

Desafios em fazer deploy no mundo todo para todo mundo

Lubien



Fly.io

Lubien



- Dev Fullstack / Plataforma
- Anteriormente Time Full Stack
- Atualmente no Time de Volumes
- Alquimista de plantão
- Aprendendo Golang



Fly.io



Fly Machines API ^{1.0}

[Base URL: api.machines.dev/v1]

[doc.json](#)

Apache 2.0

<https://fly.io/docs/machines/working-with-machines/>

Schemes

HTTPS

Apps

GET /apps

POST /apps

GET /apps/{app_name}

DELETE /apps/{app_name}

superfly/flyctl

Command line tools for fly.io services



147

Contributors

5

Used by

1k

Stars

204

Forks

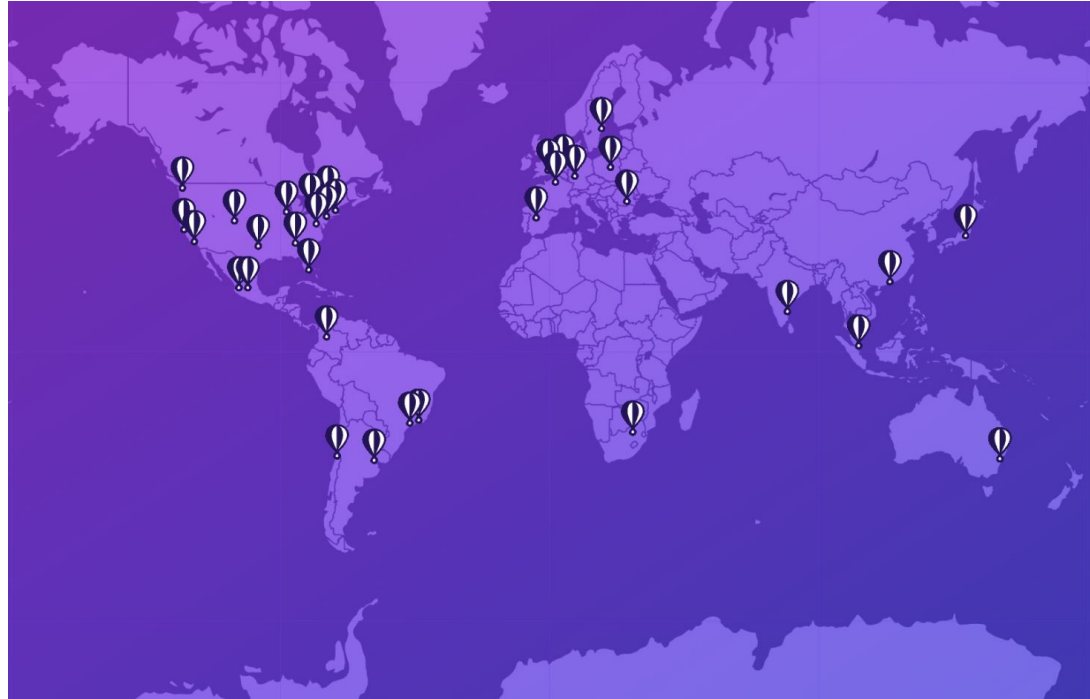


Os dois principais produtos da Fly.io



O que acontece
quando escalo
meu app?

```
$ fly scale count 3 \  
  --region gru,gig,sjc
```



Eu quero minha app nesta cidade

No seu computador

- Verificar permissões do token de deploy
- Validar configuração
- Solicitar o builder remoto para imagens
- Enviar o código para o builder
- Gerar imagem OCI para deploy
- Solicitar uma máquina com esta imagem
- Aguardar a release

No nosso lado

- Criar o builder remoto para imagens
- Receber o código para o builder
- Enviar a imagem pro nosso registro
- Detectar um host com capacidade
- Solicitar ao host a execução
- Alocar espaço nos discos
- Criar container com imagem
- Criar rede privada
- Monitorar release
- Ativar o proxy



fly launch: o quão difícil é fazer um deploy simplesmente funcionar?

- Quanto menos decisões você tiver que fazer, maior a chance de você finalizar seu deploy.
- Os times de frameworks preparam nossa CLI para saber o que você precisa antes de você precisar.



Phoenix

Remix



docker



GO



Rust

django



Laravel

NEXT.js




Fly.io

Como buildar docker sem docker?

- Remote builders por padrão, localmente se desejado
- App temporária
- CPU compartilhada com 4 núcleos
- 4GB de RAM
- Grátis
- Deletado se não usado por um tempo

superfly/rchab

Fly.io Remote Builder (Remote Controlled Hot Air Balloon)




Machine
created

6
Contributors

0
Issues

34
Stars

4
Forks



ID
32874551a30068

Name
fragrant-pond-6827

Image
flyio/rchab:sha-a4467b8

Region
gru

IP Address
fdaa:0:5463:a7b:103:cac5:387b:2

Size/CPU
shared-cpu-4x

Created
2023-11-09T17:50:35

Last Updated
2023-11-09T17:50:38

**Fly.io**

Onde ficam minhas imagens?

- Imagens compiladas são enviadas pro registry
- Atualmente em 3 localidades: EUA, Austrália e Cingapura
- Quanto mais longe da sua máquina, maior a latência de download

Preview: a more reliable global registry

● Fresh Produce

they/them

tvdfly

Jun 14



Every Fly deployment interacts with `registry.fly.io`. That's where we store the docker image that gets transmogrified into a running firecracker VM. `fly deploy` will push an image to `registry.fly.io` and then `flyd` or `nomad` will pull that image when creating or updating an instance.

The registry stores images in the iad (Ashburn, Virginia USA) region. `fly deploy` can struggle to push the image to the registry when run far away from Virginia USA, like say from Sydney. That's because pushing gigabytes, or even lots of megabytes, of docker image content from Sydney to Virginia is... difficult. Packets get lost, timeouts occur, retries are needed all resulting in slow or even failed deployments.

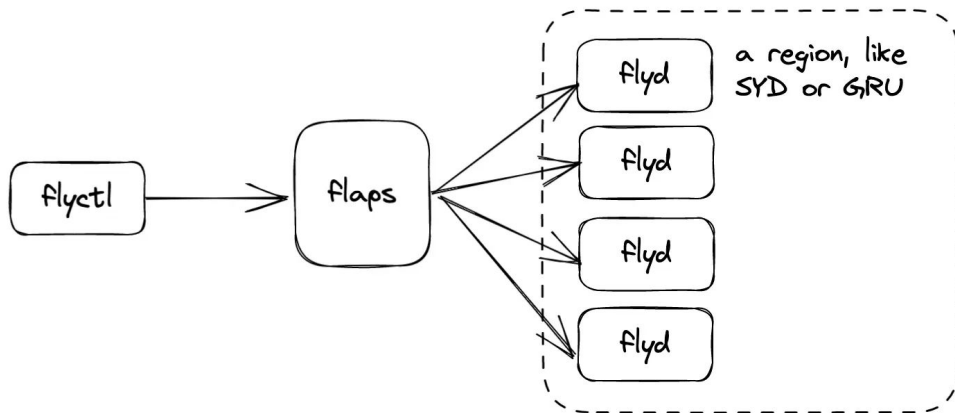
We're changing that today! We're bringing the registry storage closer to you using our global network. Deploying from Sydney? We'll store the docker image in Sydney. Deploy from Singapore and we'll store the image in Singapore. Virginia => Virginia. This makes it more reliable and faster to deploy your applications.



Fly.io

Quem hospeda de verdade minha app?

- Flaps: nossa API REST
- Flyd: nosso orquestrador
- <https://api.machines.dev>



Capacidade

- Onde minha máquina vai ficar tem CPU e memórias necessárias?
- E se eu quiser escalar esses valores, terá o suficiente?
- Flaps trata isso



Onde fica a fonte da verdade?

Nível global

- Postgres com read-replicas
 - Informações básicas de usuários
 - Organizações
 - Pagamentos
 - Dados sobre hosts ativos
- TimescaleDB para dados de utilização
 - Quantas horas de CPU usaram?
 - Quantos GB em volumes usaram?
 - Quantos GB de banda usaram?
- Corrosion
 - Dados compartilhados entre hosts

Nível de host

- SQLite para máquinas
- SQLite para volumes
- Dados sobre capacidade, LVM, disco etc
- Corrosion
 - Dados compartilhados entre hosts

Corrosion

- SQLite distribuído
- Essencialmente cada host faz upsert de seus dados e o corrosion concilia
- CRDT com automerge

superfly/corrosion

Gossip-based service discovery (and more) for large distributed systems.



2

Contributors

5

Issues

481

Stars

7

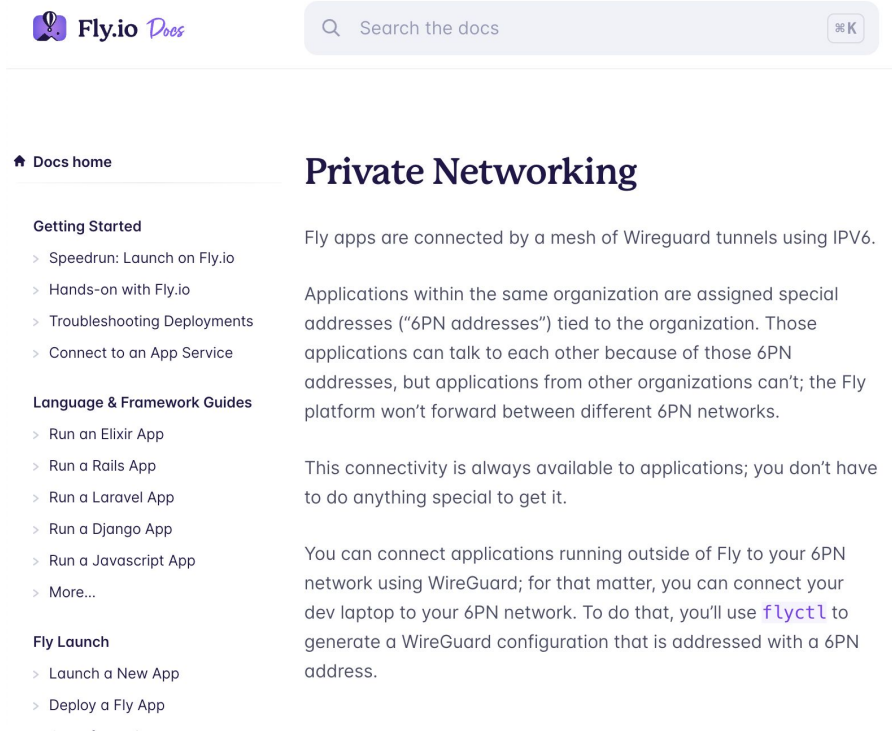
Forks



Fly.io

Como garantir segurança da sua rede privada?

- GET seu-app.internal
- GET gru.seu-app.internal
- GET web.seu-app.internal
- GET ID.vm.seu-app.internal
- Acesso externo via proxy



The screenshot shows the Fly.io documentation website. At the top, there's a navigation bar with the Fly.io logo and a search bar. Below the navigation bar, there's a sidebar with a 'Docs home' link and a list of categories: 'Getting Started', 'Language & Framework Guides', and 'Fly Launch'. The main content area is titled 'Private Networking' and contains two paragraphs of text. The first paragraph explains that Fly apps are connected by a mesh of Wireguard tunnels using IPV6. The second paragraph explains that applications within the same organization are assigned special addresses ('6PN addresses') tied to the organization. The third paragraph explains that this connectivity is always available to applications; you don't have to do anything special to get it. The fourth paragraph explains that you can connect applications running outside of Fly to your 6PN network using WireGuard; for that matter, you can connect your dev laptop to your 6PN network. To do that, you'll use `flyctl` to generate a WireGuard configuration that is addressed with a 6PN address.

Fly.io

Search the docs

Private Networking

Fly apps are connected by a mesh of Wireguard tunnels using IPV6.

Applications within the same organization are assigned special addresses ("6PN addresses") tied to the organization. Those applications can talk to each other because of those 6PN addresses, but applications from other organizations can't; the Fly platform won't forward between different 6PN networks.

This connectivity is always available to applications; you don't have to do anything special to get it.

You can connect applications running outside of Fly to your 6PN network using WireGuard; for that matter, you can connect your dev laptop to your 6PN network. To do that, you'll use `flyctl` to generate a WireGuard configuration that is addressed with a 6PN address.

Getting Started

- › Speedrun: Launch on Fly.io
- › Hands-on with Fly.io
- › Troubleshooting Deployments
- › Connect to an App Service

Language & Framework Guides

- › Run an Elixir App
- › Run a Rails App
- › Run a Laravel App
- › Run a Django App
- › Run a Javascript App
- › More...

Fly Launch

- › Launch a New App
- › Deploy a Fly App

E se eu precisar de dados persistentes?

- NVMe SSDs
- Volumes são ligados a hosts
- Internamente usamos LVM

Add volume storage

Fly Volumes are local persistent storage for [Fly Machines](#). Learn [how Fly Volumes work](#).

Launch a new app with a Fly Volume

1. Add a `[mounts]` section in the app's `fly.toml`, where `source` is the volume name and `destination` is the directory where the volume should be mounted on the Machine file system. For example:

```
[mounts]
  source="myapp_data"
  destination="/data"
```

2. Run `fly status` to check the `regions` of the Machines and then create the volume in the same regions as your app's Machines. For example:

```
$ fly volumes create <volume name> -r <region code>
```

E se eu precisar de dados persistentes?

Upload de arquivos?

- Volumes **não são sincronizados** por padrão
- Se um upload for feito em uma Máquina A ele fica **disponível apenas nesta máquina**
- Necessidade de **estratégias para distribuir o conteúdo**
- **Limite** de upload pelo tamanho do volume
- Alternativa: Object Storage

Fly Postgres

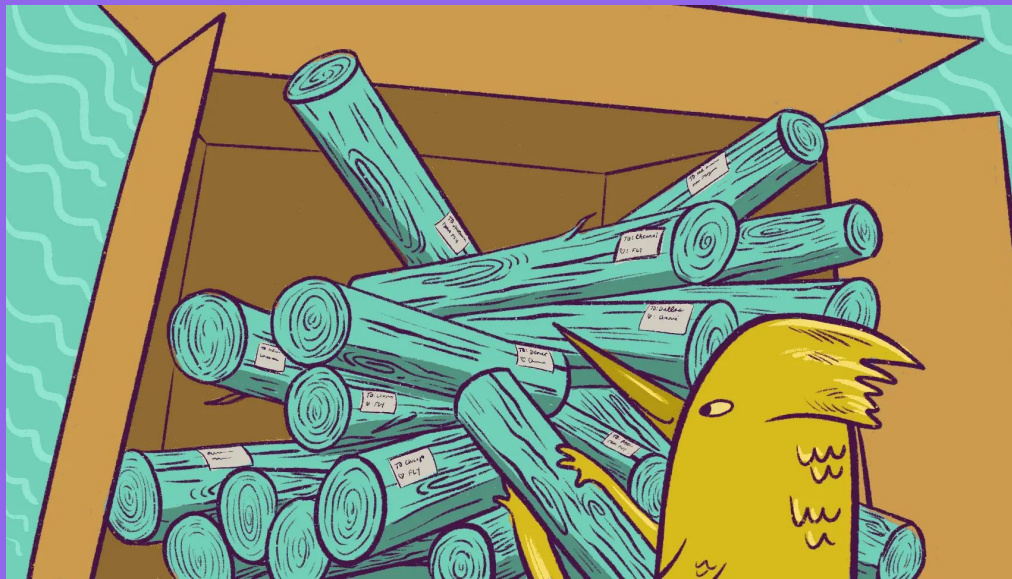
- Arquitetura de um nó principal e múltiplas read-replicas
- Internamente usa repmgr
- PgBarman para PITR
- Failover automático



Fly.io

LiteFS

- Free open source software
- SQLite distribuído
- Arquitetura de primário + read-replicas
- Proxy integrado
 - GET manda para réplicas
 - POST/PUT/DELETE manda para primário
- Backups e PITR



Fly.io

E se eu precisar de dados persistentes?

Bottomless S3-backed volumes

● Fresh Produce volumes, storage



Matthew Ingwersen

Sep 27

[Fly Volumes](#) ¹⁵ provide persistent storage to your app by exposing a slice of a local NVMe drive. This works well in many cases, but it requires a “provision-first” approach: you need to know roughly what you’re going to use in advance (yes, you can manually extend your disks, [even without restarting your machine](#) ², but you cannot yet shrink them back). Also, there’s only so much space available to a single volume on a single server: right now, the cap is 500 GiB. If you have terabyte upon terabyte of data to store, especially if it’s not frequently accessed, then you’ll need to look for alternatives.

- Facilidade de migrar um host para outro em caso de falha
- Não é limitado ao tamanho do volume local
- Trabalho futuro: volumes standby
- Futuro: visualizar uma snapshot
- Futuro: sincronizar dados entre servers



Fly.io

Fly MongoDB, MySQL e outros?

- Custo de manutenção
- Baixa demanda
- Parcerias são mais simples (fly extensions)



Se eu ganhasse um centavo todas vez que falta RAM

- O free tier contém 256MB de memória RAM
- Algumas apps tem um build step que roda quando a app inicializa: exemplo NextJS
- Algumas apps requerem mais do que 256MB só para boot: exemplo Rails
- Algumas pessoas migram o banco da app em runtime

SWAP Memory



Fly.io

[Fly.io] mentorise-frontend-example ran out of memory and crashed



Fly [Cancelar inscrição](#)
para mim ▼

sex., 3 de nov., 22:30 (há 6 dias)



Hello! Your “mentorise-frontend-example” application hosted on Fly.io crashed because it **ran out of memory**. Specifically, the instance 6e82d93ec36187. Adding more RAM to your application might help!

You should know that adding RAM does cost money. Not much, but some. Figure about \$5/mo per extra GB. Our docs have [complete pricing details](#).

When you're ready, add more RAM by running this from the command line or the [Fly Web CLI](#):

```
fly scale memory [memoryMB] -a mentorise-frontend-example
```

(replace [memoryMB] with the amount **of memory** you want to use, in megabytes eg. 2048)

Here's the raw log message:

```
Out of memory: Killed process 513 (node) total-vm:410692kB, anon-rss:163788kB, file-rss:0kB, shmem-rss:0kB, UID:0 pgtables:4788kB oom_score_adj:0
```

If you could use a little help translating this log message, try our [community forum](#). It's full **of** incredibly smart devs who've seen these kinds **of** problems before.

If you don't want to get emails when “mentorise-frontend-example” OOMs anymore, [unsubscribe with a click](#).



Fly.io

App deployado

Parabéns, você chegou aqui!



Fly.io

Suporte é um produto

- Planos pagos
- Suporte com SLA
- Expectativas dos clientes sempre são altas

- Plano grátis tem suporte de fórum da comunidade
- Planos pagos tem suporte dedicado por email
- Suporte da **plataforma** VS suporte de **framework**

Shell · Fly.io


flyctl.sh/shell

← → ↺

🗑️ ☆ 🗑️ 👤 ⋮


Fly.io

Docs / Community



Fly Launch

Launch your first project using the fly CLI right from your browser.



Upload a project directory
or drag and drop a one onto the terminal

Directories up to 100MB

```
Using net-protocol 0.2.1
Using net-imap 0.3.4
Fetching net-pop 0.1.2
Installing net-pop 0.1.2
Fetching net-smtp 0.3.3
Installing net-smtp 0.3.3
Using mail 2.8.0.1
Using actionmailbox 7.0.4.2
Using actionmailer 7.0.4.2
Using actiontext 7.0.4.2
Using bundler 2.4.6
Fetching io-console 0.6.0
Installing io-console 0.6.0 with native extensions
Fetching reline 0.3.2
Installing reline 0.3.2
Fetching irb 1.6.2
Installing irb 1.6.2
Fetching debug 1.7.1
Installing debug 1.7.1 with native extensions
Using method_source 1.0.0
Fetching puma 5.6.5
Installing puma 5.6.5 with native extensions
Using thor 1.2.1
Using zeitwerk 2.6.6
Using railties 7.0.4.2
Using rails 7.0.4.2
Fetching sprockets 4.2.0
Installing sprockets 4.2.0
Fetching sprockets-rails 3.4.2
Installing sprockets-rails 3.4.2
Fetching sqlite3 1.6.0 (x86_64-linux)
Installing sqlite3 1.6.0 (x86_64-linux)
Bundle complete! 6 Gemfile dependencies, 53 gems now installed.
Use `bundle info [gemname]` to see where a bundled gem is installed.
      run bundle binstubs bundler
/app/bin $ cd welcome
/app/bin/welcome $ echo 'Rails.application.routes.draw { root "rails/welcome#index" }' > config/routes.rb
```

Deploying a Rails app via the new Fly.io terminal



Fly.io

Abuso e free tier

- Como identificar contas fraudulentas?
- Como identificar usuários criando botnets?
- Como automatizar detectar abuso?
- Como impedir que detecção de abuso não afete usuário legítimos?



Desafios em fazer deploy no mundo todo para todo mundo

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