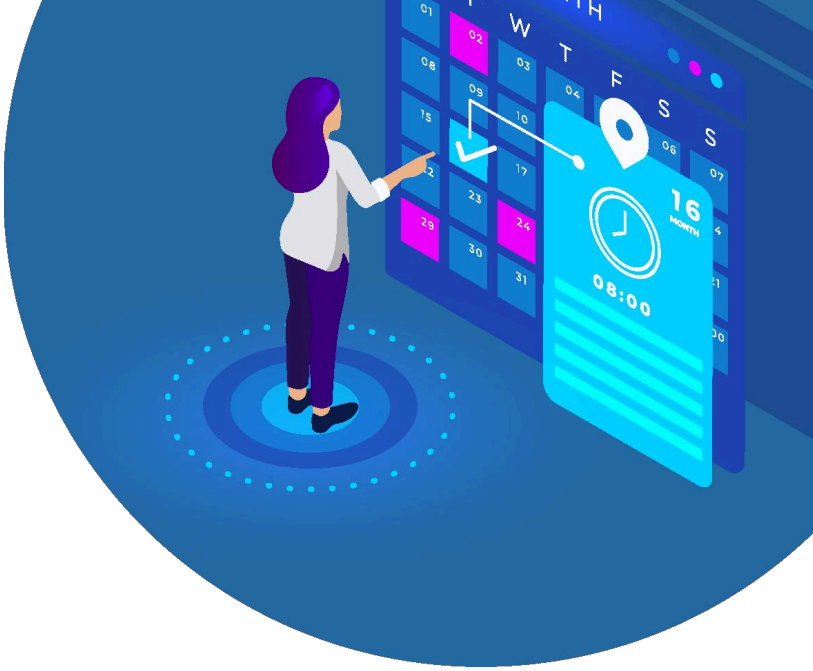
Invimatic
Innovation in Automation

How AWS Data Lake Solved Customer Challenges



The client is a leading organization in the event management industry, specializing in organizing large-scale events such as conferences, trade shows, and expos. Their platform serves as a hub for event planning, participant registration, and real-time event tracking, catering to thousands of concurrent users across diverse geographies.

PROBLEM

The client faced significant challenges in scaling their event management system due to bottlenecks in their MongoDB database. The application, deployed on virtual machines (VMs), experienced performance issues as the number of concurrent users increased, leading to slow response times and frequent system outages. These issues jeopardized user satisfaction and the ability to manage high-profile events effectively.

THE SOLUTION

To address these challenges, we designed and implemented an AWS Data Lake solution using the following components:

Amazon S3

- Centralized data storage was established using Amazon S3, ensuring scalability to accommodate large volumes of event data without impacting performance.
- Data was partitioned effectively to enable faster querying and analytics.

Amazon DynamoDB

- MongoDB data was migrated to Amazon DynamoDB, providing automatic scaling based on workload requirements and ensuring high availability during peak loads.
- Indexing was optimized to facilitate faster data retrieval, addressing previous bottlenecks in the database.

Amazon Athena

- Implemented Amazon Athena for querying structured and semi-structured data directly from Amazon S3.
- This eliminated the dependency on preloading data into relational databases, reducing query execution time significantly.

AWS Lambda

- Serverless computing was introduced with AWS Lambda to manage dynamic workloads and handle background processes like event processing and data transformation.
- Functions were written to execute tasks only when triggered, reducing the operational cost and improving response time during high-demand scenarios.

Event Streaming with Amazon Kinesis (if applicable)

- For real-time event data processing, Amazon Kinesis was used to stream data to the data lake, ensuring event data was available for immediate analysis.

Monitoring and Alerting

- AWS CloudWatch was integrated to monitor system performance and set up real-time alerts for potential issues, ensuring proactive resolution of bottlenecks.

RESULTS DELIVERED

- **Improved Scalability:** The system now supports tens of thousands of concurrent users without any performance degradation.
- **Enhanced Performance:** Query response times reduced by over 50%, significantly improving the user experience.
- **Cost Efficiency:** Transitioning from VM-based deployments to a serverless architecture eliminated the need for constant VM provisioning and maintenance, reducing operational costs.

KEY TAKEAWAYS

By leveraging AWS Data Lake and its associated services, the client achieved a robust and scalable event management platform capable of handling high-demand scenarios efficiently. The transition to a serverless and data lake architecture not only resolved performance bottlenecks but also enabled the client to focus on their core business objectives without being burdened by operational complexities. This case demonstrates how a well-architected solution can drive both technological and business success.