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The Next Applied

SOLUTION BRIEF

Database Artifact Factory

Build and publish immutable database artifacts for testing and deployment

Overview

As data teams strive to shorten database development cycles, they often run into two major obstacles. Inconsistent and manual testing slows development time and leads to integrity and quality issues upon deployment. Manual configuration of infrastructure and database resources leads to slow, error prone, and insecure deployments. Understanding how to automate these two stages is paramount to achieving rapid database development.

Building Database Artifacts

In order to ensure consistent testing and deployment, it's important to guarantee the testing and deployment artifacts are defined and immutable. The entire artifact must be defined including underlying infrastructure, database configuration and parameters, schema, and the actual data set incorporated for testing. This artifact must also be immutable to ensure that testing & deployment processes have known inputs and will generate consistent test output or deployments.

How It Works

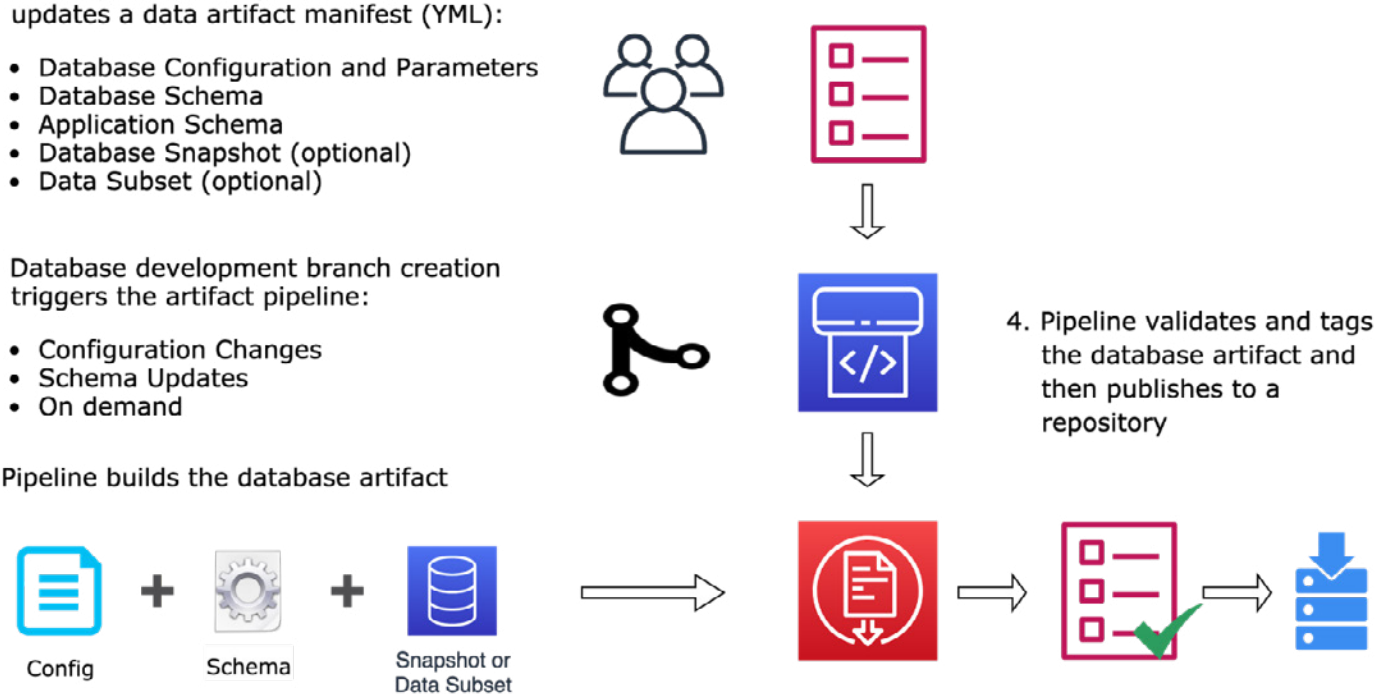
The Database Artifact Factory utilizes a pipeline to build and publish a database artifact when changes to data sets, schemas, configuration or infrastructure are committed to source control. Data operations teams define an artifact manifest which includes infrastructure, configuration & parameters, database & application schemas, and optionally database snapshots or data subsets along with storage information. Upon being triggered, the pipeline reads the manifest and builds an immutable artifact. The pipeline validates and tags the artifact and then publishes to a repository. The artifact is now ready for testing or deployment processes.

1. Data Operations Engineer creates or updates a data artifact manifest (YML):
   - Database Configuration and Parameters
   - Database Schema
   - Application Schema
   - Database Snapshot (optional)
   - Data Subset (optional)

2. Database development branch creation triggers the artifact pipeline:
   - Configuration Changes
   - Schema Updates
   - On demand

3. Pipeline builds the database artifact

4. Pipeline validates and tags the database artifact and then publishes to a repository



End Result

DataOps brings the concept of Continuous Integration and Continuous Deployment (CI/CD) to your database development teams. Automating the creation of database artifacts ensures:

- Fast creation of testing artifacts with consistent input for test validation
- Consistent deployment of infrastructure and database configuration
- Enforced access and security controls
- Enforced data lifecycle controls including PII and localization

Rapid and consistent builds of database artifacts reduces database development cycles by several factors and frees your data teams to focus on development and iteration of database code. Data teams are no longer the bottleneck in application development. Database creation, iteration, and updates are now validated rapidly and in concert with application changes. Security and data controls are incorporated into your development process.

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