Leveraging AWS Serverless in National Vote Processing

Overview

The National Election Pool (NEP) is a non-profit organization that collects and distributes election results across the United States. Recognizing the need for a scalable and cost-effective solution, the NEP went on a transformative journey, leveraging AWS Serverless to revolutionize its data aggregation process. By utilizing cutting-edge AWS services, the NEP achieved unparalleled efficiency and accuracy and set a new standard for real-time voting data aggregation.

Problem

To stay up to date with the latest votes, the NEP needed to be able to consume hundreds of vote feeds from various sources, including Secretary of State websites, APIs, and SFTP servers. The NEP also wanted to do this in a scalable way that could run for long periods while keeping costs down. The need to revamp and improve its current data consumption process presented itself.

Solution

Our developers' innovative solution hinged on a well-orchestrated deployment of AWS Serverless services. AWS Serverless is a suite of services that allows developers to build and run applications without worrying about provisioning or managing servers. AWS Lambda, the core component, consumed and transformed the vast amounts of incoming data into a standardized format. To maintain data integrity and streamline operations,DynamoDB, a highly scalable NoSQL database, was employed to track and manage the state of the incoming data.

About Thortech

ThorTech Solutions, a New York-based software engineering and cloud consulting firm with over 22 years of experience, provides services such as application architecture, DevOps infrastructure, managed services, and staffing to help accelerate business initiatives.

Our team focuses on putting ourselves in customers' shoes, delivering business objectives by leveraging the best technologies, and optimizing costs.

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Once the data was transformed, AWS Managed Kafka became the backbone for seamless data distribution. The transformed data, now within the Managed Kafka topics, awaited further processing. ECS Fargate tasks came into play, consuming the data and invoking additional Lambdas for advanced data processing. ThorTech's modular and event-driven architecture ensured the system's ability to scale, even with fluctuating voting data volumes during election cycles.

To further enhance the system's reliability, our developers utilized AWS Kinesis for comprehensive tracing, logging, and event monitoring. This facilitated debugging and troubleshooting and provided crucial insights into the system's performance, enabling prompt optimizations and fine-tuning as necessary.

Result

By leveraging the power of AWS Lambda, the new system achieved minimal latency and zero downtime during the weeks-long data aggregation process. This ensured that the NEP remained current with the latest votes across the United States. This also allowed timely and accurate information to be shared with stakeholders.

In addition, the scalability of the solution proved invaluable. The NEP can now effortlessly handle surges in voting data during peak election periods. The efficient allocation and utilization of AWS resources resulted in significant cost savings, allowing the NEP to maximize its operational budget while delivering exceptional service.

Conclusion

The successful deployment of AWS Serverless services is a concrete example of the transformative potential of cloud computing in real-time voting data aggregation. By adopting a modular and event-driven architecture, the NEP not only achieved its objective of staying updated with the latest votes. They did so with minimal latency, zero downtime, and cost efficiency.

This case study emphasizes the importance of scalable and cost-effective solutions in meeting the ever-growing demand for real-time information. As the digital landscape evolves, organizations can look to the NEP's success story as inspiration for leveraging the full potential of cloud services and serverless architectures.