

Case Study - Total System Makeover: Designing a Secure & Scalable Solution



Rybbon is a digital gifting platform developed specifically for marketers and researchers, allowing them to incentivize and deliver instantaneously.

CHALLENGE:

Rybbon's online gifting platform has grown substantially over time, presenting a common challenge many organizations face: Scalability. The development and support teams needed a technical solution to up with changing needs and the goal of maintaining operational excellence. With an increased customer base, Rybbon was also seeking an efficient and cost-effective DR (Disaster Recovery) solution to achieve lower RTO (Recovery Time Objective) & RPO (Recovery Point Objective).

Another significant challenge critical for the Idexcel team to address in the solution provided was increased security risks and decreased operational proficiency. Architecting a solution to resolve these two high-priority items were key to removing the hindrance on Rybbon's growth and reliability goals.

Utilizing a micro-service approach, the organization's distributed architecture needed to be more robust to meet business needs. Through the implementation of an efficient Content Delivery Platform with a secure and reliable failover system, the solution would eliminate data loss in case any incidents should arise.

The infrastructure was also missing an efficient log-analysis framework that provides complete insight into the application's performance and resource utilization.

Major Challenges
Resource crunching as dev team engaged in decomposing the monolithic application and enhancing its functionality
Lack of insight into the application's performance and resource utilization needs
Constantly changing hardware platform
No alert mechanism
No proactive approach
No Disaster Recovery Plan
Lower security best practice awareness
Lower operational best practice awareness

SOLUTION:

The Idexcel team conducted a meticulous review on the technical and operational challenges to construct a series of remedies to improve Rybbon's security, performance, reliability, costs, operational excellence.



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SECURITY:

The Idexcel team selected various satellite AWS resources to build the IaC (Infrastructure As Code) solution to cover the security loopholes. These tools include WAF (Web Application Firewall), Config, Inspector, CloudTrail, GuardDuty and Security Hub. The IaC has been implemented using CloudFormation, which allows the Rybbon team to execute the template whenever and/or wherever needed, on demand.

The WAF protects the CDN (Content Delivery Network) and the application from all well-known threats. The primary Security hub implemented functions as a centralized monitoring platform for all satellite security tools.

AVAILABILITY & RELIABILITY:

Our team implemented an Infrastructure as Code approach to develop the services and functionalities for the disaster recovery solution. Our approach to disaster recovery includes the construction of a passive DR region with limited services running at the DR location to lower infrastructure expenditure.

The DR implementation uses multi-region replication of AWS Aurora RDS (Relational Database Service), which replicates the data continuously for higher availability to the users.

The CloudFormation templates for remaining resources are kept readily available to execute in case of any incidents that may arise. This approach allowed the system to enact the failover functionality to the DR region within 15-20 minutes with zero loss of data.

PERFORMANCE:

Our team adopted a distributed approach based on micro-services, coupled with our content delivery network using AWS CloudFront. This resulted in increased performance by multiple times, while also helping to attain a stronger security system and reduce overall expenses.

OPERATIONAL EXCELLENCE:

The applied Idexcel solution to provide an efficient log analysis framework includes using CloudWatch, Lambda, ElastiCache and Kibana in a comprehensive architecture. This approach integrated with an effective alert mechanism using SNS, increased insight analysis critical for operational excellence. This solution led to the development of a more proactive approach to infrastructure & application management. The IaC using CloudFormation reduced the organization's provisioning efforts, while reusing the templates on demand increased the availability and reliability of the architecture with a much lower effort.

BENEFITS:

The well-designed review solution allowed the client to implement a more secure and operational system, which moved the customer towards PII/PCI compliance. A more proactive approach towards infrastructure management allowed the team to focus on enhancing the functional aspects of the workload.

The passive DR approach paired with a 90% serverless approach reduced the infrastructure cost with the option to failover with lower RTO & RPO.

The CDN reduced the amount of data transferred out by caching the content at edge locations, which increased the performance and availability of the system by several times.

IDEXCEL COMPETENCIES

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