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Camunda 8 Self Managed IaC AWS

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Summary

1. Solution Description

The Infrastructure as Code (IaC) project **aims to automate the creation and configuration of an environment for Camunda 8**, a business process automation platform. **The idea is to use Terraform**, a tool that allows defining the entire infrastructure as code, making it easier to reproduce and manage this environment efficiently and in a controlled manner. This way, any individual or team can create the necessary environment to run Camunda 8 without relying on manual or repetitive configurations.

The infrastructure will be deployed on AWS, utilizing Amazon EKS (Elastic Kubernetes Service) to manage the containers running Camunda 8 services. Additionally, Terraform will provision resources such as **RDS (Relational Database Service) for the PostgreSQL database**, **Elasticsearch** for search and data indexing, and **Keycloak** for authentication and authorization management. The use of an **Ingress Gateway** will ensure controlled and secure access to services in a scalable manner.

With Terraform modules, this entire infrastructure will be generated and managed automatically, enabling the environment to be created quickly with the necessary consistency. This approach reduces human errors, increases security and efficiency, and facilitates system maintenance and scalability as the application grows or requires adjustments.

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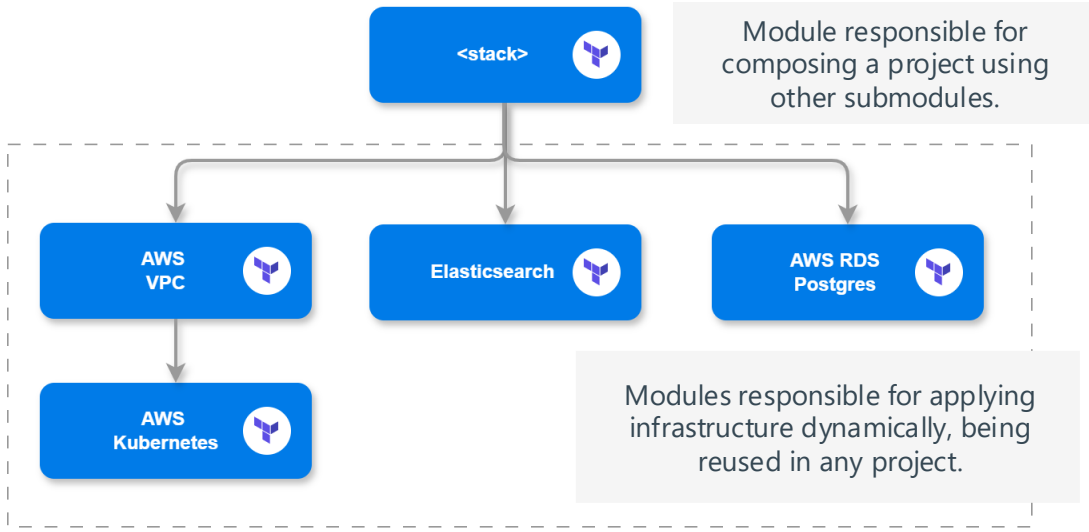
2. DevOps

IaC Modules

1. **The creation of Terraform modules** to represent the technology stacks required for deploying the Camunda 8 platform **involves defining core modules that encapsulate high-level infrastructure** (such as networks, clusters, and databases) **and specialized submodules for each technology (AWS, GCP, Azure, etc.)**. These submodules isolate specific resources, promoting reusability and easy maintenance.

2. Each module is developed with **configurable parameters, allowing customization** without modifying the source code. **Versioning and storage in Git** repositories ensure change control and consistency across projects, enabling different teams to use the same modules in a standardized manner.

Composition of IaC projects



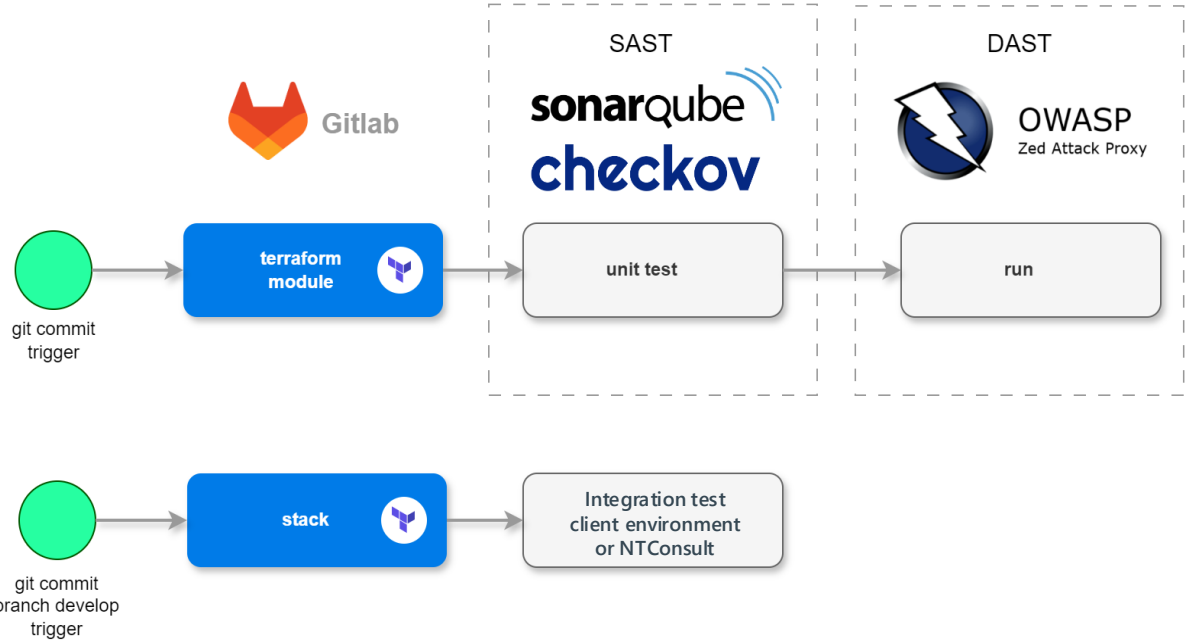
3. DevOps and DevSecOps

Infrastructure pipelines

1. **To ensure quality**, a quality gate with **SonarQube is implemented in the CI/CD pipeline**. It runs unit tests on Terraform using tools like Terratest or Checkov, validating syntax, security standards, and resource logic.

2. Next, **integration tests with Java are performed, simulating the interaction between the provisioned infrastructure and real applications** to ensure that services are operational (e.g., validating database connections or APIs). **Only modules that pass all tests and validations are released** for use, ensuring reliability, security, and functionality across all projects.

NTConsult Terraform Pipeline for all clients



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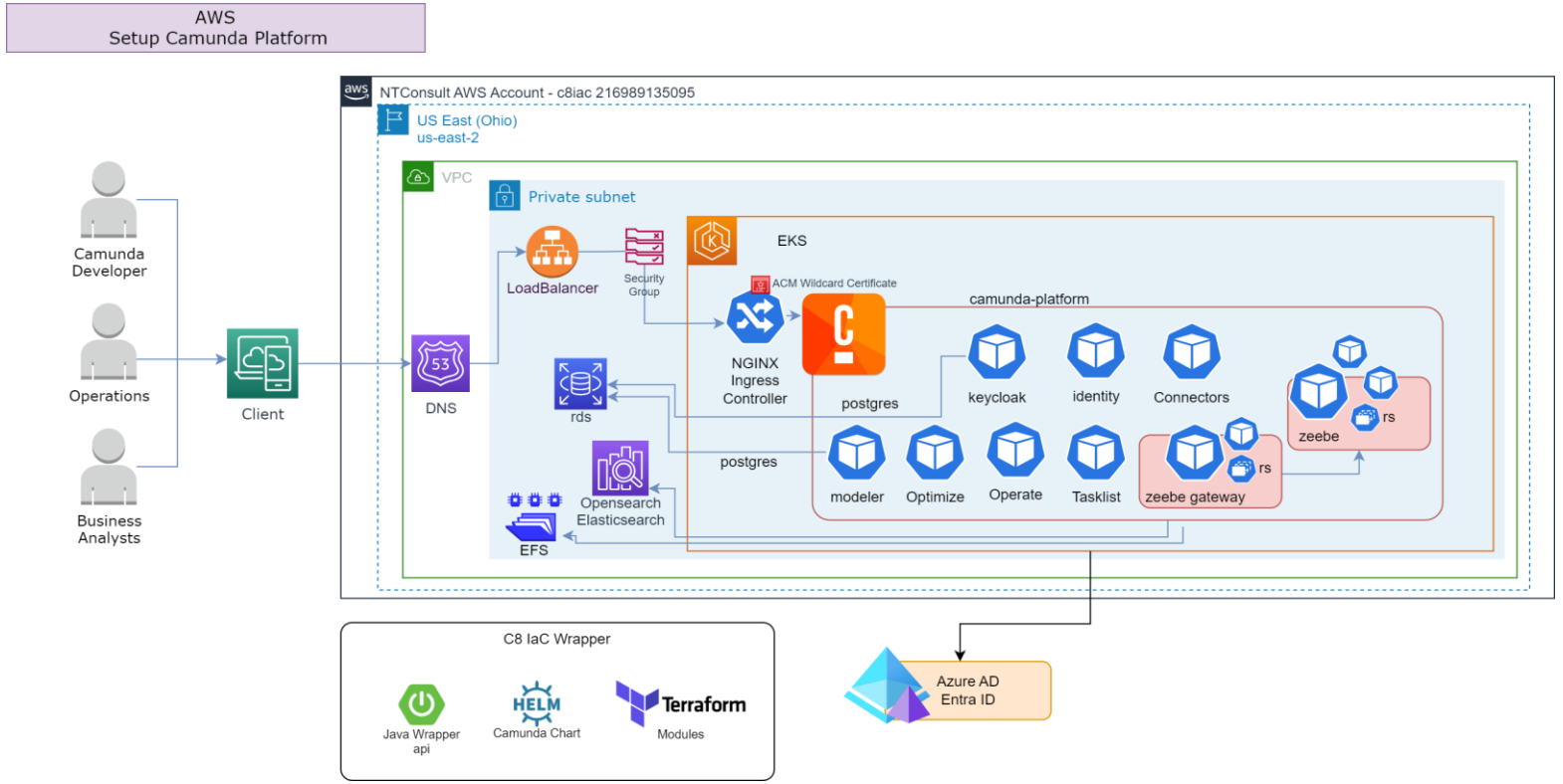
4. Architecture

Components

The architecture of Camunda 8 consists of several essential components:

1. **Zeebe** (process orchestration engine) is responsible for executing workflow processes.
2. **Modeler** offers a collaborative environment to model, simulate and deploy BPMN processes.
3. **Optimize** offers analytics and reporting to improve performance.
4. **Operate** provides real-time monitoring and management of processes.
5. **Tasklist** allows users to interact with human tasks.
6. **Keycloak** is used for authentication and authorization.
7. Additionally, the system can integrate with other components such as **databases and Elasticsearch** for search and data indexing.



Internal documentation can be found at: https://gitsrv.ntconsult.com.br/coe-architecture/platform/tf-modules/tf-module-aws-c8

5. Benefits

The implementation of Infrastructure as Code (IaC) brings significant improvements in efficiency, security, and scalability. By automating the deployment and configuration processes, you can reduce manual effort, minimize errors, and optimize resource utilization. Below are some of the key benefits achieved with this approach:

- **Reduction from 30 days to 30 minutes for installing and configuring Camunda** in a Greenfield AWS environment.
- **Reduction from 30 days to one week** for installing and configuring Camunda in non-Greenfield AWS environments.
- Reduction of installation errors.
- Increased accuracy in security configurations.
- Fast duplication of environments.
- Optimization of resources and cost reduction in installation, including machines and load balancing.
- Alignment of AWS FinOps with Camunda.

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Thank you!

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