

# AWS Well-Architected EKS single-tenant SaaS environments for **Flexibility Plug** fintech ecosystem middleware



## Executive Summary

We partnered with Flexibility to deploy an AWS Well-Architected multi-account EKS SaaS platform for their middleware software, **Plug**. Our goal was to improve, secure, scale, and automate their current AWS cloud infrastructure for their cloud environments so they can efficiently provide core transaction processing systems for the banking, payment and insurance industries.

## Customer Challenge

The customer was looking to develop a highly available and cost-efficient single-tenant SaaS environment on AWS. They had a single AWS account with a manually deployed environment not following recommended practices, making it difficult to both develop and test new features, as well as almost impossible to onboard new SaaS customer environments. The infrastructure timeline was very difficult to predict, and new projects stretched on longer than expected, resulting in wasted time and increased costs.

The challenge was to improve, secure, scale and automate their current AWS Cloud Infrastructure environments for this product. Enabling a cross-project AWS reference architecture through best practices that supports:

- **Reusability and repeatability** (standardized code for every single-tenant SaaS customer environment).
- **Simplified deployment and troubleshooting** experience by declaratively defined IaC.
- **Disaster recovery** support by design as IaC will enable deployment of the same stack in another AWS Region,
- **Security and audit** through a single source of truth defined as versioned code in infrastructure repository.
- **Full visibility** of the code for DevOps and Cloud Architecture teams.
- **Portability** of the solution to other AWS accounts.

## Partner Solution

We conducted a thorough review using the AWS Well-Architected tool. The resulting report summarized their workload review along with an improvement plan and architectural guidance we then developed into recommendations and step-by-step guidelines on how to improve their workload.

Afterward, we presented a complete Statement of Work with the improvement and remediation roadmap for their current EKS single-tenant SaaS AWS solution.

## About Flexibility

The word "flexibility" is written in a white, lowercase, sans-serif font and is centered within a solid red rectangular box.

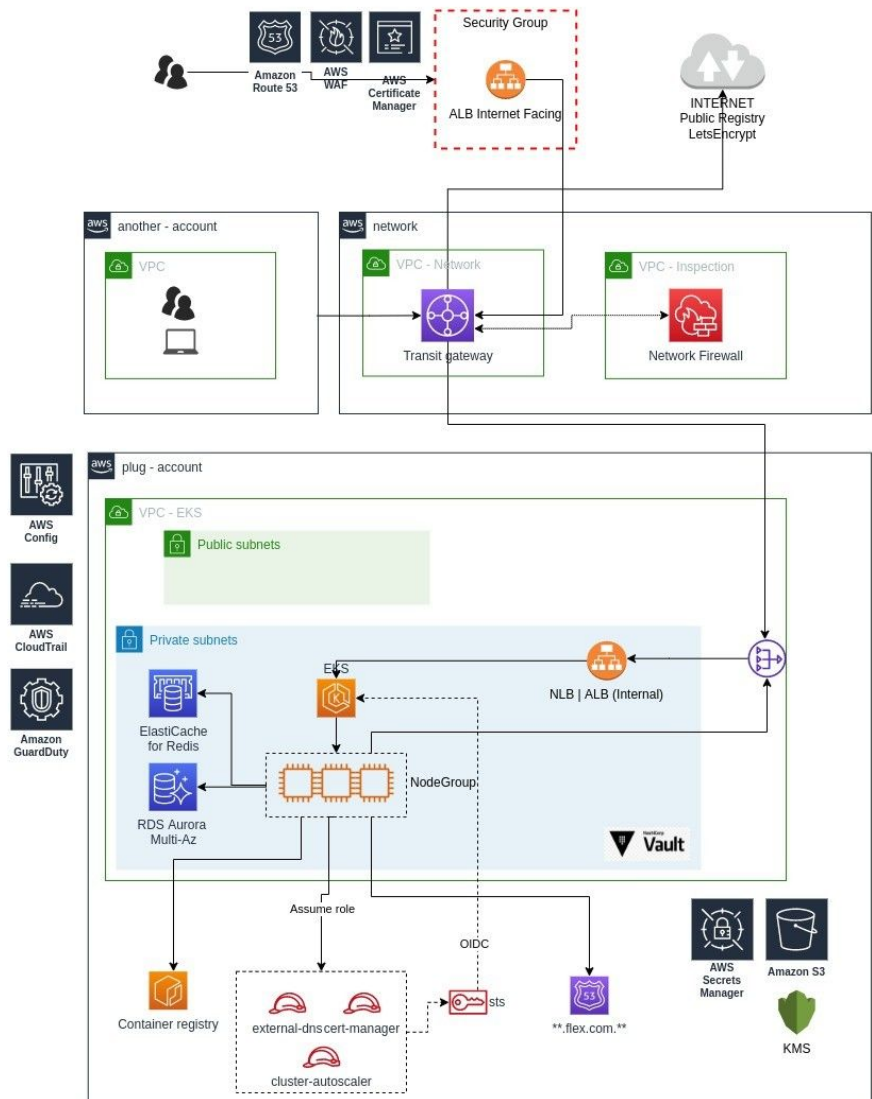
Flexibility is a fintech (finance technology) company that helps Latin American banks, fintechs, retailers, and insurers connect to the financial ecosystem and offer better digital products. Their middleware software solution, Plug, provides pre-developed modules and APIs for connections with clearing houses, payment systems, ATMs, cash networks, cards, and core banking in the cloud.

Our role was then to design, build (develop IaC), and deploy the SaaS microservices workloads in automation on AWS EKS (Elastic Container Service for Kubernetes) in a reproducible, secure, reliable, and scalable way.

The AWS solution comprises a Java Microservices Architecture deployed in Kubernetes including the following services: AWS Organizations, IAM, Identity Center (SSO), Route53, ALB, NLB, WAFv2, Shield, ACM, VPC, TGW, NFW, S3, EC2, EKS, ECR, RDS Aurora, SNS, Lambda, CloudWatch, CloudTrail, Guardduty, Config, Backup Service, Parameter Store and KMS.

The entire infrastructure was deployed through Infrastructure as Code (IaC) with Terraform + **binbash Leverage™** Framework ([binbash.com.ar/leverage](http://binbash.com.ar/leverage)), which includes a collection of reusable, tested, production-ready E2E IaC solutions. Leveraged by modules written in Terraform, Ansible, Dockerfiles, Helm Charts, and Python.

Other non-AWS solutions included were Vault, Prometheus, Grafana, EFK (Elastic Stack), SonarQube, ArgoCD, Veler, Cert Manager, Nginx Ingress Controller, Load Balancer Ingress Controller, External DNS, and K8s Cluster Autoscaler.





## Results and Benefits

### ✓ 100% IaC REUSABLE WELL-ARCHITECTED SOLUTION & OPERATIONAL EXCELLENCE

By moving to a single tenant SaaS model, the company is able to offer greater flexibility to its customers. Customers can now customize their software to their specific needs. The adoption of AWS Well-Architected EKS single-tenant SaaS environments enabled the **Flexibility Plug** middleware solution to scale seamlessly based on varying workloads.

This allows the middleware to support the growing financial ecosystem that it connects. Additionally, the solution provides the agility to deploy updates and new features without affecting the availability of the system. This improvement has reduced downtime and has allowed the middleware solution to adapt quickly to new requirements.

Instead of manually provisioning infrastructure, the real benefits of cloud adoption come from orchestrating infrastructure through code. However, this is really challenging to achieve, in this case, it was taking up to 12 months to achieve the desired infrastructure state in AWS.

By using our **binbash Leverage™** ([leverage.binbash.com.ar/](https://leverage.binbash.com.ar/)) solution we had their AWS Landing-Zone up and running in a few weeks, and their entire AWS Well-Architected cloud-based SaaS environment solution on EKS in about 3 months. Currently we have reduced new environment orchestration to less than a week.

Flexibility now has a Standard AWS Reference Architecture cross-project for their single tenant SaaS with:

- Modularized IaC approach
- Modules and components based on the best practices mainly following the AWS Well-Architected Framework.
- The ability to implement, reuse and scale their production workloads faster.
- Enable consistent governance across environments and allow for evolutionary architectures.
- Repeatable, composable, extensible & customizable IaC.



## ✓ ENHANCED NETWORKING & SECURITY

- The AWS Well-Architected EKS single-tenant SaaS environments provide robust security features, including network isolation, access controls, and encryption. The adoption of these features in the **Flexibility Plug** middleware solution enhanced the overall security of the financial ecosystem it connects. This has helped the solution to meet regulatory compliance requirements and provide a secure environment for financial transactions.
- Applied security by design: For authority AWS Identity Center, IAM Policies & Roles, and EKS IRSA. For audit and compliance CloudTrail, Guardduty, and Config cross-account. Advanced networking with WAFv2, TGW + NFW, Security Groups, and NACLs. This hardening at all layers has reduced security incidents to zero in the last 2 years.

## ✓ INFRASTRUCTURE QUALITY, COST OPTIMIZATION & PERFORMANCE EFFICIENCY

- Better infrastructure code quality and module maturity (proven and tested), so now in-production live environments can be tested in real-time.
- The 100% reusable approach has significantly improved financial savings in infrastructure & development.
- The Optimized infrastructure with right-sized Spot EKS nodes, auto-scaling, usage monitoring and budgets, S3 lifecycle policies, and consolidated DEV / QA environments has further lowered costs.
- The adoption of AWS Well-Architected EKS single-tenant SaaS environments allowed the **Flexibility Plug** middleware solution to easily scale up or down based on demand, reducing the need for over-provisioning of resources. Additionally, the solution uses AWS services that are billed based on usage, allowing the company to pay only for the resources they consume.
- Fully automated build & deploy processes now make daily to monthly deployments at the snap of a finger.
- The single tenant SaaS model allows the company to offer faster and more responsive software performance. The adoption of AWS Well-Architected EKS single-tenant SaaS environments improved the overall performance of the **Flexibility Plug** middleware solution. The solution can leverage the capabilities of AWS services, such as auto-scaling and load balancing, to provide high availability and improved response time.

## About binbash

binbash

We're a Select Tier Services Partner, with 5+ AWS Certifications and 6+ years of AWS Consulting service experience. We focus on creating reusable, high quality AWS Well-Architected Infrastructure for your Startup with **binbash Leverage™** ([binbash.com.ar/leverage](https://binbash.com.ar/leverage)) cloud infrastructure code.