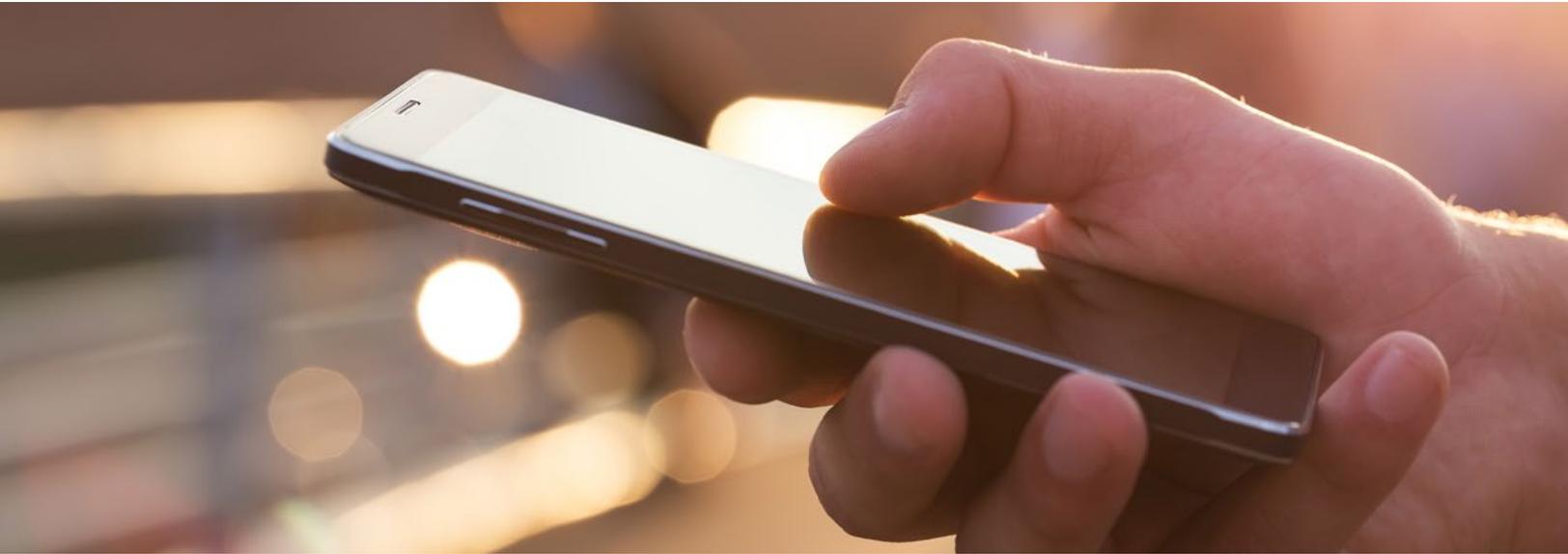


## PIN CODES

for one of the world's largest beverage corporations

**CANDID**  
PARTNERS



*Candid Partners migrated our client's PIN codes system, a cryptographic service supporting global consumer loyalty programs, to AWS and re-architected the application components to increase performance, reliability and elasticity of system.*

### **BACKGROUND**

One of the world's largest beverage corporations' team uses the PIN Codes system globally to support the generation, distribution and redemption of unique codes for customer loyalty and promotional marketing campaigns. The PIN Codes are generated and distributed securely to various printers identified by the regional marketer, which are then distributed by our client's bottlers to consumers. The consumers interact with the campaigns via websites and mobile applications to redeem the codes for loyalty points or promotional prizes.

### **THE PROBLEM**

The PIN Codes system was hosted in a third-party data center, and was unable to support the spiky, unpredictable load of the promotional marketing campaigns. As a result, company's team was concerned about the reliability and availability of the system as it grew to support larger markets on a global scale. Protecting the application against malicious attacks was a paramount concern that would result in negative public attention along with significant financial damage. In addition to these concerns, the infrastructure and support costs were too expensive than they desired.

### **THE CANDID PARTNERS SOLUTION**

The Candid Partners team proposed migrating the solution to AWS in order to increase performance, reliability and elasticity of systems. The services included Amazon Auto Scaling, Amazon ElastiCache and Amazon RDS, which provided an enterprise-grade RDBMS to improve performance. The initial Amazon RDS implementation leveraged MySQL and was later migrated to Amazon Aurora.

# Actions speak louder than advice.



## ACTION

The Candid Partners team used the following AWS services to implement our solution:

- Leveraged AWS CloudFormation templates to standardize and automate infrastructure deployments, and enable DR.
- Used bootstrap mechanisms to spin up and initialize the environments.
- Multi-AZ RDS was used with Amazon Aurora and Amazon ElastiCache Redis clusters to provide resiliency on the data layer.
- Autoscaling and elastic load balancers provided the elasticity to grow and shrink per demand.
- AWS IAM roles/policies and security groups were used to enforce strict access rules and provide protection against unauthorized access.
- Implemented AWS WAF and Alert Logic® to protect and support the system from web-based attacks.
- Alert Logic WAF was trained to identify normal application behaviour and block non-conforming requests.
- Alert Logic WAF workers scale with traffic minimizing the impact to performance.
- Alert Logic security experts provided continuous monitoring of threats.

## OUTCOME

There were a number of positive outcomes for both the business side and the technical side of the organization as outlined below:

- The former model reflected hosting and infrastructure costs at \$85K per year with DevOps support costs at about \$150K per year. While there is no baseline for detailed comparison, our TCO calculations estimate that our new model has decreased support costs by over 50% or \$200K per year.
- The performance, reliability and flexibility has driven PIN Codes program adoption up to 40% between 2016 and 2017.
- Metered billing in conjunction with a local market chargeback model made this application entirely self-funded by consumer brands that utilize it.

- The migration from MySQL to Amazon Aurora improved transaction response times by about 5 times.
- Amazon Auto Scaling and Amazon EBS provisioned IOPS are able to support large spikes in traffic, which occasionally increase by twenty times on double point days.
- Alert Logic® has proactively identified and blocked malicious users attempting to hack the PIN Codes system.

## RESULTS

- Metered billing is the most efficient way to measure TCO.
- Security is more transparent and easier due to the flexibility of AWS.
- Automation reduces cost and time to deploy.
- Large performance improvements can be achieved by leveraging native cloud components from AWS.
- Reputable tools such as Alert Logic® WAF should be leveraged to improve application security.

## AWS SERVICES USED

- Amazon EC2
- Amazon ELB health check
- Amazon Auto Scaling group
- Amazon EBS
- Amazon Aurora
- Amazon ElastiCache
- Amazon S3
- Amazon CloudWatch
- Amazon SES

## THIRD PARTY APPLICATIONS USED

- Alert Logic® WAF