



Driving Water Stewardship: Kilimo's Cloud Modernization with AWS Security and Cost Optimization

Executive Summary

Kilimo, a pioneering company dedicated to advancing water stewardship in agriculture, needed to enhance its cloud infrastructure to support its growing initiatives and partnerships with global companies. Collaborating with binbash, an AWS Advanced Tier Services Partner, Kilimo undertook a comprehensive cloud modernization project. This case study highlights how Kilimo leveraged AWS's Well-Architected best practices, along with binbash Leverage™, to significantly improve security, cost management, and operational efficiency, setting a strong foundation for its mission to promote water conservation.

Customer Challenge

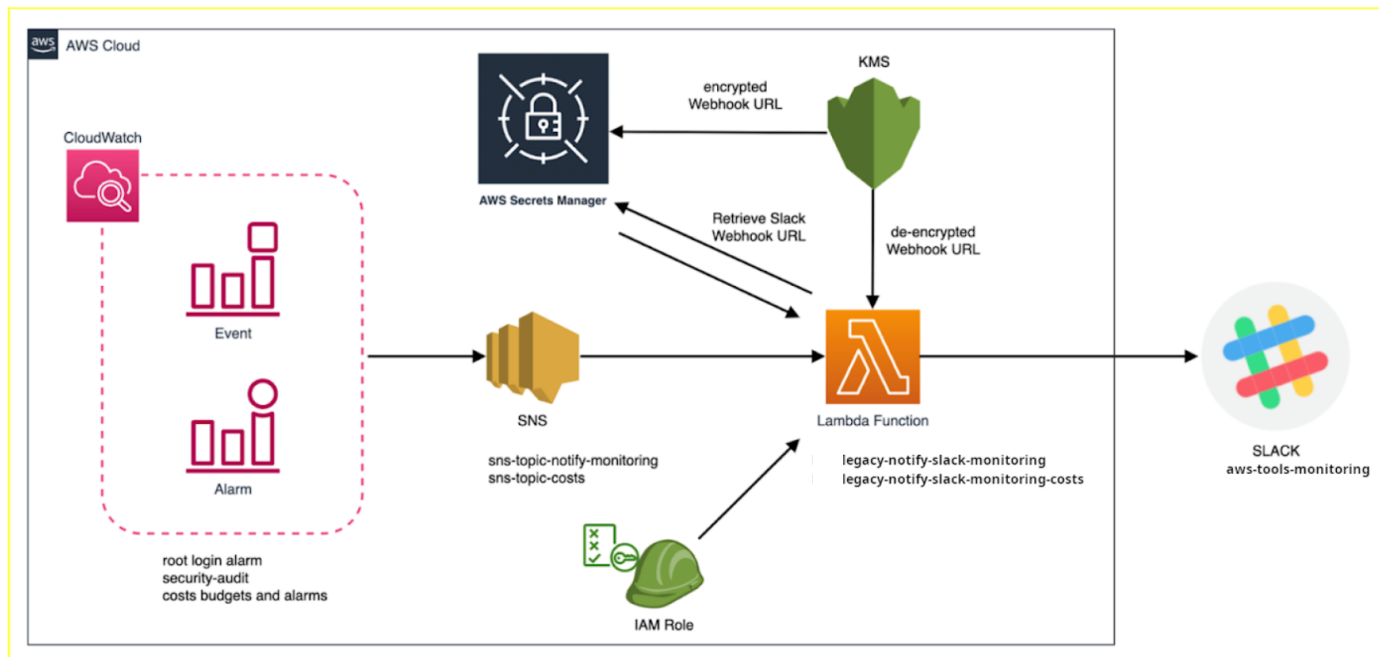
- As Kilimo expanded its water stewardship projects and collaborations, several challenges emerged:
- **Security:** Ensuring the security of sensitive data and compliance with industry standards across multiple AWS accounts.
- **Cost Management:** Optimizing cloud costs while scaling services to support a growing number of farmers and stakeholders.
- **Operational Efficiency:** Streamlining cloud operations to ensure quick and reliable service delivery across different regions and projects.

Solution

binbash provided a comprehensive solution to modernize Kilimo's infrastructure by deploying a Well-Architected AWS Security Baseline, implementing cost monitoring tools, and integrating AWS services for enhanced security and efficiency. The use of Infrastructure as Code (IaC) via Terraform with binbash Leverage™ reference architecture for AWS was critical in accelerating the delivery of these solutions.



Kilimo is a data-driven platform focused on water management for agriculture, helping farmers optimize irrigation practices and reduce water usage. By leveraging satellite imagery, weather data, and field information, Kilimo provides actionable insights that allow farmers to make informed decisions about when and how much to irrigate, ultimately improving crop yield and sustainability. The platform integrates advanced algorithms to analyze environmental variables, offering real-time recommendations and reports that help farmers maximize water efficiency. Kilimo's mission is to contribute to the global challenge of water scarcity by promoting sustainable agricultural practices and helping farmers use water more effectively.



Key Components of the solution

AWS Well-Architected Security Baseline (<https://www.binbash.co/services-catalog/security-baseline>):

Secure Defaults: Configured secure defaults across all Kilimo AWS accounts, including password policies, MFA, encrypted EBS by default, and secure S3 bucket policies.

AWS CloudTrail: Enabled CloudTrail across all accounts to audit AWS services and maintain a centralized log of all operations.

AWS Config: Aggregated all resource configurations into a central security account, enabling governance and compliance monitoring.

Amazon GuardDuty: Deployed GuardDuty for continuous threat detection and protection of AWS accounts and data.

Cost Monitoring and Optimization (<https://www.binbash.co/services-catalog/cost-monitoring>):

AWS Cost Explorer and Budgets: Configured tools to provide insights into cloud spending and set up budgets with notifications to monitor and control costs.

AWS CloudWatch Billing Alarms: Implemented billing alarms to trigger alerts when spending exceeds predefined thresholds, allowing proactive cost management.

AWS Pricing Model Recommendations: Provided guidance on using Reserved Instances,



binbash®

Saving Plans, and Spot Instances to optimize costs.

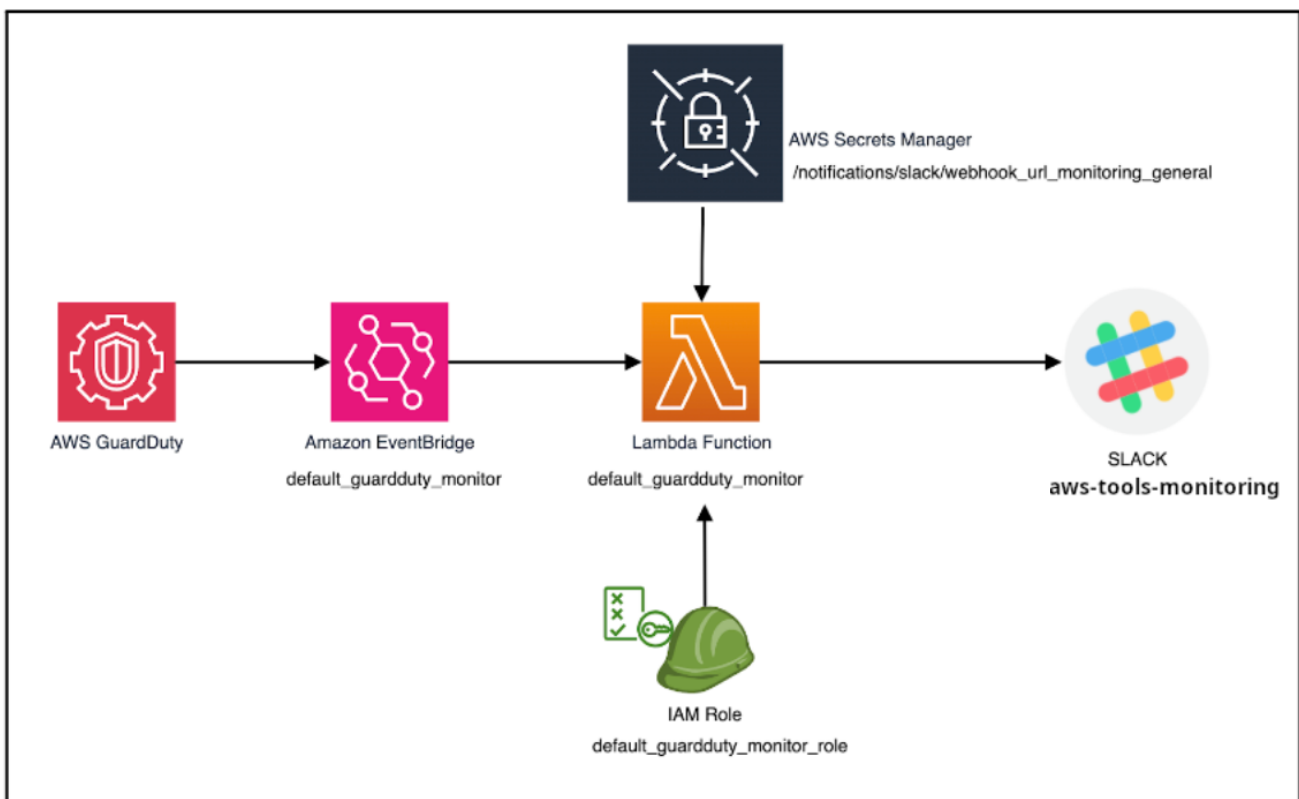
AWS Web Application Firewall (WAF) Integration:

WAF and Shield: Deployed WAF v2 and AWS Shield to protect Kilimo's web applications and APIs from common web exploits and DDoS attacks.

ALB Integration: Integrated WAF with Application Load Balancers (ALBs) to ensure robust security for Kilimo's online services.

Notifications and Automation:

SNS and Lambda: Set up SNS topics and Lambda functions to send security and cost-related notifications to Slack, ensuring real-time alerts and response.



Results

By deploying AWS's Well-Architected Security Baseline and leveraging binbash's expertise, Kilimo achieved several significant outcomes:

Enhanced Security: Kilimo's AWS infrastructure is now fortified with industry-standard security



practices, ensuring the safety of sensitive data and operations.

Improved Cost Management: The implementation of cost monitoring tools and proactive budget management resulted in optimized cloud spending.

Increased Operational Efficiency: Automated processes and real-time notifications have streamlined Kilimo's cloud operations, enabling quick response to security and cost-related events.

Robust Application Protection: With AWS WAF and Shield, Kilimo's web applications are better protected against threats, ensuring reliable service delivery.

Key Milestones

AWS Security Baseline Implementation: Established secure and compliant infrastructure across all Kilimo AWS accounts.

Cost Monitoring & Optimization: Deployed tools for detailed cost analysis and proactive budget management.

AWS WAF Deployment: Integrated advanced security measures to protect Kilimo's web applications and APIs.

Automation of Notifications: Enabled real-time alerts through SNS and Lambda, improving responsiveness to critical events.

Conclusion

The collaboration between Dily and binbash resulted in a robust, scalable, and secure cloud infrastructure, perfectly aligned with AWS Well-Architected best practices. The strategic use of AWS ECS Fargate, CloudFront, and Lambda, combined with the efficiency of binbash Leverage™ for AWS, enabled Dily to rapidly expand its service offerings while maintaining high standards of security and operational excellence. This transformation has set a solid foundation for Dily's continued growth in the automotive services industry.