QBurst | A High AI-Q™ Company

Enterprise AWS Cloud Operations for Multi-Store E-Commerce Application

Delivering comprehensive AWS cloud operations, automated CI/CD pipelines, and auto-remediation for a retail leader with 1,500+ physical stores and a massive online presence.

Overview

QBurst designed, built, and manages a resilient multi-AZ AWS cloud infrastructure with automated CI/CD, auto-remediation, and comprehensive ITSM integrations for a major retail enterprise.

- **Automated CI/CD & Security Controls:** Established Infrastructure as Code (IaC) via Terraform and automated deployments with AWS CodePipeline, reducing release lead times from 4 hours to 10 minutes.
- **High Availability & Peak Event Scalability:** Managed containerized microservices on Amazon ECS and AWS Fargate alongside Multi-AZ Amazon Aurora Serverless, ensuring seamless site performance during high-traffic retail sales events.
- **Measurable Cost & Performance Gains:** Reduced annual AWS cloud expenditure by 30% ($24,694/year in recurring savings) and migrated 100+ TB of media assets to Amazon S3 without operational disruption.

Client Profile

This retail giant is a cornerstone of the global fashion industry. With a massive physical footprint and a digital presence serving over 20 million users, the client focuses on delivering trend-setting apparel through a seamless blend of in-store expertise and online convenience.

Complex Microservices and Peak Event Bottlenecks

Operating a large-scale, multi-environment e-commerce platform presented severe operational and infrastructure friction.

- **Deployment & Change Control Bottlenecks:** Relied on manual deployment processes across development, staging, and production environments without unified version control.
- **Availability & Peak Traffic Scaling Risks:** Faced potential database query timeouts and compute bottlenecks during high-volume retail sales events.
- **Manual Recovery & Incident Handling:** Lacked self-healing capabilities, depending on manual intervention for service failures and incident response.
- **Security & Compliance Management:** Struggled with consistent vulnerability scanning and structured patch management across container images, databases, and runtimes.
- **Cost Governance:** Expended excessive budget on non-production resources during off-hours with unoptimized cloud resource right-sizing.

QBurst Solution: AWS Infrastructure Modernization & Auto-Remediation

We implemented a modern microservices architecture running across two AWS Availability Zones, supported by 17 versioned operational runbooks.

- **Infrastructure as Code (IaC) & Change Controls:** Standardized all AWS resources in Terraform using dedicated Git branches for development, staging, and production, enforcing Slack-based manual approval gates for production execution.
- **Containerized Workloads & Load Balancing:** Deployed application microservices on Amazon ECS powered by AWS Fargate and Amazon EC2, managed via Application Load Balancers (ALB).
- **Automated CI/CD & Vulnerability Scanning:** Built automated deployment pipelines using AWS CodePipeline and CodeDeploy, incorporating mandatory Amazon ECR container vulnerability scanning.
- **Data Persistence, Caching & Search Offloading:** Deployed Amazon RDS and Amazon Aurora Serverless with Multi-AZ failover, caching via Amazon ElastiCache (Redis), and offloaded search queries to Amazon OpenSearch Service.

- **Direct Connect Asset Migration:** Migrated 100+ TB of static media files to Amazon S3 over an AWS Direct Connect link without site downtime.
- **Auto-Healing & Automated Cost Governance:** Integrated CloudWatch alarms and Security Hub with AWS Lambda for Slack alerting and Backlog ticket creation, while using Amazon EventBridge to automate non-production stop/start schedules.

Technical Highlights & AWS Architecture

- **Compute & Containers:** AWS Fargate, Amazon ECS, Amazon EC2, Application Load Balancers.
- **CI/CD & DevOps:** AWS CodePipeline, AWS CodeDeploy, Amazon ECR, Terraform.
- **Data & Storage:** Amazon Aurora Serverless, Amazon RDS, Amazon OpenSearch Service, Amazon ElastiCache for Redis, Amazon S3, AWS Direct Connect.
- **Monitoring & Operations:** Amazon CloudWatch, AWS Security Hub, AWS Lambda, Amazon EventBridge, Amazon SNS, AWS Graviton processors.

Scalable Availability and Significant Cost Savings

- **Deployment Lead Time Cut by 95%:** Reduced release time from 4 hours to 10 minutes per deployment.
- **30% Cloud Cost Reduction:** Secured $24694 per year in recurring AWS savings through Graviton adoption, S3 lifecycle policies, resource right-sizing ($2057.80/month), and automated EvenBridge stop/start schedule ($612/month).
- **Eliminated Query Timeouts:** Offloaded complex search operations to OpenSearch Service, ensuring high responsiveness during peak traffic spikes.
- **Zero-Downtime Data Migration:** Successfully transferred over 100 TB of image assets to Amazon S3 over AWS Direct Connect.
- **Standardized Incident Response:** Established 17 versioned runbooks with automated Slack notifications and formal escalation pathways to the DevOps lead.