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Migrating and Modernizing Validose Infrastructure on AWS with CI/CD, Cost Optimization, and Redis Integration

validose

Validose is a U.S.-based healthcare technology startup pioneering innovative solutions to manage and monitor medication adherence. By combining digital health tools with robust data analytics, Validose aims to improve patient outcomes and ensure medication compliance in clinical and commercial settings.

Customer Challenge

As Validose prepared to scale its operations, it faced the need to transition from its existing infrastructure to a more secure, cost-efficient, and scalable environment. The team required a robust multi-environment AWS foundation, enhanced automation via CI/CD, optimized cloud spending, the ability to manage ephemeral in-memory data with minimal overhead, and early IoT capabilities to integrate with connected medical devices. Validose turned to Binbash to lead this critical migration and modernization effort.

Solution

binbash architected and executed a full migration of Validose's infrastructure to AWS. The solution included the deployment of three environments—development, staging, and production—based on AWS best practices using Infrastructure-as-Code (Terraform).

Key features included:
1. Multi-account AWS Landing Zone: Using the Binbash Leverage ™ framework to deploy secure, scalable accounts.
2. Lambda & CI/CD: Support for event-driven compute with AWS Lambda, and automated deployments using GitHub Actions and environment-specific CI/CD workflows.
3. Security & Cost Optimization: Implementation of AWS Organizations, IAM boundaries, budget alerts, and cost visibility tools.
4. Redis for Fast In-Memory Storage: A Redis instance was provisioned for low-latency data tracking (e.g., per-user or per-token endpoint request logs), designed for ephemeral use and short TTL.
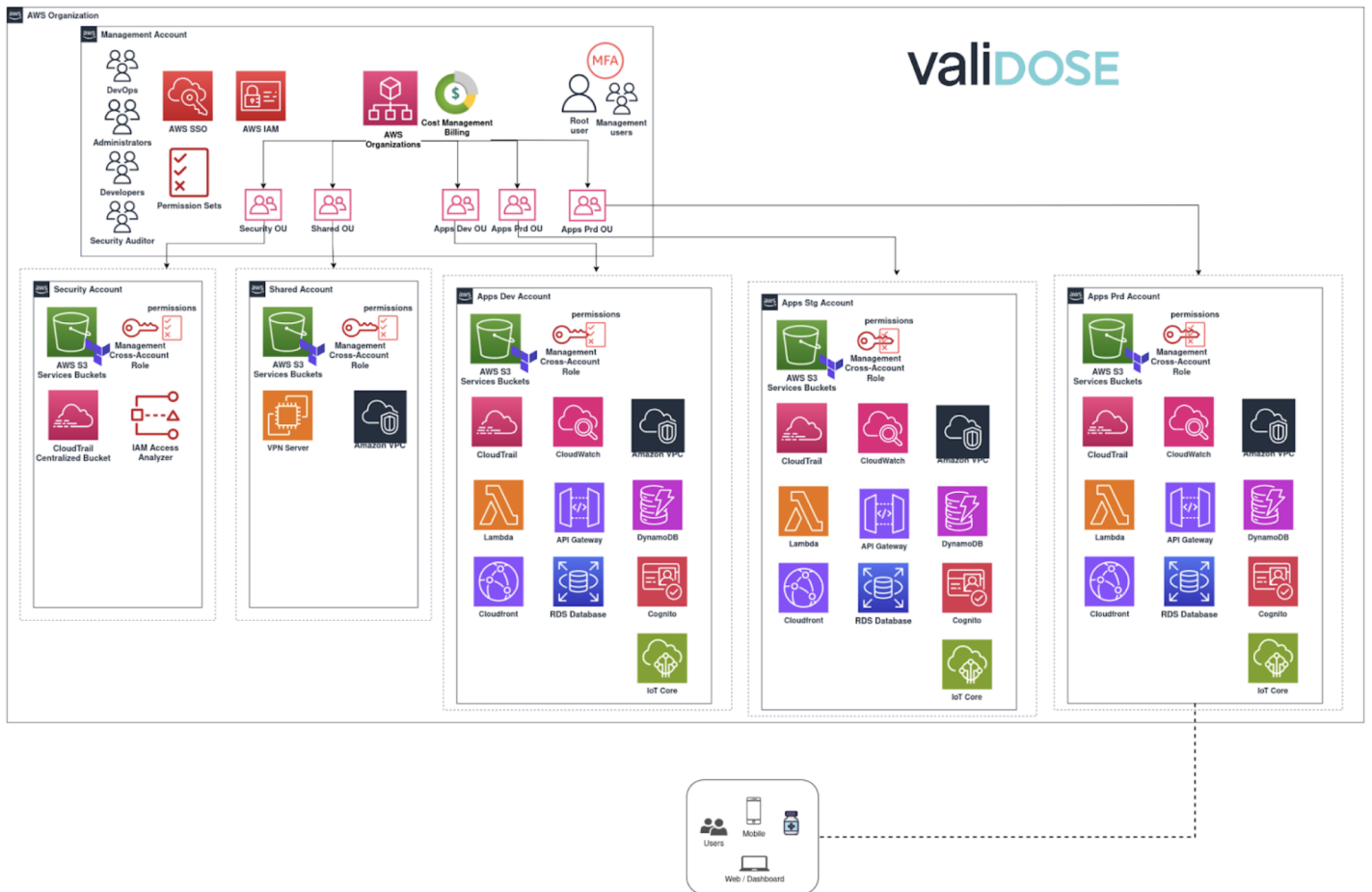
5. **IoT Core Deployment:** A foundational AWS IoT Core layer was implemented to enable secure device connectivity and messaging, serving as a starting point for integrating medical devices and supporting future IoT-driven workloads.

Key Components of the Solution

- **Infrastructure-as-Code:** All infrastructure deployed using binbash Leverage framework with Terraform, ensuring repeatability and traceability.
- **Multi-environment Setup:** Isolated development, staging, and production environments.
- **CI/CD Workflows:** GitHub Actions configured for automated, environment-specific deployments.

- **Security Hardening:** Implemented IAM boundaries, budget alerts, CloudTrail logging, and encryption.
- **Observability:** CloudWatch integration for monitoring and alerting across all environments.
- **Redis Integration:** Deployed Redis for real-time request tracking with ephemeral storage
- **IoT Enablement:** Configured AWS IoT Core with device rules and messaging for proof-of-concept integrations.

Results and Impact

- **Accelerated Deployment:** Full infrastructure migration completed with automated provisioning across all environments.
- **Improved Developer Velocity:** CI/CD pipelines reduced manual deployment effort and errors.
- **Cost Awareness:** Budget alerts and reports gave the team visibility into their AWS usage.
- **Production Readiness:** A scalable, secure AWS foundation now supports Validose's growth.
- **Flexibility with Redis:** The Redis deployment offered a high-performance solution for caching and rate tracking, extendable to prod.

IoT Readiness: IoT Core provided the foundation for future integration of connected medical devices.

Key Milestones
- Landing Zone Setup – Provisioned AWS accounts via Leverage™.
- CI/CD Integration – Configured GitHub Actions across environments.
- Security & Cost Controls – Implemented IAM, budgets, and monitoring.
- Redis Deployment in Dev – Deployed and documented in-memory DB for internal testing.
- IoT Core Enablement – Deployed IoT Core with device configuration and rules for initial device connectivity.
- Staging & Production Rollout – Fully replicated and validated environments.

Conclusion
By migrating to AWS and modernizing its cloud stack with Binbash's support, Validose gained a secure, automated, and scalable infrastructure foundation. This migration—aligned with the AWS Well-Architected Framework—enabled Validose to support current operations, anticipate future scale, and quickly adopt enhancements like Redis, IoT Core, CI/CD pipelines, and granular cost control.