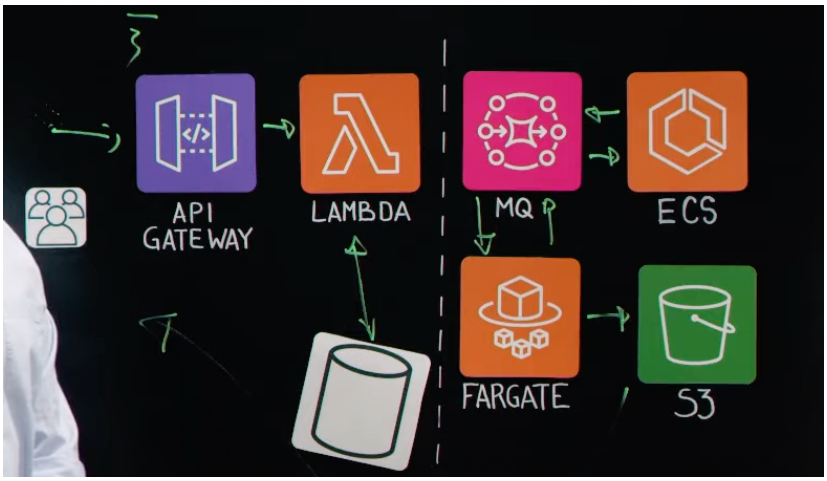
Company Name: **Vertex Pharmaceuticals**
Video Link: https://www.youtube.com/watch?v=nflGdpwbf54&list=PLhr1KZpdzukdeX8mQ2qO73bg6UKQHYsHb&index=11

Solution: **Vertex Pharmaceuticals: A Serverless Platform for Small Molecule Search**

This is built a highly **elastic, cost-effective** small molecule search platform using **Serverless** technologies. They **democratized access** to this system by making it available as an **API** using **Amazon API Gateway**, and the entire system comes alive in response to a request using **AWS Lambda, AWS Fargate**, and other technologies. To keep the system cost effective, Vertex made use of **Fargate Spot** for the search workers.



Here the use-case is the **chemists(user)** want to research query in some platform either db or a set of files. As we know that **Client – Server Architecture**. Here **chemists(user)** have the **client** application submitting the request to **Server(AWS solution)** via **API gateway.**
Search is a **post request(JSON)** which include what kind of search needs to use, how many cluster power they want to spin-up. This triggers LAMBDA functions and create the environment for the computation work. Dynamically creating by the parameters passed in the request.
It creates the FARGATE, ECS for computing -workers. Lambda will spin-up the orchestrator and communication via RabbitMQ. Here ECS pickup the works and execute it and return the result and write it to AWS S3. Fargate send notification (webhooks or email) and giving the path of the S3 location the result.

AWS SERVICES mentioned:

Amazon API Gateway Create, maintain, and secure APIs at any scale. https://aws.amazon.com/api-gateway/

AWS Lambda: Run code without thinking about servers or clusters. https://aws.amazon.com/lambda/

AWS FARGATE: Serverless compute for containers. https://aws.amazon.com/fargate/

RabbitMQ: RabbitMQ is one of the most popular open source message brokers. https://www.rabbitmq.com/

Amazon ECS (Elastic Container Service): Run highly secure, reliable, and scalable containers. Async RESTful API service. https://aws.amazon.com/ecs/

Main Highlights:
Entire Architecture is serverless. It need to come alive when there is a serch needed. Once it completed, it needs to shut down. Here using Fargate spot to get cost effective compute power. It can scale up very fast using ECS. Another feature is the democratizing the access of data.