

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

Building containerized apps: From development to production

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AWS

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AWS

Objectives

For you

- Gain practical knowledge on developing containerized apps
- Understand the dynamics of operating containerized apps
- Learn best practices

For us

- Provide you with a good experience in a hands-on workshop
- Get direct feedback to improve AWS Copilot and Amazon ECS
- Learn from your feedback on how to improve this workshop

In this workshop, we . . .

- Use Amazon ECS and AWS Fargate operated with AWS Copilot
- Simulate how we ship containerized applications
- Learn various use cases with demos
- Do hands-on modules

List of modules

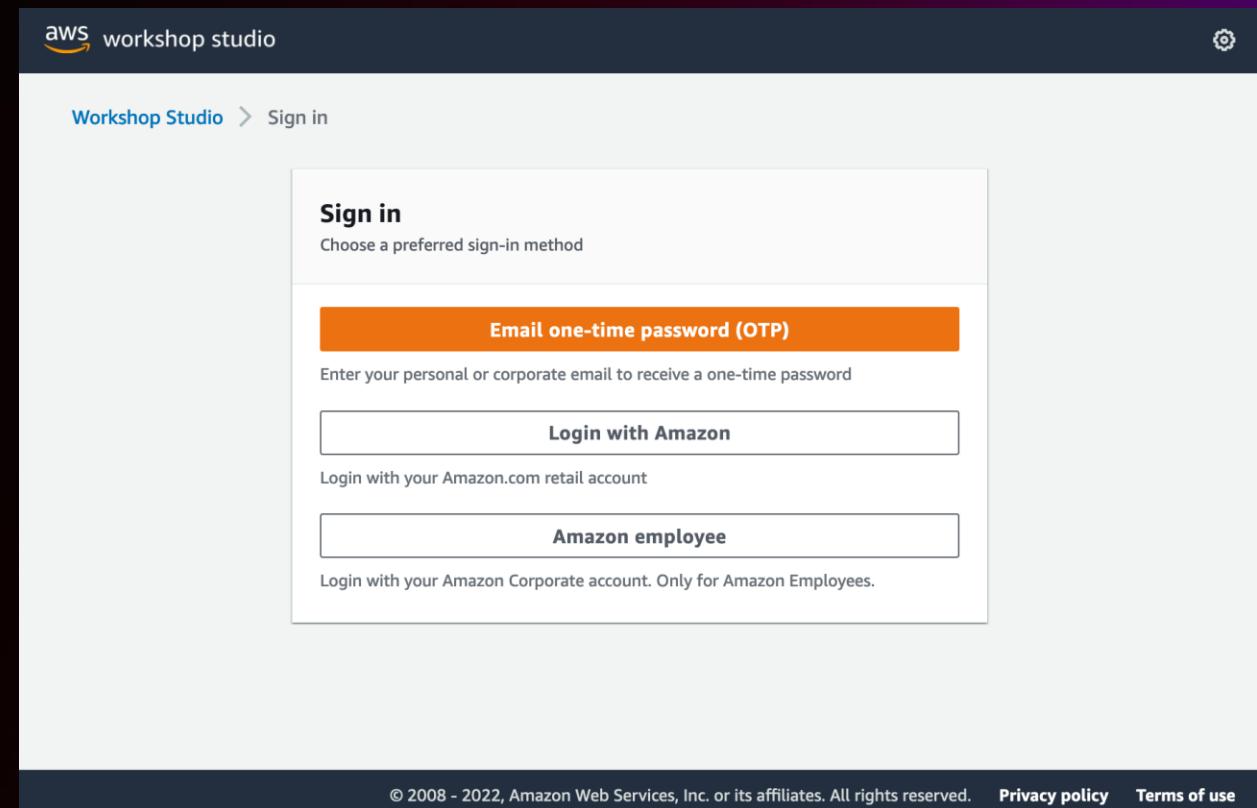
Hands-on modules	Extra modules
Module 1: Deploying API	Module 4: Implementing pub/sub
Module 2: Configuring multiple environments	Module 5: Building release pipeline
Module 3: Load-balanced private API	Module 6: Implementing observability and monitoring

Getting started with this workshop

- As a participant, you will have access to an AWS account with any optional pre-provisioned infrastructure and IAM policies needed to complete this workshop.
- The AWS account will only be available for the duration of this workshop. You will lose access to the account thereafter.
- The optional pre-provisioned infrastructure will be deployed to a specific region. Check your workshop content to determine whether other regions will be used.
- Be sure to review the terms and conditions of the event. Do not upload any personal or confidential information to the account.

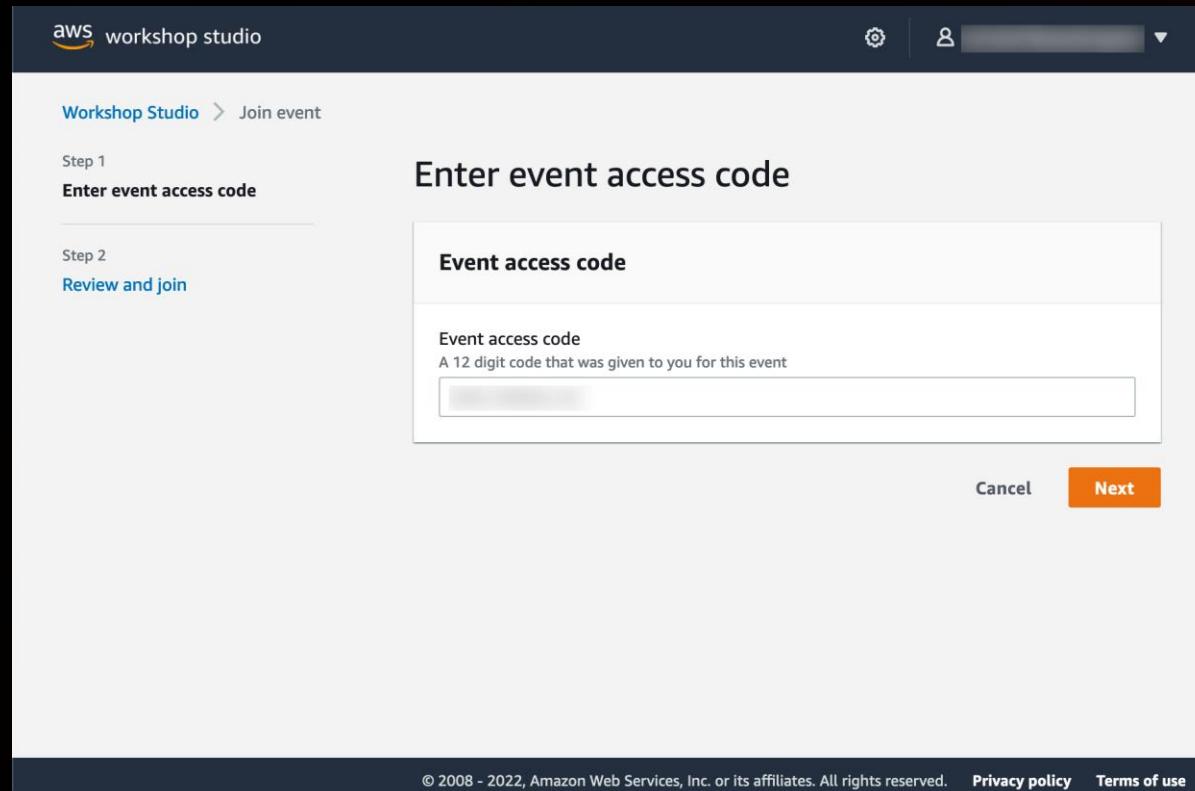
Step 1: Sign in via your preferred method

<https://catalog.us-east-1.prod.workshops.aws/join?access-code=97d2-0744ab-db>



Step 2: Enter event access code

Enter the 12 digit event access code. If you were given a one-click join link, you can skip this step.



Access code: 97d2-0744ab-db



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Step 3: Review terms and join event

The screenshot shows the 'Review and join' step of the AWS Workshop Studio 'Join event' process. The page is titled 'Review and join' and displays 'Event details' and 'Terms and Conditions'.

Event details

Name	Start time	Duration	Level
AWS General Immersion Day	9/23/2022 01:13 AM	12 hours	-

Description
AWS General Immersion Day

Terms and Conditions
Read and accept before joining the event

1. By using AWS Workshop Studio for the relevant event, you agree to the AWS Event Terms and Conditions and the AWS Acceptable Use Policy. You acknowledge and agree that are using an AWS-owned account that you can only access for the duration of the relevant event. If you find residual resources or materials in the AWS-owned account, you will make us aware and cease use of the account. AWS reserves the right to terminate the account and delete the contents at any time.
2. You will not: (a) process or run any operation on any data other than test data sets or lab-approved materials by AWS, and (b) copy, import, export or otherwise create derivative works of materials provided by AWS, including but not limited to, data sets.
3. AWS is under no obligation to enable the transmission of your materials through Event Engine and may, in its discretion, edit, block, refuse to post, or remove your materials at any time.
4. Your use of AWS Workshop Studio will comply with these terms and all applicable laws, and your access to AWS Workshop Studio will immediately and automatically terminate if you do not comply with any of these terms or conditions.

I agree with the Terms and Conditions

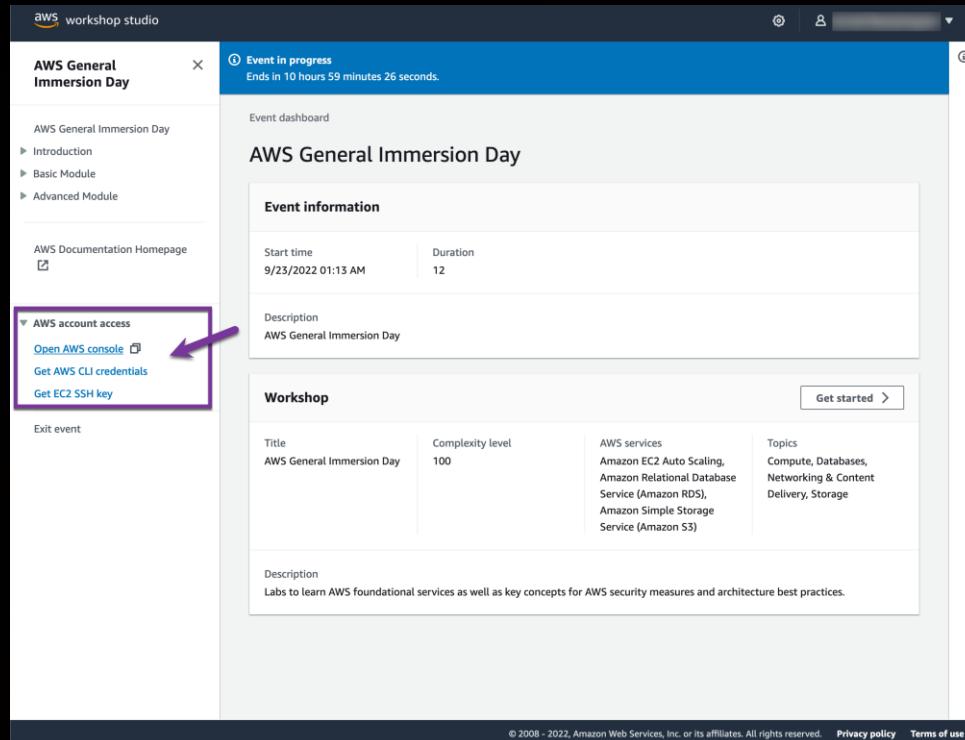
Cancel Previous **Join event**

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Step 4: Access AWS account

Access the AWS console, or generate AWS CLI credentials as needed.



AWS General Immersion Day

Event in progress
Ends in 10 hours 59 minutes 26 seconds.

Event dashboard

AWS General Immersion Day

Event information

Start time	9/23/2022 01:13 AM	Duration	12
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Description

AWS General Immersion Day

Workshop

Title	AWS General Immersion Day	Complexity level	100
AWS services	Amazon EC2 Auto Scaling, Amazon Relational Database Service (Amazon RDS), Amazon Simple Storage Service (Amazon S3)	Topics	Compute, Databases, Networking & Content Delivery, Storage

Workshop

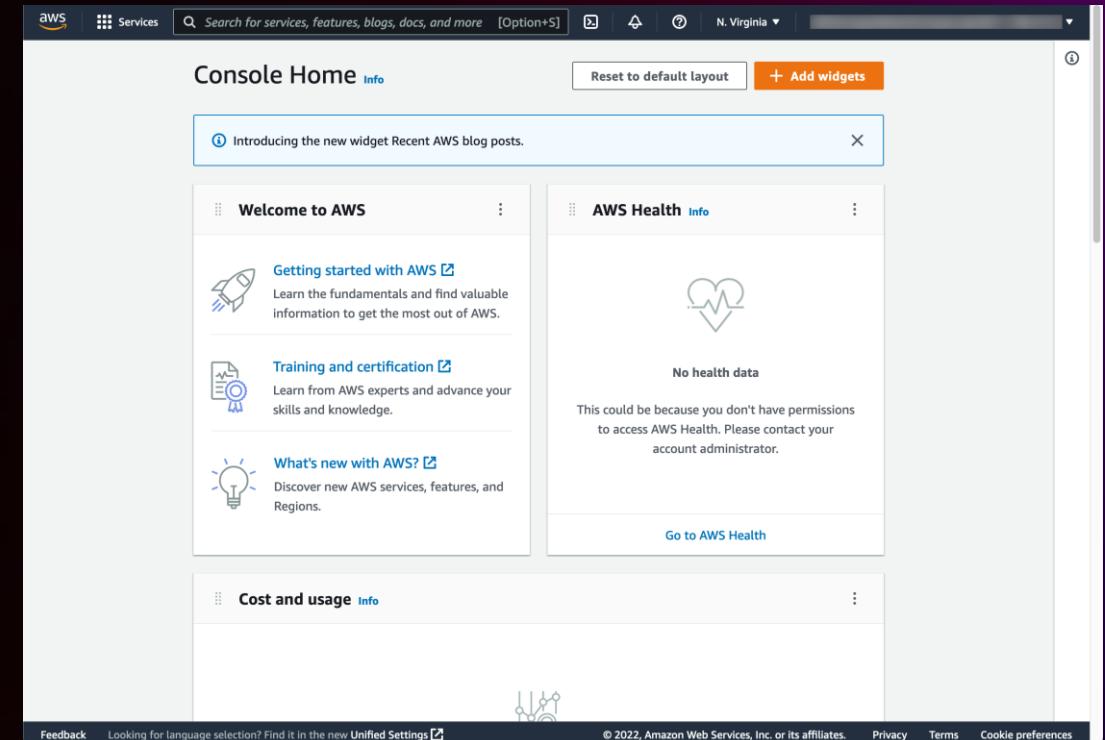
Get started >

AWS account access

- Open AWS console
- Get AWS CLI credentials
- Get EC2 SSH key

Exit event

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Console Home

Search for services, features, blogs, docs, and more [Option+S]

Reset to default layout + Add widgets

Welcome to AWS

Getting started with AWS

Learn the fundamentals and find valuable information to get the most out of AWS.

Training and certification

Learn from AWS experts and advance your skills and knowledge.

What's new with AWS?

Discover new AWS services, features, and Regions.

AWS Health

No health data

This could be because you don't have permissions to access AWS Health. Please contact your account administrator.

Go to AWS Health

Cost and usage

Feedback Looking for language selection? Find it in the new Unified Settings

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Step 5: Get started with the workshop

AWS workshop studio

AWS General Immersion Day

Event in progress
Ends in 10 hours 59 minutes 26 seconds.

Event dashboard

AWS General Immersion Day

Event information

Start time	Duration
9/23/2022 01:13 AM	12

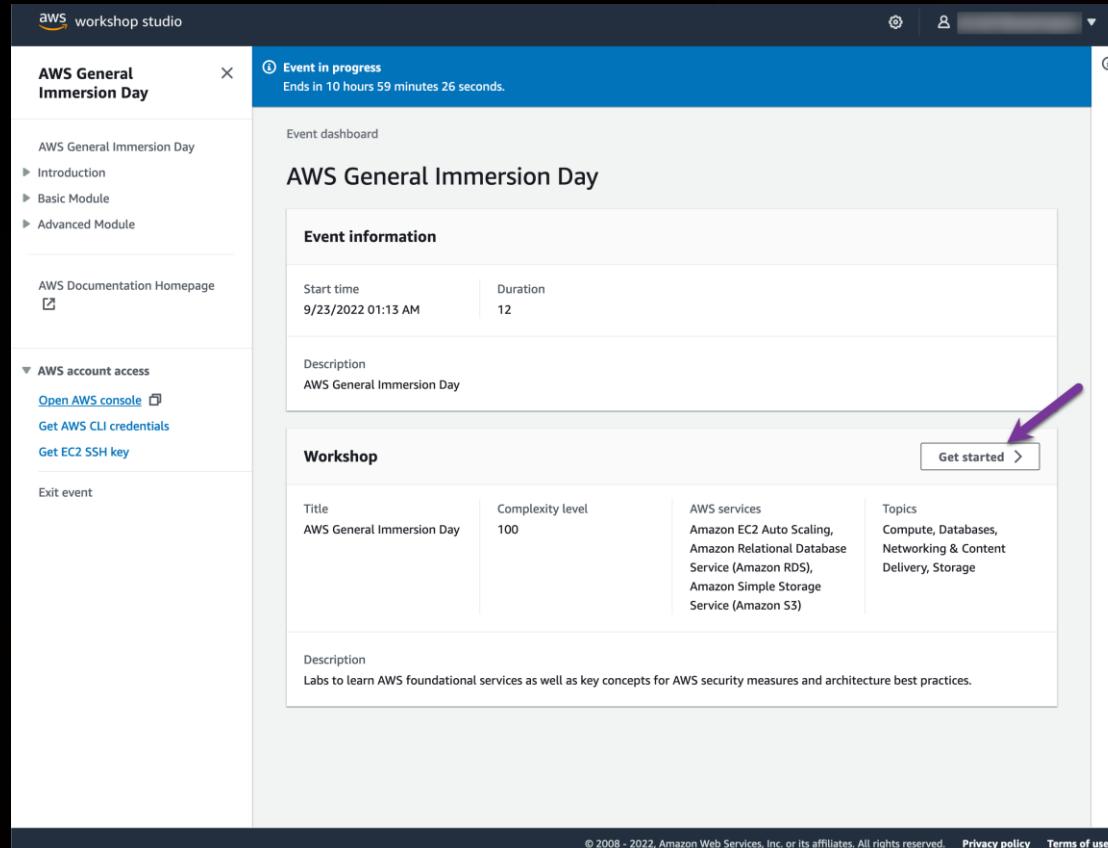
Description
AWS General Immersion Day

Workshop

Title	Complexity level	AWS services	Topics
AWS General Immersion Day	100	Amazon EC2 Auto Scaling, Amazon Relational Database Service (Amazon RDS), Amazon Simple Storage Service (Amazon S3)	Compute, Databases, Networking & Content Delivery, Storage

Description
Labs to learn AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

Get started >



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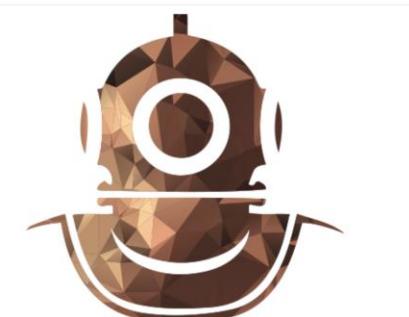
AWS workshop studio

AWS General Immersion Day

Event in progress
Ends in 10 hours 57 minutes 12 seconds.

Event dashboard > AWS General Immersion Day

AWS General Immersion Day



IMMERSION DAYS

In this General Immersion Day workshop, through a mix of service explanation and hands-on labs led by AWS, you will learn about AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

The hands-on labs are largely divided into **basic** and **advanced** modules.

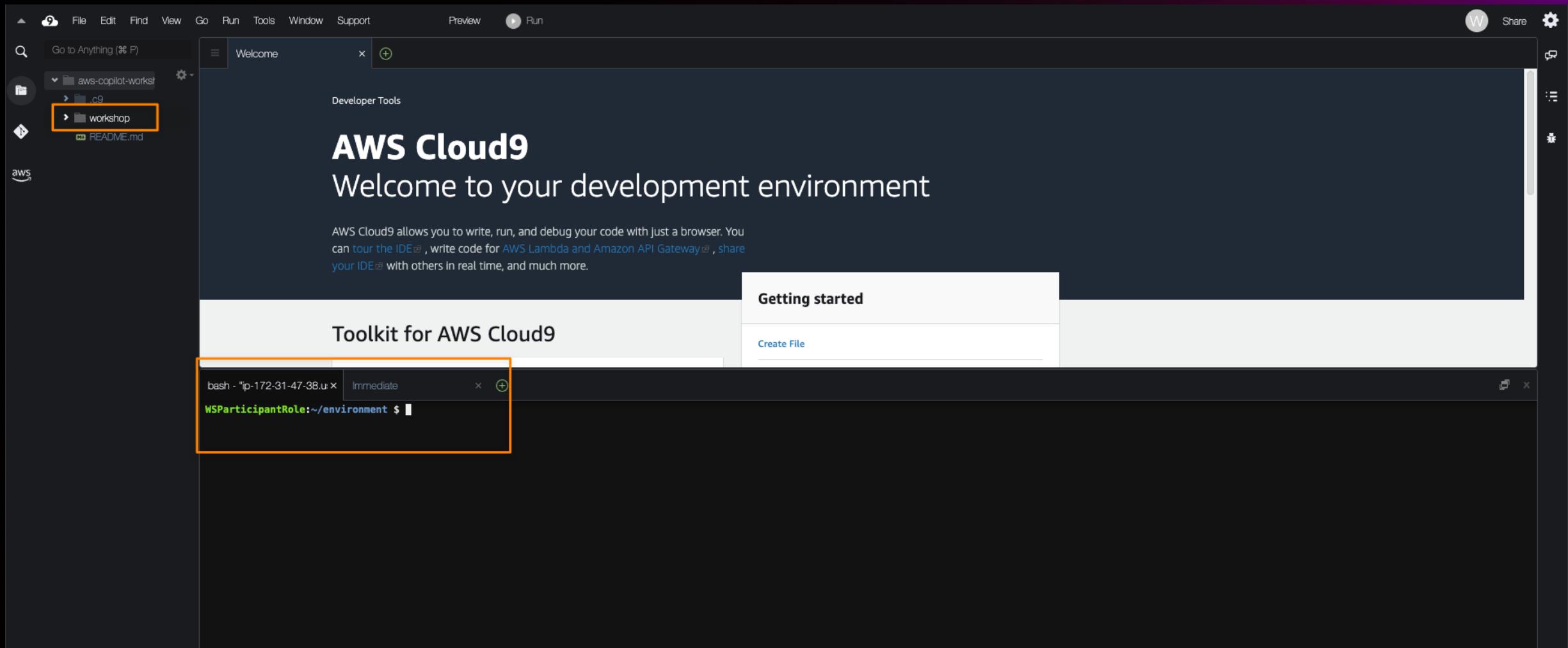
In basic modules, you can learn various features of each AWS foundational service. In advanced modules, you can learn how to connect each service organically to create architecture like 3-tier web application.

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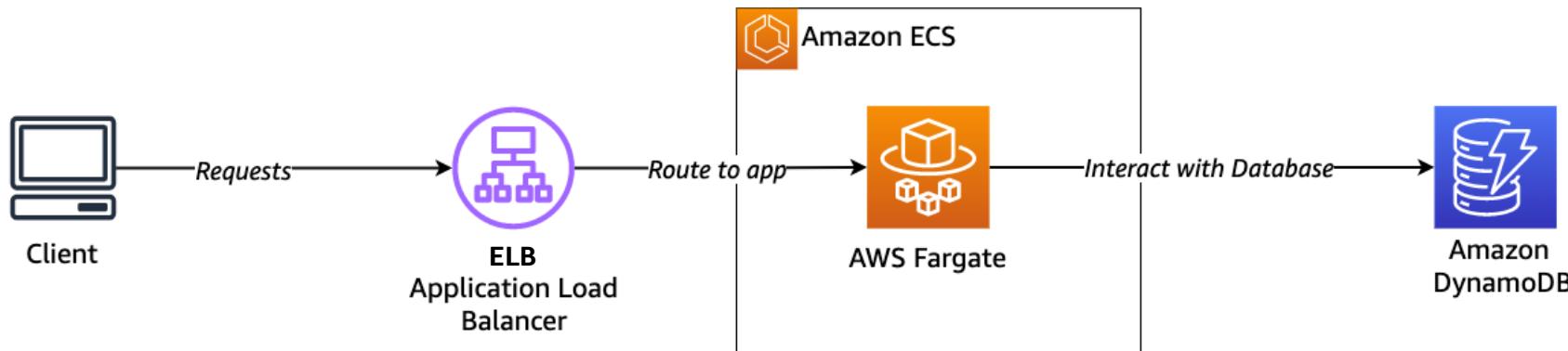
Step 6: Log in to AWS Cloud9 IDE



Workshop preparation (10 mins)

1. Go to <https://catalog.us-east-1.prod.workshops.aws/join?access-code=97d2-0744ab-db>
2. Input the event access code: **97d2-0744ab-db**
3. Get AWS CLI credentials
4. Finish **Get started with this workshop** -> [Running Workshop at an AWS Event](#)

Let's start with a simple architecture



What we are going to build

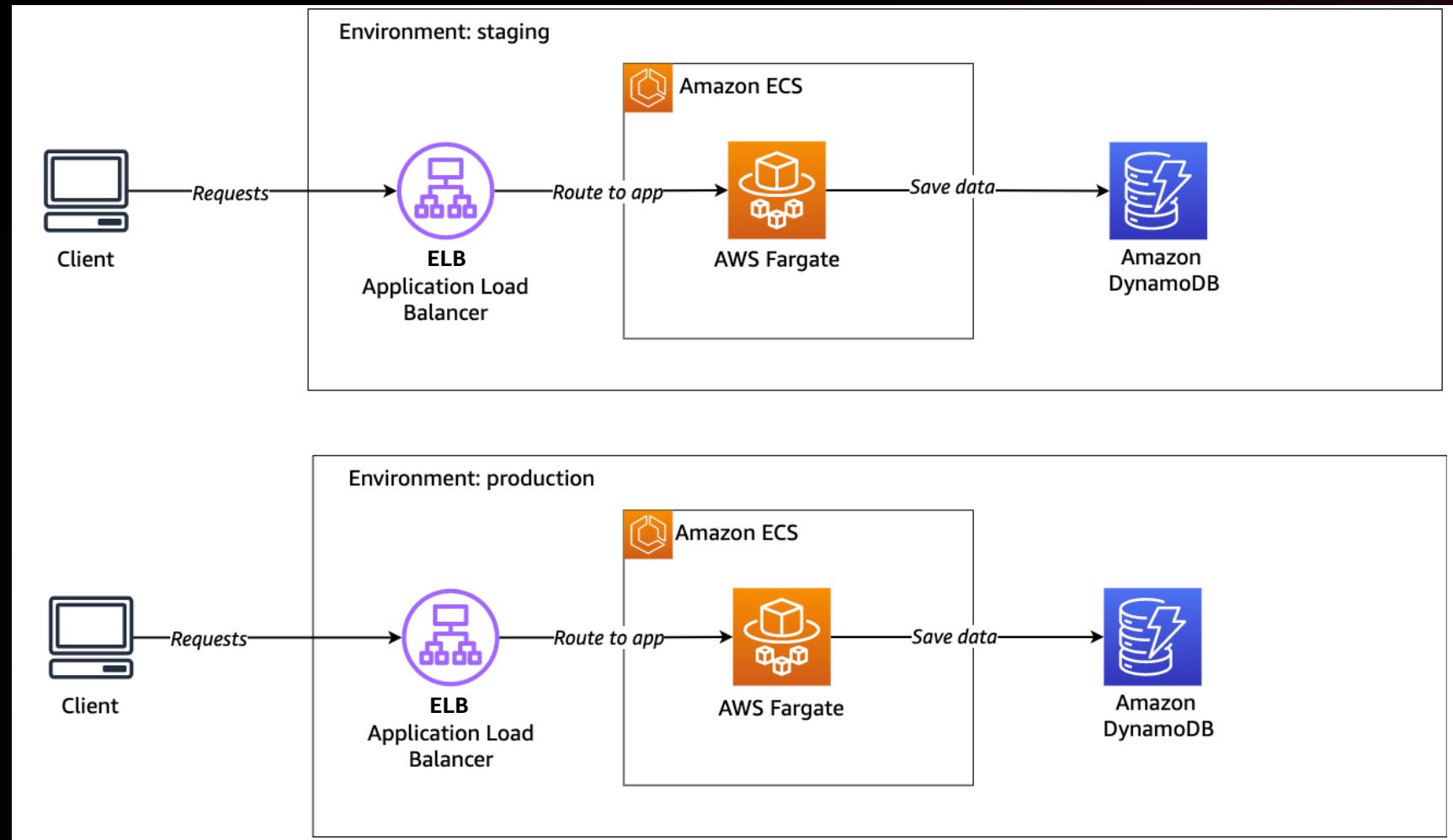
Basic architecture to interact with API and data retrieval and manipulation from/to database

Services and tools used

1. AWS Copilot
2. Elastic Load Balancing
3. Amazon ECS
4. AWS Fargate
5. Amazon DynamoDB

Start Module 1: Deploying API

But . . . I need to deploy into multiple environments



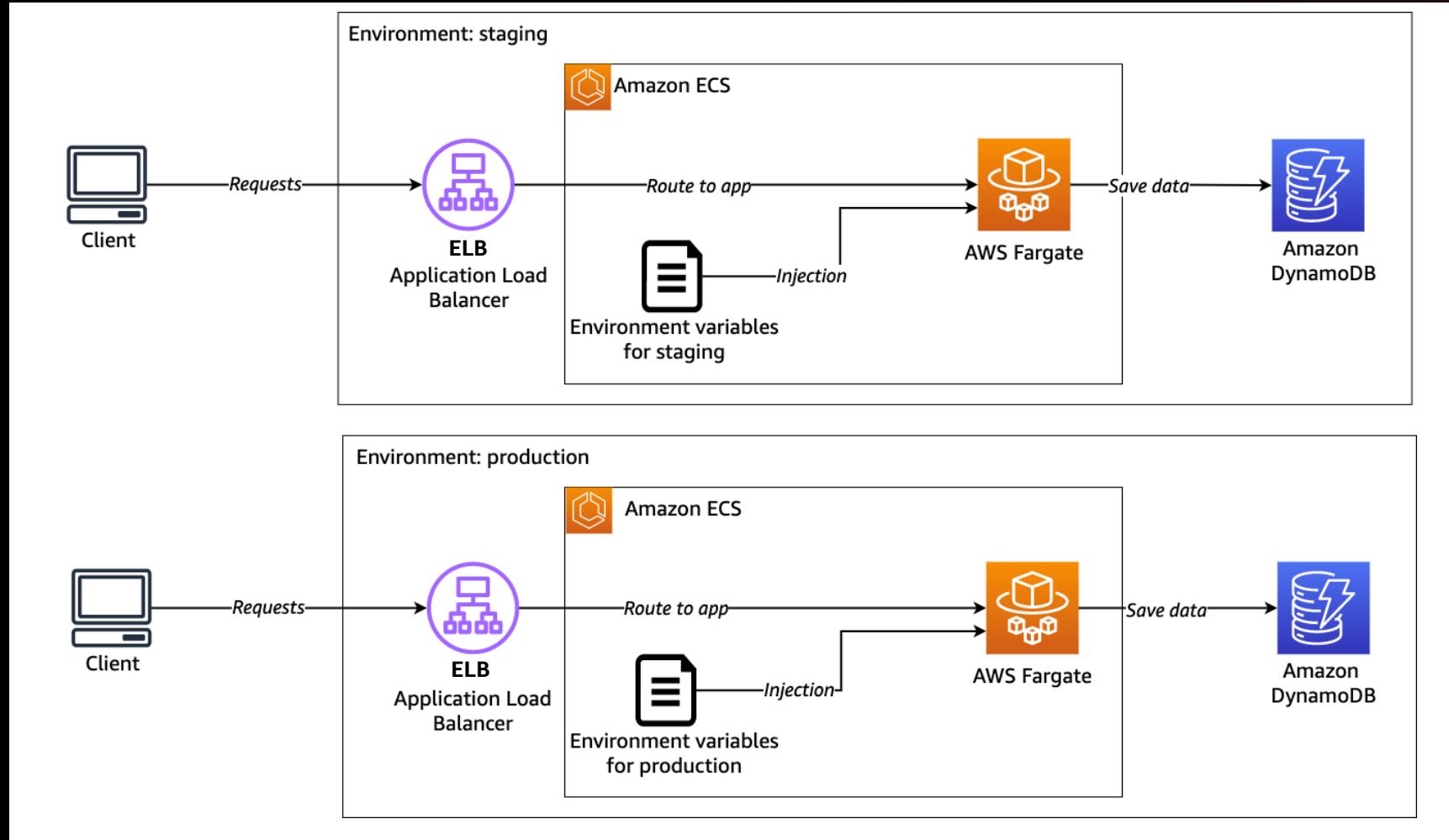
What we are going to build

Multiple environments (staging and production) and maintaining dev/prod parity for applications

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Amazon DynamoDB

Adding environment variables



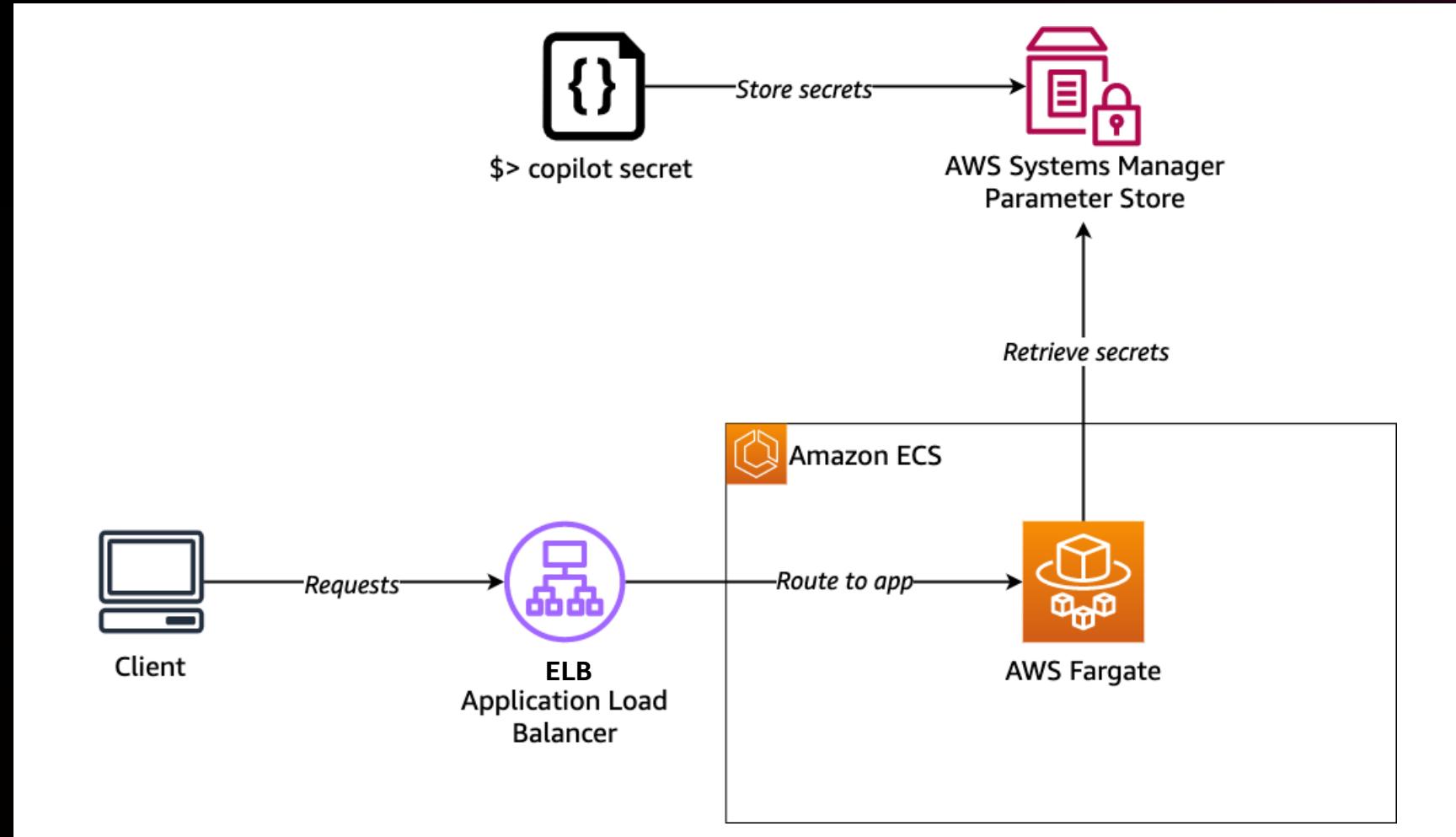
What we are going to build

Add global and separate environment variable(s) for each environment

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Amazon DynamoDB

Configuring secrets



What we are going to build

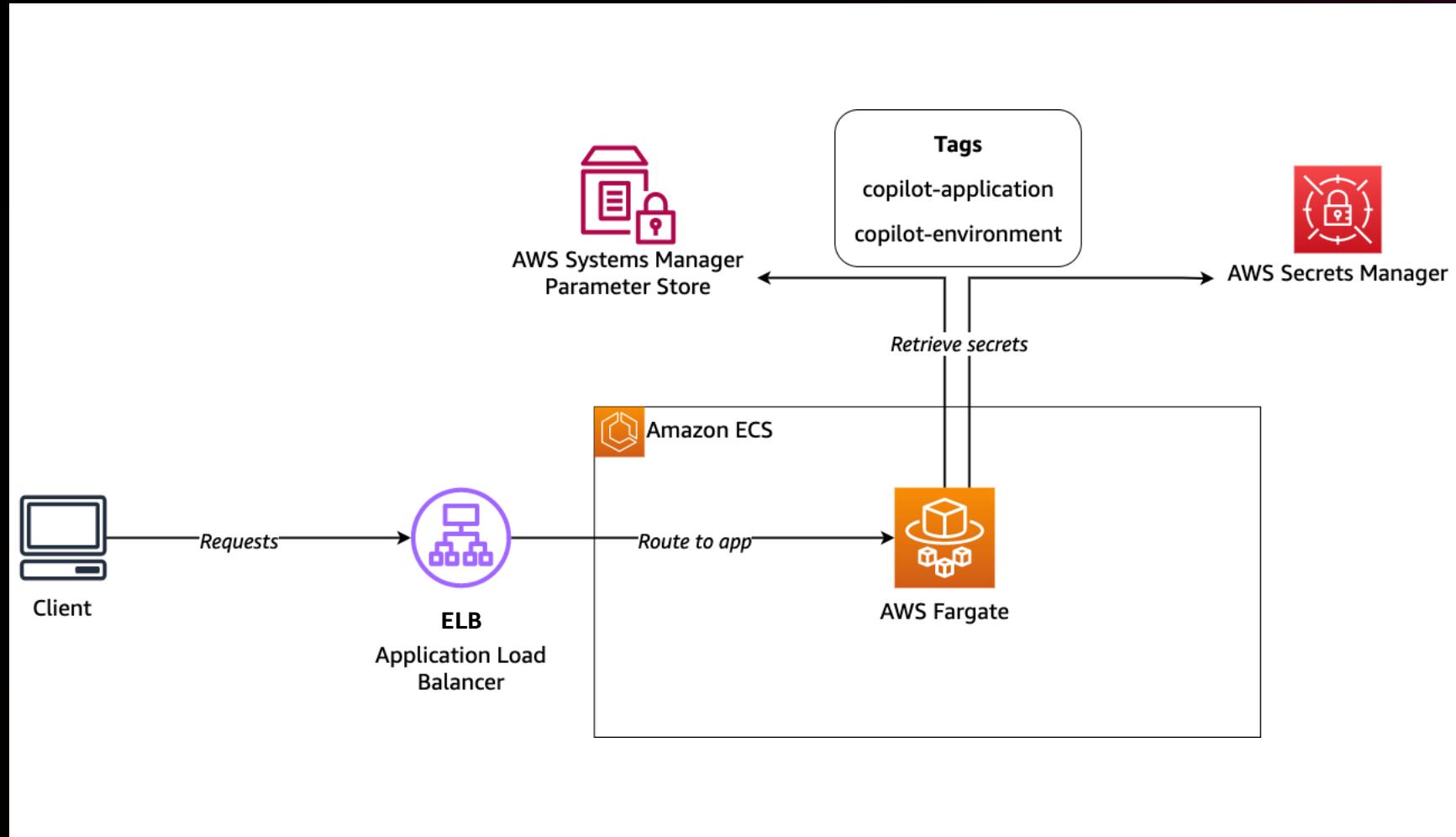
Add secret(s) with AWS Copilot and retrieve secret(s) from Parameter Store, a capability of AWS Systems Manager

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Parameter Store

Start Module 2: Configuring multiple environments

Importing existing secrets



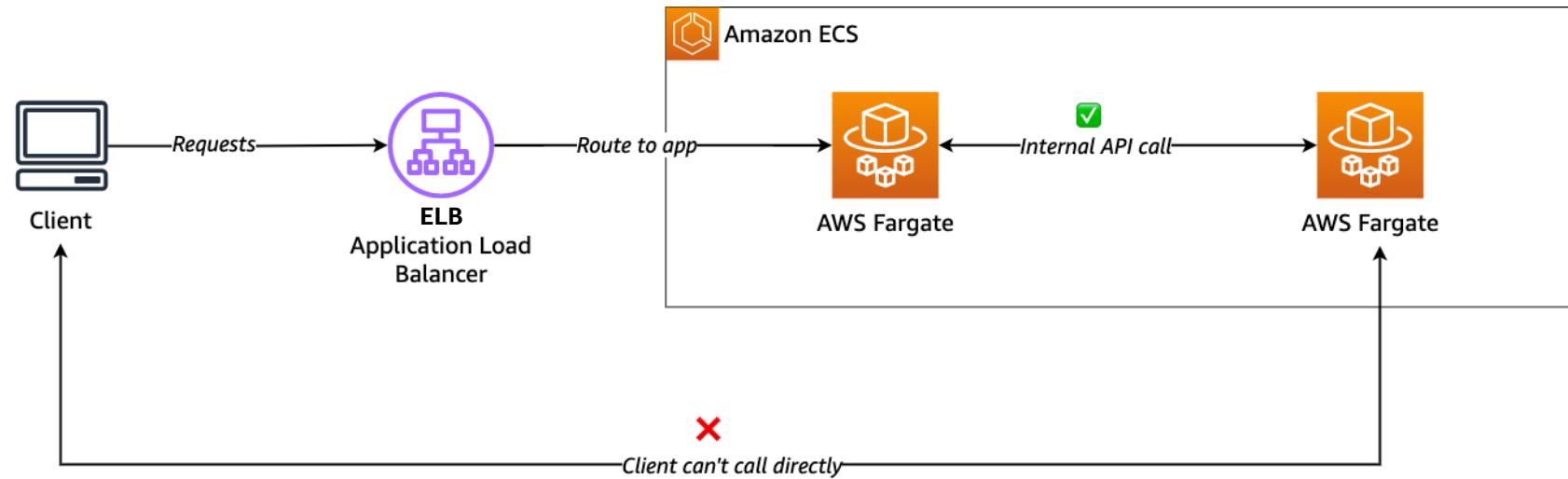
What we are going to build

Import existing secret(s) and retrieve secret(s) from application

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Parameter Store
6. AWS Secrets Manager

Private API using Service Discovery



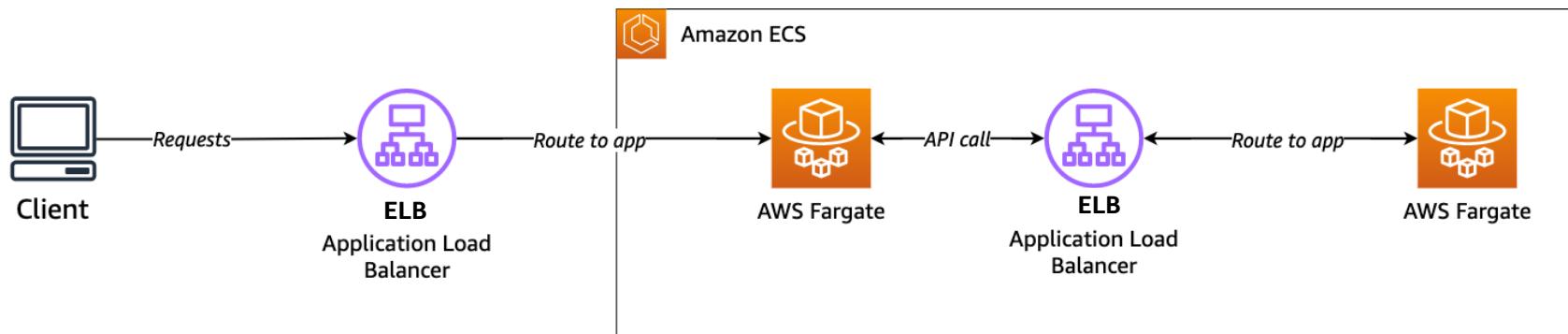
What we are going to build

Private API that isn't accessible from public and can only be accessed by internal application

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Amazon ECS Service Discovery

Load-balanced private API



What we are going to build

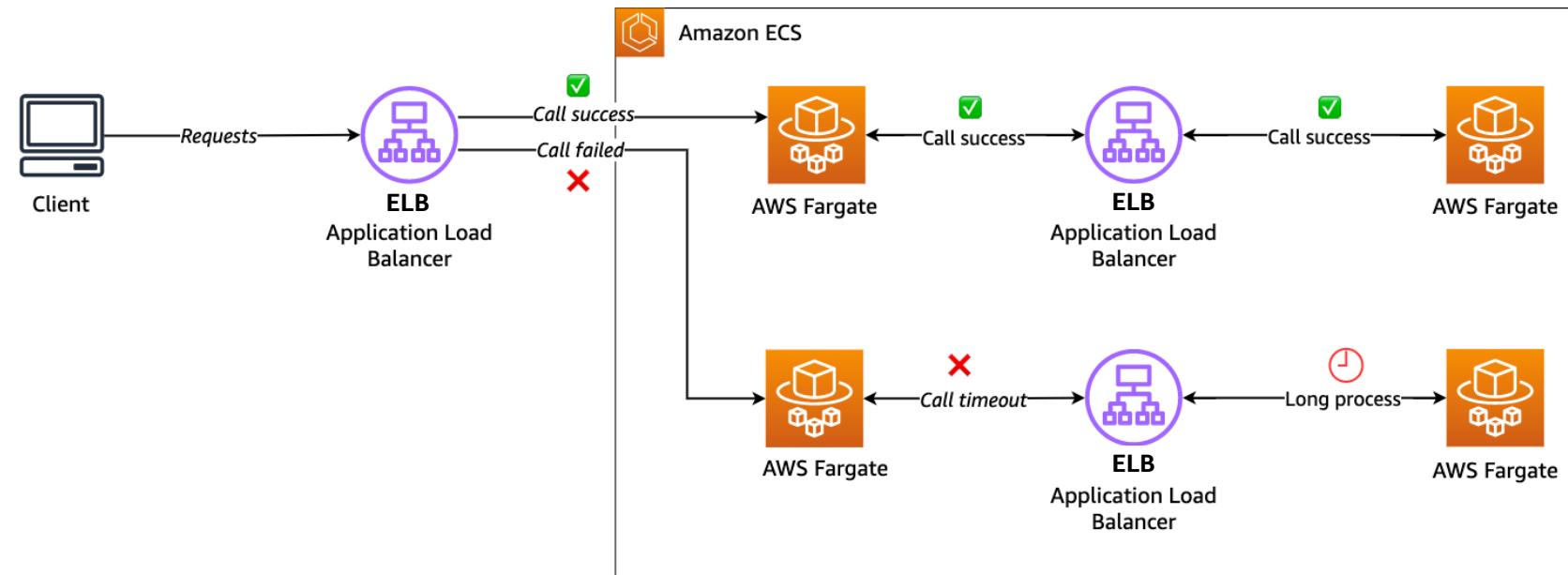
Add internal load balancer to access services to provide access from internal application for service communication

Services and tools used

1. AWS Copilot
2. ELB + internal ELB
3. Amazon ECS
4. AWS Fargate

Start Module 3: Load-balanced private API

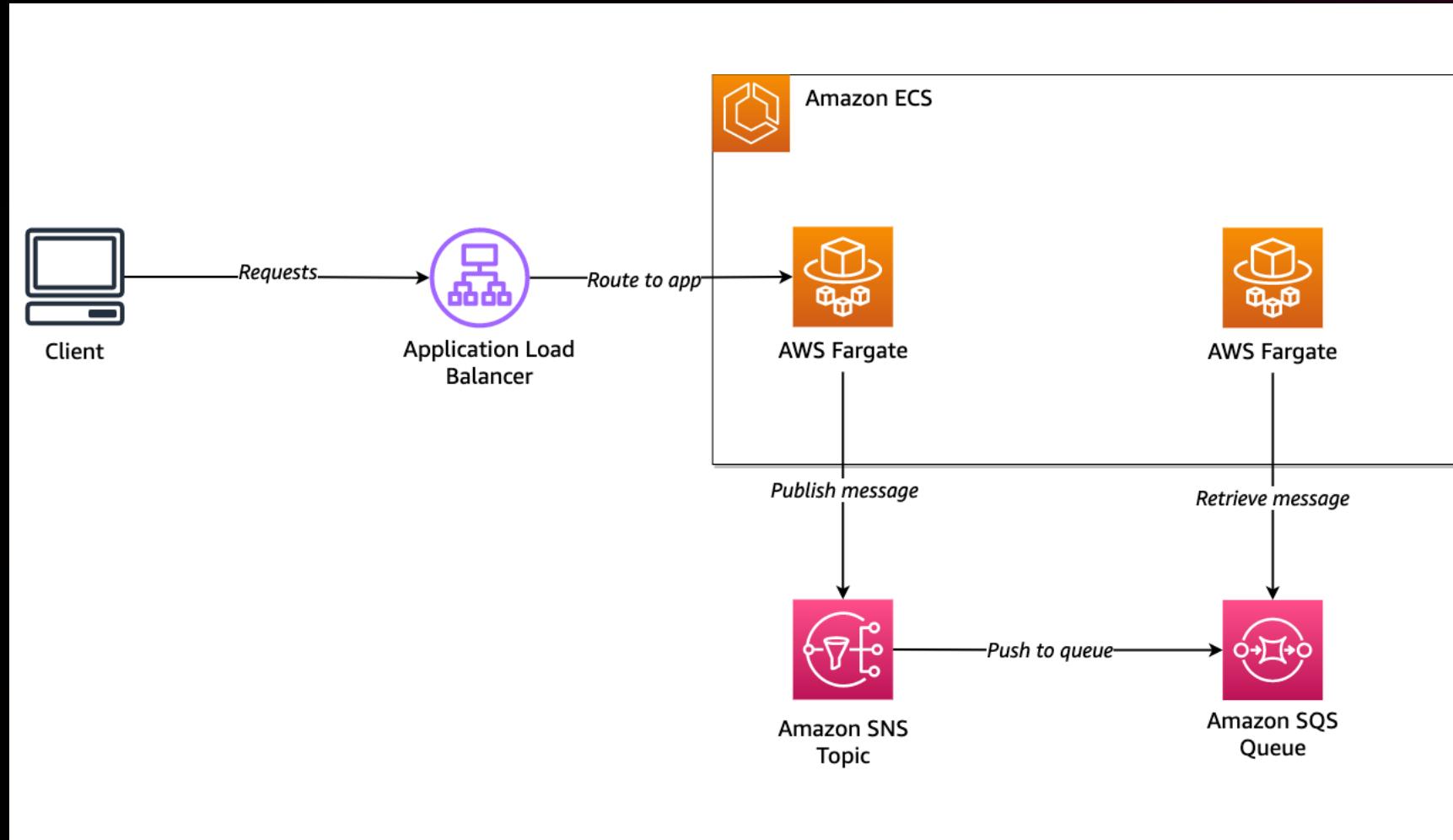
But . . . my application is very slow



Challenges

It's a common misconception that microservices consist **only** of a set of HTTP APIs. Due to the nature of synchronous call, it increases the interdependency within services and potentially introduces problems in application performance.

Implementing pub/sub



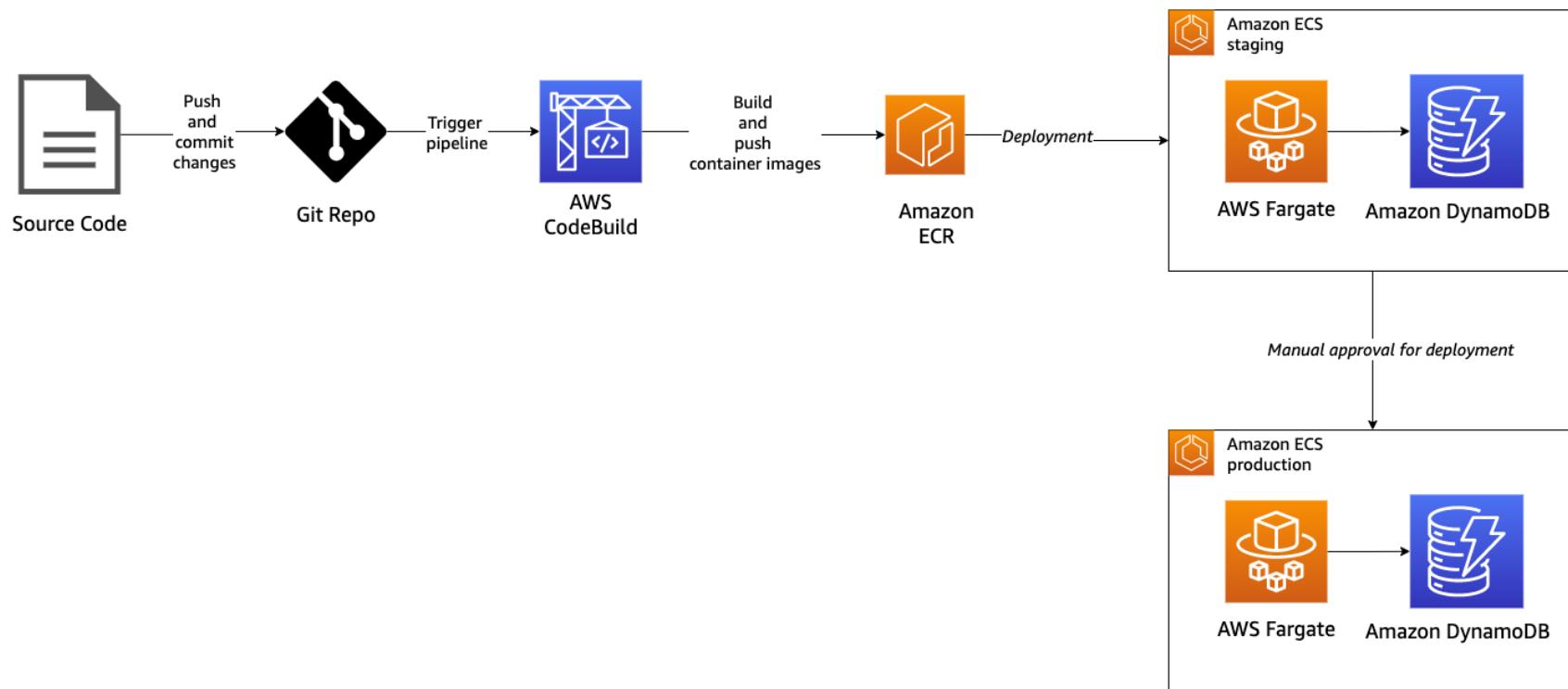
What we are going to build

Rearchitect internal services communication by leveraging asynchronous communication, implementing pub/sub pattern to decouple services

Services and tools used

1. AWS Copilot
2. Amazon ELB
3. Amazon ECS
4. AWS Fargate
5. Amazon SNS
6. Amazon SQS

Building release pipeline



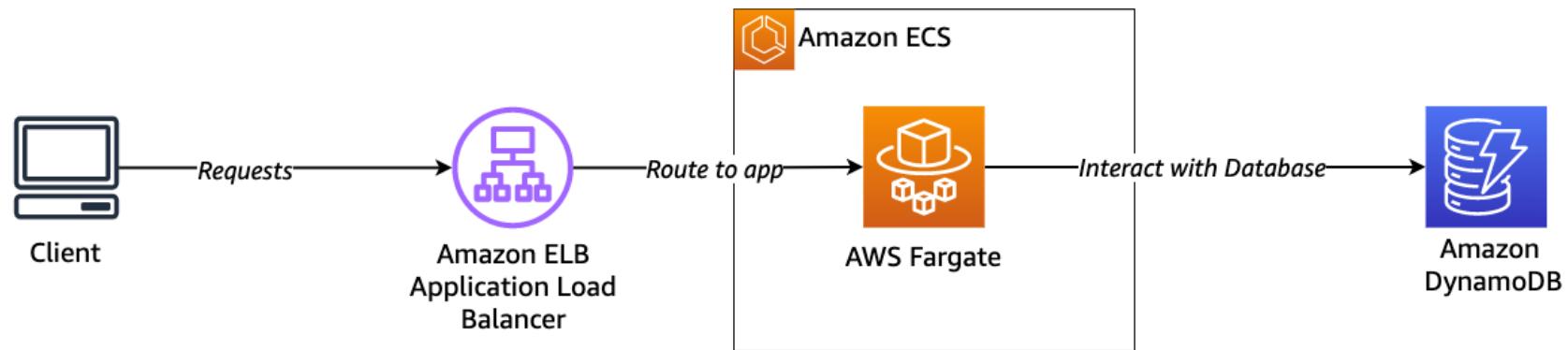
What we are going to build

Implement CI/CD for automatic deployment into application environment(s)

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. Amazon ECR
6. AWS CodePipeline
7. AWS CodeBuild

What's happening with my application?

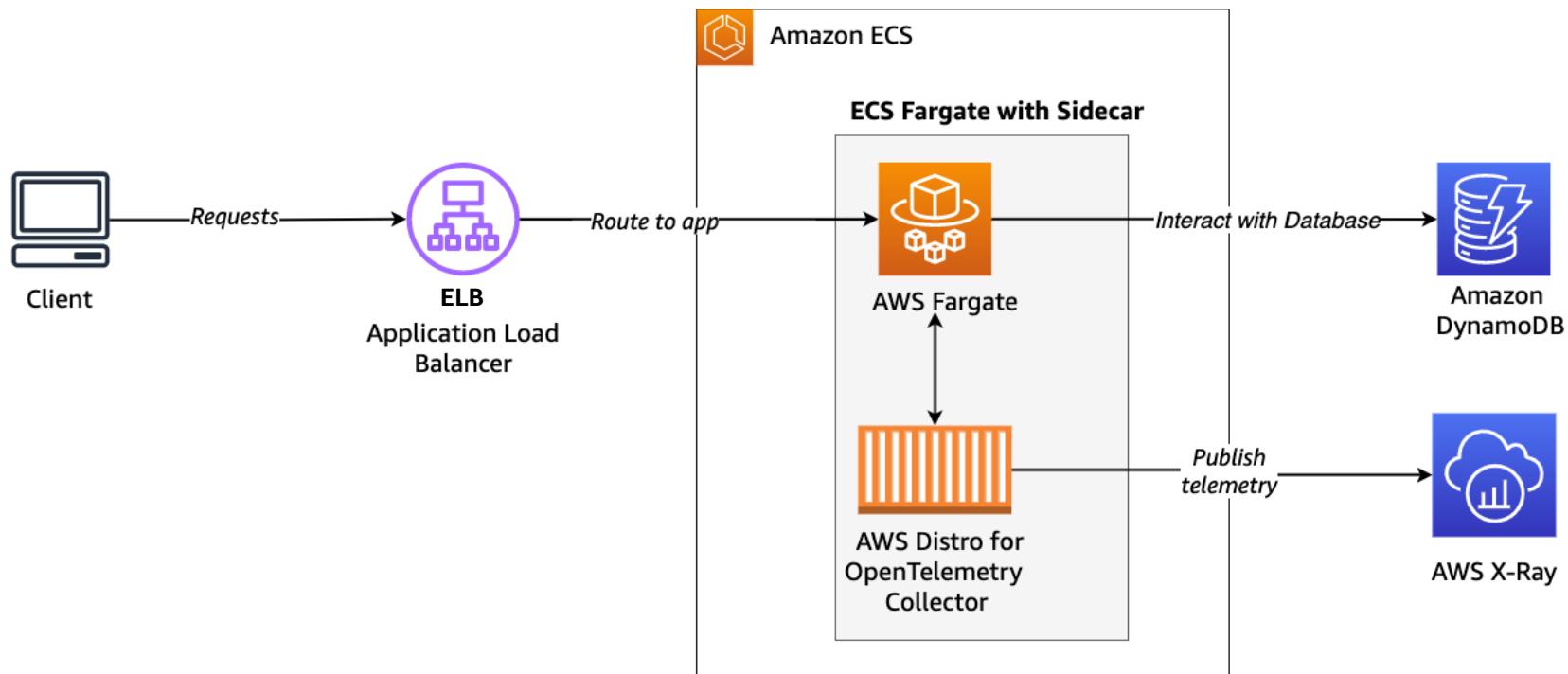


Observability and monitoring

It's critical to implement observability and monitoring from an early stage to understand what's going on instead of guessing.

Observability and monitoring is a combination of three foundational pillars: logs, metrics, and traces.

Implementing observability



What we are going to build

Use sidecar pattern to send telemetry data alongside the services

Services and tools used

1. AWS Copilot
2. ELB
3. Amazon ECS
4. AWS Fargate
5. AWS Lambda
6. AWS Distro for OpenTelemetry Collector
7. AWS X-Ray
8. Amazon CloudWatch

Start Module 6: Implementing observability and monitoring

Continue the workshop

<https://catalog.workshops.aws/aws-copilot-workshop>

Thank you!

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(Twitter | LinkedIn)

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Efe Karakus

@efekarakus (Twitter)



Please complete the session
survey in the **mobile app**