Hero + Hero = Superhero?

dbi services

Who we are

The Company
> Founded in 2010
> More than 100 specialists
> Specialized in the Middleware Infrastructure
> The invisible part of IT
> Customers in Switzerland and all over Europe

Our Offer
> Consulting
> Service Level Agreements (SLA)
> Trainings
> License Management

Basel

Delémont

Zürich

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Nyon

swiss safety center
ISO 20000
certified system

swiss safety center
ISO 27001
certified system

About me

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Delivery Manager & Senior Consultant

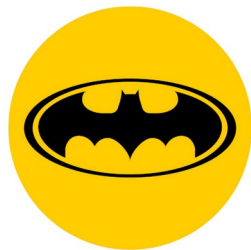+41 78 320 43 07

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in Julia Gugel

Agenda

1. Heroes

2. How to create a superhero

3. Conclusion
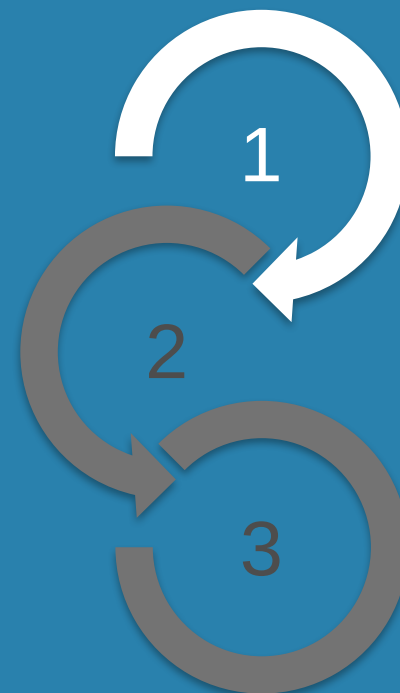
Heroes

> pgBackRest
> Patroni

Heroes
pgBackRest

OpenSource backup tool

> Full, incremental, differential backups

> Using parallel jobs, if configured

> PITR

> Backup can be stored in the Cloud (AWS S3, Azure…..)

> Centralized backup repository

> Patroni Nodes can be restored from backup

> Uses stanza

> configuration for a PostgreSQL database cluster

> defines location, how it will be backed up, archiving options

Heroes
Patroni
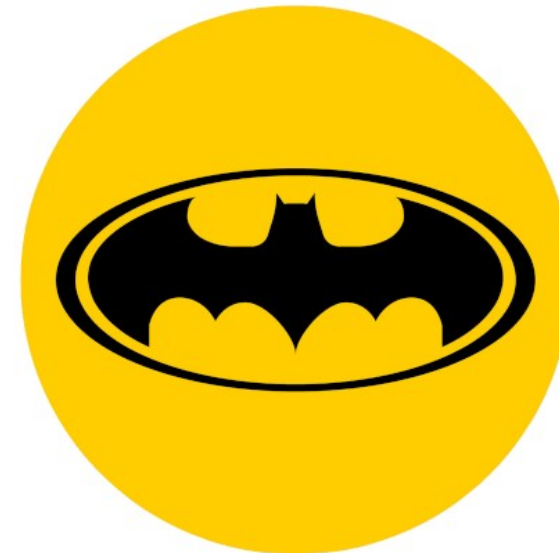
Zalando's Python-based PostgreSQL controller

Template to create high-availability solutions

Dynamical reconfiguration of all cluster members at once

Components

> One writable node (primary/leader)

> Multiple read-only replicas (secondary)

Supports manual switchovers and automatic failovers
Needs a distributed key value store

> Etcd, consul, zookeeper….

Heroes
Patroni

We will use etcd in this example

> Store data across distributed systems
> Stores information about the cluster status, available nodes and resources
> Needs an uneven number of members
> Leader is elected by the other members

What is it used for in combination with Patroni?

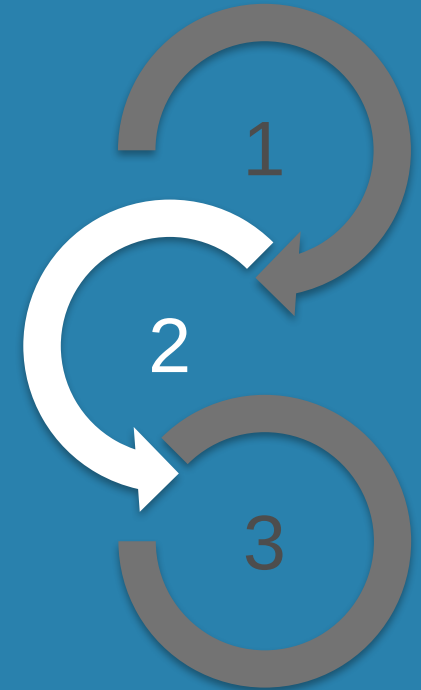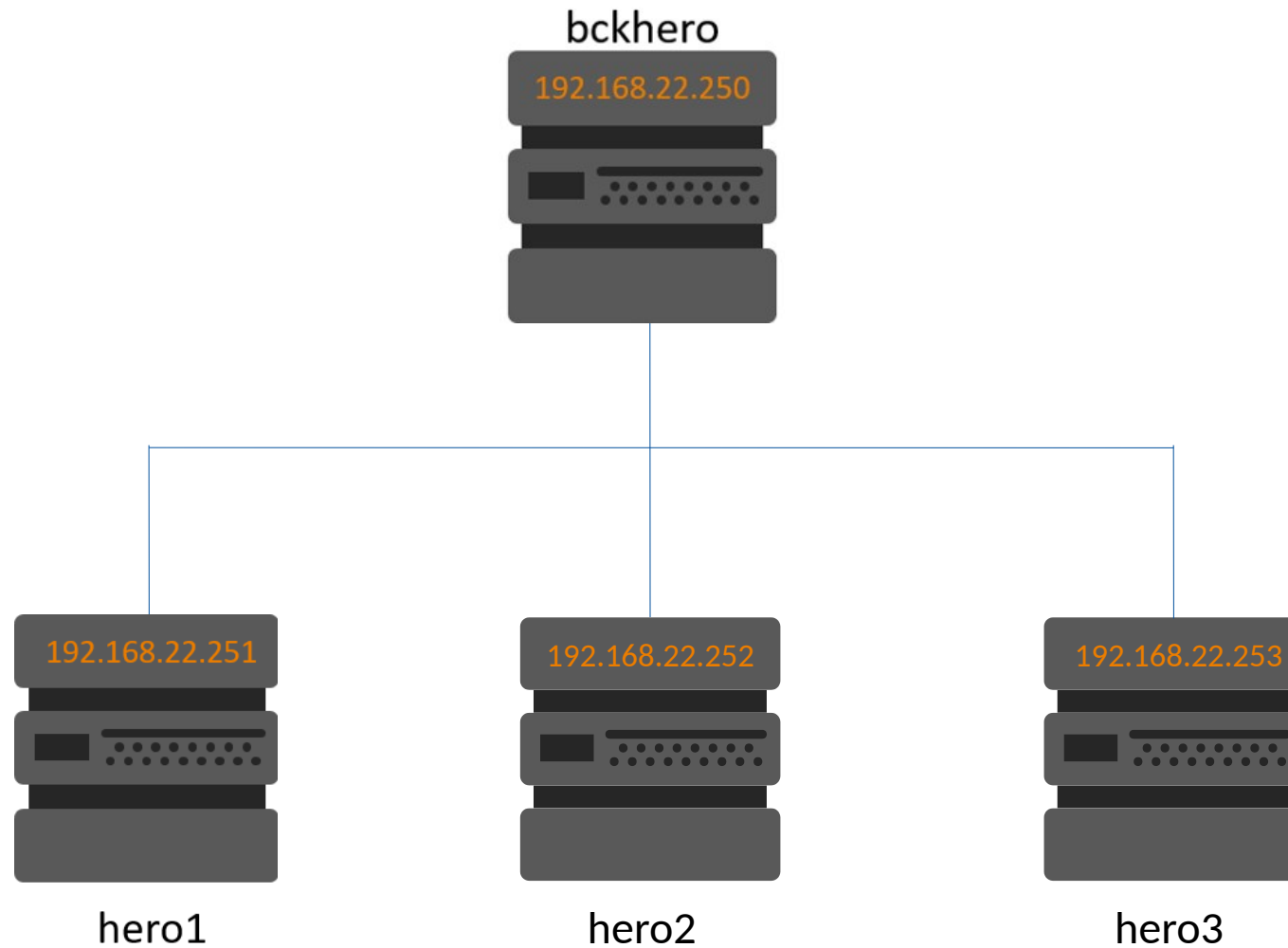> Postgres nodes make use of etcd to keep the Postgres cluster up and running
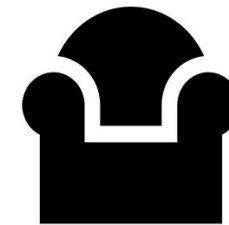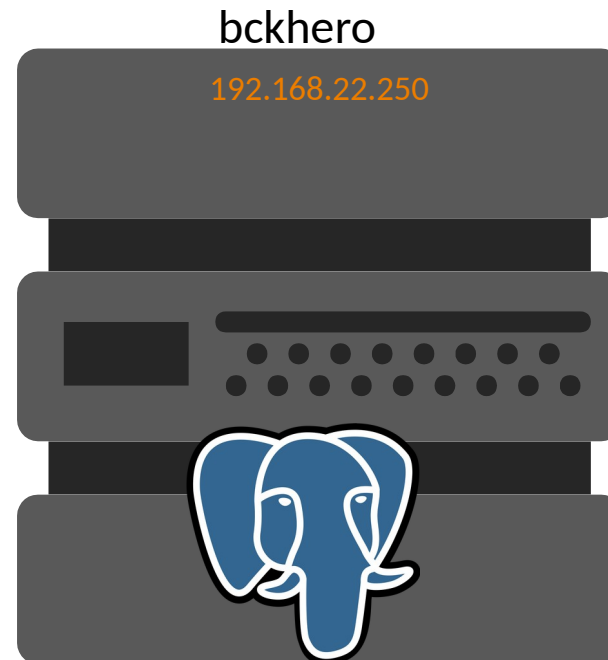
How to create a superhero

How to create a superhero

How to create a superhero

> Prerequisites installed

> pgBackRest source downloaded

> ssh-keys exchanged

> dbi dmk installed

bckhero

192.168.22.250

How to create a superhero
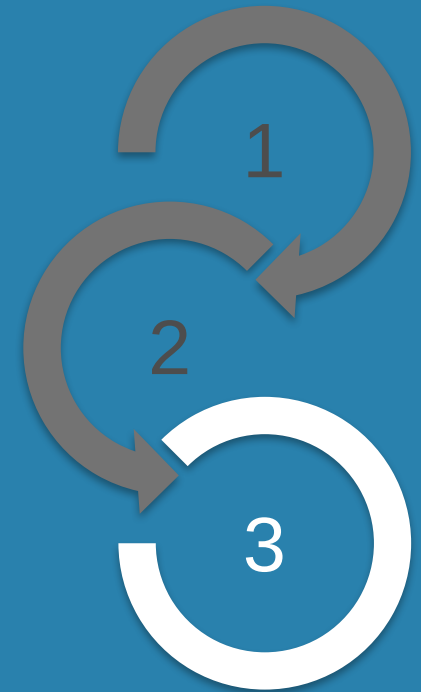
hero 1-3

192.168.22.251
192.168.22.252
192.168.22.253

> Prerequisites installed
> Etcd source downloaded
> pgBackRest source downloaded
> ssh-keys exchanged
> dbi dmk installed
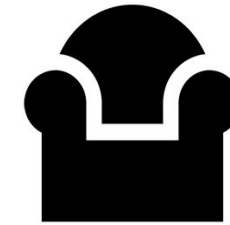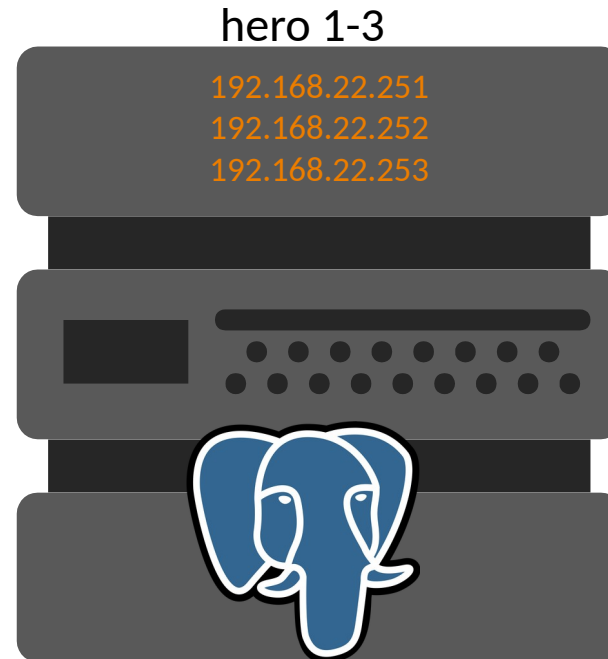
Conclusion

> Is this already a superhero?
> Is this really a superhero?

1

2

3

Conclusion
Is this already a superhero?

Create file with restore command

```
postgres@hero2:/home/postgres/ [PG1] cat bootstrap_pgbackrest.sh
#!/bin/bash
pgbackrest --stanza=hero2hero --log-level-console=info restore
postgres@hero2:/home/postgres/ [PG1] chmod +x bootstrap_pgbackrest.sh
```

Update patroni.yml

```
bootstrap:
  # this section will be written into Etcd:///config after initializing new cluster
  # and all other cluster members will use it as a global configuration
  method: pgbackrest
  pgbackrest:
    command: /home/postgres/bootstrap_pgbackrest.sh
    keep_existing_recovery_conf: False
    no_paramas: False
    recovery_conf:
        recovery_target_action: promote
        recovery_target_timeline: latest
        recovery_command: pgbackrest --stanza=hero2hero archive-get %f %p
```

Conclusion
Is this already a superhero?

Remove Patroni Cluster

```
 postgres@hero3:/u02/pgdata/etcd/member/ [PG1] patronictl remove PG1
+--------+----------------+---------+---------+----+-----------+
| Member | Host           | Role    | State   | TL | Lag in MB |
+ Cluster: PG1 (7157976722952275157) --------+----+-----------+
| hero1  | 192.168.22.251 | Replica | stopped |    |   unknown |
| hero2  | 192.168.22.252 | Replica | stopped |    |   unknown |
| hero3  | 192.168.22.253 | Replica | stopped |    |   unknown |
+--------+----------------+---------+---------+----+-----------+
Please confirm the cluster name to remove: PG1
You are about to remove all information in DCS for PG1, please type: "Yes I am aware":
Yes I am aware
16:23:06 postgres@hero3:/u02/pgdata/etcd/member/ [PG1] patronictl list PG1
+--------+------+------+-------+----+-----------+
| Member | Host | Role | State | TL | Lag in MB |
+ Cluster: PG1 (uninitialized) +----+-----------+
+--------+------+------+-------+----+-----------+
```

Conclusion
Is this already a superhero?

Start Patroni again

```
postgres@hero2:/u01/app/ [PG1] sudo systemctl start patroni
postgres@hero2:/u01/app/ [PG1] sudo systemctl status patroni
● patroni.service - dbi services patroni service

Oct 24 15:39:06 hero2 patroni[38626]: 2022-10-24 15:39:06,961 INFO: Lock owner: None; I
am hero2
Oct 24 15:39:06 hero2 patroni[38626]: 2022-10-24 15:39:06,971 INFO: trying to bootstrap
a new cluster
Oct 24 15:39:06 hero2 patroni[38626]: 2022-10-24 15:39:06,972 INFO: Running custom
bootstrap script: /home/postgres/bootstrap_pgbackrest.sh
Oct 24 15:39:06 hero2 patroni[38634]: 2022-10-24 15:39:06.985 P00   INFO: restore
command begin 2.41: --exec-id=38634-e965e985 --log-level-console=info
--pg1-path=/u02/pgdata/14/PG1/ --repo1-host=192.168.22.250 --repo1-host-user=postgres
--repo1-path=/u99/backups --stanza=hero2hero
Oct 24 15:39:07 hero2 patroni[38634]: 2022-10-24 15:39:07.568 P00   INFO: repo1:
restore backup set 20221024-145020F, recovery will start at 2022-10-24 14:50:20
```

Conclusion
Is this really a superhero?

Installation

> It's possible to install everything from packages

> Installing from source gives the biggest flexibility

Documentation

> Read it! And if you don't find your solution, community is really helpful

Configuration

> Error messages are not always self-explaining

```
ERROR: Error creating replica using method pgbackrest: pgbackrest --stanza=hero2hero
restore exited with code=31
```

Conclusion
Is this really a superhero?

Easy to rebuild a missing node either from
> pgBackRest backup or
> Basebackup taken from another node

Easy to rebuild the full cluster from pgBackRest backup

Keep some things in mind before you start

> Decision where to put your backups is important

> Reachable from all Patroni nodes

> Decide from which node you want to take the backup

> Standby / Primary

> with a repo-host this is easy

Conclusion
Is this really a superhero?

Together we are strong

Patroni

Community

pgBackRest

Conclusion
Is this really a superhero?

QUESTIONS?

Please do ask

GETTING
GREAT
PEOPLE
TOGETHER