Trusted Postgres Architect
Deploying Postgres with Infrastructure as Code

Boriss Mejías
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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

---

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
---
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
Infrastructure as Code – config.yml

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cluster_name: fosdem
cluster_tags: {}

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  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
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
$ tpaexec deploy fosdem

$ ssh -F ssh_config ulb
TPA executable - tpaexec

$ tpaexec provision fosdem
$ tpaexec deploy fosdem

$ ssh -F ssh_config ulb
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=#
slvnik → admin
@adalovelace → app
owned

fosdem-db

slovik -> admin

adalovelace -> app
Infrastructure as Code – config.yml

cluster_vars:
  failover_manager: none
  postgres_version: '16'
Infrastructure as Code – config.yml

```yaml
cluster_vars:
  failover_manager: none
  postgres_version: '16'
postgres_users:
  - username: slonik
    generate_password: true
    role_attrs:
    - superuser
```
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

```yaml
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:
 Parliamentary meritocracy

Fosdem db

Owned by: slovak @admin
Ода лавелас @app
owned
fosdemdb

slonik → admin
@dalovalace → app
Infrastructure as Code - config.yml

```yaml
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

fosdemdb

slavik → admin
adalovelace → app

16 → 16
locations:
- Name: brussels

instances:
- Name: ulb
  location: brussels
  node: 1
  role:
    - primary
- Name: vub
  location: brussels
  node: 2
  role:
    - replica
upstream: ulb
locations:
- Name: brussels
- Name: vlaanderen

instances:
- Name: ulb
  location: brussels
  node: 1
  role:
    - primary
- Name: vub
  location: brussels
  node: 2
  role:
    - replica
upstream: ulb
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
locations:
- Name: brussels
- Name: vlaanderen
- Name: wallonie

instances:
- Name: ulb
  location: brussels
  node: 1
  role:
    - primary
- Name: vub
  location: brussels
  node: 2
  role:
    - replica
  backup: rochefort
  location: brussels
  node: 3
  role:
    - barman
- Name: achel
  location: vlaanderen
  node: 3
  role:
    - replica
  upstream: vub
- Name: rochefort
  location: wallonie
  node: 4
  role:
    - barman
TPA executable - tpaexec

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
TPA executable - tpaexec

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
TPA executable - tpaexec

$ tpaexec provision fosdem
$ tpaexec deploy fosdem
$ 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
tpaqexec

Configure

Provision

Deploy

Architecture
Platform
OS

Pre-deploy
Pre-imutable
Post-deploy
tpexec

Ansible

Virtual Machines

AWS (need credentials)
tpexec

Ansible

Virtual Machines
Bare Metal
Ansible

Docker containers
tpxexec

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

Infrastructure as Code
Trusted Postgres Architect

Infrastructure as Code
Good for tests and production
Trusted Postgres Architect

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
Thank you!
Hail Slonik

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