CLOUDCONTROL

# CLOUD - DATABASE MIGRATION AND MANAGEMENT CHALLENGES CLOUDCONTROL APPROACH

Enterprises of all sizes are trying to adopt the public cloud at a rapid pace. They often find challenges with migrating existing databases from their on-premise data center and processes around it to the cloud. Talent scarcity and the lack of easy-to-use toolsets make this challenge all the more difficult. CloudControl has a unique offering to meet the Database Migration and Management challenges with its innovative tools, AppZ Platform and AppZ Stacks.

## CloudControl Approach

Cloud Control has vast experience modularizing and automating the CICD process for applications at the enterprise scale with its unique template-based approach. We have adopted the same approach to offer Data Migration and Management as code. We propose to build a framework to build, execute and audit these tasks with full automation using a declarative syntax. Our Dashboard offers observability of the entire SDLC process around data from a single pane of glass.

Here are some of the Data Management tasks for which we have ready templates across multiple Clouds(AWS and Azure in particular) and multiple RDBMS(Oracle, MSSQL, PostgreSQL, MySQL, MongoDB, MariaDB etc.).

1. Database Migration :

    a. Move to Cloud with similar or re-platformed RDBMS(switch to a different RDBMS, i.e., Oracle to PostgreSQL). Replatform does require some analysis and potential changes in the application. We work with clients to streamline the process.

    b. The client has an option to use Managed Database Services from the cloud providers or use resilient/scalable containerized databases running on AppZ Kubernetes cluster. For both of these options, clients interact with a declarative syntax to manage the databases using GitOps process. Managed Database Services from Cloud Providers have a big price tag, and Cloud Control can provide

similar services at a fraction of the cost of running them containerized on AppZ platform.

2. Migrating the Processes around Database :

    a. Setting up ETL/Reporting tools and application integration to make a seamless transition to the cloud. Clients have the option to switch to cloud providers' services(i.e., AWS Glue, Azure Data factory) or continue using the tool of their choice.

    b. We will apply the template-based automation approach to move and establish these services in the cloud and enable GitOps to manage ongoing changes.

    c. Most of these processes require some client-specific customization, and our automation templates are extendible to accommodate these changes.

3. Database Change Management:

    Ongoing application changes demand changes in the database structure. We are ready to use templates across multiple RDBMS to manage Database Change Deployment using GitOps and align them as part of application deployment. Here are some of the changes which are covered

    a. Schema, Tables, Indexes
    b. Database Code
    c. Users and ACL
    d. DML : Insert/Update

4. Database HA and DR setup

    All CloudControl database templates come ready to enable HA/DR capability, whether running managed database services from cloud providers or using containerized databases on AppZ Platform. We also make sure that the DR Database always remains in sync with the primary all the time.

5. Database Security & Privileged Access

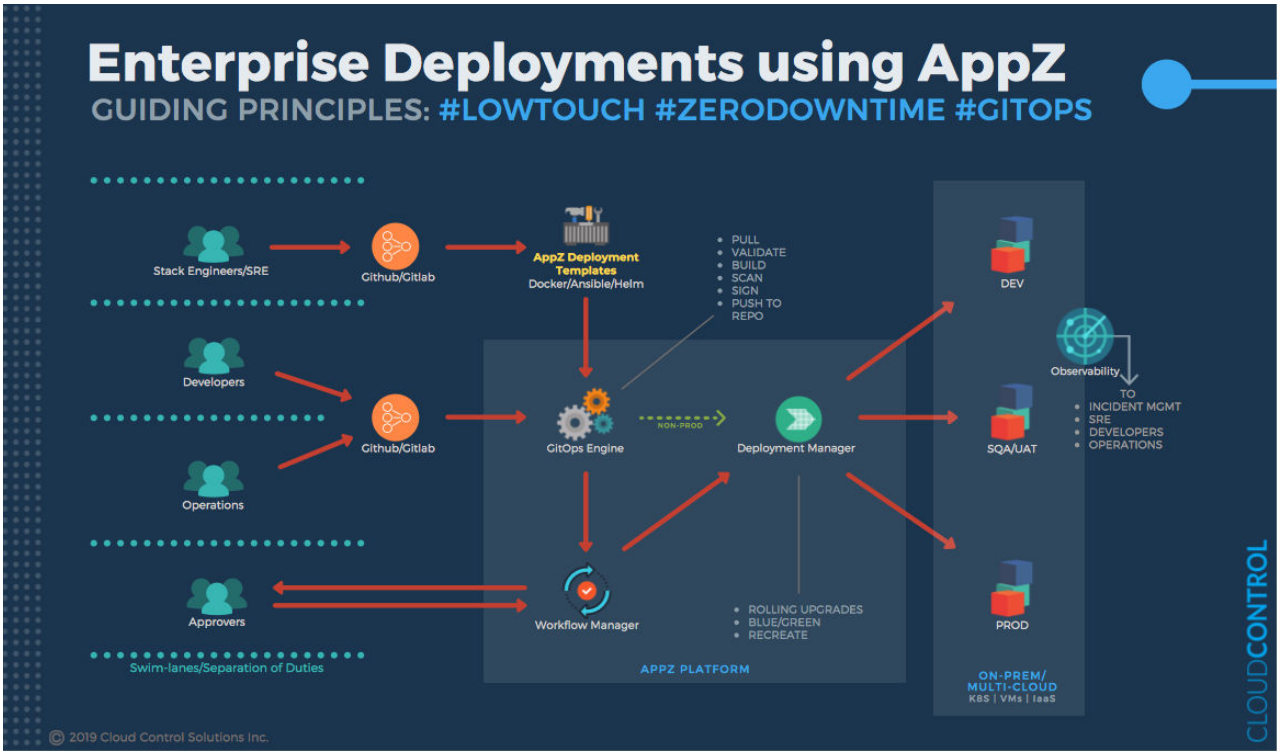
   We ensure that Databases remain fully secure behind the firewall/private network and accessible through break-glass access only. CloudControl offers Hashicorp Vault for all security credential management so that they are not exposed in the source code or file systems.

6. Database Audit and Compliance

   As per the regulatory requirements or otherwise, clients need to run and manage audit tools on the databases. CloudControl makes this process also fully self-service, and GitOps enabled to manage this better. We have built-in logging and alerting, which can look into audit and compliance data and take the necessary action as per client requirements.

   Using the CloudControl dashboard, clients can manage and monitor the status of all the above tasks. AppZ Platform can also integrate with Enterprise Toolsets like ServiceNow, Jira, and others to extend workflow capabilities as per client requirements.

The following diagram depicts our low-touch deployment of application/database and cloud infrastructure with AppZ.




## CloudControl Delivery Model

1. Establish AppZ Platform

   We establish our AppZ Platform in Client on-premise DataCenter or Cloud. This platform acts as a centralized GitOps engine to manage the rest of the application and data migration and management tasks.

2. Build/Customize Automation Templates(AppZ-Stacks)

   We will build/customize our automation templates, called AppZ Stacks. We will either pick up these templates from our library or build and customize them as per client requirements. These templates are core building blocks of our automation, and they already have security, resiliency, and observability pre-installed.

3. Regression Testing with automation

   With AppZ Platform and Stacks in place, we will demonstrate execution of all database migration/management tasks using GitOps with full auditability.

4. Go Live

   With tested GitOps enabled database migration and management tasks in place, clients can continue moving to the higher regions DEV>UAT>PROD and go live within days/weeks.

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## About the Author

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Accomplished Cloud/Data Architect with track record of delivering enterprise-class distributed IT solution for business applications. Innovator with a mission to digitize, automate, and enable self-service of Enterprise IT and Business processes. A technologist who can translate complex technologies into usable tools and communicate the same to all levels of management and development teams. Well adept with SDLC and Data Protection requirements within the highly regulated Financial Services industry. Led multiple small teams, mentored and coached to deliver complex projects on time within a frugal budget. Keep a close eye on emerging technology and open source solutions to build cost effective and lasting IT solutions.