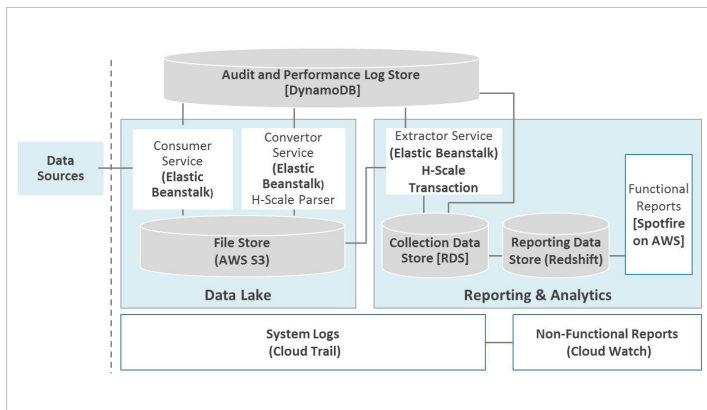


Case Study: Big Data Platform for Wellness Management

Client Requirements

Client is a leading medical device manufacturer in cardiac rhythm management. Client desired a big data platform on the cloud for its wellness management initiative to support data ingestion, aggregation, real-time processing and predictive analytics.

CitiusTech leveraged its big data platform, H-Scale, to design and implement a scalable data and server architecture, for client's insertable cardiac monitoring device, that creates sample reports on aggregated patient and device data.



CitiusTech Solution

Requirement Analysis

CitiusTech's team identified the key success criteria to meet client's requirements including:

- Scaling an existing single-threaded library on cloud while ingesting and processing high volume of data
- Creating a HIPAA-compliant solution
- Utilizing auto-scaling to optimize resources and cost-based on spikes in message ingestion
- Ensuring high availability, confidentiality and integrity of data while maintaining economical viability

Solution Design

A team of healthcare architects with expertise in Amazon Web Services (AWS) were brought on board to build the big data platform. The solution included:

- Accepting binary files using a Java WebService hosted on Elastic Beanstalk and storing them on S3, which prevented loss of data
- Leveraging S3 to fire SQS messages which are consumed by a transformation service hosted on AWS Elastic Beanstalk with Private VPC
- Leveraging auto-scaling and processing based on CPU Utilization and Queue Depth using AWS technologies
- Transformation service (wrapper around the single-threaded library) that transformed binary messages into XML files
- Utilizing AWS Lambda and Extractor Service to collate the data from XML file and inserting into AWS RDS datastore (MySQL)
- Moving log data stored in DynamoDB to Redshift using EMR
- Utilizing Spotfire to create analytical reports from Redshift
- Making optimum use of CloudWatch and CloudTrail features to define custom metrics and alerts for non-functional reporting of various AWS services

Value Delivered

By partnering with CitiusTech, the client was able to:

- Leverage CitiusTech's expertise in big data technology to improve current data ingestion and processing rate
- Leverage CitiusTech's H-Scale platform on AWS to significantly reduce processing time by enabling the client to mimic multi-threaded behavior of their single-threaded library and achieve linear scalability using auto-scaling on AWS services
- Reduce the processing time of daily workload of 80,000 messages from 8 hours to 4.5 minutes
- Build a scalable solution that could effortlessly process up to 1 million messages per hour, achieving significant cost savings and faster results

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About CitiusTech

CitiusTech is a specialist provider of healthcare technology services and solutions to medical technology companies, providers, payers and life sciences organizations, with over 2,700 professionals worldwide. CitiusTech's services and solutions include healthcare software development, healthcare interoperability, regulatory compliance, BI/analytics, consumer engagement, care coordination and population health management. CitiusTech helps customers accelerate innovation in healthcare through a number of solutions and accelerators for clinical quality reporting, healthcare big data, cloud computing, mobile health and predictive analytics. With cutting-edge technology expertise, world-class service quality and a global resource base, CitiusTech consistently delivers best-in-class solutions and an unmatched cost advantage to healthcare clients worldwide.

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