

FROM OPEN SOURCE TO ENTERPRISE SCALE AND BACK

A journey with Road-Runner





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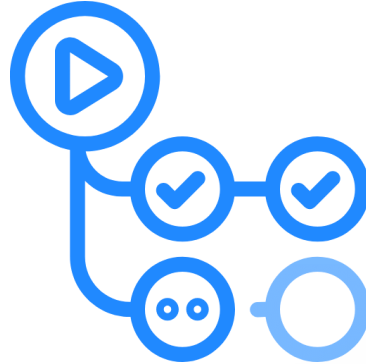
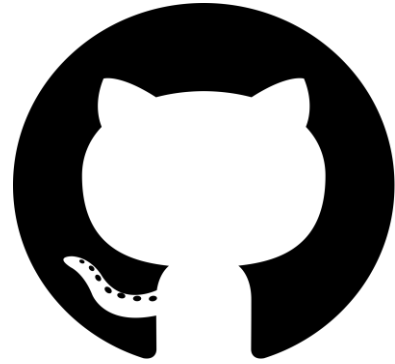
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Lessons learned from building managed shared service
on top of an open source project.

You see an opportunity.
But you don't have the budget, the team, or the
mandate.

How do you start?

Our challenge:



Teams started setting up their own runners.
Duplicated effort. No standardization. Security?

We knew we had to do something.

We had a vision.
We wrote it down.

A simple document.

Road-Runner: Managed GitHub Actions Runners

What

A common, managed CI/CD runner platform
for our GitHub Enterprise instance

Why

Less duplicate work, more standardization and
security

Let engineers focus on code, not infrastructure

How

Provide ephemeral, VM-based runners to every
repository

No config, no approval, ready to use

This became our reference point.
And our pitch deck.

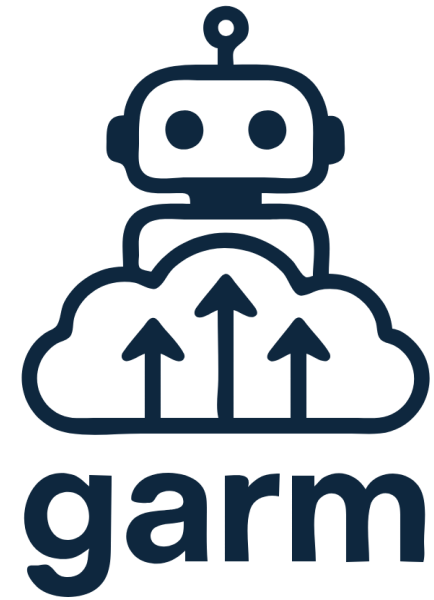
Detail the vision and get feedback.

Write down the what, the why, and the how.
Make it shareable. Get it out there.

We shared it internally.
People who cared could find us now.

Time for a proof of concept, but first:
Research.

If you have a good idea, probably someone else has
already had it too.



Plugin architecture.
Easy to extend.
Written in Go.

But don't just pick something and start building.

We reached out to the creator.

First with a short PR

feat: webhook does not return error on 'instance not found'. #28

Merged gabriel-samfira merged 1 commit into `cloudbase:main` from `mercedes-benz:no-404` on Oct 7, 2022

Conversation 8 Commits 1 Checks 0 Files changed 1



maigl commented on Oct 6, 2022 • edited

Contributor ...

This case is probably caused by a webhook event that was meant for another runner controller / manager. No need to report this as error, we can simply ignore this and avoid noise in the logs.

Michael Kuhnt michael.kuhnt@mercedes-benz.com Mercedes-Benz Tech Innovation GmbH ([ProviderInformation](#))

👍 2

Reviewers

gabriel-samfira

First with a short PR

 Merged

feat: webhook does not return error on 'instance not found'. #28

gabriel-samfira merged 1 commit into `cloudbase:main` from `mercedes-benz:no-404` 

 **gabriel-samfira** on Oct 7, 2022 • edited  Member 

TL;DR: It should be safe to ignore any `ErrNotFound` in this particular code path (webhook handling).

TS; NM: I will elaborate (bare with me, I sometimes tend to be verbose 😊).

The web hook handler is how we consume GitHub events and react to them in 3 particular ways:

- When a new job is queued (a `queued` event is sent)
- When a job is started (an `in_progress` event is sent)
- When a job is completed (a `completed` event is sent)

In the case of a `queued` event, `garm` will look at the job info and using the tags that were requested by the workflow, will attempt to find a pool where it will try to spawn a worker. `Garm` looks for a pool that matches *all* requested tags. If a pool is not found, then an `ErrNotFound` is returned.

This is not necessarily an error. It's just that we don't have a pool to handle that particular workflow, so for us, that webhook is a noop.

In the case of an `in_progress` event, `garm` will attempt to determine the worker name that is handling the job we were just notified about. When a worker name is found, `garm` will look for that particular worker and attempt to change its status from `idle` to `active`. This is important because once that happens, if we have `min_idle_runners` set on the pool, `garm` will attempt to automatically create a new worker, if one was not already created during the `queued` event (which can happen if `max_runners` is reached).

If `garm` can't find the runner in the database, it will return `ErrNotFound`. But this means that we never managed the runner we got a hook for. So this may be handled by another controller or by github itself. So it is safe to ignore.

In the case of a `completed` event, we do pretty much the same thing as in the `in_progress` event, but we mark the runner as `pending_delete`. At this point the runner was already removed from github, so all

First with a short PR



maigl on Oct 7, 2022

thx for the elaborate explanation :) ..

Does your use case align with their vision?

Before you build from scratch, look around.

Someone else probably faced this problem. Understand if your use case aligns with their vision.

GARM

GitHub Actions Runner Manager

Initial motivation:
Moving Flatcar Linux from an internal CI to Github Actions.

SOURCE FORGES



GitHub
github.com

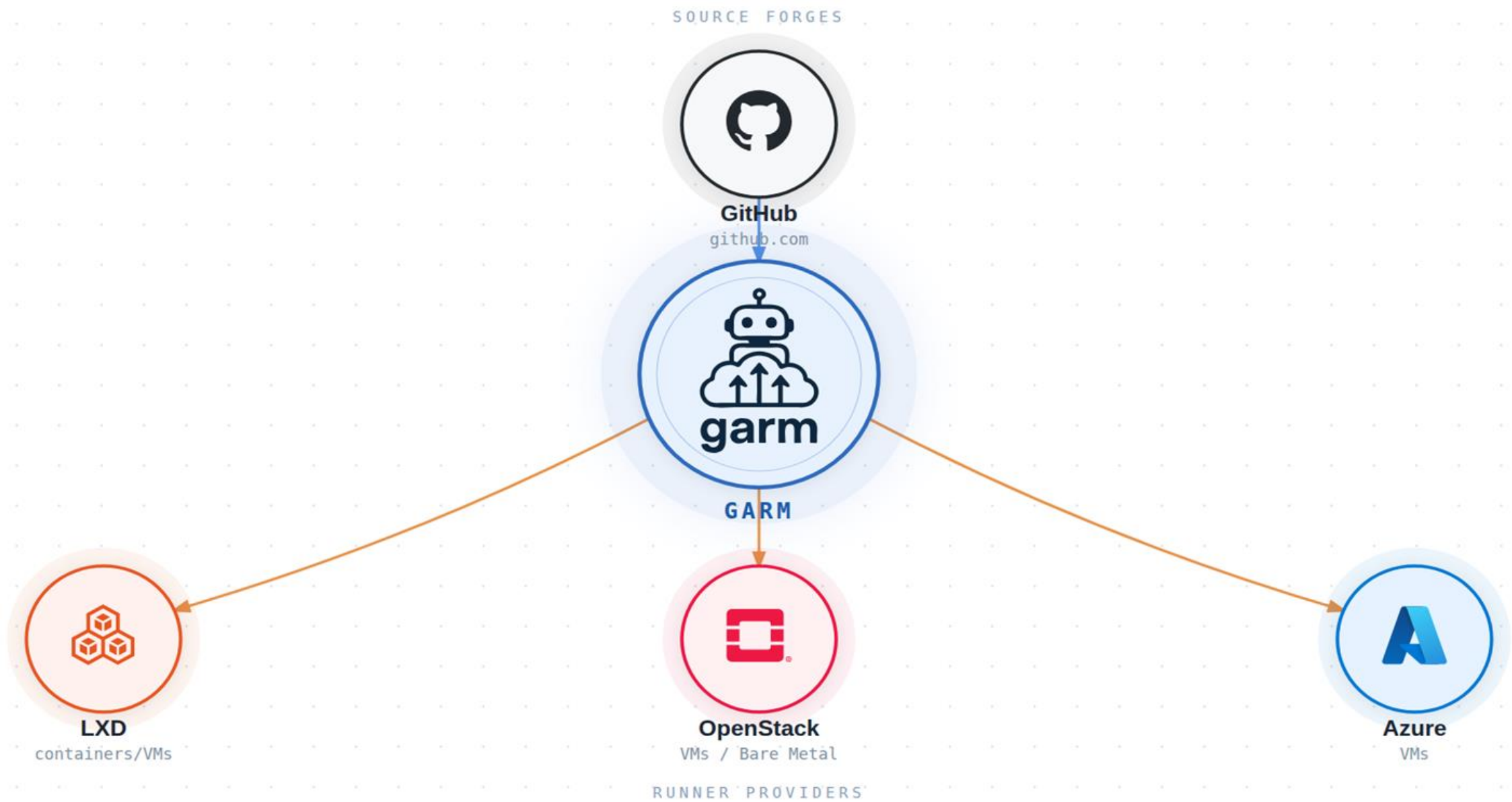


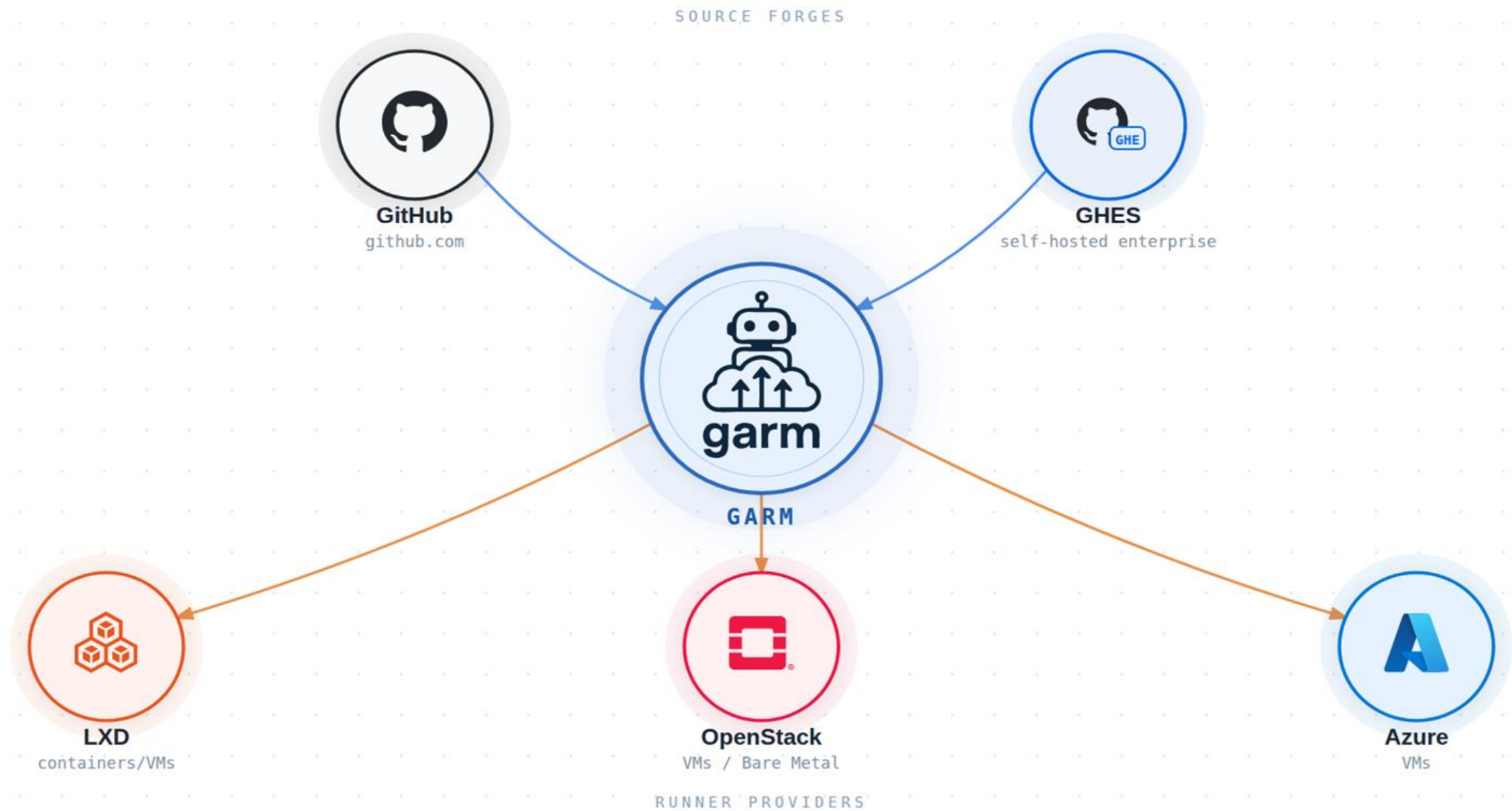
GARM



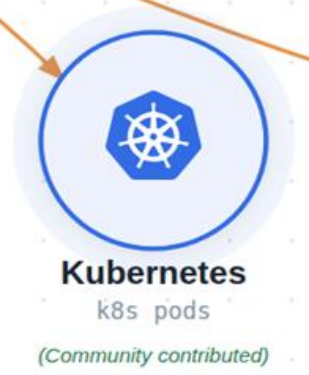
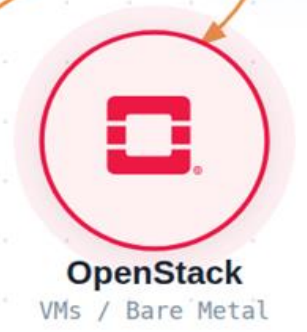
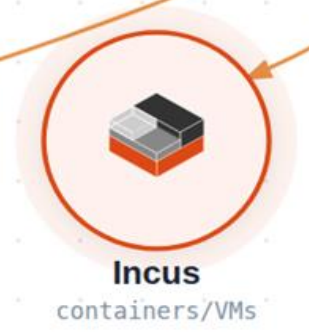
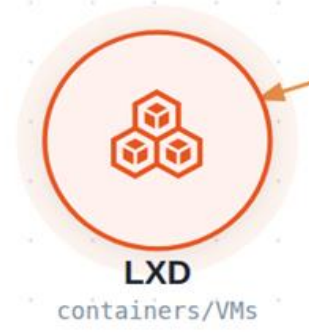
LXD
containers/VMs

RUNNER PROVIDERS

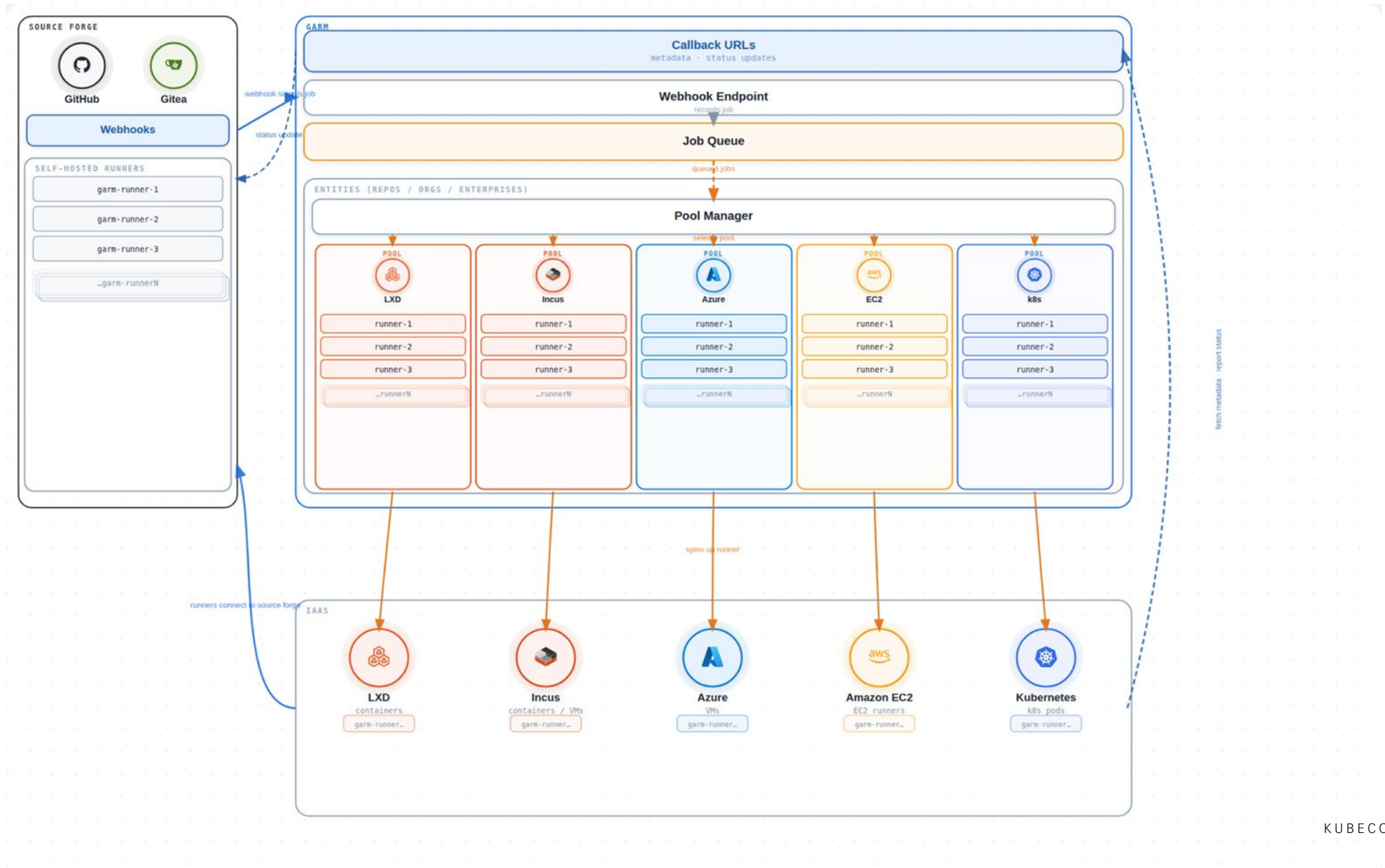


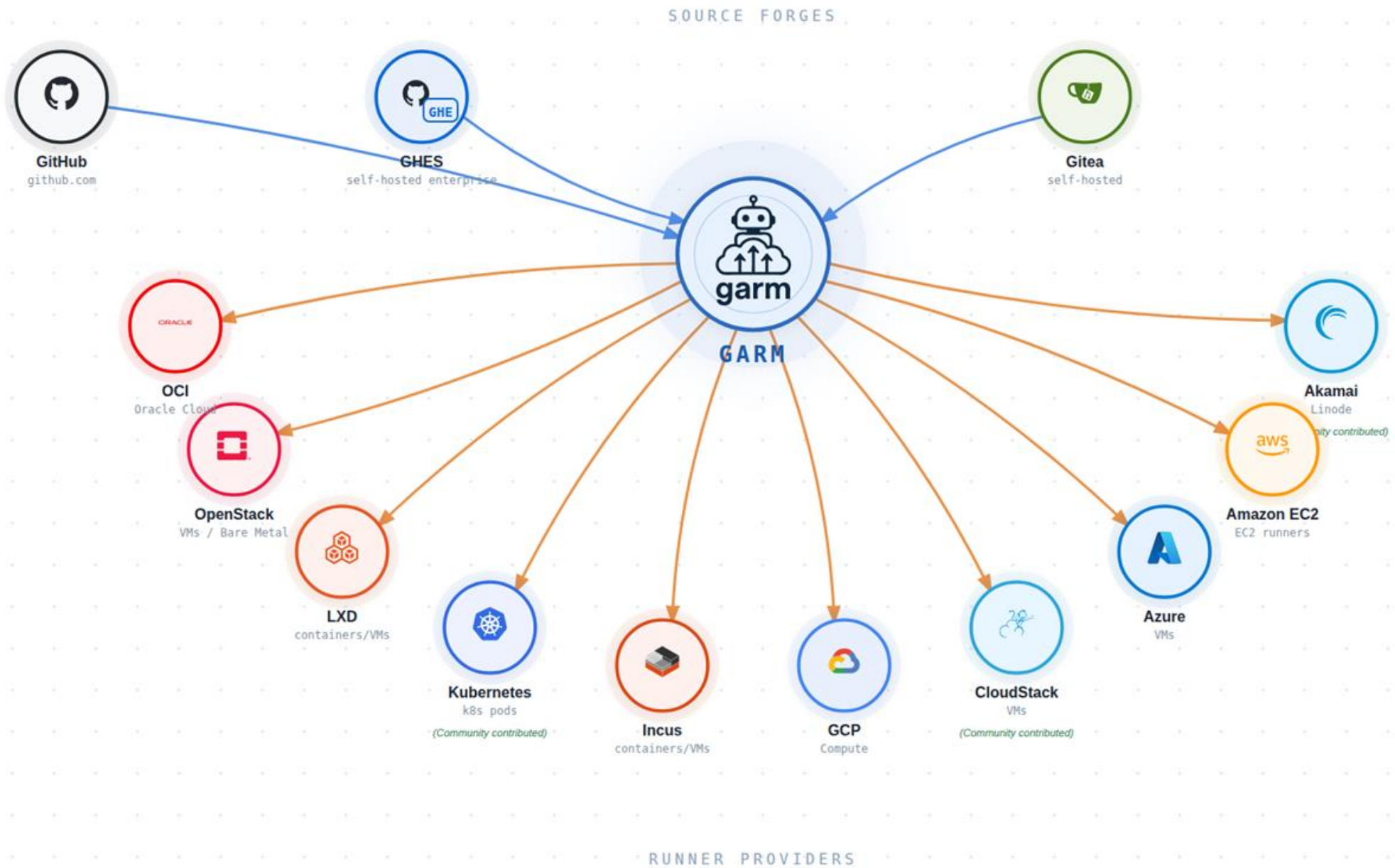


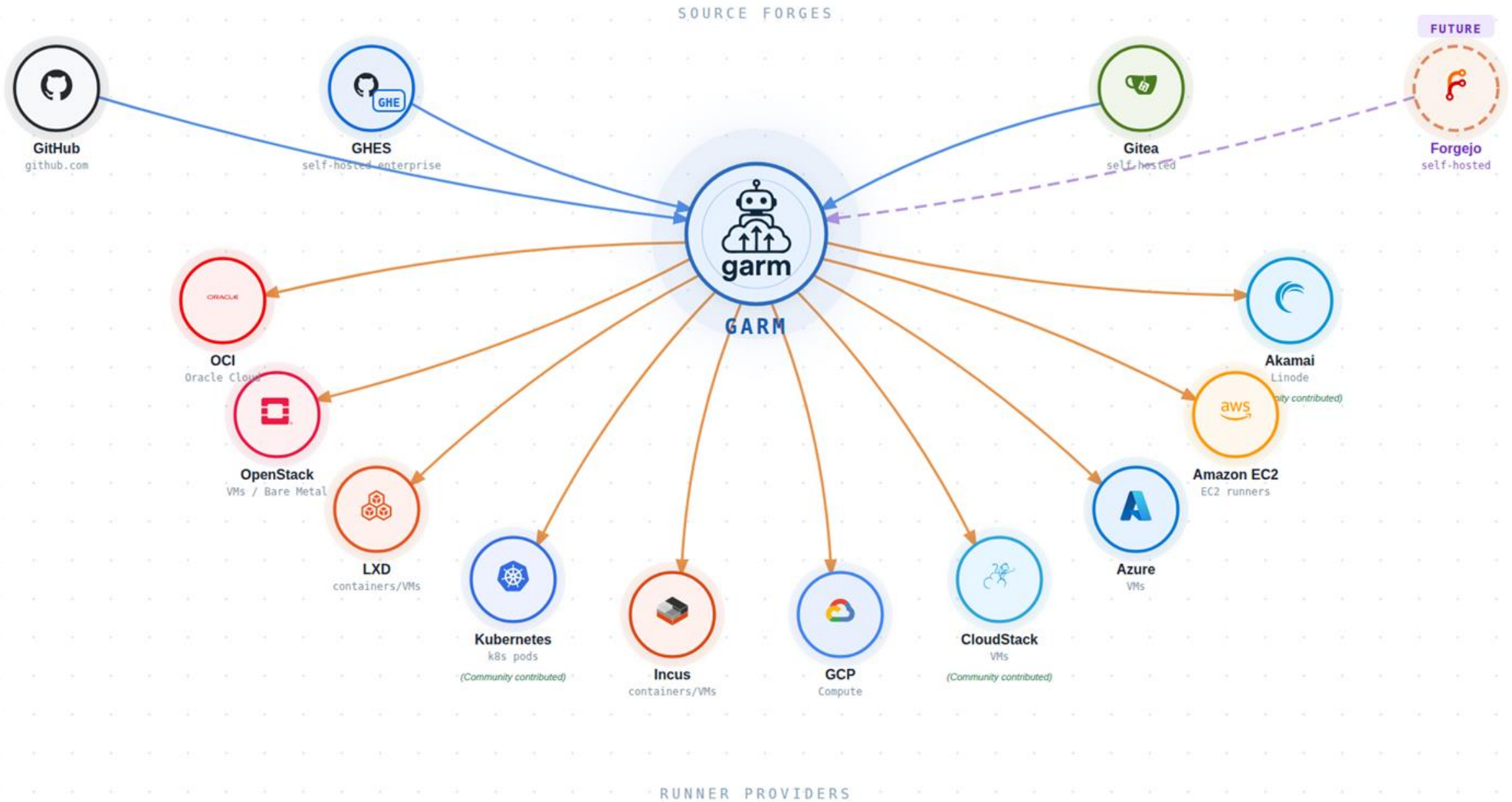
SOURCE FORGES



RUNNER PROVIDERS







Finding Garm gave us a working prototype in no time.
Now we just needed users.

This was probably the hardest part.

There's no simple plan that always works.
But there are two things that matter.

Reach out everywhere:
Slack channels. Coffee machine. Competence groups.

Remove friction.
You only have one shot.

They need an aha moment.
Not after configuration. Not after documentation.
Immediately.

`runs-on: [self-hosted]`

Runners	Status
 road-runner-os021-s-nw6BVCTqSXKO Enterprise self-hosted Linux X64 road-runner	Active
Runner group: <u>Default</u>	

No configuration changes needed.
Less friction, more adoption.

Improve over time, everyone benefits.
Fix proxy config, add remote-shell access.

Getting first users is hard.

Reach out everywhere. Remove friction, make the value immediate.

The platform was growing.
But things break sometimes.

We had our first big incident.
Platform went down. Users were blocked.

IaaS layer failed to delete our VMs.
GARM Pools full of used Runner VMs,
no free slots to spin new Runners.

We fixed it. Crisis over.
Now what?



We chose option 2: transparency.
We wrote a postmortem.

Takes thirty minutes to write.

Post-mortem

Description

Rootcause

Timeline

Mitigate

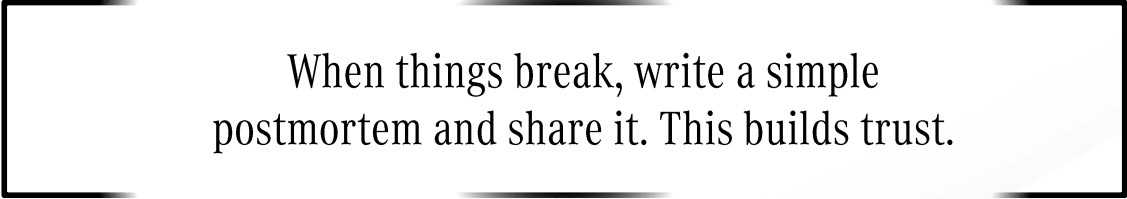
Detect

Prevent

Users thanked us.
Not for the failure. For the honesty.

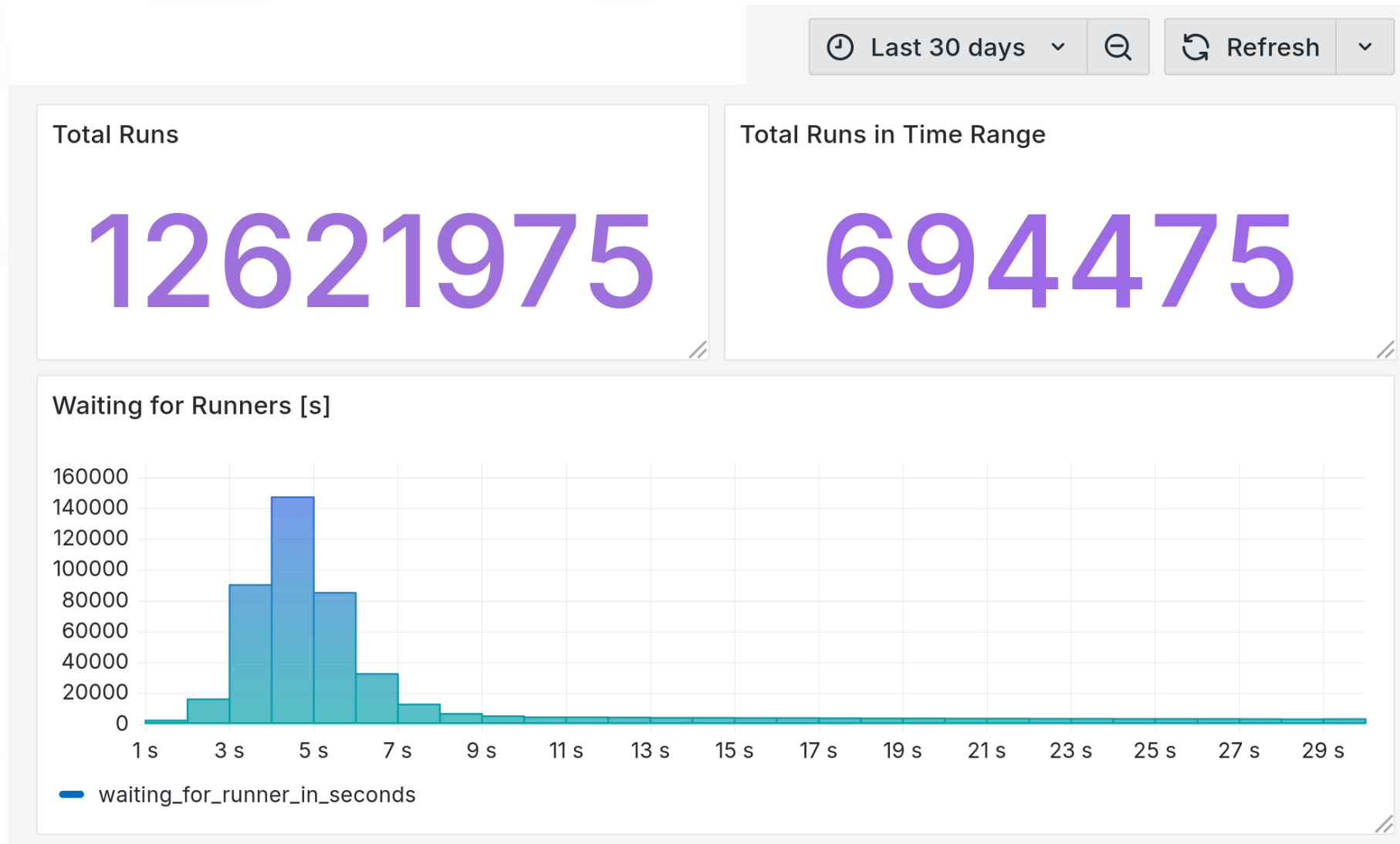
People don't expect perfection.
They expect honesty and improvement.

Learn from your failures and be transparent.



When things break, write a simple
postmortem and share it. This builds trust.

It took us ~4 months to reach 100k workflow runs.
Over 1M runs after the first year.



None of this would exist without open source.

That's how small teams can build big things.

Try to give back to open source.

When the community becomes part of your team,
it's a two-way street.

It doesn't have to be massive.

Bug fixes. Insights. Tools.

We built a Kubernetes operator for GARM
and open sourced it.

These are some of the important lessons we learned.
Maybe they can help you too.

Demo

Resources to get you started with GARM.

<https://github.com/cloudbase/garm>

<https://github.com/mercedes-benz/garm-operator>

<https://github.com/actions/runner-images>

Thank you.

Mercedes-Benz Tech Innovation

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More

Data.

The anti-pattern:
Impressive dashboards. Colorful graphs.

But when someone asked "Are users happy?"
we couldn't answer.

Who needs to make decisions based on our data?
What questions do they need answered?

Three audiences.

Management:
"Is this gaining traction? Should we invest more?"

Users:
"How long do I have to wait for my runner?"

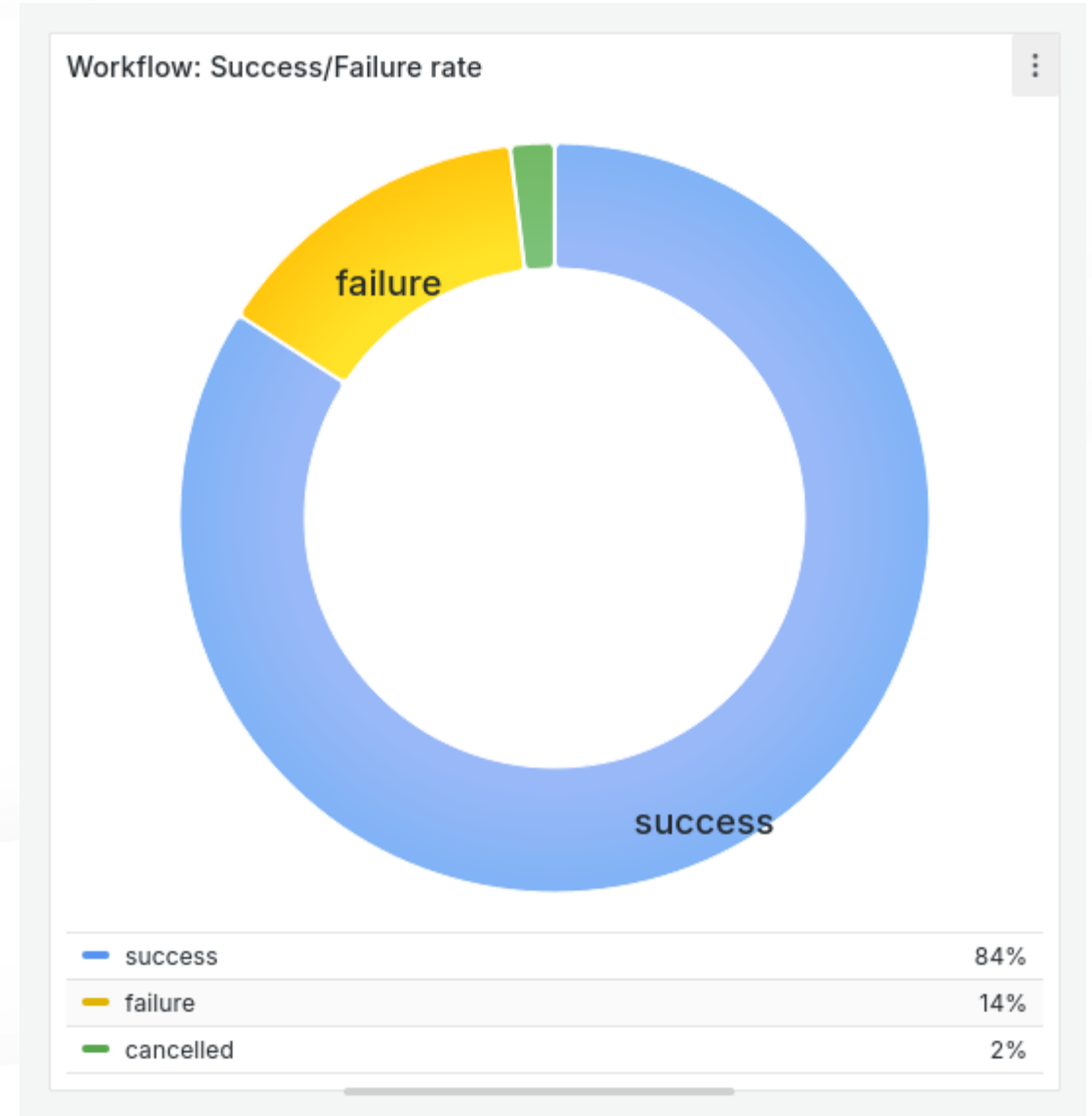
Platform team:
"Is the system healthy? Are we wasting resources?"

Every metric had a purpose:
Help someone make a decision.

Let stakeholder questions drive your metrics.

Start with: Who makes decisions? What do they need to know? Then design your metrics.

Meaning might change over time.



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