

Rockset's real-time SQL on Amazon DynamoDB enables lifesaving IoT alerting device

Case Study

Executive Summary

A French connected devices company, ido-data, uses Rockset's real-time SQL on DynamoDB to build life-saving GPS-connected wristbands. [Rockset](#), an AWS Select partner, built a serverless real-time database on AWS that powers intelligent applications with millisecond-latency SQL queries for search, aggregations, and joins on data across Amazon DynamoDB and other sources. The solution works by leveraging the scalability, security, and performance of AWS and is ideal for powering personalization engines, gaming leaderboards, IoT apps, and vision-AI-based automation.

The Challenge

Many of the world's fastest growing businesses are using Amazon DynamoDB, a fast and serverless NoSQL database service, because it delivers single-digit millisecond performance at any scale. However, building a data-intensive application that requires powerful SQL queries over data in DynamoDB requires months of pipeline development and database configuration as well as ongoing management and performance tuning. Using traditional methods, users would need to provision a SQL database to serve the application and set up a data pipeline to extract and transform the relevant data. The delay from updating data in DynamoDB to delivering actionable insights in the application could potentially be hours, which cannot meet the real-time requirements of most modern applications.

The Solution

Rockset created a real-time database that allows users to power intelligent applications, such as personalization engines, gaming leaderboards, and IoT apps, on real-time data from DynamoDB. It runs on AWS architecture and uses DynamoDB Streams to consume data directly from DynamoDB—no ETL or data transformation required. Rockset makes the data from DynamoDB immediately available for queries using full-featured SQL via a REST endpoint.

Using Rockset, developers can build new data applications in days, free from the burden of complex real-time data architectures. Rockset is able to help developers build scalable, real-time applications faster and more efficiently by leveraging the scalability, availability, agility, and security of AWS and serverless technologies.



About Rockset

Rockset is the real-time database that automatically builds indexes on the latest data from user interactions in DynamoDB and other sources. Developers can move faster using serverless data APIs for millisecond-latency search, aggregations, and joins. Under the hood, Rockset uses DynamoDB Streams to build and maintain Converged Indexes in real-time. Rockset, built by the team behind RocksDB and Facebook's online data platform, is focused on increasing developer velocity for teams building intelligent applications.

" One of the key reasons we chose AWS was because our customers' security and compliance needs are all met by following AWS best practices."

— Shruti Bhat, SVP Products at Rockset

// At ido-data, we develop waterproof GPS-connected wristbands that allow rescuers to locate water sports participants in an emergency. The ability to analyze geolocation data in real time is of critical importance to us and our customers. Knowing exactly where the wearer of our wristband is at any point in time can be the difference between life and death.

We use Amazon DynamoDB as our primary database to store beacon data from the GPS tags in our wristbands. When we needed to build real-time applications on this data, we found Rockset to be the simplest way to achieve the performance we require.

Rockset offers click-and connect integration with DynamoDB, so we do not have to write a single line of ETL code. All modifications in DynamoDB are continuously synced to Rockset, which automatically builds indexes to enable SQL queries that run in milliseconds. With Rockset, we were able to set up our application in a matter of hours instead of weeks. Since DynamoDB and Rockset are both serverless, our lean engineering team can focus on delivering life-saving innovations in the product rather than managing data infrastructure, because we trust DynamoDB and Rockset to give us the reliability and scale we need. DynamoDB and Rockset additionally offer the data encryption and GDPR compliance that we require for our product.

We are always adding features to our product and are currently implementing functionality to determine whether a wristband is on land or water, given its latitude and longitude. This can be a complicated undertaking, as water polygons can have thousands of vertices, but Rockset's high-performance indexing, including support for geospatial queries, will shorten our development time from weeks to days. //

– Yannick Tocquet, CEO of ido-data

Results and Benefits

Rockset enables Amazon DynamoDB customers to unlock real-time data insights with fast SQL queries so they can build scalable, real-time applications, and increase developer velocity and efficiency.

Scales in real time by leveraging AWS architecture

Rockset enables customers to run complex SQL queries in real time at scale, without managing servers, clusters, or indexing. The success of their solution stems from the way they use AWS serverless architecture to enable microservices-based applications that perform at scale. "We've developed our Converged Indexing™ to combine the power of search, row, and columnar indexing into one," says Shruti Bhat, SVP Products at Rockset, "which we can accomplish by the way we leverage AWS serverless technologies."

AWS serverless provides maximum flexibility for scaling by measuring units of consumption (e.g. throughput, memory) rather than servers. Serverless applications don't require provisioning, maintaining, and administering servers for backend components such as compute, databases, storage, stream processing, message queueing, and more. AWS handles all of these capabilities, allowing Rockset to focus on product innovation while enjoying faster time-to-market.

Reduces development time from months to days with native DynamoDB integration

Traditional methods for running SQL queries over NoSQL data require developers to move data via data pipelines and then prepare and transform that data before the data can be queried. Tight integration with AWS via DynamoDB Streams enables shorter development time and increased developer velocity. DynamoDB Streams captures a time-ordered sequence of item-level modifications in any DynamoDB table, so applications can look at recent data changes instead of pulling and preparing all the data for each query. "Our direct integration with DynamoDB, through DynamoDB Streams, enables us to iterate fast and see query results seconds after the data changes. Streams creates huge time savings that benefit our developers and our customers," says Shruti.

Maximizes SLA, efficiency, and security benefits with built-in AWS services

Building natively on AWS allows Rockset to pass along availability, cost, and security benefits to its developers and customers. The 99.999% SLA for uptime from AWS provides Rockset customers the confidence they require for their mission-critical workloads. Pay-as-you-go pricing used for AWS Serverless services gives Rockset and its customers maximum access to resources while reducing overprovisioning costs. And through built-in security capabilities, AWS continuously monitors compliance status and uses automated checks based on the AWS best practices and industry standards to stay ahead of any problems. "One of the key reasons we chose AWS was because our customers' security and compliance needs are all met by AWS best practices," explains Shruti.

Learn more

[Amazon DynamoDB](#) is a key-value and document database that delivers single-digit millisecond performance at any scale. It's a fully managed, multiregion, multimaster, durable database with built-in security, backup and restore, and in-memory caching for internet-scale applications. DynamoDB can handle more than 10 trillion requests per day and can support peaks of more than 20 million requests per second.