White Paper: AWS Best Practices Implemented Across Projects

(Showcasing Security, Automation, Cost Optimization & More)

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Executive Summary

Over multiple projects, we have implemented industry-leading AWS best practices to enhance security, automation, and cost efficiency. This white paper outlines the strategies and technologies adopted to ensure scalable, secure, and optimized cloud operations.

1. Security & Identity Management ■

IAM Roles & Policies: - Designed and enforced IAM roles and policies adhering to the Principle of Least Privilege (PoLP). - Ensured that each role has only the minimum permissions required to perform its intended tasks, reducing the risk of unauthorized access. AWS Secrets Manager: - Migrated sensitive credentials (API keys, database passwords, certificates) from code and configuration files into AWS Secrets Manager. - Configured automatic rotation of secrets to minimize exposure risk. - Enforced encrypted secret storage using AWS KMS for additional data protection. Benefits Achieved: - Reduced attack surface for potential breaches. - Achieved compliance with security and audit requirements (e.g., ISO 27001, SOC 2). - Eliminated the need to store credentials in source code repositories.

2. Infrastructure as Code (IaC) ■■

Terraform-based Provisioning: - Adopted Terraform for defining AWS infrastructure in a declarative and version-controlled manner. - Implemented reusable Terraform modules to standardize provisioning across environments (Dev, Staging, Production). - Enabled consistent, repeatable deployments with minimal manual intervention. Automation & Deployment Pipeline Integration: - Integrated Terraform scripts into CI/CD pipelines for automated infrastructure provisioning during application deployments. - Applied GitOps principles to track and review all infrastructure changes via pull requests. Benefits Achieved: - Reduced deployment time by up to 70% compared to manual provisioning. - Enhanced reliability through environment parity (Dev matches Prod). - Improved disaster recovery readiness by enabling rapid, consistent rebuilds.

Conclusion

By implementing security-first identity management and automated, Terraform-driven infrastructure provisioning, these AWS best practices have significantly improved

operational efficiency, compliance, and cost control across projects. These measures position our cloud environments for long-term scalability, security, and performance.