Universe2020

Catching vulnerabilities early with GitHub

William Bartholomew
Staff Product Manager, GitHub
Maya Kaczorowski
Sr Director Product Manager, GitHub

Agenda

Dependencies

Software supply chain security

Risks from dependencies

Dependency management with GitHub

Dependency Graph

Dependabot

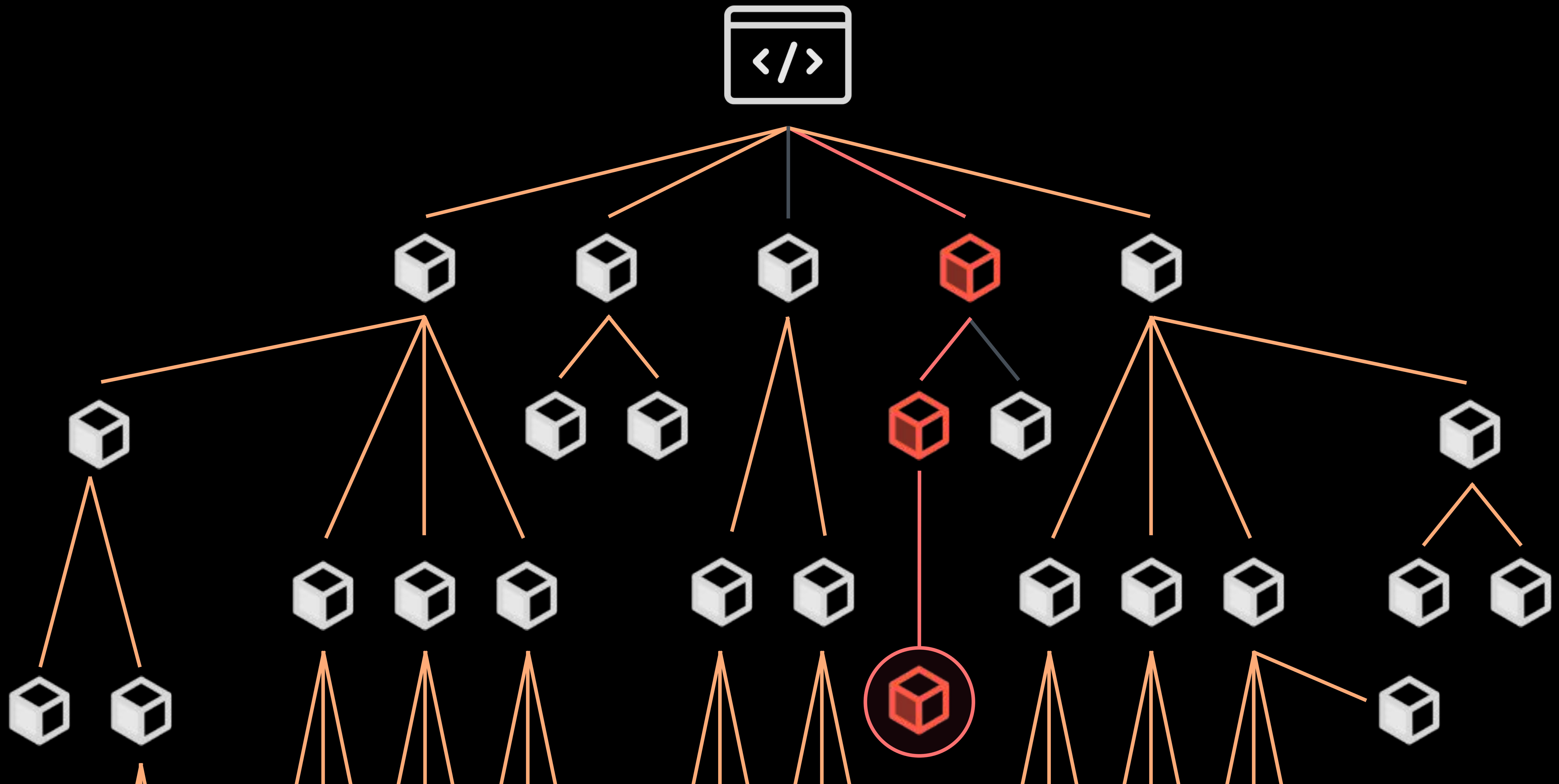
New: Dependency review

Introducing dependency review

How dependency review works

How GitHub helps you shift left

Dependencies and your software supply chain



A dependency is another binary that your software needs in order to run

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Author

Date of contribution

Date of publication

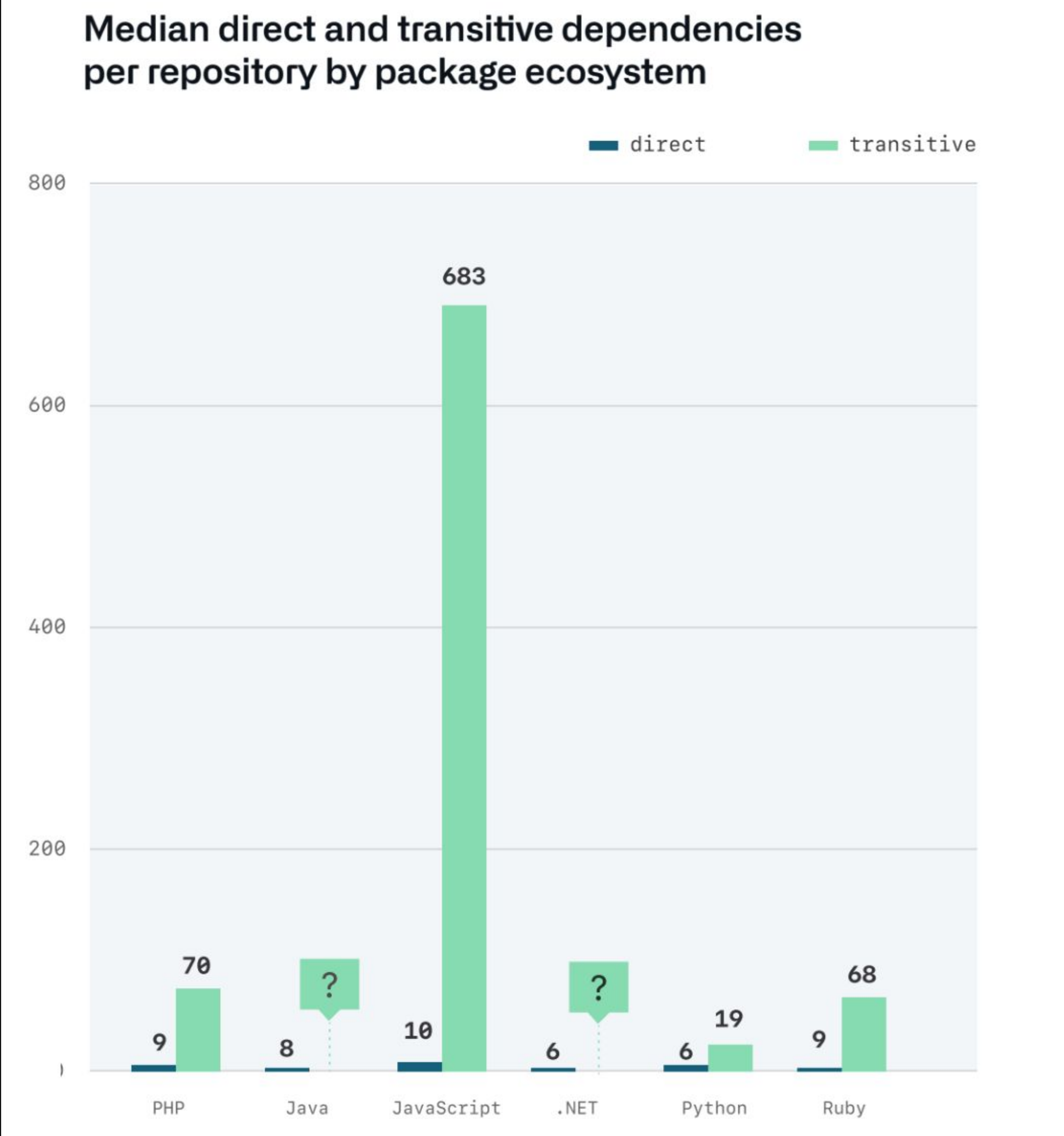
Security reviews

Known vulnerabilities

Supported versions

License information

etc.



Software dependencies are pervasive

Dependency management with GitHub

Dependency management with GitHub

Know your environment

Dependency graph

Understand your project’s dependencies

Manage your dependencies

Dependabot alerts

Be notified of a vulnerability in a dependency

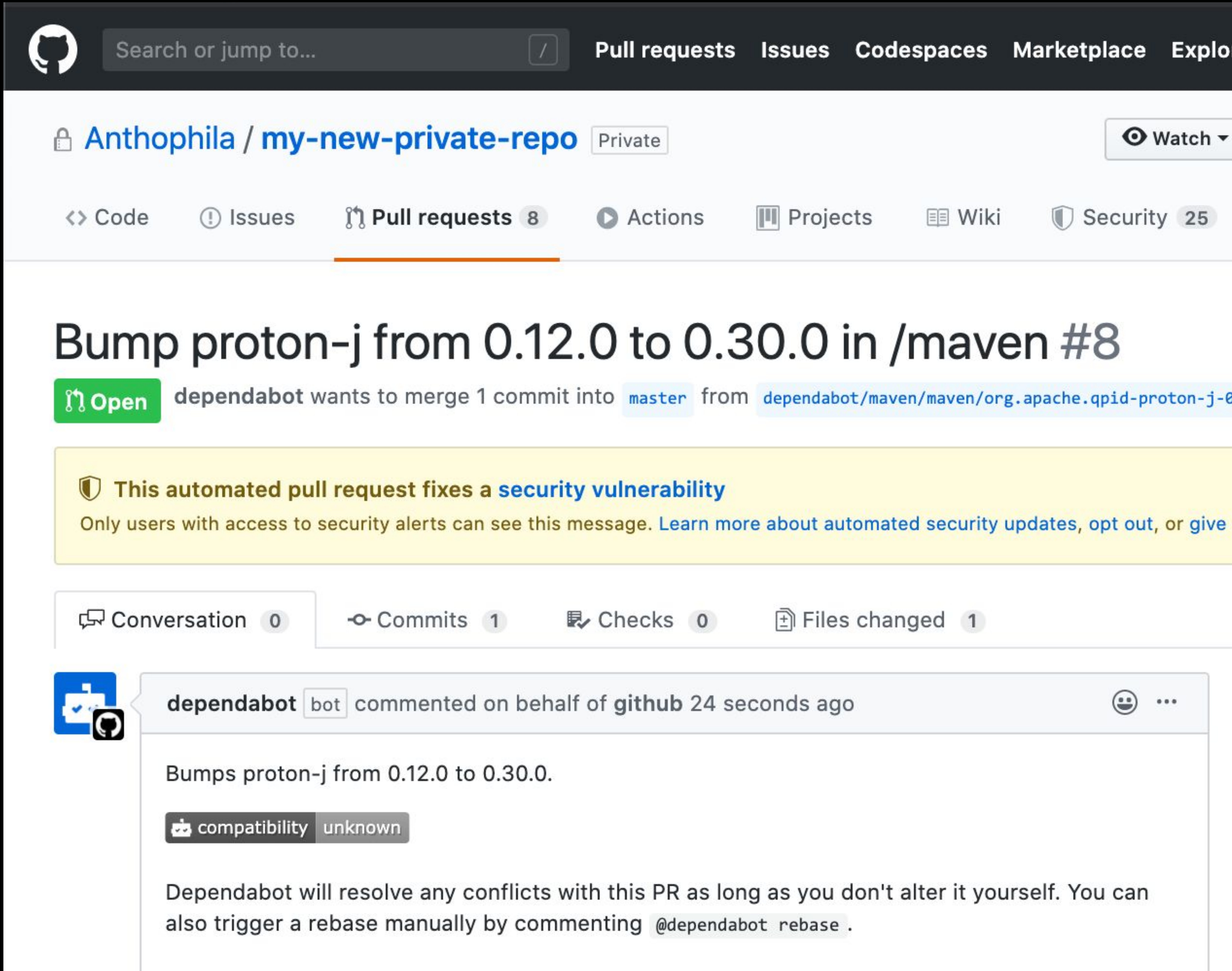
Dependabot security updates

Review a PR to update to the minimum fixed version

Dependabot version updates

Review a PR to update to the latest stable dependency version

Fixing vulnerabilities is as simple as merging a PR



Anthophila / my-new-private-repo Private

Bump proton-j from 0.12.0 to 0.30.0 in /maven #8

Open dependabot wants to merge 1 commit into `master` from `dependabot/maven/maven/org.apache.qpid-proton-j-0`

This automated pull request fixes a security vulnerability

Only users with access to security alerts can see this message. Learn more about automated security updates, opt out, or give

dependabot bot commented on behalf of github 24 seconds ago

Bumps proton-j from 0.12.0 to 0.30.0.

compatibility unknown

Dependabot will resolve any conflicts with this PR as long as you don't alter it yourself. You can also trigger a rebase manually by commenting `@dependabot rebase`.

1.4x

faster to apply a patch
when an automatic pull request is generated

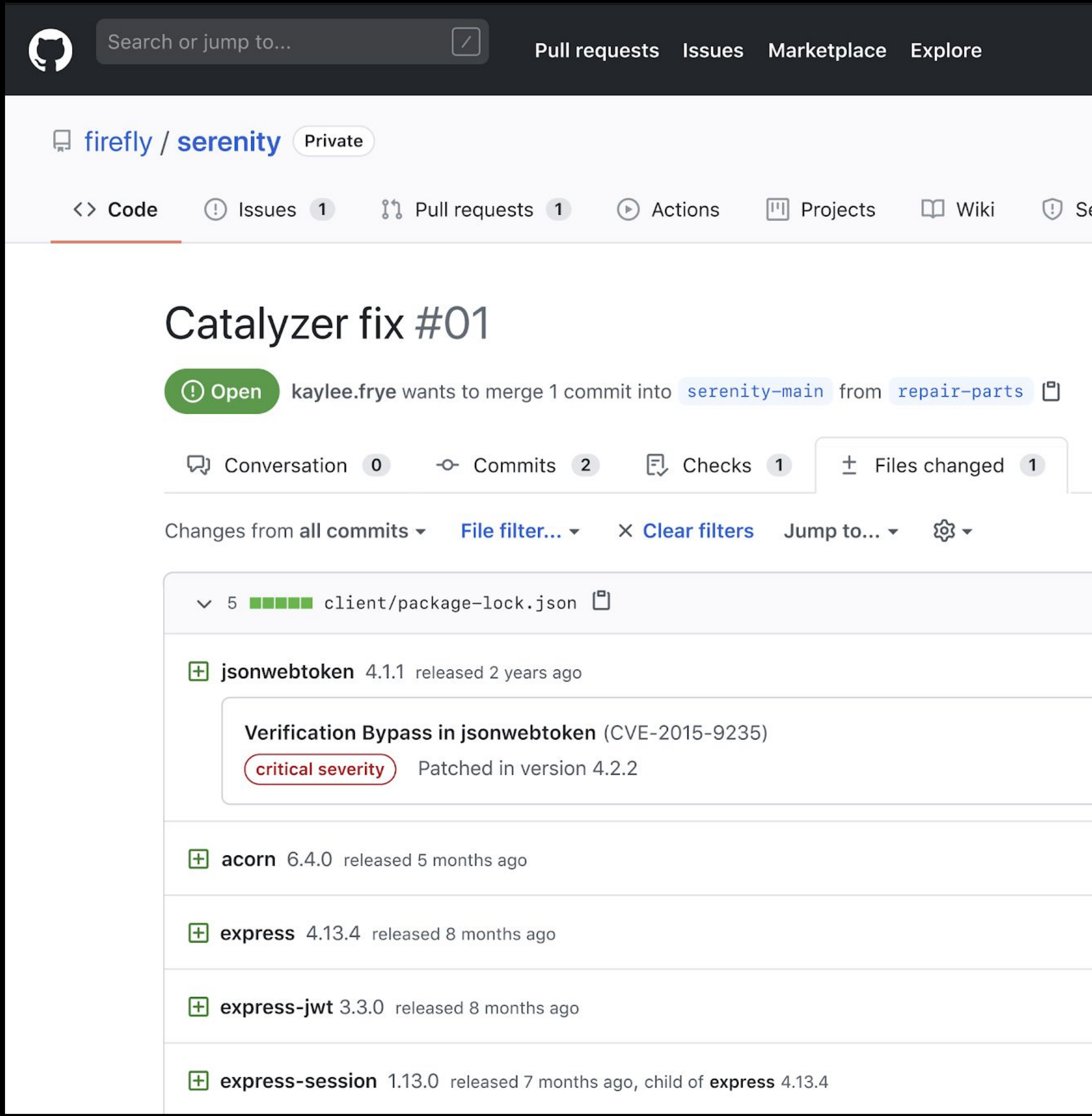
Shift left

to catch security issues earlier

New
Dependency review

Dependency review

- Understand and review dependency changes in pull requests
- Catch additions and changes of vulnerable or out of date dependencies
- Avoid “after the fact” alerts and remediation



Catalyzer fix #01

Open kaylee.frye wants to merge 1 commit into `serenity-main` from `repair-parts`

5 `client/package-lock.json`

jsonwebtoken 4.1.1 released 2 years ago

Verification Bypass in jsonwebtoken (CVE-2015-9235)
critical severity Patched in version 4.2.2

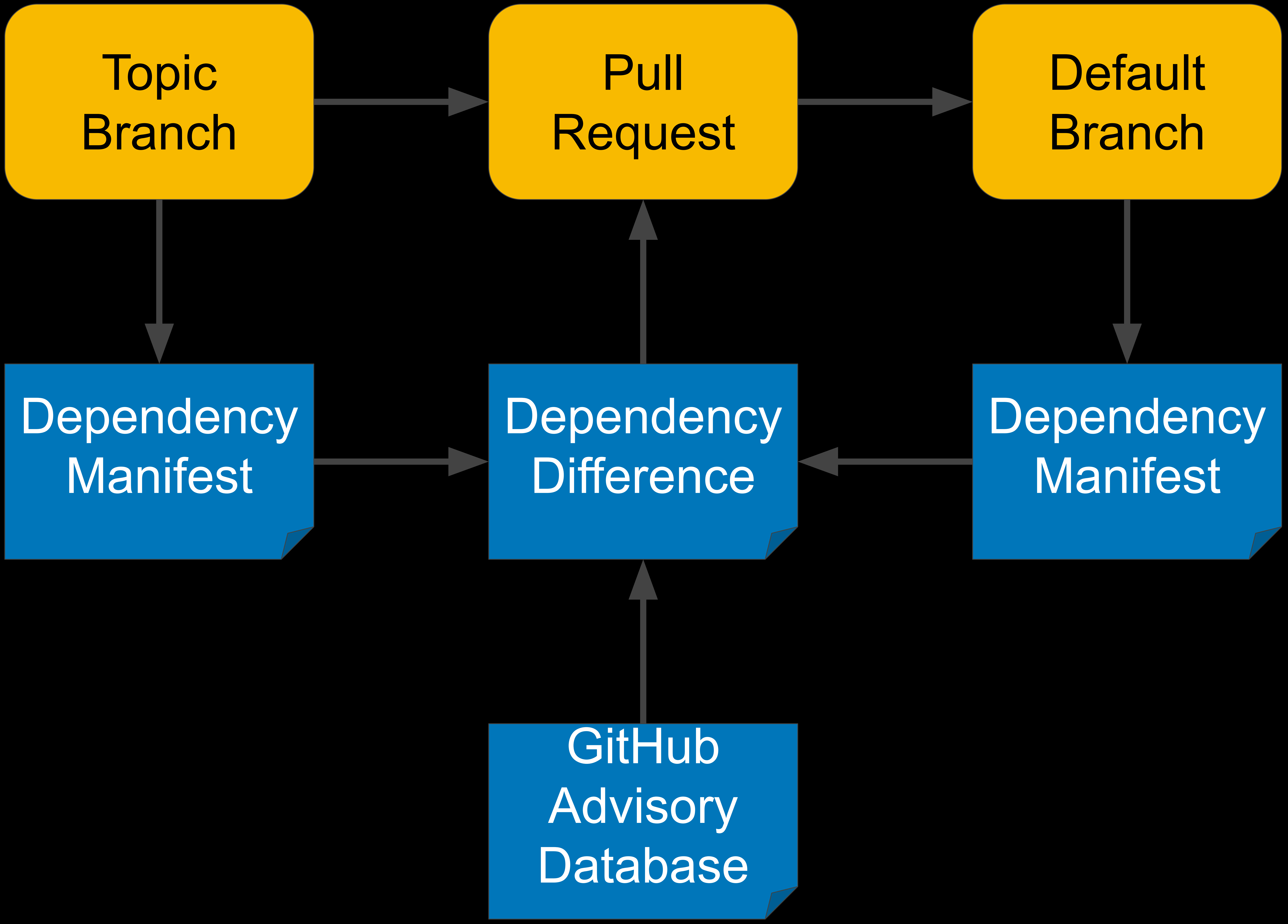
acorn 6.4.0 released 5 months ago

express 4.13.4 released 8 months ago

express-jwt 3.3.0 released 8 months ago

express-session 1.13.0 released 7 months ago, child of express 4.13.4

Demo


Topic Branch
Pull Request
Default Branch
Dependency Manifest
Dependency Difference
Dependency Manifest
GitHub Advisory Database

Dependabot alerts

- Notifies you after you have made a change to a manifest file
- Also notifies you of new vulnerabilities in existing dependencies

Dependency review

- Lets you “shift left” and catch vulnerable dependencies before they are introduced
- Provides information on license, dependents, and age of dependencies

… you still need both!

Other ways to shift security left with GitHub

Code scanning

Find vulnerabilities in custom code using static analysis

Dependabot version updates

Update dependencies to the latest stable versions

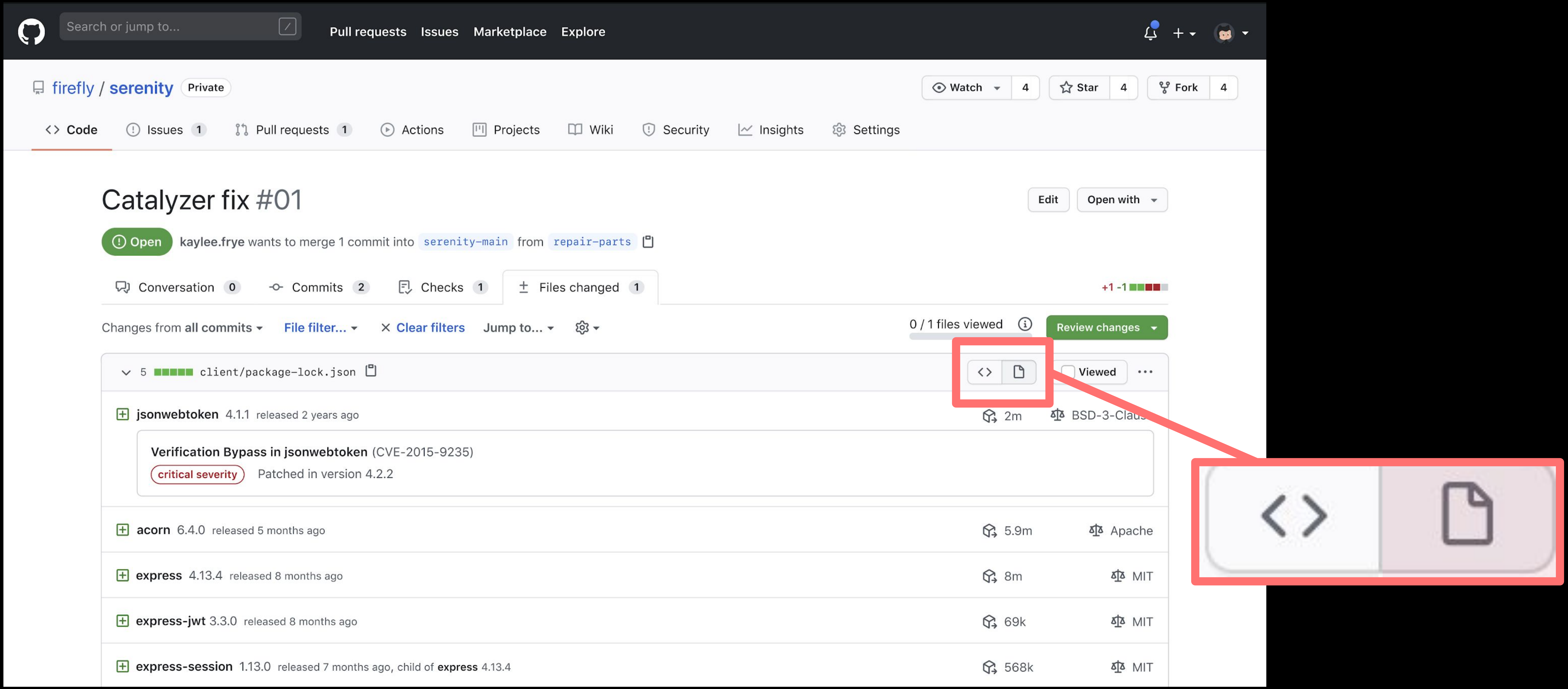
Actions

Automate all your software development workflows

Protected branches

Enforce restrictions on how code branches are merged

Now available...



Search or jump to... /

Pull requests Issues Marketplace Explore

firefly / serenity Private

Watch 4 Star 4 Fork 4

Code | Issues 1 | Pull requests 1 | Actions | Projects | Wiki | Security | Insights | Settings

Catalyzer fix #01

Edit | Open with

Open kaylee.frye wants to merge 1 commit into `serenity-main` from `repair-parts`

Conversation 0 | Commits 2 | Checks 1 | Files changed 1

+1 -1

Changes from all commits | File filter... | ✕ Clear filters | Jump to...

0 / 1 files viewed

Review changes

5 client/package-lock.json

□ Viewed

⊞ **jsonwebtoken** 4.1.1 released 2 years ago	2m	BSD-3-Claus
Verification Bypass in jsonwebtoken (CVE-2015-9235) critical severity Patched in version 4.2.2		
⊞ **acorn** 6.4.0 released 5 months ago	5.9m	Apache
⊞ **express** 4.13.4 released 8 months ago	8m	MIT
⊞ **express-jwt** 3.3.0 released 8 months ago	69k	MIT
⊞ **express-session** 1.13.0 released 7 months ago, child of **express** 4.13.4	568k	MIT

Learn more

Dependency review:
https://github.co/dependency-review

Enable supply chain security features:

- https://github.co/dependency-graph
- https://github.co/security-alerts
- https://github.co/security-updates