

coditas

Ambry Genetics

Breaking COVID-19 barriers with CARE



The Client

Ambry Genetics, a part of **the Konica Minolta family**, is considered one of the largest genetic sequencing labs globally, providing advanced genetic testing solutions. Founded in 1999, Ambry Genetics has generated an unparalleled track record with its experience, technology, and dedication to all **clinical genetic testing**. Based in the USA, Ambry Genetics has access to the most **extensive suite of diagnostic technologies in the world**.

Project Duration

3+ Years

Problem Definition

Before the CARE program at Ambry Genetics, the patients visited providers. Patients were given a form that consisted of 100-120 questions, which helped experts at Ambry to understand whether the patients met the NCCN criteria; according to that, medical advice was given. After evaluating the form by the staff, it was sent to the doctor, which was rather **time-consuming — resulting in increasing the staffing of providers**, in turn reducing the number of patients.

Major constraints were:

- To fix the logging solution for EKS.
- To implement MTLS for one of the projects.



Why Amazon Web Services?

AWS is the most suitable option for its global presence due to its infrastructure, simplicity, storage, backups, scalability, security, and performance. Using AWS tools, Auto Scaling, and Elastic Load Balancing would let us scale the application up or down based on demand. AWS is also easy to use via its **Management Console, APIs, and tools.**

ISV Tools & Technologies Used

- We integrated **Jenkins CI/CD** to set up and **automate the AWS infrastructure's code deployment.**
- We used **Prometheus, Alertmanager, and Grafana for monitoring,** alerts, alarms, and metrics.
- To secure the whole infrastructure, we **configured OpenVPN** to access private entities.
- For seamless logging, we used **ELK** and **PLG.**

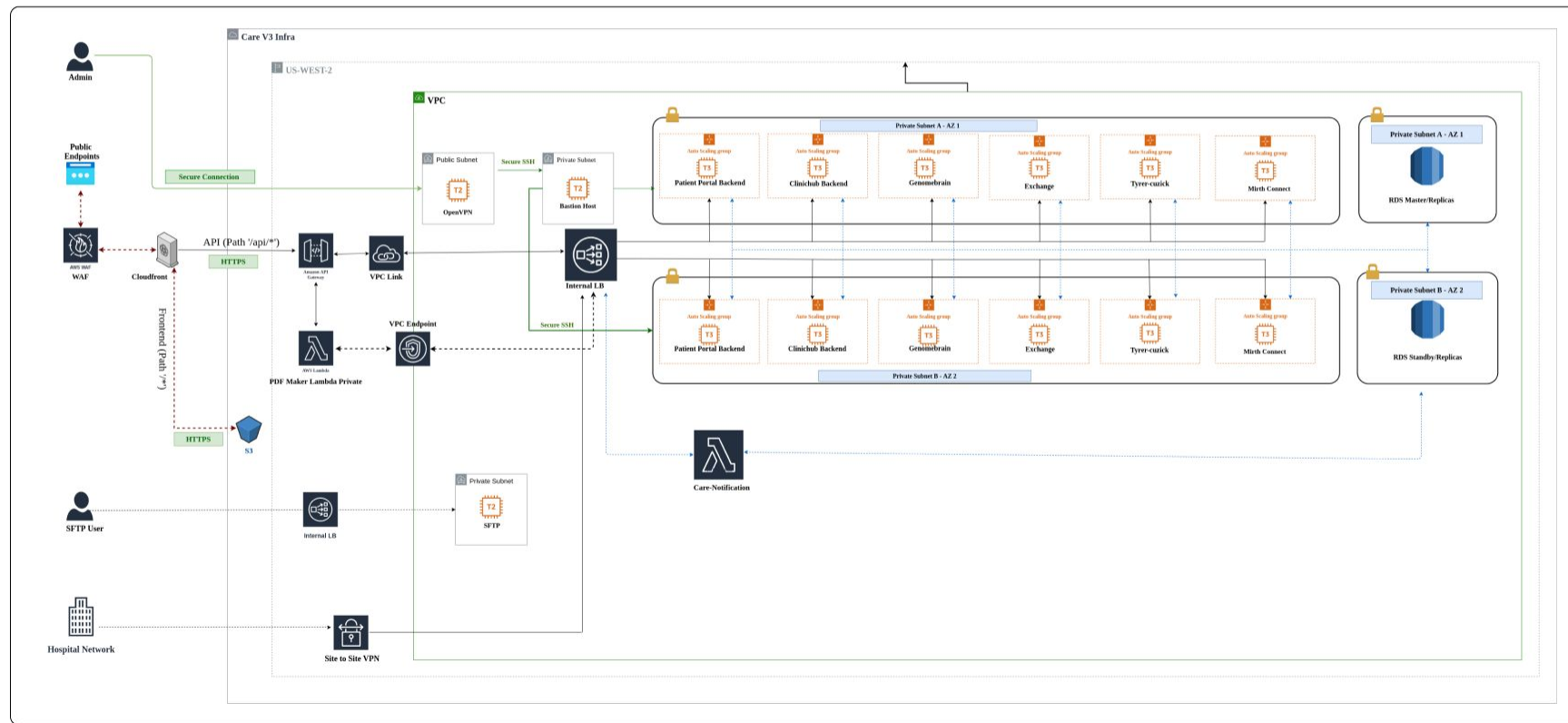


Proposed Solution

- ✔ We **migrated from EC2 to EKS**, which helped lower our overhead costs.
- ✔ **Amazon Simple Storage Service (Amazon S3)** for storing static content and hosting frontends.
- ✔ **Amazon Elastic Compute Cloud (EC2)** with autoscaling groups and Elastic Kubernetes Service (EKS) for computing.
- ✔ **Amazon Elastic Block Store (EBS)** for Amazon EC2 storage.
- ✔ **Amazon Relational Database Service** for application database (MySQL).
- ✔ **Amazon CloudWatch** for altering and monitoring applications.
- ✔ **CloudFront** and S3 for frontend hosting.
- ✔ **Amazon SNS** for various notifications and SES for emails.
- ✔ **Amazon API Gateway Service** to handle backend application.
- ✔ **Amazon Lambda service** for Node applications.
- ✔ **Site-to-Site VPN** for connecting private hospital networks.
- ✔ **OpenVPN** for connecting private resources.
- ✔ **Parameter Store** for storing secrets & configs for the application.
- ✔ **API Gateway for API** and ELK for logging.
- ✔ **Jenkins** for deployments (CI/CD).
- ✔ **Amazon WAF** for application firewall.



Solution Architecture





Outcome and Success Metrics

Coditas designed a solution **to digitize the CARE Programs for Ambry** by building a platform that lets even before they come for an appointment. So, whether the patient meets NCCN or not is already decided, and CARE provides enough information to the doctors in advance to proceed further with the treatment.

- ✔ Migration to EKS from EC2 helped to **reduce the overhead cost**.
- ✔ Using the AWS autoscaling service helped us **achieve high availability for our application**.
- ✔ While using RDS, we experienced **better backup methods** as we can restore a database backup from a snapshot provided by the RDS.
- ✔ We used WAF, Guard duty, Patch manager, and AWS Inspector services to help **Ambry maintain system security**.
- ✔ CloudWatch allowed us to check application logs. It is helpful to set up alarms, detect anomalous behavior in our environments, visualize logs and metrics side by side, take automated actions, **troubleshoot issues, and discover insights to keep our applications running smoothly**.



We'd love to hear from you

Let's start talking at

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