

Finch



Finch: Streamlining Container Development with an Open Source stack

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Container Development

- Most container development targets Linux, while most of development environments are macOS or Windows.
- Virtualization is the popular way to run Linux env in macOS or Windows
- Legacy approach: users directly use virtualization tools to manage the Linux VM by themselves
- E2E solutions: the solution manages virtualization layer for users



What is Finch?

- an E2E open-source solution for container development
- a new command line client for building, running, and publishing Linux containers

[AWS Open Source Blog](#)

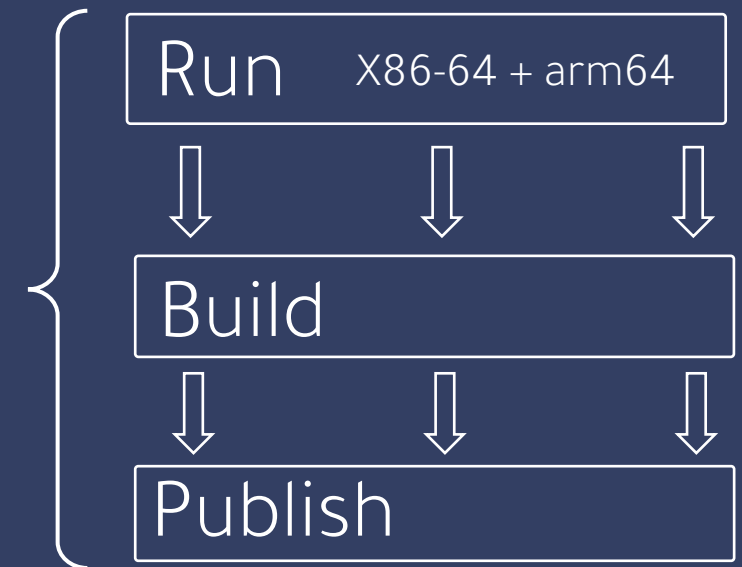
Introducing Finch: An Open Source Client for Container Development

by Phil Estes and Chris Short | on 22 NOV 2022 | in [Announcements](#), [Containers](#), [Open Source](#) | [Permalink](#) | [Comments](#) | [Share](#)

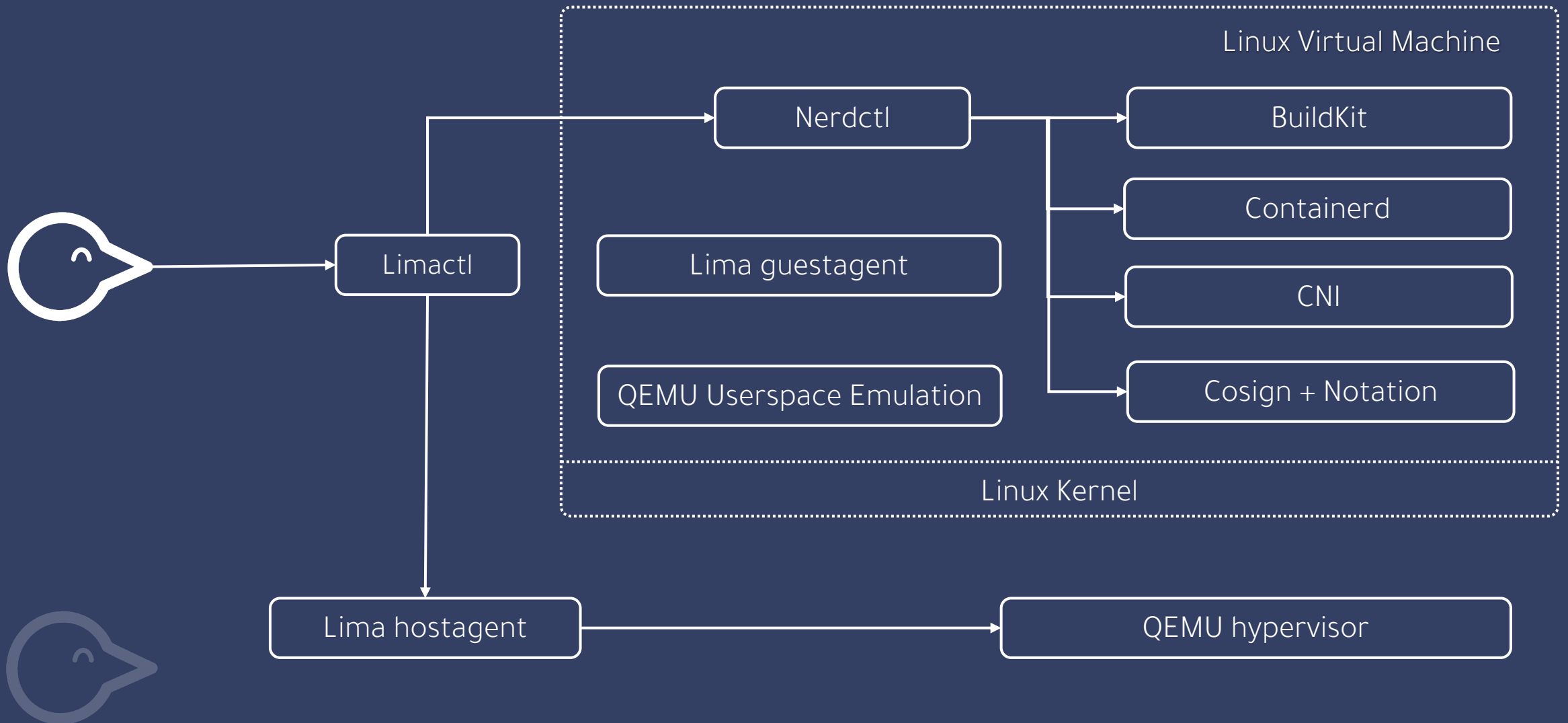
Today we are happy to announce a new open source project, [Finch](#). Finch is a new command line client for building, running, and publishing Linux containers. It provides for simple installation of a native macOS client, along with a curated set of de facto standard open source components including [Lima](#), [nerdctl](#), [containerd](#), and [BuildKit](#). With Finch, you can create and run containers locally, and build and publish Open Container Initiative (OCI) container images.

At launch, Finch is a new project in its early days with basic functionality, initially only supporting macOS (on all Mac CPU architectures). Rather than iterating in private and releasing a finished project, we feel open source is most successful when diverse voices come to the party. We have plans for features and innovations, but opening the project this early will lead to a more robust and useful solution for all. We are happy to address issues, and are ready to accept pull requests. We're also hopeful that with our adoption of these open source components from which Finch is composed, we'll increase focus and attention on these components, and add more hands to the important work of open source maintenance and stewardship. In particular, Justin Cormack, CTO of Docker shared that "we're bullish about Finch's adoption of containerd and BuildKit, and we look forward to AWS working with us on upstream contributions."

We are excited to build Finch in the open with interested collaborators. We want to expand Finch from its current basic starting point to cover Windows and Linux platforms and additional functionality that we've put on our roadmap, but would love your ideas as well. Please open issues or file pull requests and start discussing your ideas with us in the [Finch Slack channel](#). Finch is licensed under the Apache 2.0 license and anyone can freely use it.



Architecture

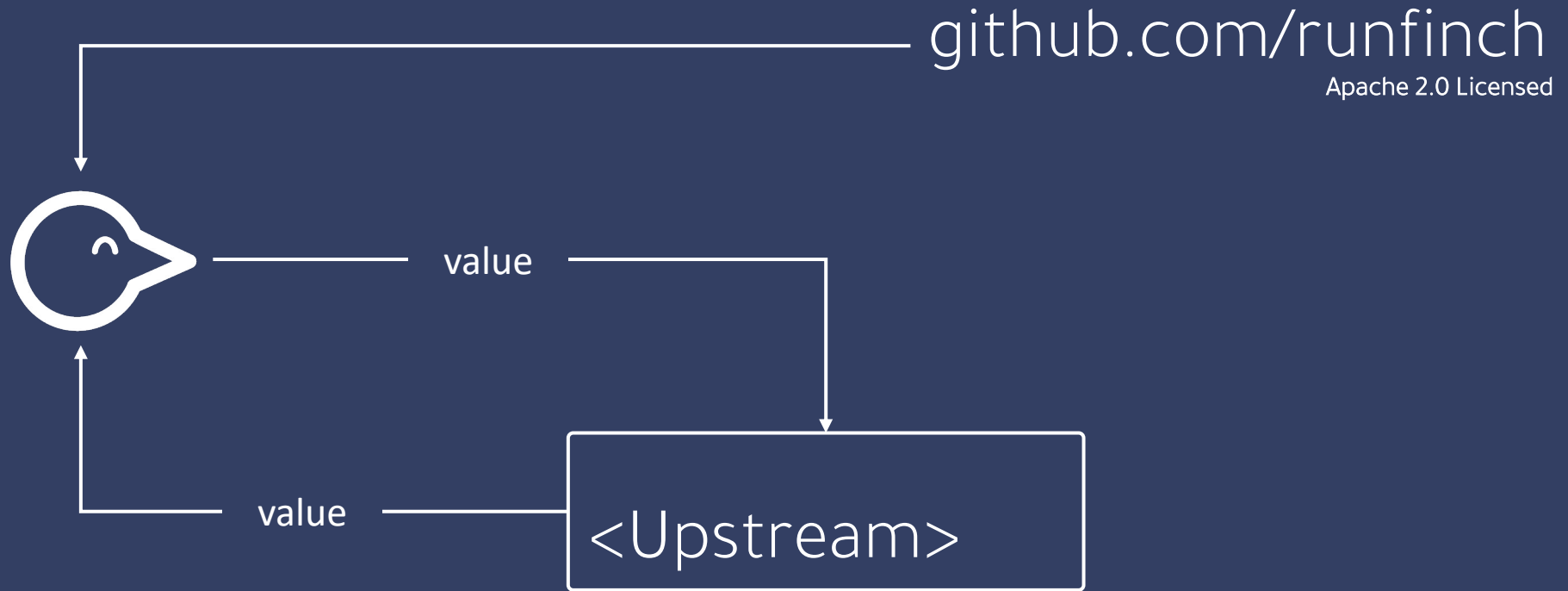


Values

- Open source & work in the open
- Wheel creation is rare
- Stick to muscle memory and standards
- Keep it small and focused, but give room to extend



Open Source



Multiple Disks in Lima

lima-vm/lima#1065

lima-vm/lima Public

Watch 70 Fork 437 Star 11k

Code Issues 177 Pull requests 27 Discussions Actions Projects Security Insights

Add disk command and allows multiple additional disks #1065

Merged jandubois merged 1 commit into lima-vm:master from sam-berning:volume on Nov 11, 2022

Conversation 59 Commits 1 Checks 12 Files changed 27 +668 -16

sam-berning commented on Sep 22, 2022

#722

After looking through the discussion on #759, I implemented a basic volume command. Volumes are stored under a `_volumes` directory under `$LIMA_HOME` and can be attached by name to an instance in its LimaYAML.

Also added a boot script that performs some setup for volumes. So far, it creates a filesystem labeled with the volume name if it's the first time the volume has been attached to an instance. In the future, we could expand it to bind-mount the volume to specific directories.

Contributor

Reviewers

- chancez
- jandubois
- AkihiroSuda

Still in progress? Learn about draft PRs

Assignees

No one assigned

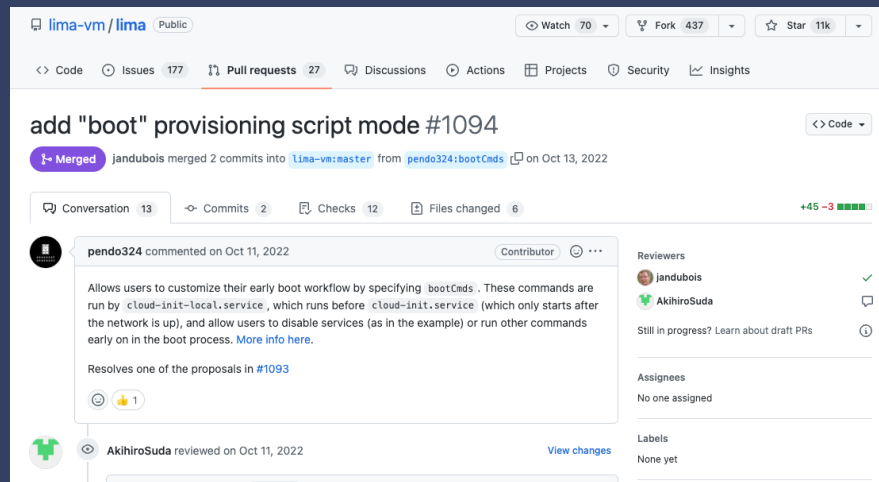
Labels

- lima#722
- Adds `disk` to lima
- Finch OS updates w/o losing data



Customizable early boot

lima-vm/lima#1094



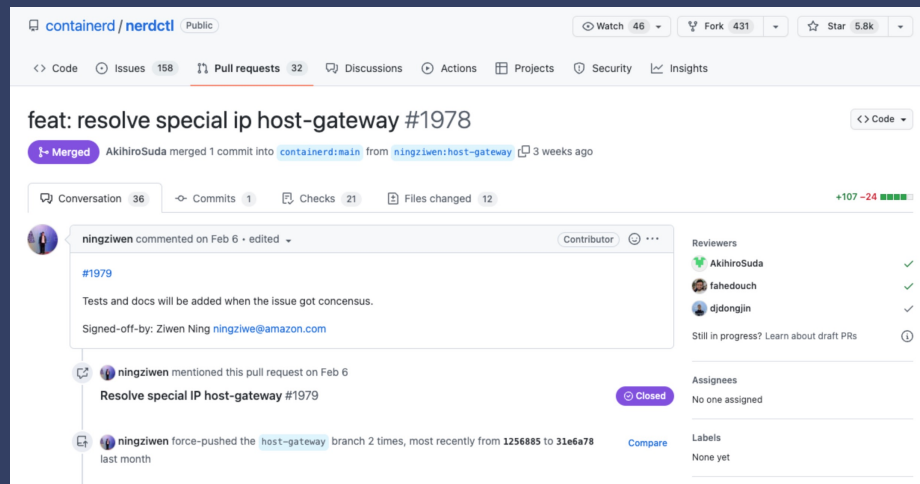
The screenshot shows a GitHub pull request titled "add 'boot' provisioning script mode #1094". The pull request is merged and was merged into the `lima-vm:master` branch from the `pendo324:bootCmds` branch on October 13, 2022. The pull request description states: "Allows users to customize their early boot workflow by specifying `bootCmds`. These commands are run by `cloud-init-local.service`, which runs before `cloud-init.service` (which only starts after the network is up), and allow users to disable services (as in the example) or run other commands early on in the boot process. [More info here.](#)" It also notes that it resolves one of the proposals in #1093. The pull request has 13 conversations, 2 commits, 12 checks, and 6 files changed. The reviewers listed are jandubois and AkihiroSuda. The assignees are none, and there are no labels.

- Adds configurability to Lima through yaml configuration
- Finch deterministic & self-contained
- Related (pending): #1105, #1123



Configurable host gateway

containerd/nerdctl#1978



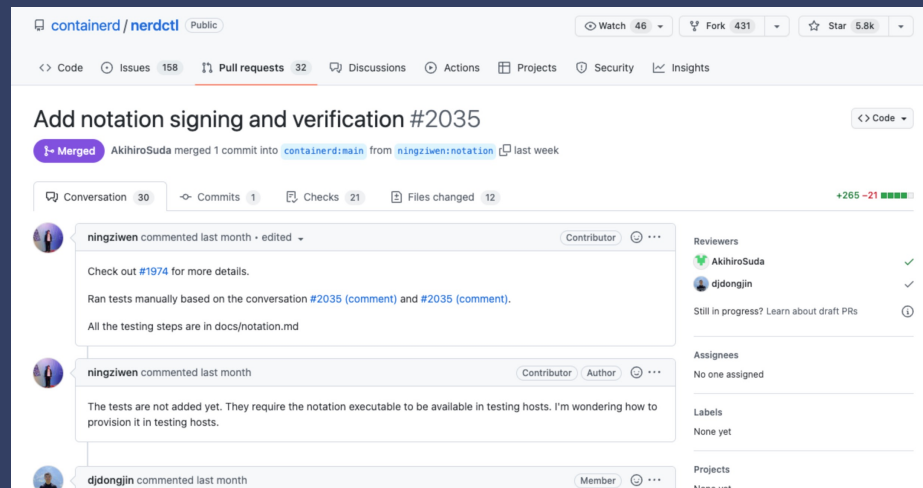
The screenshot shows a GitHub pull request for the repository `containerd/nerdctl`. The pull request title is `feat: resolve special ip host-gateway #1978`. It was merged by `AkihiroSuda` 3 weeks ago. The pull request includes a comment from `ningziwen` on Feb 6, stating that tests and docs will be added once the issue has consensus. The pull request also shows a mention of the pull request on Feb 6 and a force-push of the `host-gateway` branch by `ningziwen` last month. The pull request is currently closed.

- Pass in a host gateway or fall back to container gateway
- Adds feature parity w/ docker



Notation signing & verification

containerd/nerdctl#2035

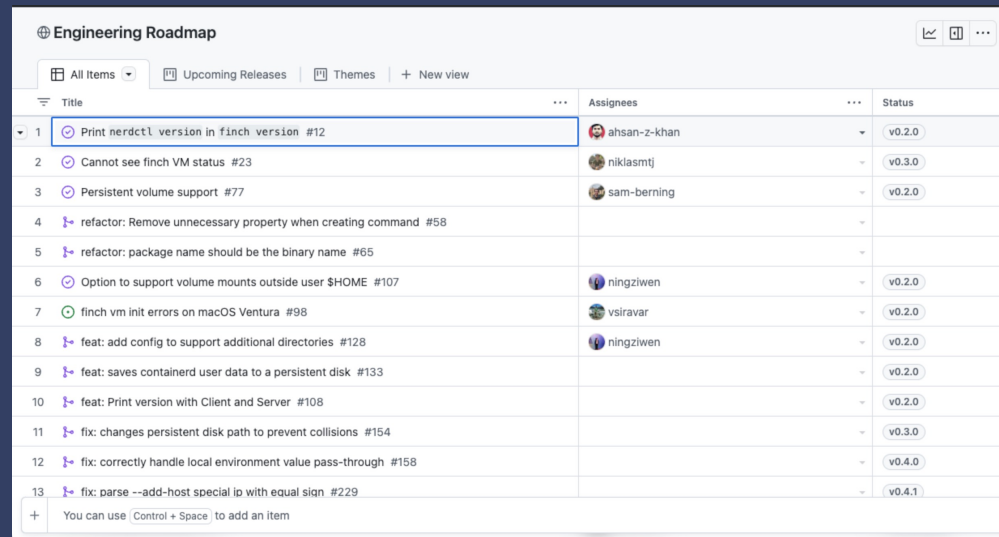


The screenshot shows a GitHub pull request interface for the repository 'containerd/nerdctl'. The title of the pull request is 'Add notation signing and verification #2035'. It is marked as 'Merged' and was merged by 'AkihiroSuda' into the 'containerd:main' branch from the 'ningziwen:notation' branch. The pull request details include a conversation with three comments from 'ningziwen' and 'djdongjin'. The right sidebar shows the review status, with 'AkihiroSuda' and 'djdongjin' as reviewers, and 'Assignees' and 'Labels' sections.

- Adds notation signing option in addition to cosign



Roadmap



The screenshot shows a table titled "Engineering Roadmap" with columns for "Title", "Assignees", and "Status". The table lists 13 items, each with a unique icon and ID number. The first item is "Print nerdctl version in finch version #12" assigned to "ahsan-z-khan" with status "v0.2.0". The second item is "Cannot see finch VM status #23" assigned to "niklasmtj" with status "v0.3.0". The third item is "Persistent volume support #77" assigned to "sam-berning" with status "v0.2.0". The fourth and fifth items are refactor tasks. The sixth item is "Option to support volume mounts outside user \$HOME #107" assigned to "ningziwen" with status "v0.2.0". The seventh item is "finch vm init errors on macOS Ventura #98" assigned to "vsiravar" with status "v0.2.0". The eighth item is a feature "add config to support additional directories #128" assigned to "ningziwen" with status "v0.2.0". The ninth item is a feature "saves containerd user data to a persistent disk #133" with status "v0.2.0". The tenth item is a feature "Print version with Client and Server #106" with status "v0.2.0". The eleventh item is a fix "changes persistent disk path to prevent collisions #154" with status "v0.3.0". The twelfth item is a fix "correctly handle local environment value pass-through #158" with status "v0.4.0". The thirteenth item is a fix "parse --add-host special ip with equal sign #229" with status "v0.4.1".

Title	Assignees	Status
1 Print nerdctl version in finch version #12	ahsan-z-khan	v0.2.0
2 Cannot see finch VM status #23	niklasmtj	v0.3.0
3 Persistent volume support #77	sam-berning	v0.2.0
4 refactor: Remove unnecessary property when creating command #58		
5 refactor: package name should be the binary name #65		
6 Option to support volume mounts outside user \$HOME #107	ningziwen	v0.2.0
7 finch vm init errors on macOS Ventura #98	vsiravar	v0.2.0
8 feat: add config to support additional directories #128	ningziwen	v0.2.0
9 feat: saves containerd user data to a persistent disk #133		v0.2.0
10 feat: Print version with Client and Server #106		v0.2.0
11 fix: changes persistent disk path to prevent collisions #154		v0.3.0
12 fix: correctly handle local environment value pass-through #158		v0.4.0
13 fix: parse --add-host special ip with equal sign #229		v0.4.1

- More platforms
- Extensions

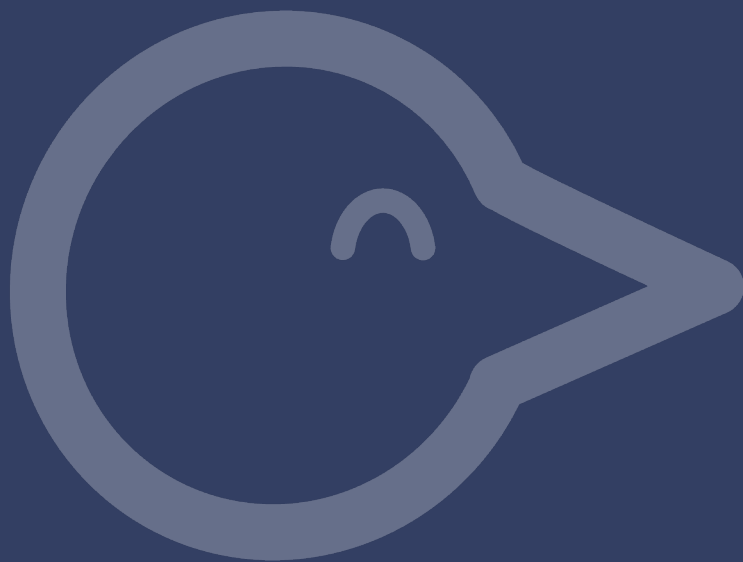
github.com/orgs/runfinch/projects/2



What's next?

- Talk to us in `#finch` on the cncf slack
- Check out Finch (`runfinch/finch`)
- Drop us an issue
- Contribute to `nerdctl`, `containerd`, `BuildKit`, `Lima`, or `Finch`





Q&A

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