeBSD Foundation is now able to accept donations through the web with PayPal. To place a donation, please visit the Foundation web site.

More information about the FreeBSD Foundation can be found in The FreeBSD Foundation -- an Introduction. To contact the Foundation by email, write to <bod@FreeBSDFoundation.org >.

2.5.2. Donating Hardware

The FreeBSD Project happily accepts donations of hardware that it can find good use for. If you are interested in donating hardware, please contact the Donations Liaison Office.

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