

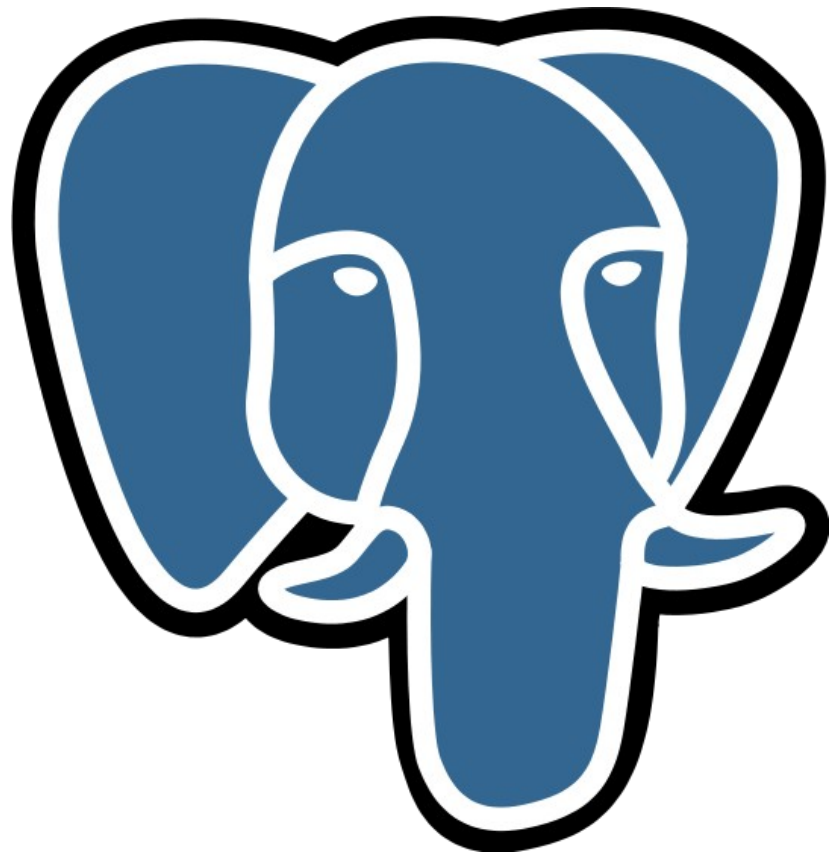
Trusted Postgres Architect Deploying Postgres with Infrastructure as Code



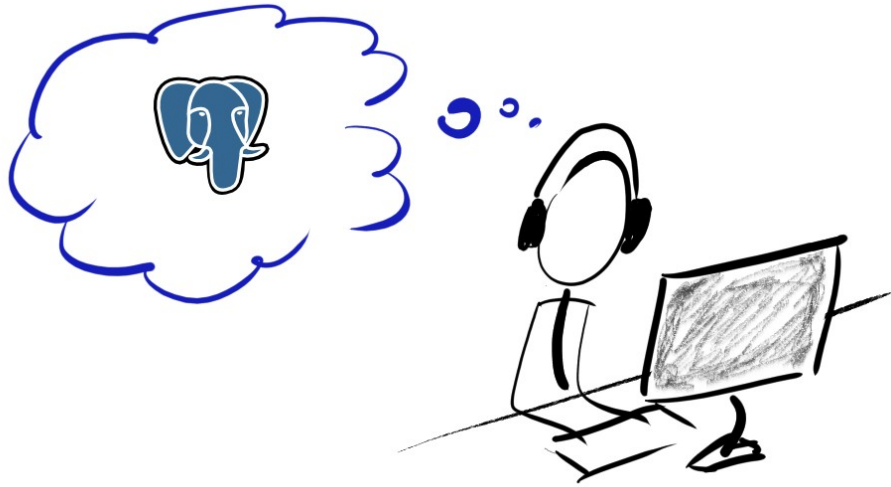
Boriss Mejías
Senior Solutions Architect
Air Guitar Player

Trusted Postgres Architect Deploying Postgres with Infrastructure as Code

Boriss Mejías
Holistic System Software Engineer
Air Guitar Player



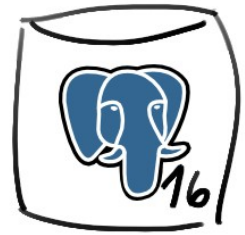








Trusted Postgres Architect



Infrastructure as Code – config.yml

```
architecture: M1  
cluster_name: fosdem  
cluster_tags: {}
```

Infrastructure as Code – config.yml

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architecture: M1  
cluster_name: fosdem  
cluster_tags: {}
```

cluster_vars:

```
  enable_pg_backup_api: false  
  failover_manager: none  
  postgres_flavour: postgresql  
  postgres_version: '16'  
  preferred_python_version: python3  
  use_volatile_subscriptions: true
```

Infrastructure as Code – config.yml

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architecture: M1  
cluster_name: fosdem  
cluster_tags: {}
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```
locations:  
- Name: brussels
```

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Infrastructure as Code – config.yml

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  postgres_version: '16'
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locations:
- Name: brussels

instance_defaults:
  image: tpa/debian:11
  platform: docker
  vars:
    ansible_user: root
```

Infrastructure as Code – config.yml

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architecture: M1
cluster_name: fosdem
cluster_tags: {}

cluster_vars:
  enable_pg_backup_api: false
  failover_manager: none
  postgres_flavour: postgresql
  postgres_version: '16'
  preferred_python_version: python3
  use_volatile_subscriptions: true

locations:
- Name: brussels

instance_defaults:
  image: tpa/debian:11
  platform: docker
  vars:
    ansible_user: root

instances:
- Name: ulb
  location: brussels
  node: 1
  role:
  - primary
```

TPA executable - tpaexec

```
$ tpaexec provision fosdem
```

TPA executable - tpaexec

```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```


TPA executable - tpaexec

```
$ tpaexec provision fosdem
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```
$ tpaexec deploy fosdem
```

```
$ ssh -F ssh_config ulb
```

TPA executable - tpaexec

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```
$ tpaexec deploy fosdem
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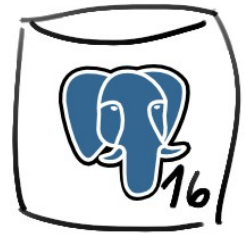
```
root@ulb:~# sudo -u postgres psql
```

TPA executable - tpaexec

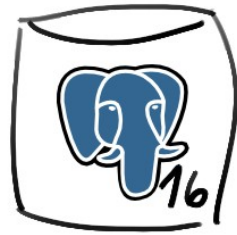
```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```

```
$ ssh -F ssh_config ulb  
root@ulb:~# sudo -u postgres psql  
psql (16.1 (Debian 16.1-1.pgdg110+1))  
Type "help" for help.
```

```
postgres=#
```



slovnik → admin
@adalovelace → app



owned
slonik → admin
@adalovelace → app
fosedemdb



Infrastructure as Code – config.yml

cluster_vars:

failover_manager: none

postgres_version: '16'

Infrastructure as Code – config.yml

cluster_vars:

failover_manager: none

postgres_version: '16'

postgres_users:

- username: **slonik**
generate_password: true
role_attrs:
 - **superuser**

Infrastructure as Code – config.yml

cluster_vars:

failover_manager: none

postgres_version: '16'

postgres_users:

- username: **slonik**
generate_password: true
role_attrs:
 - **superuser**
- username: **adalovelace**
generate_password: true

Infrastructure as Code – config.yml

cluster_vars:

failover_manager: none

postgres_version: '16'

postgres_users:

- username: **slonik**
generate_password: true
role_attrs:
 - **superuser**
- username: **adalovelace**
generate_password: true

postgres_databases:

- name: **fosdemdb**
owner: **adalovelace**

TPA executable - tpaexec

```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```

Connecting to the database

Connecting to the database

```
$ tpaexec show-password fosdem adalovelace
```

Connecting to the database

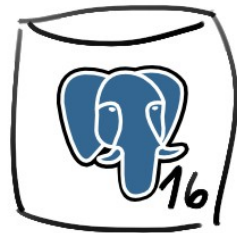
```
$ tpaexec show-password fosdem adalovelace  
8h#n4*Bh@Rlo1UxTofe9Uscyy2xjSk$u
```

Connecting to the database

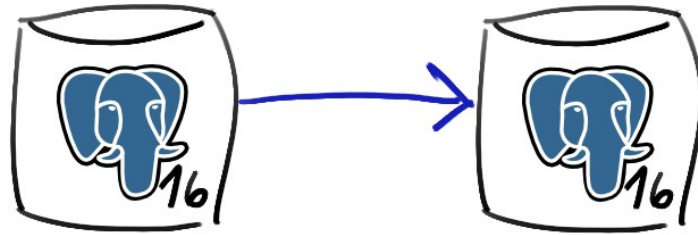
```
$ tpaexec show-password fosdem adalovelace  
8h#n4*Bh@Rlo1UxTofe9Uscyy2xjSk$u
```

```
$ psql -h 172.17.0.4 -p 5432 -U adalovelace -w  
Password:
```

owned
slonik → admin
@adalovelace → app
fosedemdb



owned
@adalovelace → app
fosedemdb



Infrastructure as Code – config.yml

cluster_vars:

failover_manager: none

postgres_version: '16'

Infrastructure as Code – config.yml

```
cluster_vars:  
  failover_manager: repmgr  
  postgres_version: '16'
```

Infrastructure as Code – config.yml

cluster_vars:

```
failover_manager: repmgr  
postgres_version: '16'
```

instances:

```
- Name: ulb  
  location: brussels  
  node: 1  
  role:  
  - primary
```

Infrastructure as Code – config.yml

cluster_vars:

```
failover_manager: repmgr  
postgres_version: '16'
```

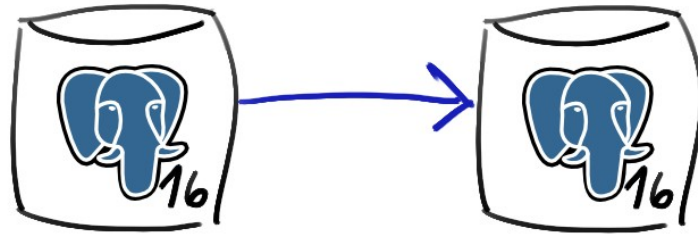
instances:

```
- Name: ulb  
  location: brussels  
  node: 1  
  role:  
  - primary  
- Name: vub  
  location: brussels  
  node: 2  
  role:  
  - replica  
  upstream: ulb
```

TPA executable - tpaexec

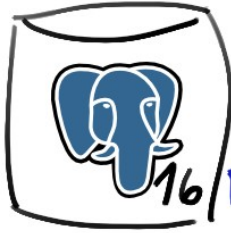
```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```

owned
@adalovelace → app
fosedemdb



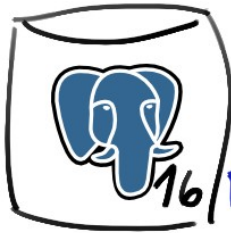
owned
fosedemdb

slonik → admin
adalovelace → app



owned
fostemdb

slonik → admin
adalovelace → app



Infrastructure as Code – config.yml

locations:

- Name: brussels

instances:

- Name: ulb
 - location: brussels
 - node: 1
 - role:
 - **primary**
- Name: vub
 - location: brussels
 - node: 2
 - role:
 - **replica**
 - upstream:** ulb

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen

instances:

- Name: ulb
 - location: brussels
 - node: 1
 - role:
 - **primary**
- Name: vub
 - location: brussels
 - node: 2
 - role:
 - **replica**
 - upstream:** ulb

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen

instances:

- Name: ulb
location: brussels
node: 1
role:
 - **primary**
- Name: vub
location: brussels
node: 2
role:
 - **replica****upstream:** ulb

- Name: achel
location: vlaanderen
node: 3
role:
 - **replica****upstream:** vub

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen
- Name: wallonie

instances:

- Name: ulb
location: brussels
node: 1
role:
 - **primary**
- Name: vub
location: brussels
node: 2
role:
 - **replica****upstream:** ulb

- Name: achel
location: vlaanderen
node: 3
role:
 - **replica****upstream:** vub

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen
- Name: wallonie

instances:

- Name: ulb
location: brussels
node: 1
role:
 - **primary**
- Name: vub
location: brussels
node: 2
role:
 - **replica****upstream:** ulb

- Name: achel
location: vlaanderen
node: 3
role:
 - **replica****upstream:** vub
- Name: rochefort
location: wallonie
node: 4
role:
 - **barman**

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen
- Name: wallonie

instances:

- Name: ulb
location: brussels
node: 1
role:
 - **primary**
- Name: vub

location: brussels
node: 2
role:

- **replica**

upstream: ulb

- Name: achel
location: vlaanderen
node: 3
role:
 - **replica****upstream:** vub
- Name: rochefort
location: wallonie
node: 4
role:
 - **barman**

Infrastructure as Code – config.yml

locations:

- Name: brussels
- Name: vlaanderen
- Name: wallonie

instances:

- Name: ulb
location: brussels
node: 1
role:
 - **primary**
- Name: vub
backup: rochefort
location: brussels
node: 2
role:
 - **replica****upstream:** ulb

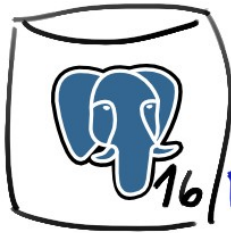
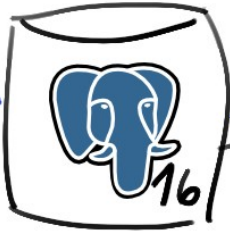
- Name: achel
location: vlaanderen
node: 3
role:
 - **replica****upstream:** vub
- Name: rochefort
location: wallonie
node: 4
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TPA executable - tpaexec

```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```

owned
fostemdb

slonik → admin
adalovelace → app



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```

TPA executable - tpaexec

```
$ tpaexec provision fosdem  
$ tpaexec deploy fosdem
```

TPA executable - tpaexec

```
$ tpaexec configure fosdem --architecture M1 --postgresql \
--postgres-version 16 \
--platform docker --os Debian \
--failover-manager repmgr

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
```

TPA executable - tpaexec

```
$ tpaexec configure fosdem --architecture M1 --postgresql \
--postgres-version 16 \
--platform docker --os Debian \
--failover-manager repmgr

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
```

TPA executable - tpaexec

```
$ tpaexec configure fosdem --architecture M1 --postgresql \
--postgres-version 16 \
--platform bare --os Debian \
--failover-manager repmgr

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
```

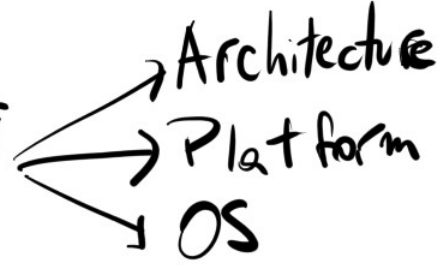
TPA executable - tpaexec

```
$ tpaexec configure fosdem --architecture M1 --postgresql \
--postgres-version 16 \
--platform aws --os Debian \
--failover-manager repmgr

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
```


t paexec

Configure



Provision

Deploy

tpaexec

Configure

- Architecture
- Platform
- OS

Provision

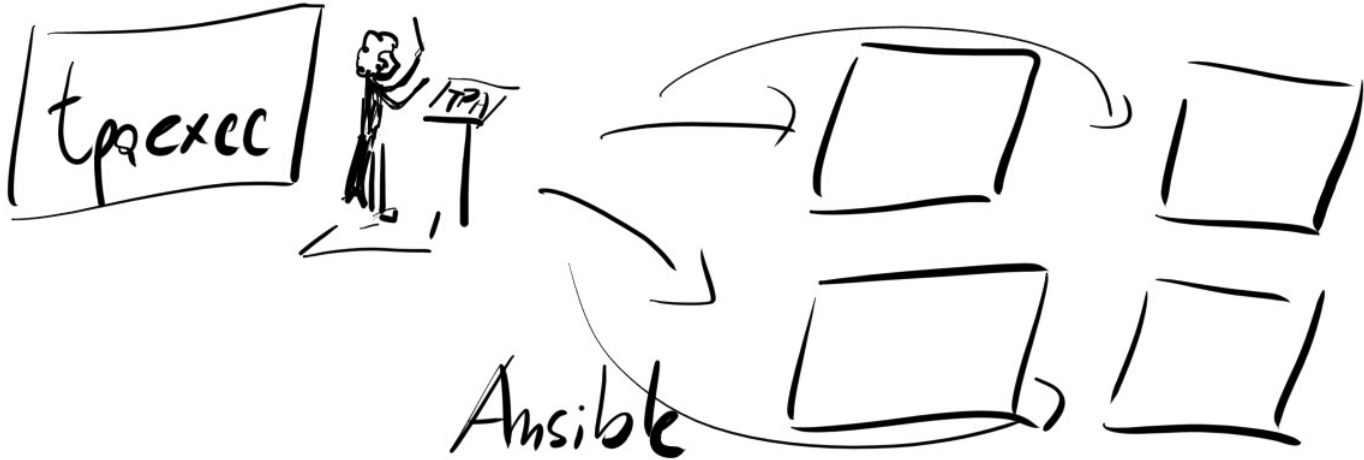
Deploy

- Pre-deploy
- Pre-initdb
- Post-deploy

tpexec

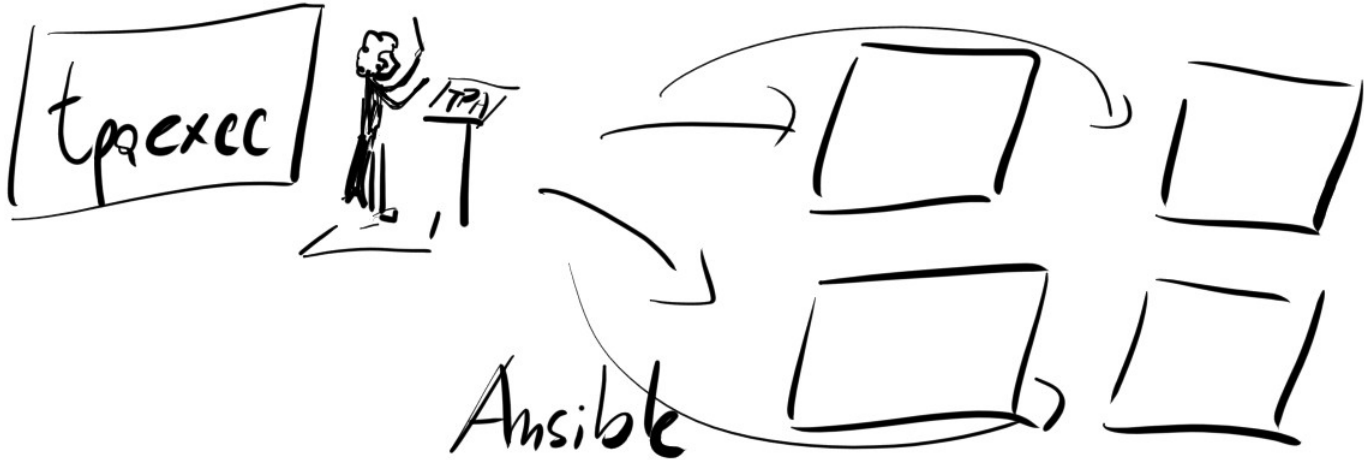


Ansible



Virtual Machines.

AWS (need credentials)



~~Virtual~~ Machines.

Bare Metal 

tpexec

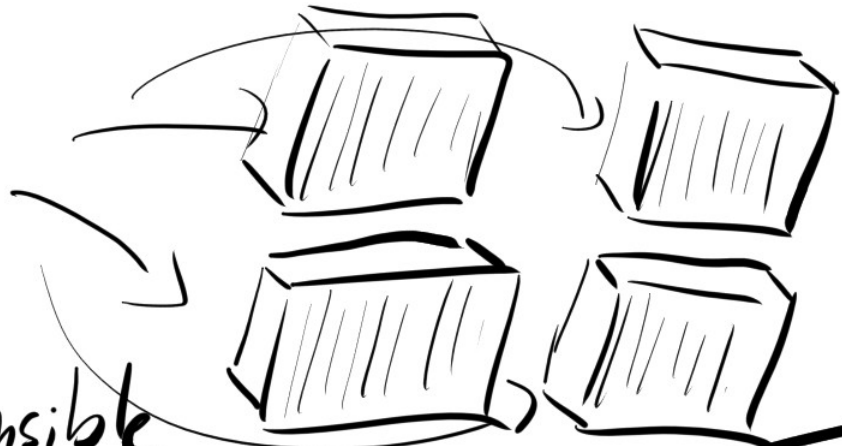


Ansible



Docker containers

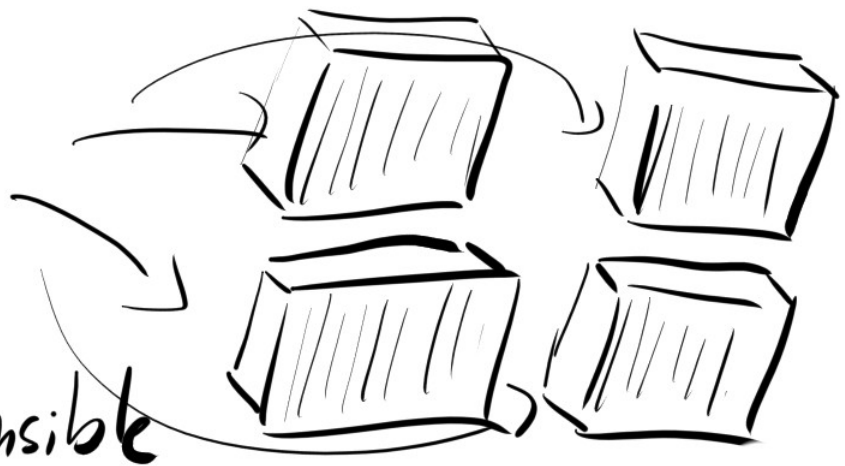
tpexec



Ansible



tpexec



Ansible

Platforms

Trusted Postgres Architect

Code:

<https://github.com/enterprisedb/tpa.git>

License:

GPLv3

Documentation:

<https://www.enterprisedb.com/docs/tpa/latest/>

Trusted Postgres Architect

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Infrastructure as Code

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Infrastructure as Code
Good for tests and production

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Infrastructure as Code

Good for tests and production

Document your deployment

Trusted Postgres Architect

Infrastructure as Code

Good for tests and production

Document your deployment

Deployment and Maintenance

Trusted Postgres Architect

Infrastructure as Code

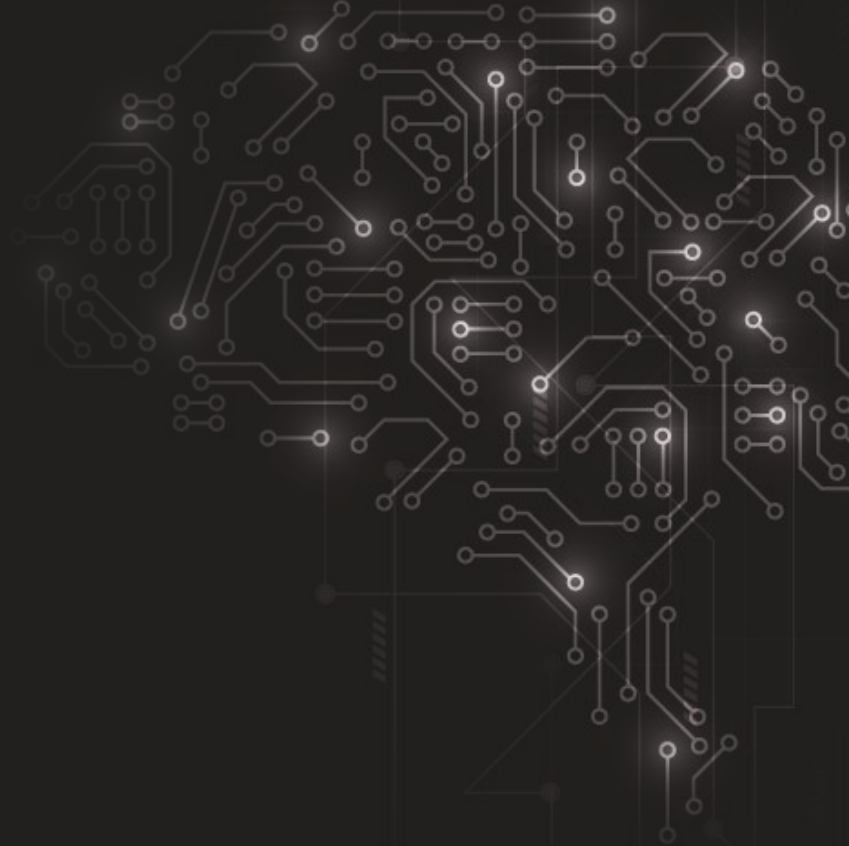
Good for tests and production

Document your deployment

Deployment and Maintenance

Open Source

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@tchorix@mastodon.world



Thank you!
Hail Slonik

Boriss Mejías
tchorix@gmail.com
boriss.mejias@enterprisedb.com
@tchorix@mastodon.world

