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Jumia Multi-Cloud Data Residency

Jumia engaged Deimos to deploy JumiaPay in Egypt as a compliant, on-site PSP. The hybrid system combined monoliths and microservices, leveraging Kubernetes, Kafka, and various databases. Data migration, security, and observability were key. Infrastructure was managed via Terraform, ArgoCD, Packer and Cluster API.

THE CHALLENGE:

JumiaPay Deployment in Egypt

Jumia partnered with Deimos to deploy JumiaPay, a localised on-site Payment Service Provider (PSP), specifically tailored for the Egyptian market. This initiative aimed to meet strict regulatory requirements while ensuring seamless, high-performance payment processing.

A key challenge was navigating Egypt's dynamic legislative environment, which required a fully isolated infrastructure—completely disconnected from public cloud providers—to ensure compliance. The solution involved a hybrid architecture, integrating monolithic systems with microservices, built on a diverse technology stack that included Java, Python, PHP, and Go.

Additionally, Deimos managed a complex data migration from the existing JumiaPay instance to a newly provisioned, self-managed infrastructure in Egypt. The transition had to preserve service continuity, security, and operational efficiency, while aligning with Jumia's long-term strategy for scalability and resilience.

This deployment also involved:

- Self-hosted Kubernetes clusters for application orchestration.
- Custom database replication and backup strategies across MySQL and PostgreSQL.
- Local security measures, including Web Application Firewalls (WAF), Intrusion Detection Systems (IDS), and PCI-compliant encryption.
- Automated CI/CD pipelines and observability tools to maintain platform reliability and performance.

Through this multi-phased migration, Jumia and Deimos successfully built a secure, compliant, and future-ready payments platform, positioning JumiaPay as a cornerstone of Egypt's digital commerce ecosystem.

THE SOLUTION

The proposed solution in the document focuses on deploying JumiaPay as a standalone, locally-hosted payment service provider in Egypt to ensure regulatory compliance and operational efficiency. The key aspects of the solution include:

Hybrid Architecture

- A combination of monolithic and microservices-based components.
- Multi-language tech stack (Java, Python, PHP, Go).
- Managed databases (MySQL, PostgreSQL, MongoDB).
- Kubernetes for container orchestration.
- Kafka for messaging and event streaming (self-hosted in Egypt).

Data Residency Compliance

- Fully disconnected from public clouds to comply with Egyptian regulations.
- Migration of existing JumiaPay instance to an isolated, local infrastructure.
- Use of AWS KMS for encryption while ensuring compliance with PCI security standards.

Infrastructure & Deployment

- Cluster API for managing Kubernetes clusters on Vsphere.
- Use of ArgoCD and Helm for deployment automation.
- Cilium for high-performance networking and observability.
- Harbor registry for local container image storage.
- MINIO for local object storage.

Security & Reliability

- Encryption at rest & in transit (AWS KMS, TLS 1.2+).
- Key Management with AWS KMS.
- Regular backups using MINIO for PostgreSQL & MySQL databases.
- HAProxy & FortiWeb for secure traffic routing.
- BGP peering setup for efficient load balancing.

Operational Excellence

- Standardised deployment readiness checklist.
- Automated testing (Terraform validation, CI/CD, observability via Grafana & Prometheus).
- Rollback mechanisms to AWS RDS in case of failure.

Cost Optimisation Strategy

- Right-sizing of resources (EC2, EKS, RDS, S3).
- Use of Reserved Instances, Savings Plans, and discount structures.
- Continuous cost assessments to optimise expenses.

JUMIA

ABOUT JUMIA

Jumia is Africa's leading e-commerce platform, offering online shopping, logistics, and payment services across multiple countries.

INDUSTRY: Digital Payments
LOCATION: Nigeria

> Deimos helped us launch a compliant, high-performance JumiaPay platform in Egypt. Their technical expertise and agile support made a complex migration seamless and set us up for long-term success.

PEDRO FANGUEIRO | CTO | JUMIA

ABOUT DEIMOS

Deimos helps businesses save, secure, & scale in the cloud with expert guidance across all major public clouds (AWS, GCP, Azure, & Huawei) & a range of cloud-native technology providers including Gitlab, JumpCloud, Datadog and Grafana. Clients can pay in their local currency of choice and use our Rebate Calculator to see exactly how much they could save by partnering with Deimos. The more services you bundle, the greater the savings. Plus, qualifying clients get free annual cloud assessments, monthly optimisation, & dedicated support. Scale smarter with Deimos.

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THE RESULT

The JumiaPay project demonstrated that a compliance-first approach, backed by automation, observability, and strong security practices, ensures a successful, scalable, and cost-effective deployment. However, hybrid deployments introduce complexity, and proper planning for migration, compliance, and cost control is essential.