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Modernizing Supply Chain Insights: Datup's GenAI Platform Migration with AWS

∙∙∙DATUP

Datup is an AI-driven platform empowering supply chain teams with advanced predictive analytics to optimize operations, reduce excess inventory, and mitigate stockouts. By seamlessly integrating internal and external data sources, Datup enables accurate demand forecasts, strategic inventory management, and data-driven decision-making for leading companies across Latin America.

Executive Summary

Datup partnered with binbash to migrate its AI-based SuplAI solution from OpenAI to AWS Bedrock. The project involved implementing a robust cloud environment, including an AWS Landing Zone, Kubernetes EKS clusters, and a Retrieval-Augmented Generation (RAG) architecture to enhance cost-efficiency, scalability, and data security. Implementing the binbash Leverage™ framework, Datup achieved a seamless transition, ensuring their GenAI capabilities scaled to meet growing demand while reducing operational costs.

Customer Challenge

- **Cost Optimization:** The rapid growth of SuplAI resulted in a 200% increase in usage, making OpenAI's pricing model unsustainable.
- **Scalability:** Datup required a scalable cloud infrastructure to support its expanding customer base.
- **Security:** Handling sensitive customer data necessitated compliance with stringent security and privacy standards.
- **Operational Efficiency:** Streamlining the integration of AI and RAG models with existing workflows was critical to improving response times and reducing manual interventions.

Solution

binbash implemented a comprehensive AWS Well-Architected solution, addressing Datup's challenges through the following key components:

1. **AWS Landing Zone:**
   - Established a multi-account structure with centralized management, governance, and cost control.

binbash's work increased the app's response accuracy to 90% and decreased response time to 30 seconds. The team was well-organized and managed tasks efficiently. They communicated effectively via virtual meetings and email. binbash's proactive approach to security and cost management was exemplary.

Ramiro Chaparro - CTO
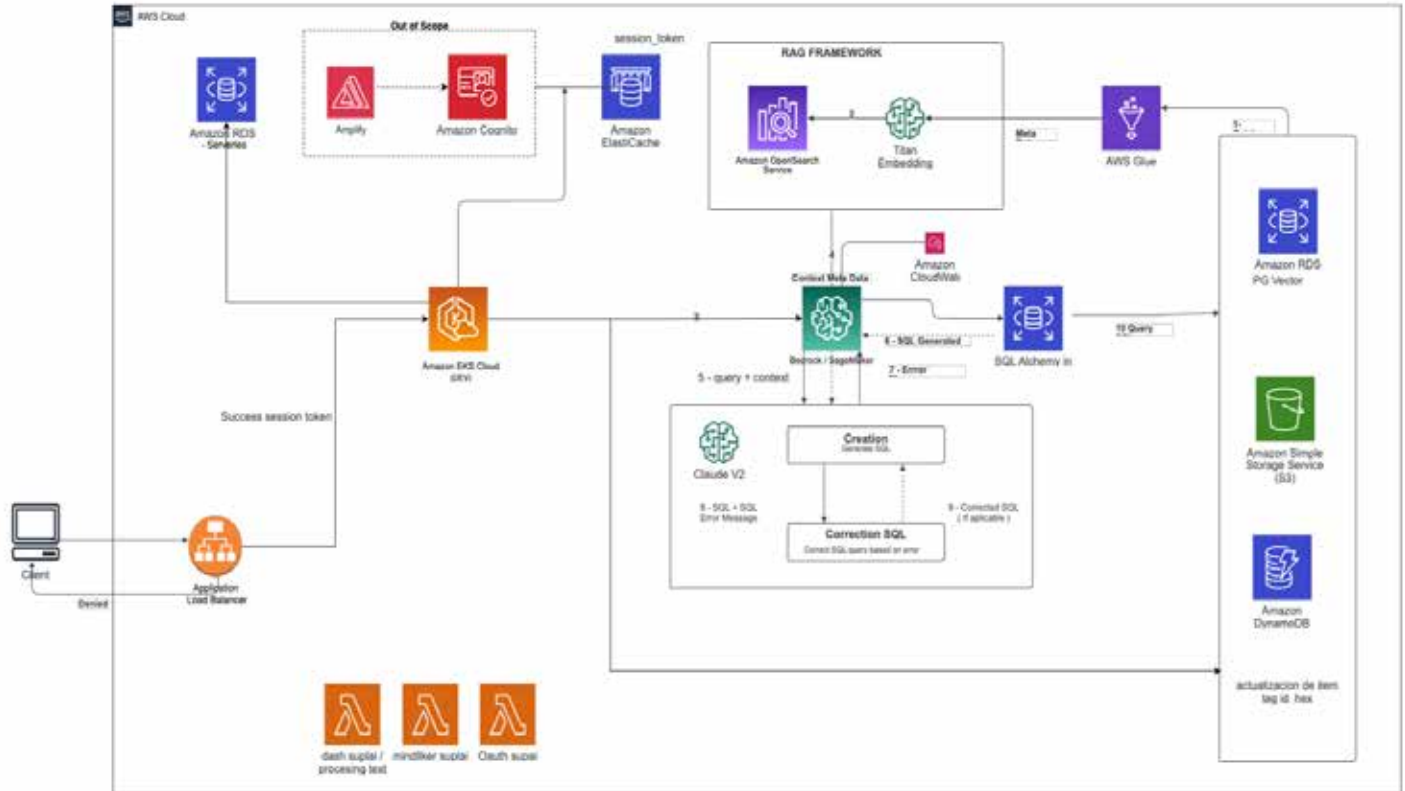
       - Created accounts for management, security, shared services, and applications, each with a secure baseline.

2. Kubernetes EKS Deployment:

       - Deployed EKS clusters with managed nodes and spot instances for scalability and cost efficiency.

       - Implemented namespaces, RBAC, and network policies for workload isolation and secure multi-environment operations.

3. RAG Architecture with AWS Bedrock:

       - Migrated Datup's GenAI solution to AWS Bedrock, leveraging foundation models and embedding models for enhanced NLP capabilities.

       - Integrated OpenSearch as a vector database for efficient data retrieval.

       - Developed a Streamlit-based frontend for seamless user interaction.

4. Security and Compliance:

       - Configured AWS CloudTrail, IAM Access Analyzer, and GuardDuty for monitoring and compliance.

       - Applied encryption using AWS KMS and disabled S3 public ACLs to secure sensiti-

ve data.

5. **CI/CD and Automation:**
    - Built pipelines for deploying containerized applications to EKS clusters, streamlining operational workflows.
    - Integrated Terraform and ArgoCD for automated infrastructure provisioning and application deployment.

Key Milestones

1. **AWS Landing Zone Deployment:** Delivered a secure and scalable multi-account foundation.

2. **EKS Cluster Implementation:** Enabled workload orchestration and high availability for application services.

3. **RAG with Bedrock Migration:** Transitioned SuplAI from OpenAI to AWS Bedrock, improving cost structure and scalability.

4. **Integrated Solution Testing:** Validated the end-to-end solution with comprehensive testing of frontend, backend, and vector database interactions.

Results and Impact

- **Cost Efficiency: Migration to AWS Bedrock reduced operational costs by 35%.**
- **Scalability: The infrastructure supports a 200% growth in SuplAI usage, ensuring seamless performance.**
- **Enhanced Security: Implementation of AWS security best practices mitigated cybersecurity risks.**
- **Improved Efficiency: Streamlined workflows reduced manual interventions, enabling faster insights and decision-making.**
- **Customer Satisfaction: Datup's clients reported a significant improvement in data accessibility and decision support, resulting in optimized supply chain operations.**
- **Accelerated Deployment:** Leveraged the binbash Leverage™ framework for rapid and reliable implementation.

Conclusion

Datup's collaboration with Binbash successfully modernized its GenAI SuplAI solution, enhancing scalability, cost-efficiency, and security. The AWS-based architecture provides a strong foundation for future growth, empowering Datup to continue transforming supply chain management in Latin America.