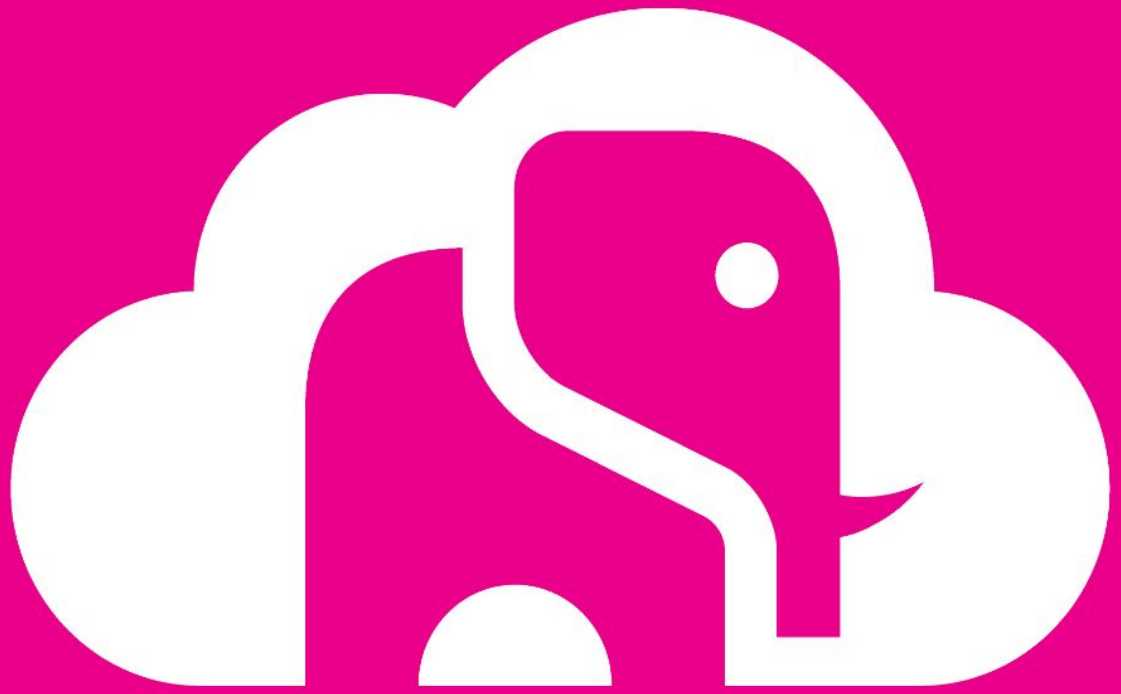
Streamlining database provisioning with DevOps



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EDB

Welcome

Housekeeping Items

Slides and recording will be available within 24 hours

?

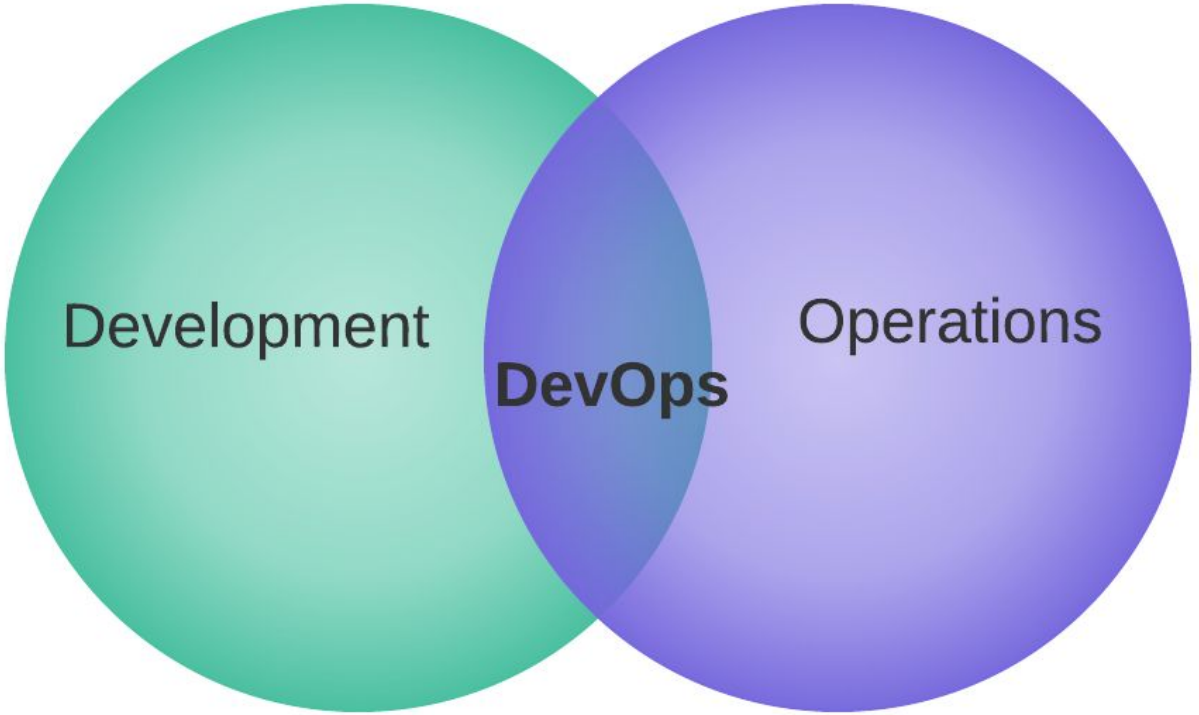
Questions will be answered at the end

Agenda

Streamlining database provisioning with DevOps

- DevOps
  - What is DevOps
  - Benefits
  - Core values
  - Principles
- DevOps for Databases
  - Pipelines
  - Points to consider
  - Why Implement
  - Principles
  - Tools

DevOps - Where the term comes from



DevOps

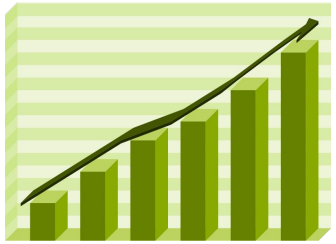
What is DevOps? - No exact or official definition. Among them are the ones below:

- Practice of operations and engineers participating together in the entire service lifecycle, from design -> process development -> production support
- Philosophy for software development
- Culture centered around collaboration, communication, integration among development, operations, and quality assurance teams
- Set of tools and practices that streamline building, testing, and deploying software at a much more reliable and faster rate

DevOps - Benefits

Main

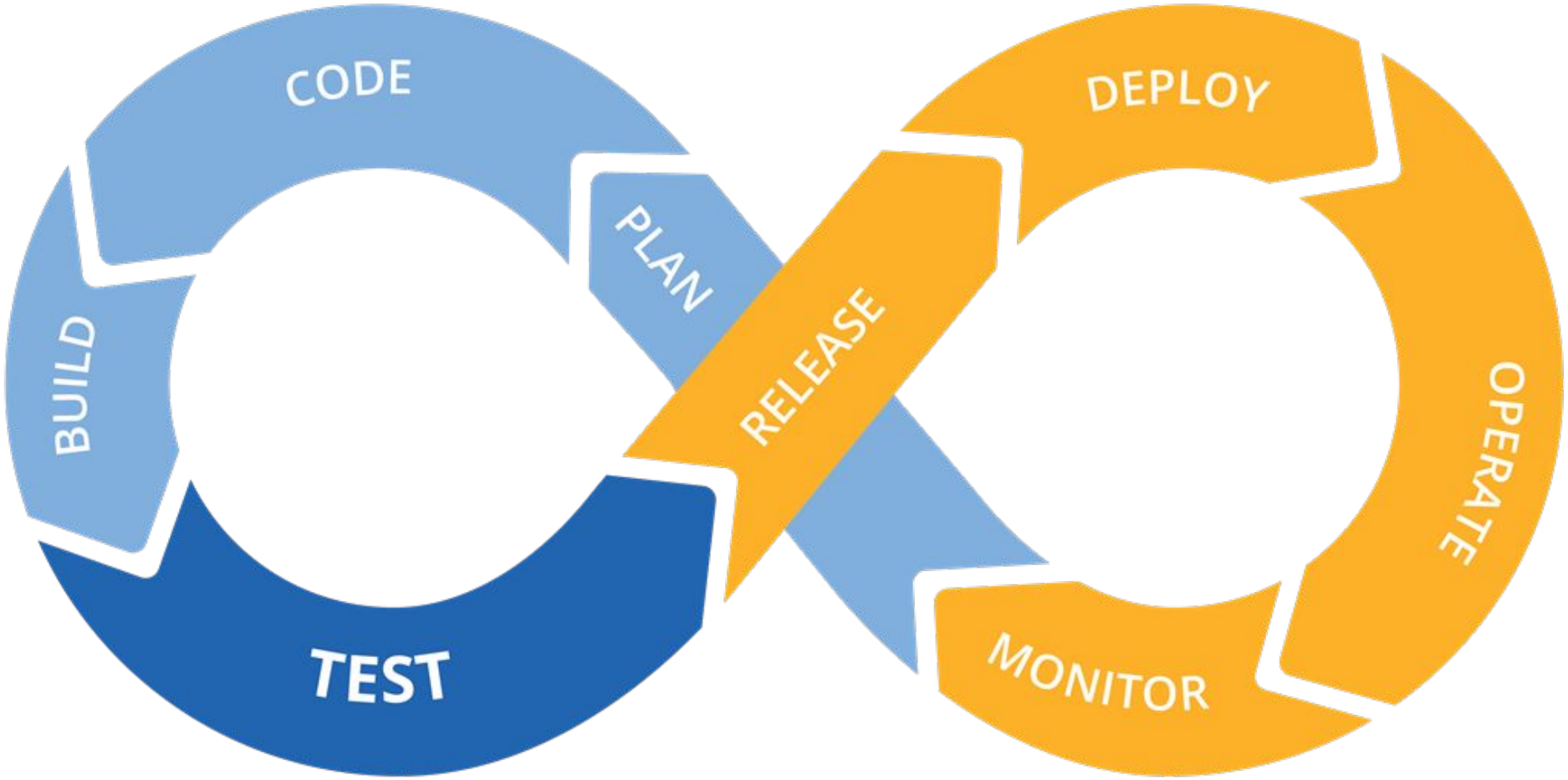
- Competitive advantage measured in high efficiency
- Improves IT performance
- Deploys code faster
- Fewer failures



Even more

- Reliability
- Reduced time to recover
- Risk reduction
- Shorter development cycles
- Increased stability
- Better user experience
- Higher quality builds, and releases
- Faster product delivery
- Cost savings

DevOps - Toolchain



DevOps - Core Values

What DevOps is all about. Which one is it? CALM, CALMS or CLAMS?

- Culture
- Automation

Lean

- Not originally part of the core values
- Added recently to expand and enhance the DevOps Core Values

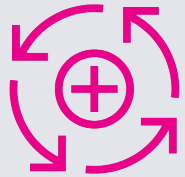
- Measurable
- Shareable

DevOps - Principles

Covered by 3 important aspects between Developers and Operations

Systems thinking

Amplify feedback loops



Continuous Experimentation

DevOps for Databases - Benefits of incorporating Database provisioning into pipelines

Main

- Application of DevOps culture, and philosophies to Database processes

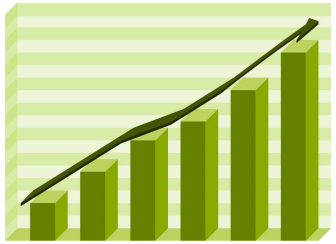
Additional

- Automate processes that were usually solely assigned to Database Administrators
- No longer having DBA's being the bottleneck

DevOps for Databases - Points to consider

Main

- Learning curve for DBA's



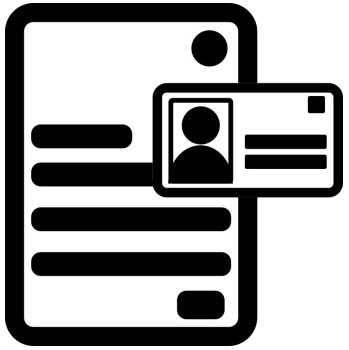
Tools

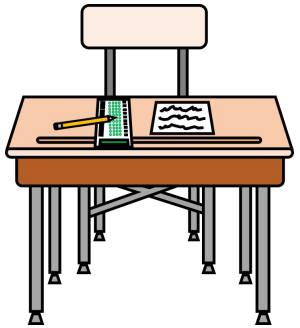
- Pipeline
- Testing
- Data version control

DevOps for Databases - Why Implement?

Data

- Data automation
- Pipelines
- Data ends up being treated as code
- Unit tests for data





Database

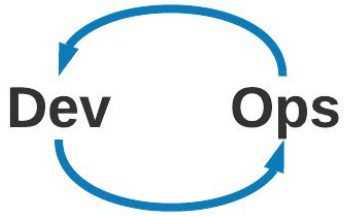
- Baselines
- Drift prevention
- Clean up
- Rollbacks

DevOps for Databases - Principles

Leverages same principles of DevOps:

Systems Thinking

Amplify Feedback Loops



Continuous Experimentation

DevOps for Databases - Tools

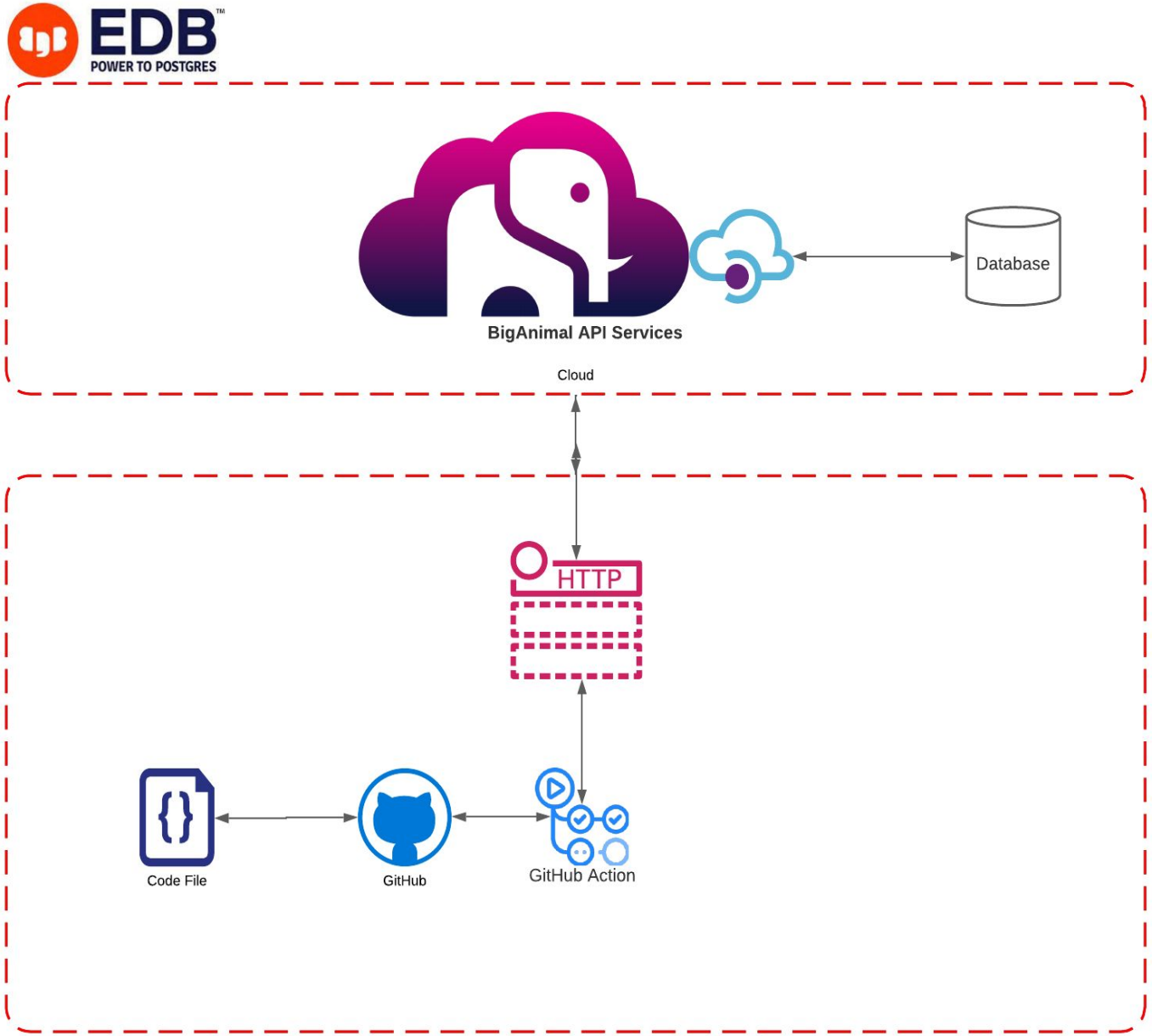
- Source Control for Scripts
  - Tables, Views, Indexes, Constraints, Stored Procedures, Functions, Triggers, and Database Configuration
- Schema Source Control
- Data Change Scripts - Data Manipulation
  - Database Objects
  - Data with Database Objects
- Version control data and/or a database
  - Liquibase
  - Flyway
- Data Testing
  - Faker

- Provisioning and configuration of Database Clusters
  - Terraform
  - Ansible
  - Puppet
  - EDB postgres-deployment
  - EDB edb-ansible

- Kubernetes
  - CloudNativePG
  - EDB Postgres for Kubernetes

- DevOps Tools for Databases
  - Containerization - Docker
  - Orchestrators - Kubernetes, and Openshift
  - Source Control
  - Job Scheduling

BigAnimal Demo DevOps Pipeline



Walk through example with provisioning BigAnimal Cluster with a Database via a Pipeline

Takeaways

DevOps for Databases - Takeaways

https://github.com/EnterpriseDB/blogpostings/tree/main/DevOps/devops-demo

Recommendations

- Break scripts by task
- Add tests to the pipeline
- Consider if 3rd party tools might be helpful
- Use coffee test metric for pipeline execution time
- Commits should be small
- No broken builds
- Deployments should be idempotent

Applicable areas

- Development
- Testing
- Collaboration
- Deployment

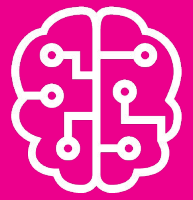
Outcomes

- Data ends up
  - Treated as code
  - Becoming testable
  - Version controlled
- Releases incorporate
  - Source controlled scripts
  - Data ready - Provide data/database(s) for applications
  - Multiple versions of data/database(s) can be made available through pipelines

Q&A

Thank you!

BigAnimal: Faster, safer, smarter, better



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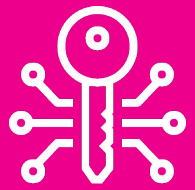

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