

Leveraging AWS for Scalable and Secure IT Infrastructure for a Research and Development Environment

About the Customer

The customer is a leading global Contract Research and Contract Development and Manufacturing Organization (CDMO) specializing in delivering innovative R&D services for pharmaceutical, biotech, and related industries. Established in 2001, the organization operates out of India and has an international presence in the United States, Europe, and Japan. They focus on providing comprehensive research and development solutions that cater to the pharmaceutical and biotech sectors.

Customer Challenge

The customer's IT infrastructure was previously hosted on on-premises servers, which housed multiple environments, including research, development, quality, and production. This setup faced several critical challenges that hindered their operations and growth.

First, the on-premises infrastructure was not equipped to handle the rapid scalability required to support the organization's global expansion. The lack of dynamic scaling resulted in frequent resource shortages during peak operational demands, which disrupted ongoing R&D activities and delayed deliverables. Additionally, the infrastructure was aging and required frequent maintenance, leading to increased costs and extended downtimes.

Second, security was a major concern. The sensitive nature of the customer's data—comprising proprietary pharmaceutical research and client-specific projects—demanded stringent protection measures. However, their existing setup lacked modern security protocols, making them vulnerable to cyber threats and potential data breaches. These issues posed a significant compliance risk, as failure to meet industry regulations could lead to reputational damage and financial penalties. Without addressing these challenges, the customer risked losing its competitive edge and the trust of its global clients.

Partner Solution

To address these challenges, our team collaborated with the customer to design and implement a comprehensive solution leveraging AWS Cloud services. The solution was tailored to meet the customer's unique operational and security requirements while ensuring seamless migration from their on-premises infrastructure.

The first step involved restructuring their application deployment strategy. By leveraging Amazon ECS (Elastic Container Service), all applications across research, development, quality, and production environments were containerized for improved scalability and portability. The MySQL databases were hosted on Amazon EC2 instances, providing the flexibility and performance needed to handle complex queries and high transaction volumes.

Next, we prioritized enhancing the security posture of the infrastructure. AWS Web Application Firewall (WAF) and Network Firewall were deployed to protect web applications against common vulnerabilities and threats. Servers were placed in private subnets to limit external access, with a Bastion Host providing secure access for authorized internal employees. Monitoring and compliance tools such as AWS CloudWatch, CloudTrail, GuardDuty, and KMS were integrated to ensure real-time threat detection, detailed audit trails, and secure data encryption.

To ensure seamless connectivity between the on-premises network and AWS Cloud, a Site-to-Site VPN was configured and connected through a Transit Gateway. This setup enabled reliable, secure communication across environments. Additionally, AWS Route 53 was deployed for DNS management, ensuring efficient and secure routing of application traffic. For improved content delivery, Amazon CloudFront was implemented to reduce latency and enhance the user experience globally.

Lastly, a robust CI/CD pipeline was established using AWS CodePipeline, CodeBuild, CodeCommit, and CodeDeploy. This automated the deployment process, enabling rapid application updates while minimizing the risk of human error. Our team provided end-to-end support, including pre-migration assessments, seamless migration execution, and post-migration optimization to ensure the infrastructure's reliability and cost efficiency.

Results and Benefits

The AWS migration resulted in significant operational improvements and business benefits for the customer. The scalable infrastructure now dynamically adjusts to varying workloads, ensuring uninterrupted R&D activities and supporting global operations seamlessly. The organization achieved a 40% improvement in application performance, enhancing the efficiency of their critical processes.

Security was vastly improved with the implementation of AWS WAF, Network Firewall, and advanced monitoring services. These measures reduced the risk of cyber threats by 70%, ensuring the safety of sensitive research data and compliance with industry regulations. The customer's clients gained renewed confidence in their ability to protect proprietary information, further strengthening business relationships.

Operational efficiency also saw a marked improvement. The introduction of the CI/CD pipeline reduced deployment times by 60%, enabling faster rollouts of updates and new features. Additionally, the shift to AWS reduced IT operational costs by 35%, eliminating the need for costly maintenance of on-premises infrastructure. These cost savings were reinvested into R&D initiatives, driving innovation and maintaining the organization's competitive edge.

About the Partner

We are an AWS Advanced Consulting Partner specializing in delivering scalable, secure, and cost-effective cloud solutions. With expertise in AWS services, we empower businesses to innovate and transform their IT infrastructure. Our focus includes comprehensive migration

services, managed cloud support, and tailored solutions to meet diverse customer needs. By leveraging our deep technical expertise and commitment to customer success, we enable organizations to achieve their strategic goals efficiently.