How can I backup my PostgreSQL databases?
custom scripts, pg_backrest, WAL-G, pg_probackup, Barman, ..?
As technical people we have a tendency to focus on the **means** (tools)
Means without goals are useless
What are the **business continuity goals** of my PostgreSQL infrastructure?
With **clear goals**

any tool is fine
Barman in action

PGConf.eu 2019 - October 16

Gabriele Bartolini
About myself

- Open Source passionate and programmer since 1995
- First time with Postgres in 1997, regular from ~2000
- Co-Founder of ITPUG and PostgreSQL Europe
- With 2ndQuadrant since 2008
  - Head of Global Support
- Co-Founder and developer of Barman
- Lean and DevOps practitioner
Goals

**Recovery Point Objective (RPO)**
“How much data the business can afford to lose”

**Recovery Time Objective (RTO)**
“How long it takes to restore the business service”

“*From 0 to 100: Business continuity with PostgreSQL*”:
[https://www.youtube.com/watch?v=-EuVjj3zqE8](https://www.youtube.com/watch?v=-EuVjj3zqE8)
Incremental approach

- Keep our **goals** in mind (RPO and RTO)
- Focus on **Disaster Recovery** (DR)
- Incrementally build a solid DR solution for PostgreSQL based on Barman
- *What better approach than a practical one?*
Barman and PostgreSQL 12

- Native
- Transparent
  - `postgresql.auto.conf` for PostgreSQL 12
    - With `recovery.signal` and `standby.signal`
  - `recovery.conf` for PostgreSQL 8.3 -> 11
- Available from 1 Aug 2019
  - When PostgreSQL 12 was still in beta
  - Request originated from a support case
Playground used in this talk

https://github.com/2ndquadrant-it/ansible-postgresql-barman-playground

4 machine Vagrant playground environment with Ansible Playbooks for provisioning of PostgreSQL and Barman

Available under GNU GPL 3

After the talk explore the playbook and “play” with it
The “Beatles” cluster

- 4 CentOS pre-configured virtual machines:
  - **Paul**: PostgreSQL 12 + barman-cli on 192.168.33.10
  - **John**: PostgreSQL 12 + barman-cli on 192.168.33.11
  - **George**: Barman 2.10dev on 192.168.33.12
  - **Ringo**: Barman 2.10dev on 192.168.33.13
What Ansible did for us

- Basic PostgreSQL configuration
  - PGDATA initialised with data checksums
  - Archive mode enabled
    - `archive_command = /bin/true`
  - Syslog destination for logs
  - Enable md5 access from 192.168.33.x in pg_hba
  - Empty database for pgbench
- Paul and John have a running PostgreSQL instance
- SSH key exchange between `postgres` and `barman` users
Asciinema

- I have recorded casts using Asciinema
  - https://asciinema.org
- I will now be playing some casts, not all of them
  - See link at the end of the presentation
Pgbench

All commands have been executed with **pgbench** simulating workload in background.
What we will be doing today

- Paul
- George
- John
- Ringo

sync (RPO = 0)
Hands-on now
There's more ...
There’s more

● Backup frequency (cron for “barman backup”)
● Retention policies
  ○ Redundancy (number of backups)
  ○ Point of Recoverability (based on time)
● Archive command (barman-wal-archive)
● Streaming backup
● Point In Time Recovery (define a target)
● Monitoring, monitoring, monitoring
● Backup from standby
Future

● Direct cloud storage (starting with AWS S3) - 2.10
  ○ barman-cloud-wal-archive
  ○ barman-cloud-wal-restore
  ○ barman-cloud-backup
  ○ barman-cloud-recover

● Integration of the above with Barman - 2.11/3.0?

● Multi-tier setups, based on retention policies:
  ○ Tier 2: Local compressed backups
  ○ Tier 3: Cloud storage
DR Through the Beatles

I’m down. Yesterday my PostgreSQL cluster had a storage problem. I can’t bring it up. Don’t let me down! You can’t do that! I should have known better, I have no backups! It’s been a hard day’s night … Help! Please get back my Postgres database! I’ve got a feeling: I’ve lost all my data. I’ll cry instead.

Recovery is now a long and winding road. Do you want to know a secret? I have learnt my lesson now. We can work it out, it is going to be a revolution. I will now take backups eight days a week.

Oh, Here comes the sun! And with geo-redundancy and cloud storage it is going to be here, there and everywhere. From me to you: now I feel fine.

Sincerely yours,
The fool on the hill

(You: “All you need is love Barman”)
Feedback

Please leave your feedback about my presentation, thanks!

https://2019.pgconf.eu/f
Asciinema recordings

- https://asciinema.org/a/udbWdT4MqAthUhHIL5FP5lJw
- https://asciinema.org/a/UGX6VP0m6BBeYvb7M6wYH03on
- https://asciinema.org/a/hPiH7ZEaJux83aS6StaF56qX5
- https://asciinema.org/a/wK8MMh1zvjbylQKvAbQEkvIQZ
- https://asciinema.org/a/Mes4u4FktkVtjFbeln7NybIZY
- https://asciinema.org/a/g9VZvMg5qqZUt9l8cn1ziJJX2
- https://asciinema.org/a/XK0kRXmE9I4oFULXQtdmo0lD4
- https://asciinema.org/a/YPGrH0GGZq7fNxmbtMo6W1lZk
- https://asciinema.org/a/WUICvtnDH8PFEcR5fSsrBtBHi
Thanks to

- Barman development team
  - They are all here today
- For Ansible automation:
  - Rubens Souza
  - Anna Bellandi
- Benjamin Zander for Rule #6
  - [https://www.youtube.com/watch?v=M-HG6X6fpBM](https://www.youtube.com/watch?v=M-HG6X6fpBM)
Pass by our booth!
Thank you!
Questions?

pgbarman.org - docs.pgbarman.org

Gabriele Bartolini
Twitter: @_GBartolini_
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