

Self hosting your side projects with Django and duct tape

PyCon Italia

@anze3db, May 25, 2024



OVERALL ANALYZED REQUESTS

23/APR/2024 — 24/MAY/2024

Total Requests

490,931

Excl. IP Hits

0

Valid Requests

490,931

Referrers

0

Failed Requests

0

Not Found

7,413

Log Parsing Time

00:00:40

Static Files

629

Unique Visitors

223,791

Log Size

0 Byte

Requested Files

139,331

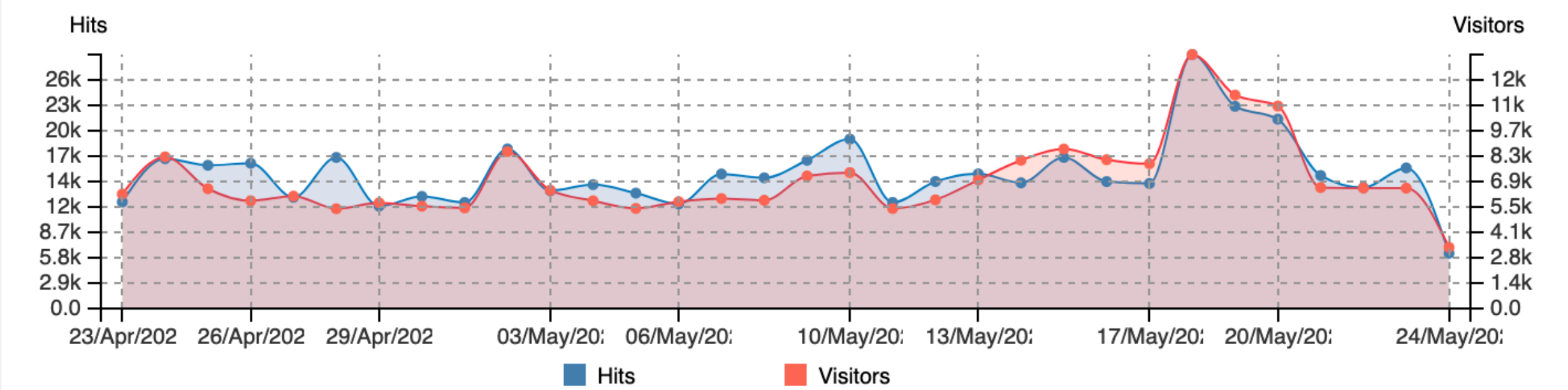
Tx. Amount

3.76 GiB

UNIQUE VISITORS PER DAY - INCLUDING SPIDERS

⚙️ Panel Options ▾

HITS HAVING THE SAME IP, DATE AND AGENT ARE A UNIQUE VISIT.

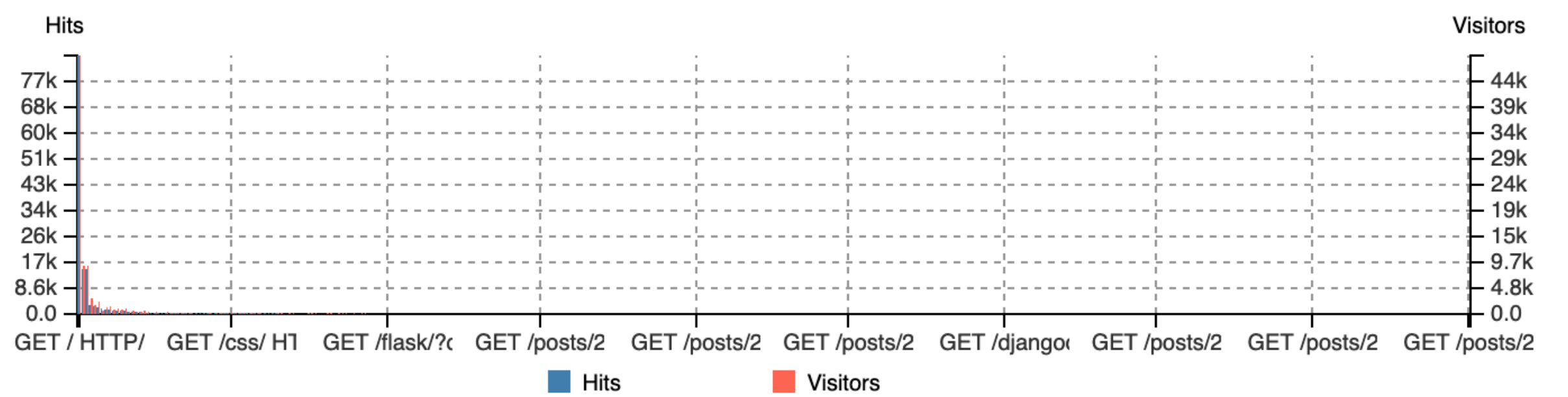


Date	Hits	Visitors
23/Apr/2024	12k	12k
26/Apr/2024	17k	17k
29/Apr/2024	17k	12k
03/May/2024	17k	17k
06/May/2024	12k	12k
10/May/2024	19k	12k
13/May/2024	12k	12k
17/May/2024	12k	12k
20/May/2024	23k	23k
24/May/2024	12k	12k

REQUESTED FILES (URLS)

⚙️ Panel Options ▾

TOP REQUESTS SORTED BY HITS [, AVGTS, CUMTS, MAXTS, MTHD, PROTO]



File	Hits	Visitors
GET / HTTP/	77k	77k
GET /css/ H1	17k	17k
GET /flask/?c	8.6k	8.6k
GET /posts/2	0.0	0.0
GET /posts/2	0.0	0.0
GET /posts/2	0.0	0.0
GET /django	0.0	0.0
GET /posts/2	0.0	0.0
GET /posts/2	0.0	0.0
GET /posts/2	0.0	0.0

✓ fedidevs.com

99.994% uptime



Response time



Downtime

Down for 7 minutes

Mar 12, 2024

0.45 s

0.30 s

0.15 s

0.0 s

07:00pm

10:00pm

01:00am

04:00am

07:00am

10:00am

01:00pm

04:00pm

✓ surfcams.pecar.me

99.991% uptime



Response times

This might not be a good idea

But it is possible

And it could be fun

Hardware

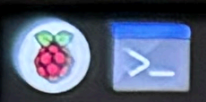
Raspberry Pi

SD Cards

Limited number of write-and-erase cycles

USB Drives

Displays



BpyTOP

cpu Menu mode:full

12:47:42

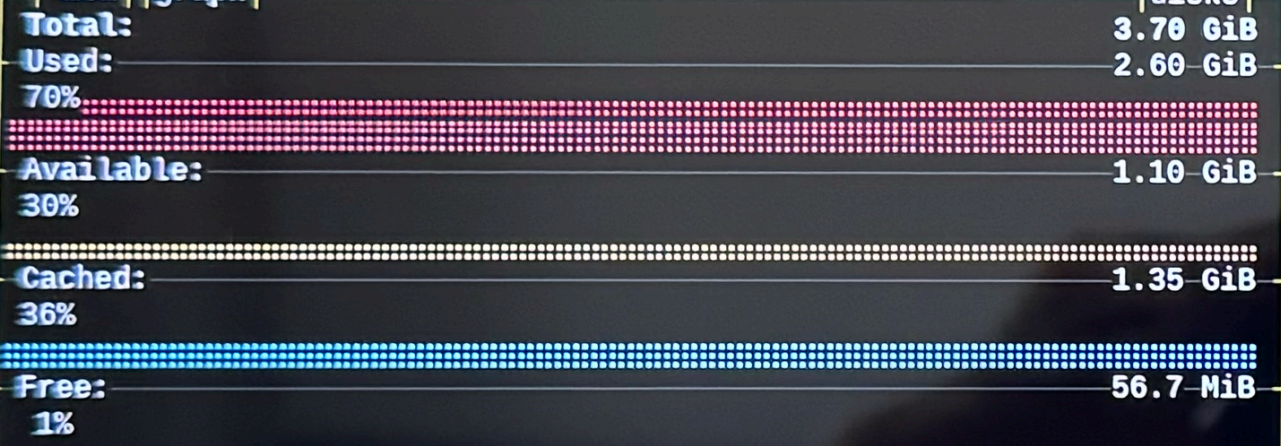
2000ms



CPU	13%	1.5 GHz	82°C
C1	9%		
C2	18%		
C3	21%		
C4	6%		
Load AVG:	1.09	1.33	1.37

up 68d 19:24

mem graph



disks

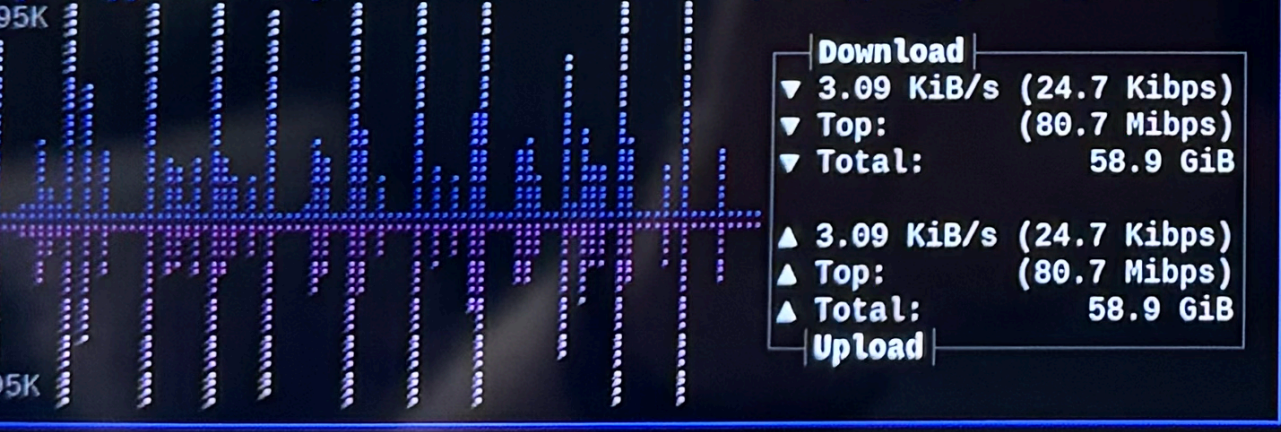
proc filter

per-core reverse tree < cpu lazy >

Pid	Program	Arguments	Threads	User	MemB	Cpu%
1749976	postgres	postgres: 13/main: postgres fe	1	postgres	187M	36.4
5347	bpytop	/usr/bin/python /usr/local/bin	3	home	16M	7.3
5310	lxterminal	lxterminal	3	home	17M	2.3
1748468	python	python manage.py scheduler	10	root	276M	0.3
683	Xorg	/usr/lib/xorg/Xorg :0 -seat se	2	root	59M	2.0
42	kcompactd0	[kcompactd0]	1	root	0B	0.5
649	redis-server	/usr/bin/redis-server 127.0.0.	5	redis	4M	0.5
1748459	gunicorn: work	gunicorn: worker [fedidevs]	11	root	101M	0.0
1748460	gunicorn: work	gunicorn: worker [fedidevs]	11	root	101M	0.3
1748482	dramatiq	/home/home/projects/fedidevs/.	6	root	76M	0.5
1306850	gunicorn	/home/home/projects/goals/.ven	7	root	50M	0.5
1306846	gunicorn	/home/home/projects/goals/.ven	7	root	50M	0.5
1306847	gunicorn	/home/home/projects/goals/.ven	7	root	50M	0.5
1306849	gunicorn	/home/home/projects/goals/.ven	8	root	48M	0.5
1306848	gunicorn	/home/home/projects/goals/.ven	7	root	48M	0.0
1748458	gunicorn: work	gunicorn: worker [fedidevs]	11	root	100M	0.0
1748456	gunicorn: work	gunicorn: worker [fedidevs]	11	root	98M	0.0
2788	mutter	mutter	4	home	19M	0.5
1605828	dramatiq	/home/home/projects/flakytest/	6	root	60M	0.5
1748457	gunicorn: work	gunicorn: worker [fedidevs]	11	root	100M	0.0
4544	python	python -m gunicorn surfcamsapi	7	root	89M	0.3
4543	python	python -m gunicorn surfcamsapi	10	root	88M	0.3
1776237	gunicorn	/home/home/projects/botko/.ven	4	root	37M	0.3
1776236	gunicorn	/home/home/projects/botko/.ven	4	root	37M	0.3
55	kswapd0	[kswapd0]	1	root	0B	2.5
660	fail2ban-serve	/usr/bin/python3 /usr/bin/fail	9	root	21M	0.3
2800	lxpanel	lxpanel --profile LXDE-pi	6	home	55M	0.0
15	rcu_preempt	[rcu_preempt]	1	root	0B	0.3

net 127.0.0.1

sync auto zero <b lo n>



select info terminate kill interrupt 0/246

Software

Raspberry Pi OS

Python


```
python3 -m pip
```

```
/usr/bin/python3: No module named pip
```

```
apt install python-full
```


python.org

```
./configure
```

```
make
```

```
make test
```

```
sudo make install
```

Example 1

Searching "All Mailbo...
Found 836 results

+

☰

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↶

↶

↷

>> 🔍 wave watcher ✕

dependab... Arc... 01/05/2023
Re: [anze3db/wave-watcher] Bu...
...ID: <anze3db/wave-watcher/pull/13/issue_event/9139069942@gith...

wave-wat... Arc... 30/01/2022
Strong wind on 2022-01-31 12:0...
Wave Watcher Strong winds detected! 2022-01-31 12:00:00 Vi...

wave-wat... Arc... 29/01/2022
Strong wind on 2022-01-31 12:0...
Wave Watcher Strong winds detected! 2022-01-31 12:00:00 Vi...

wave-watc... Arc... 17/01/2022
Strong wind on 2022-01-20 00:...
Wave Watcher Strong winds detected! 2022-01-20 00:00:00 2...

wave-wat... Arc... 02/01/2022
Strong wind on 2022-01-04 12:0...
Wave Watcher Strong winds detected! 2022-01-04 12:00:00 2...

wave-watc... Arc... 24/12/2021
Strong wind on 2021-12-25 12:0...
Wave Watcher Strong winds detected! 2021-12-25 12:00:00 Vi...

wave-watc... Arc... 23/12/2021
Strong wind on 2021-12-24 12:0...
Wave Watcher Strong winds detected! 2021-12-24 12:00:00 2...

wave-watc... Arc... 06/12/2021
Strong wind on 2021-12-08 12:0...
Wave Watcher Strong winds detected! 2021-12-08 12:00:00 2...

wave-watc... Arc... 05/12/2021
Strong wind on 2021-12-08 13:0...
Wave Watcher Strong winds detected! 2021-12-08 13:00:00 Vi...

W

wave-watcher@psywerx.net
Strong wind on 2022-01-31 12:00:00!

Archive -...ogle (All Mail) 30 January 2022 at 22:00

Wave Watcher

Strong winds detected!

2022-01-31 12:00:00

View details

Proгноза Wind

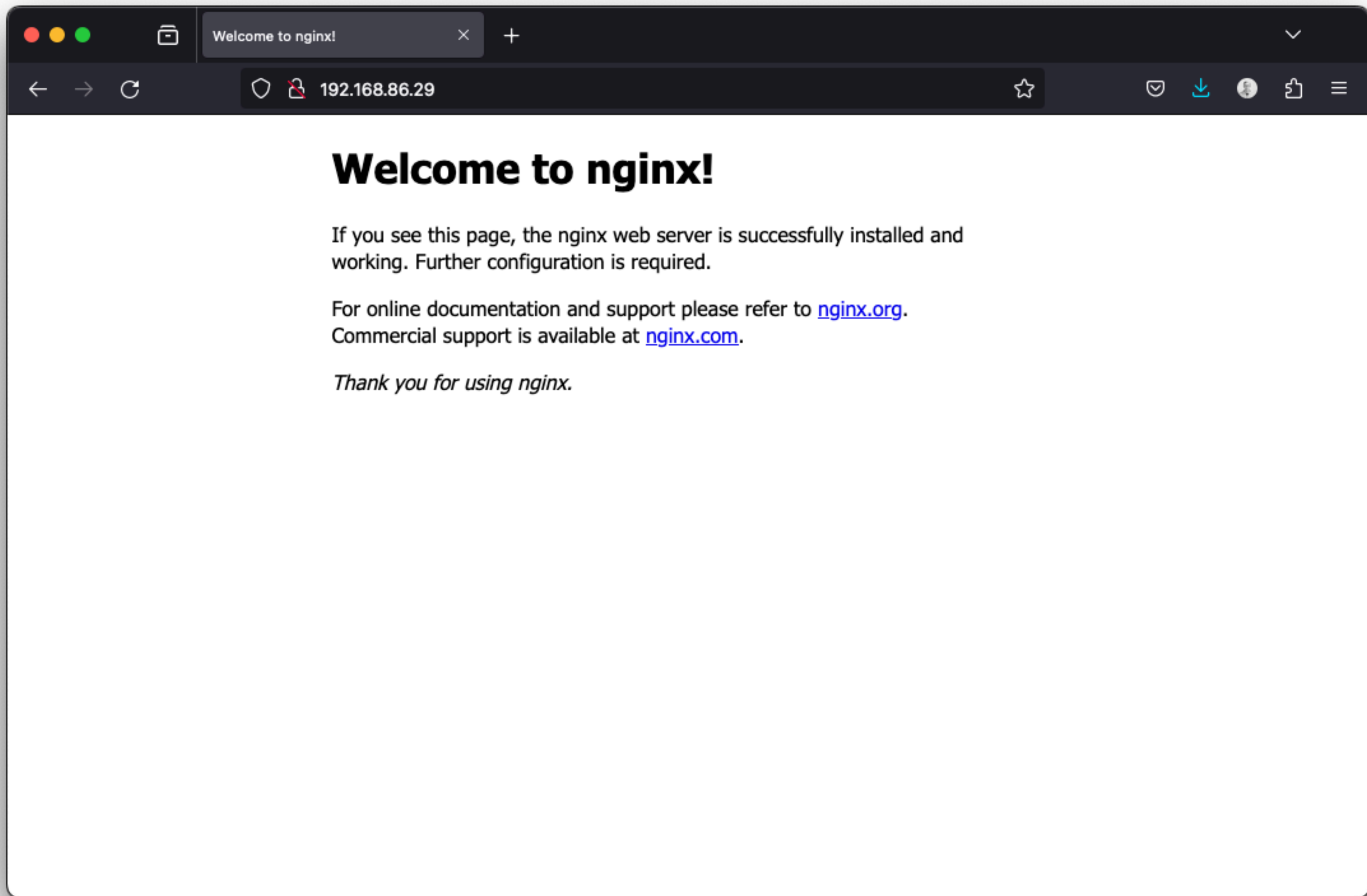
Proгноза Waves

Happy surfing!



nginx


```
apt install nginx
```



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

Example 2

Surfcams

★ Favorites

- Carcavelos
- Guincho
- Costa de Caparica
- Praia Grande
- Ribeira d'Ilhas
- Lagide

Carcavelos

- Carcavelos
- Calhau
- Overview
- Tricana
- Reef
- FPS
- Praia da Torre
- São Pedro do Estoril
- São João do Estoril
- Santo Amaro
- Santo Amaro
- Paço de Arcos
- Caxias

Guincho

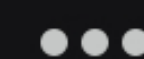
- Guincho
- Norte
- Crismina
- Overview

How to put it on the internet?

Port forwarding



Port management



raspberrypi
192.168.86.29
dc:a6:32:11:e6:30
22 → 22 (TCP)



raspberrypi
192.168.86.29
dc:a6:32:11:e6:30
80 → 80 (TCP)



raspberrypi
192.168.86.29
dc:a6:32:11:e6:30
443 → 443 (TCP)



Danger

#	HITS ▾	VISITORS ⇅	TX. AMOUNT ⇅	METHOD ⇅	PROTOCOL ⇅	DATA ⇅
MIN.	1 (00.02%)	—	—	—	—	—
MAX.	91 (01.41%)	—	13.84 KiB (01.51%)	—	—	—
AVG.	3 (00.05%)	—	468 B (00.05%)	—	—	—
1	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//xmlrpc.php?rsd
2	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//blog/wp-includes/wlwmanifest.xml
3	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//web/wp-includes/wlwmanifest.xml
4	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//wordpress/wp-includes/wlwmanifest.xml
5	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//wp/wp-includes/wlwmanifest.xml
6	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//2019/wp-includes/wlwmanifest.xml
7	91 (00.02%)	0 (00.00%)	13.8 KiB (00.00%)	GET	HTTP/2	//shop/wp-includes/wlwmanifest.xml
TOT.	6,468	—	914.8 KiB	—	—	2,001


```
Nov 19 01:32:06 raspberrypi sshd[124639]: Received disconnect from 223.171.46.146 port 58358:11: Bye Bye [preauth]
Nov 19 01:32:06 raspberrypi sshd[124639]: Disconnected from invalid user dev 223.171.46.146 port 58358 [preauth]
Nov 19 01:32:07 raspberrypi sshd[124641]: Invalid user deploy from 107.173.160.154 port 40870
Nov 19 01:32:07 raspberrypi sshd[124641]: Received disconnect from 107.173.160.154 port 40870:11: Bye Bye [preauth]
Nov 19 01:32:07 raspberrypi sshd[124641]: Disconnected from invalid user deploy 107.173.160.154 port 40870 [preauth]
Nov 19 01:32:11 raspberrypi sshd[124643]: Invalid user user1 from 181.2.151.236 port 38092
Nov 19 01:32:12 raspberrypi sshd[124643]: Received disconnect from 181.2.151.236 port 38092:11: Bye Bye [preauth]
Nov 19 01:32:12 raspberrypi sshd[124643]: Disconnected from invalid user user1 181.2.151.236 port 38092 [preauth]
Nov 19 01:32:15 raspberrypi sshd[124647]: Invalid user oracle from 180.151.215.230 port 35098
Nov 19 01:32:15 raspberrypi sshd[124647]: Received disconnect from 180.151.215.230 port 35098:11: Bye Bye [preauth]
Nov 19 01:32:15 raspberrypi sshd[124647]: Disconnected from invalid user oracle 180.151.215.230 port 35098 [preauth]
Nov 19 01:32:16 raspberrypi sshd[124651]: Invalid user odoo from 167.71.67.44 port 47668
Nov 19 01:32:16 raspberrypi sshd[124651]: Received disconnect from 167.71.67.44 port 47668:11: Bye Bye [preauth]
Nov 19 01:32:16 raspberrypi sshd[124651]: Disconnected from invalid user odoo 167.71.67.44 port 47668 [preauth]
Nov 19 01:32:16 raspberrypi sshd[124649]: Invalid user test from 162.241.126.244 port 44424
Nov 19 01:32:16 raspberrypi sshd[124649]: Received disconnect from 162.241.126.244 port 44424:11: Bye Bye [preauth]
Nov 19 01:32:16 raspberrypi sshd[124649]: Disconnected from invalid user test 162.241.126.244 port 44424 [preauth]
Nov 19 01:32:29 raspberrypi sshd[124654]: Invalid user ubuntu from 1.12.255.20 port 40594
Nov 19 01:32:29 raspberrypi sshd[124656]: Invalid user minecraft from 103.133.36.6 port 34916
Nov 19 01:32:29 raspberrypi sshd[124654]: Received disconnect from 1.12.255.20 port 40594:11: Bye Bye [preauth]
Nov 19 01:32:29 raspberrypi sshd[124654]: Disconnected from invalid user ubuntu 1.12.255.20 port 40594 [preauth]
Nov 19 01:32:29 raspberrypi sshd[124656]: Received disconnect from 103.133.36.6 port 34916:11: Bye Bye [preauth]
Nov 19 01:32:29 raspberrypi sshd[124656]: Disconnected from invalid user minecraft 103.133.36.6 port 34916 [preauth]
Nov 19 01:32:32 raspberrypi sshd[124660]: Invalid user odoo from 43.130.158.82 port 38930
Nov 19 01:32:32 raspberrypi sshd[124660]: Received disconnect from 43.130.158.82 port 38930:11: Bye Bye [preauth]
Nov 19 01:32:32 raspberrypi sshd[124660]: Disconnected from invalid user odoo 43.130.158.82 port 38930 [preauth]
Nov 19 01:32:47 raspberrypi sshd[124663]: Received disconnect from 43.131.39.140 port 46752:11: Bye Bye [preauth]
Nov 19 01:32:47 raspberrypi sshd[124663]: Disconnected from authenticating user postgres 43.131.39.140 port 46752 [preauth]
Nov 19 01:33:03 raspberrypi sshd[124667]: Invalid user test from 159.203.170.197 port 60204
Nov 19 01:33:03 raspberrypi sshd[124667]: Received disconnect from 159.203.170.197 port 60204:11: Bye Bye [preauth]
Nov 19 01:33:03 raspberrypi sshd[124667]: Disconnected from invalid user test 159.203.170.197 port 60204 [preauth]
Nov 19 01:33:13 raspberrypi sshd[124672]: Invalid user toor from 107.173.160.154 port 36296
Nov 19 01:33:13 raspberrypi sshd[124672]: Received disconnect from 107.173.160.154 port 36296:11: Bye Bye [preauth]
Nov 19 01:33:13 raspberrypi sshd[124672]: Disconnected from invalid user toor 107.173.160.154 port 36296 [preauth]
Nov 19 01:33:17 raspberrypi sshd[124674]: Invalid user kali from 180.151.215.230 port 61240
Nov 19 01:33:17 raspberrypi sshd[124674]: Received disconnect from 180.151.215.230 port 61240:11: Bye Bye [preauth]
```


Domain names

DNS

CloudFlare

Dynamic IP

ipster

`ipster` is a command line tool that keeps your CloudFlare DNS record in sync with your Raspberry Pi's IP 🍌

Install and Run

```
wget https://github.com/anze3db/ipster/releases/download/24.1/ipster.pi
chmod +x ./ipster.pi
./ipster.pi
```



`ipster` will need access to your CloudFlare account so you'll have to create an [API_TOKEN](#) (use the Edit Zone DNS template).

Run with the necessary environment variables:

```
IPSTER_CLOUDFLARE_API_TOKEN=xxxxxxxxx_yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy IPSTER_CLOUDFLARE_ZONE_NAME=example.com
```



Required environmental variables:

- `IPSTER_CLOUDFLARE_API_TOKEN` - your CloudFlare [API_TOKEN](#) (Use the Edit zone DNS template).
- `IPSTER_CLOUDFLARE_ZONE_NAME` - your CloudFlare zone name. Usually your domain name e.g. `example.com`.
- `IPSTER_CLOUDFLARE_DNS_RECORD_NAME` - the CloudFlare DNS record that you want to keep in sync e.g. `home.example.com`.

Example 3

PyCon Italia

PyCon Italia will take place on May 22-25 in Florance, Italy.

22nd of May 2024: Beginners' Day

23rd to the 25th of May 2024: Main conference days (Talks, Workshops and more)

Visit <https://2024.pycon.it> for more info!

Follow the official Mastodon account to be up to date.

Edit

Filter by most active accounts

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Cheuk Ting Ho (7)



mborus (4)
- 

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- 

Clément Robert  (2)
- 

Nafiul Islam (2)



Paolo Melchiorre at #PyConIT

@fosstodon.org@paulox

[May 21, 2024](#)

Tomorrow PyCon Italia 2024 will begin 🚀

Everything's ready to welcome many Pythonistas to the beautiful city of Florence



I'm ready to meet you all, please stop by and say hello 🙌

[#PyCon](#) [#PyConIT](#) [#PyConIT24](#) [#PyConIT2024](#) [#PyConItalia](#)

Free streaming 📌

2024.pycon.it/en



☆ 21

↻ 4

💬 4

nginx + Django


```
pip install django  
django-admin startproject  
python manage.py runserver
```

Gunicorn


```
import multiprocessing
```

```
bind = "unix:fedidevs.sock"
```

```
workers = multiprocessing.cpu_count() + 1
```

```
threads = multiprocessing.cpu_count() * 2
```

```
proc_name = "fedidevs"
```

```
loglevel = "info"
```

```
pidfile = "gunicorn.pid"
```

SystemD

/etc/systemd/system/fedidevs.service

[Unit]

Description=Fedidevs

[Service]

Type=simple

Restart=always

RestartSec=1

ExecStart=/home/anze/fedidevs/start.sh

[Install]

WantedBy=multi-user.target

/home/anze/fedidevs/start.sh

```
. .venv/bin/activate  
gunicorn fedidevs.wsgi
```



```
sudo systemctl enable fedidevs.service
```

```
sudo systemctl start fedidevs.service
```

nginx config

```
server {  
  
    server_name fedidevs.com;  
  
    location / {  
        proxy_set_header Host $http_host;  
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;  
        proxy_set_header X-Forwarded-Proto $scheme;  
        proxy_set_header Upgrade $http_upgrade;  
        proxy_set_header Connection $connection_upgrade;  
        proxy_redirect off;  
        proxy_buffering off;  
        proxy_pass http://fedidevs_gunicorn;  
    }  
}  
  
upstream fedidevs_gunicorn {  
    server unix:///home/fedidevs/fedidevs.sock;  
}
```



```
server {  
  
    server_name fedidevs.com;  
  
    location / {  
        proxy_set_header Host $http_host;  
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;  
        proxy_set_header X-Forwarded-Proto $scheme;  
        proxy_set_header Upgrade $http_upgrade;  
        proxy_set_header Connection $connection_upgrade;  
        proxy_redirect off;  
        proxy_buffering off;  
        proxy_pass http://fedidevs_gunicorn;  
    }  
}  
  
upstream fedidevs_gunicorn {  
    server unix:///home/fedidevs/fedidevs.sock;  
}
```

Https?

✓ **Your SSL/TLS encryption mode is Flexible**

This setting was last changed 8 years ago



- ☐ Off (not secure) ⓘ
No encryption applied
- ☒ **Flexible**
Encrypts traffic between the browser and Cloudflare
- ☐ Full
Encrypts end-to-end, using a self signed certificate on the server
- ☐ Full (strict)
Encrypts end-to-end, but requires a trusted CA or Cloudflare Origin CA certificate on the server


```
sudo certbot --nginx
```

Databases

SQLite


```
sqlite3 db.sqlite3 ".backup 'db.bck.sqlite3'"
```

Postgres

```
pg_dump yourdb > location.sql
```


Deployments

GitHub Action

```
#!/bin/bash
```

```
. .venv/bin/activate
```

```
git pull
```

```
pip install -r requirements.txt
```

```
python manage.py collectstatic --noinput
```

```
python manage.py migrate
```

```
sudo kill -hup `cat gunicorn.pid`
```

```
sudo systemctl restart fedidevs-worker
```


Summary

- Raspberry Pi + a fast SD card
- Raspberry Pi OS and install Python
- Nginx for the webserver
- Gunicorn to serve your Django
- SystemD to make sure your services keep running
- SQLite for storage
- GitHub Actions with SSH to do deployments

Questions?

@anze3db



<https://pyconit2024.pecar.me>