Contributing to FreeBSD via Github

A guide to all the fussy bits

Warner Losh

Some History

The Github Pull Request Experiment

- Started just after git migration
- What to do about github pull requests?
- Core requested I figure out next steps for our workflow.
- How do we use git better?
- What can we do to improve our workflow?

Pull Request Ideals

- Easy path for mature changes
- Integrate worth while changes
- Make contribution easier
- Stop ignoring changes
- Improvements our process and culture
- Help recruit new talent

Boring Background

Overview

- Baseline assumptions
  - You know what git is and how to use it
  - You know what Github is
  - Vague familiarity with FreeBSD’s infrastructure
- Github
  - Will highlight the basic mechanics
  - Some GUI pictures
- FreeBSD Expectations
  - What we want
  - What we don’t want
  - How we want it packaged
- How to Help Out

Why Github?

- A familiar process to many
- An experiment to try to increase engagement
- Improve our developer pipeline
- Easy to publish to Github w/o being completely dependent on it
- A place to try new ways to improve our general development workflow
- Changes are more visible and discoverable
- Better fit for more people than Phabricator

Target Audience

- Casual user with small fix
  - Man page improvements
  - Minor tweaks (new devices, build fix, etc)
- Casual developers with small to medium sized change
  - Fix to broken behavior
  - Optimizations with measured speed ups
  - Minor new feature
- People Wanting to Contribute
  - Improve the FreeBSD experience
  - Improve the patch acceptance workflow
- vendors with drivers for their hardware
- Focuses on base system, with callouts for docs and ports

Only One Part of the Story

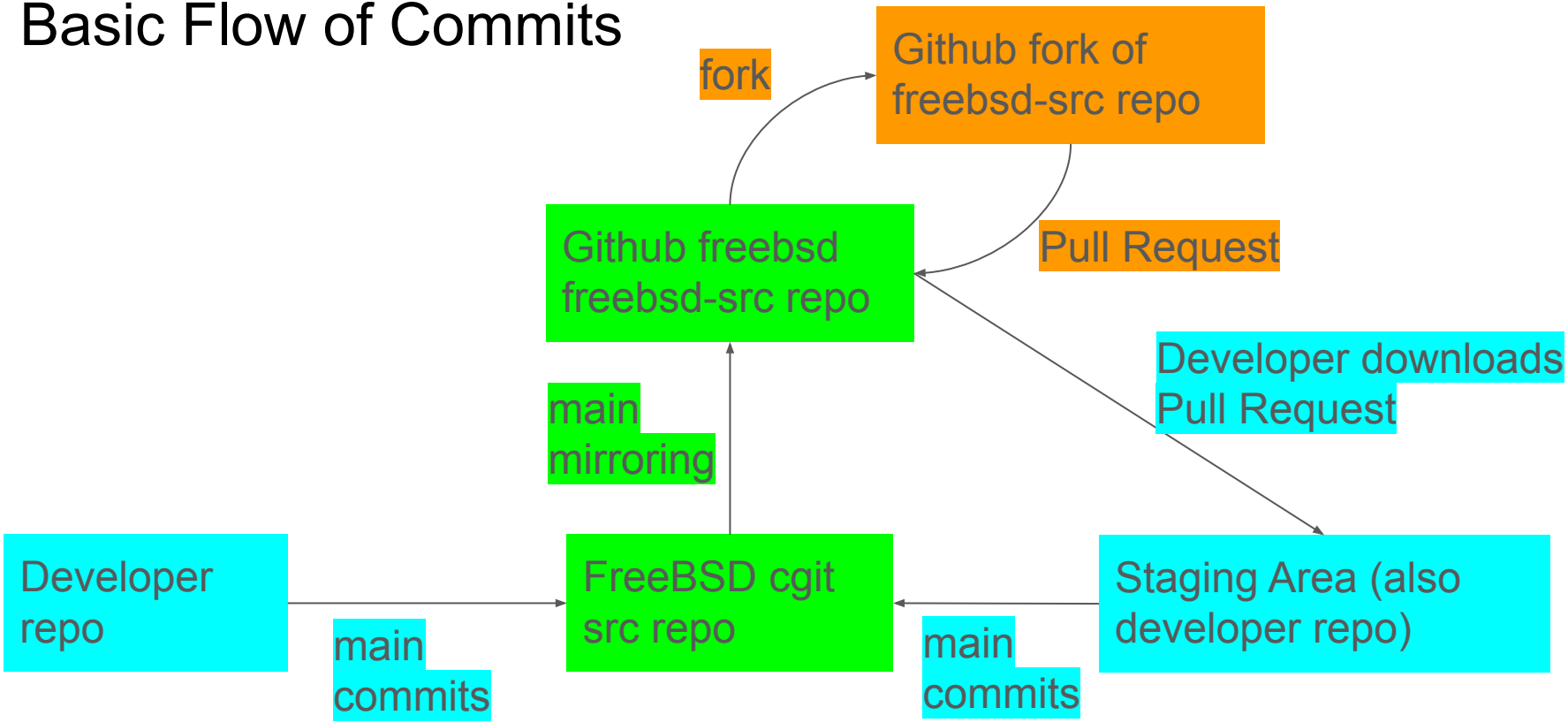
- Bugzilla still for bugs
- Project private resources guard the source of truth repo
- Phabricator for developer review
- Complements CI efforts
- Mailing Lists

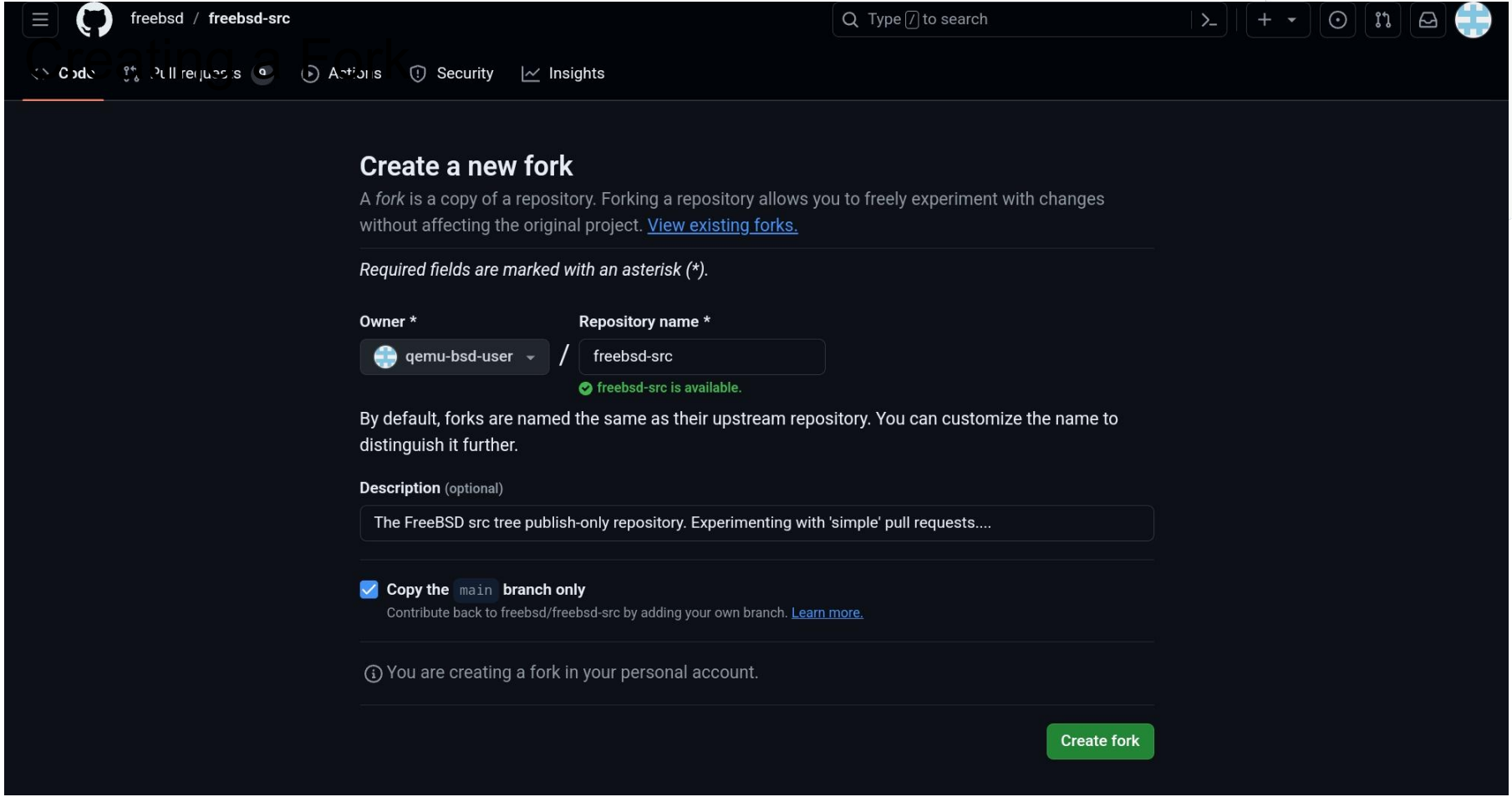
Why Not Phabricator?

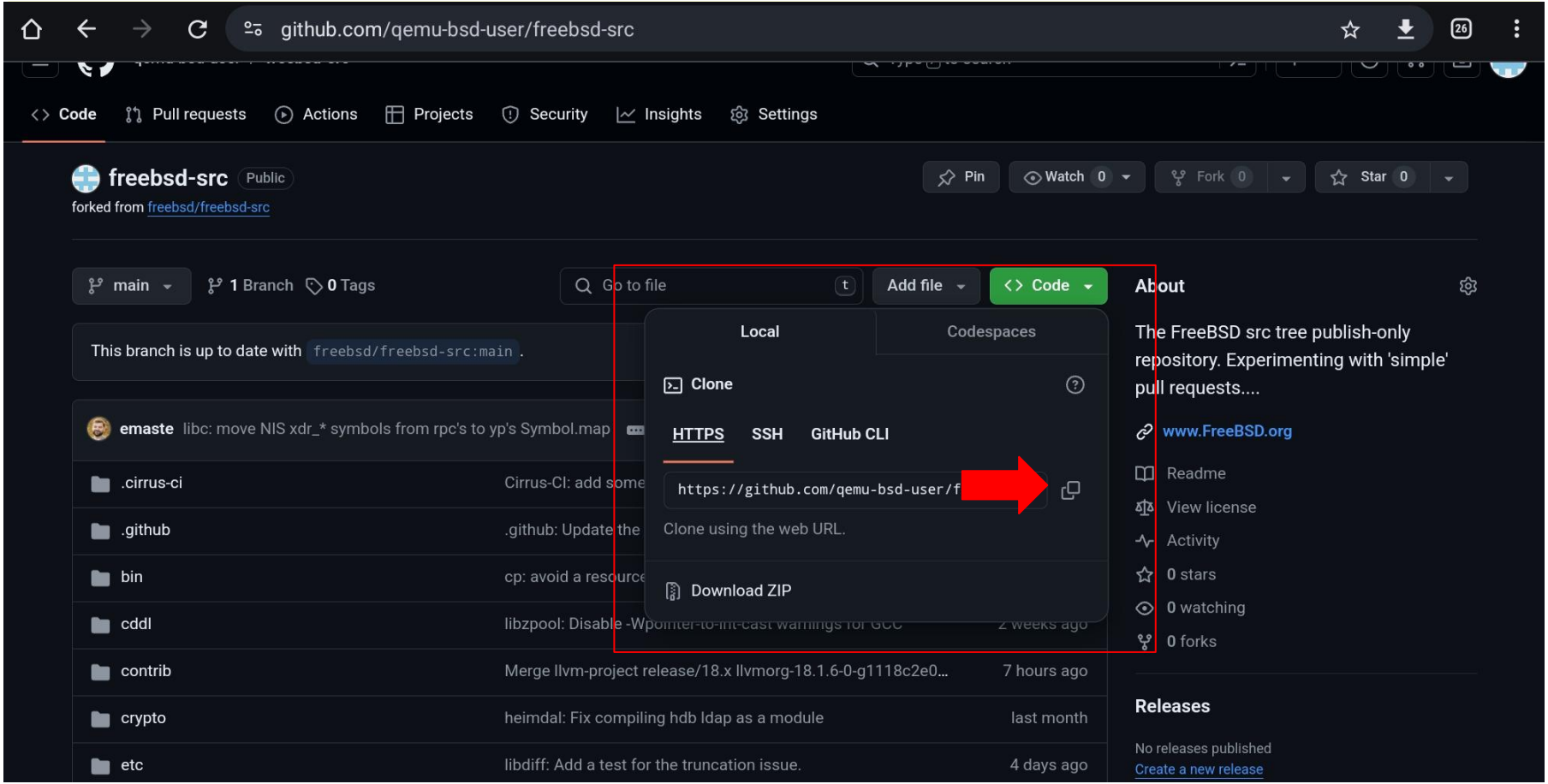
- Have to create a new account
  - Most people already have github account
- Hard to discover changes
  - Phabricator’s interface makes it hard to find things to commit
- Hard to extract information
  - Phabricator tracks less information than git, and creating a commit message with proper credit from that is hard
- Is End of Life
  - Although things like Phorge are replacing it, they aren’t materially fixing these defects
- Phabricator is a developer tool to communicate with other developers
  - Not a friendly place to contribute a change

Getting Started – Basic Flow

Basic Flow of Commits




freebsd / freebsd-src
Type / to search
Code
Pull requests
Actions
Security
Insights
Create a new fork
A fork is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project. View existing forks.
Required fields are marked with an asterisk (*).
Owner *
Repository name *
qemu-bsd-user
/
freebsd-src
freebsd-src is available.
By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.
Description (optional)
The FreeBSD src tree publish-only repository. Experimenting with 'simple' pull requests....
Copy the main branch only
Contribute back to freebsd/freebsd-src by adding your own branch. Learn more.
You are creating a fork in your personal account.
Create fork


github.com/qemu-bsd-user/freebsd-src
Code
Pull requests
Actions
Projects
Security
Insights
Settings
freebsd-src
Public
forked from freebsd/freebsd-src
Pin
Watch 0
Fork 0
Star 0
main
1 Branch
0 Tags
Go to file
t
Add file
Code
This branch is up to date with freebsd/freebsd-src:main .
Local
Codespaces
Clone
HTTPS
SSH
GitHub CLI
https://github.com/qemu-bsd-user/f
Clone using the web URL.
Download ZIP
emaste libc: move NIS xdr_* symbols from rpc's to yp's Symbol.map
.cirrus-ci
Cirrus-CI: add some
.github
.github: Update the
bin
cp: avoid a resource
cddl
libzpool: Disable -W
2 weeks ago
contrib
Merge llvm-project release/18.x llvmorg-18.1.6-0-g1118c2e0...
7 hours ago
crypto
heimdal: Fix compiling hdb ldap as a module
last month
etc
libdiff: Add a test for the truncation issue.
4 days ago
About
The FreeBSD src tree publish-only repository. Experimenting with 'simple' pull requests....
www.FreeBSD.org
Readme
View license
Activity
0 stars
0 watching
0 forks
Releases
No releases published
Create a new release

Clone your new repo

```
10:46am rebo:[20061]> git clone -o github \
    https://github.com/qemu-bsd-user/freebsd-src
Cloning into 'freebsd-src'...
remote: Enumerating objects: 3287614, done.
remote: Counting objects: 100% (993/993), done.
remote: Compressing objects: 100% (585/585), done.
remote: Total 3287614 (delta 412), reused 815 (delta 397), pack-reused 3286621
Receiving objects: 100% (3287614/3287614), 2.44 GiB | 22.06 MiB/s, done.
Resolving deltas: 100% (2414925/2414925), done.
Updating files: 100% (100972/100972), done.
10:50am rebo:[20062]> cd freebsd-src
```

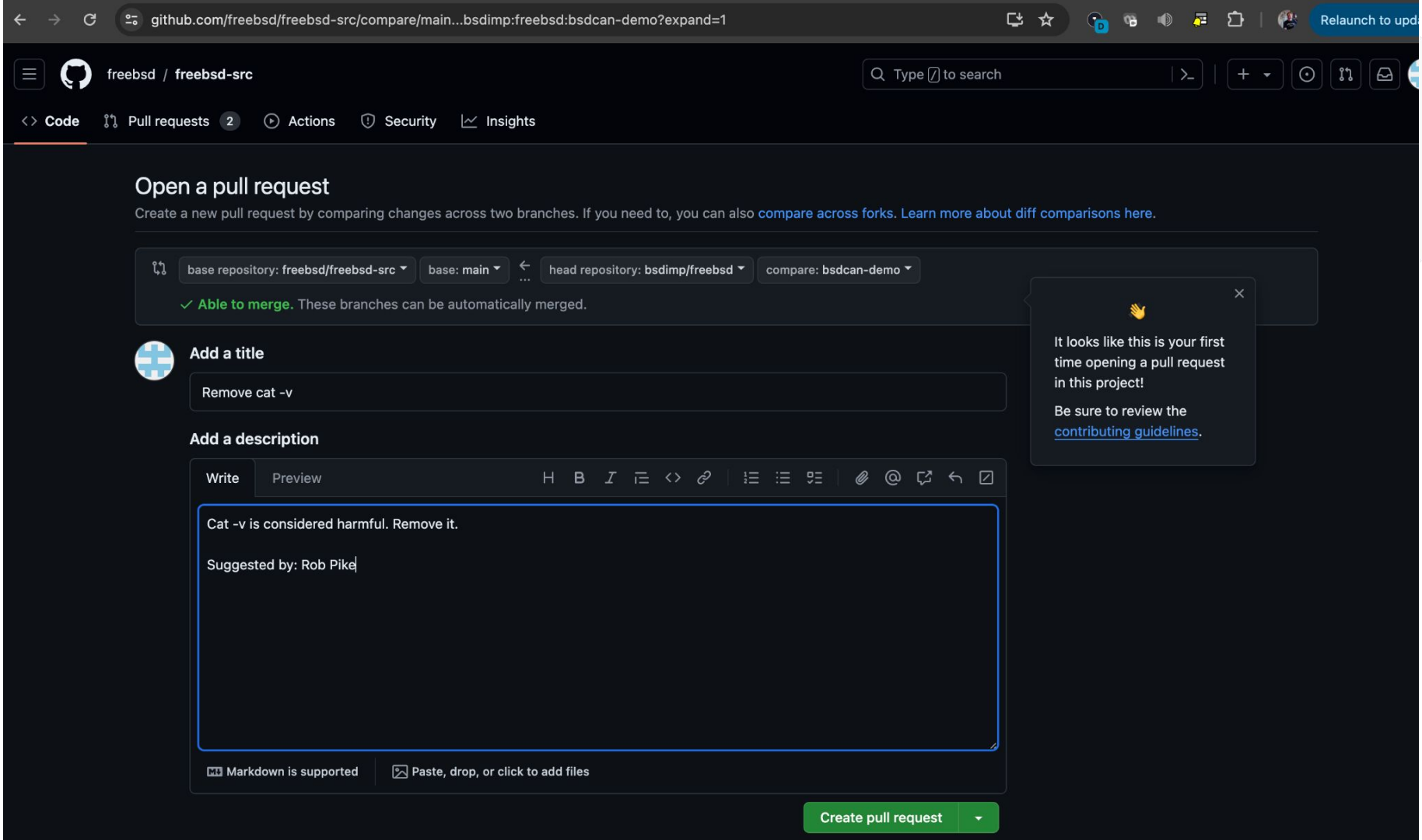
Make your changes

```
10:50am rebo:[20063]> git checkout -b bsdcan-demo
Switched to a new branch 'bsdcan-demo'
10:51am rebo:[20064]> vi mumble-foo
10:55am rebo:[20065]> git commit -a
```

- Rince, Lather, Repeat

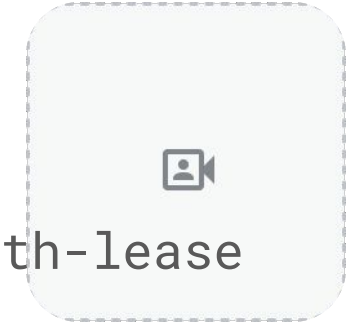
Push Changes to Your Repo

```
11:15am rebo:[20066]> git push github
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 64 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 301 bytes | 3.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
remote:
remote: Create a pull request for 'bsdcan-demo' on GitHub by visiting:
remote:      https://github.com/bsdimp/freebsd/pull/new/bsdcan-demo
remote:
To github.com:bsdimp/freebsd.git
 * [new branch]                bsdcan-demo -> bsdcan-demo
```


github.com/freebsd/freebsd-src/compare/main...bsdimp:freebsd:bsdcan-demo?expand=1
Relaunch to upd
freebsd / freebsd-src
Type / to search
Code
Pull requests 2
Actions
Security
Insights
Open a pull request
Create a new pull request by comparing changes across two branches. If you need to, you can also compare across forks. Learn more about diff comparisons here.
base repository: freebsd/freebsd-src
base: main
head repository: bsdimp/freebsd
compare: bsdcan-demo
Able to merge. These branches can be automatically merged.
Add a title
Remove cat -v
Add a description
Write
Preview
Cat -v is considered harmful. Remove it.
Suggested by: Rob Pike
Markdown is supported
Paste, drop, or click to add files
Create pull request
It looks like this is your first time opening a pull request in this project!
Be sure to review the contributing guidelines.

More changes, repush

```
10:55am rebo:[20065]> git push github --force-with-lease
```




THIS COUPON GOOD FOR:
ONE (1) FREE
DISAPPOINTMENT
WHILE SUPPLIES LAST

Evaluating the Changes

First Steps

- Does it pass the CI steps on github
- Are there complaints from our ‘checker’ scripts

Do We Want It?

- Is it important enough
  - Typo fixes generally not wanted
- Automated Checkers
  - Signed errors
  - Theoretical problems
- Does it fix a real problem?
- Does it solve an interesting problem?
- Generally, cleanup and style changes generally not wanted
- But… on going work in an area may warrant an exception

Is it correct

- Is the code correct?
- Does it solve it in a desirable way?
- Does it integrate well into FreeBSD systems?

FreeBSD Style

- Style checker in Github
- But there’s FreeBSD architecture considerations
- Integrates to the FreeBSD specific things

Right Size

- Large enough to do something interesting, desirable and useful
- Small enough to be able to review
- < 10 commits
- < 200 lines changed
- (though those are just guidelines, not hard limits)
- Exceptions do apply

Right Subject

- Change in user-visible behavior
- Change that has consensus
- Change that is worth volunteer time to review, test and commit

Changes Are Mature Enough

- Some changes during review are inevitable
- Major rewrites
  - Must be tested
  - Must have been socialized
  - Must have little to no dissent in the community
- Changes are stable
  - Experimental changes that crash are not welcome

Vendor Driver Changes

- Can be large
- Assume vendor tested
- But we build everywhere (vendors don’t always)
- Sanity checks
- Possible alternative to “vendor commit bit”

Some Bad Examples

- Typos in comments
  - Nobody cares, unless you have real bug fixes too
- Theoretical Bugs
  - The kind found by “scanners” that look for patterns
  - That won’t change behavior
  - Though some exceptions may apply
- Changes that don’t even compile
  - Changes should pass the github testing jobs
- Changes that fix one thing but break other things

How to Help

Github Actions

- Moving the process along
  - “Thank you for your submission”
  - “Thanks for your update” + tag
- Better checking
  - Commit message checking
  - Merge commit filtering

Tooling

- Staging
- CI testing
- Pushing with rebase
- Other sanity checkers
  - Run igor on man page changes
  - Run lua checker on lua changes
- Context Sensitive Checking
  - No need to rebuild world for man page changes
  - But need to for man page addition (and install too!)

Questions?
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