

AWS re:Invent

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

BOA317-R

Building containerized apps: From development to production

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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>



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Workshop Studio > Sign in

Sign in

Choose a preferred sign-in method

Email one-time password (OTP)

Enter your personal or corporate email to receive a one-time password

Login with Amazon

Login with your Amazon.com retail account

Amazon employee

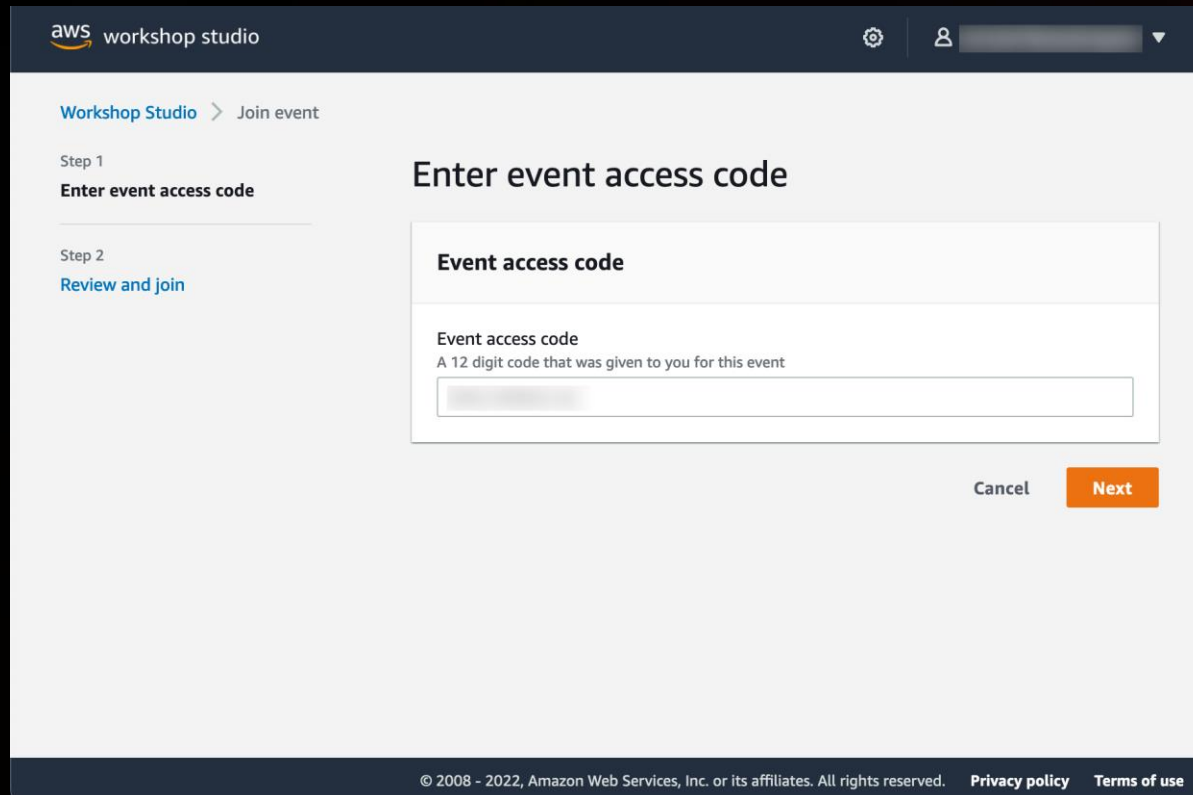
Login with your Amazon Corporate account. Only for Amazon Employees.

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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



The screenshot shows the AWS Workshop Studio interface. At the top, there's a header with the AWS logo and 'workshop studio' text. Below the header, a breadcrumb trail shows 'Workshop Studio > Join event'. The main content area is titled 'Enter event access code'. On the left, there's a sidebar with 'Step 1 Enter event access code' (highlighted) and 'Step 2 Review and join'. The main form area has a title 'Enter event access code' and a section 'Event access code' with a description 'A 12 digit code that was given to you for this event' and a text input field. At the bottom right of the form, there are 'Cancel' and 'Next' buttons. The footer contains copyright information and links to 'Privacy policy' and 'Terms of use'.

Step 3: Review terms and join event

aws workshop studio

Workshop Studio > Join event

Step 1

[Enter event access code](#)

Step 2

Review and join

Review and join

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 derivate 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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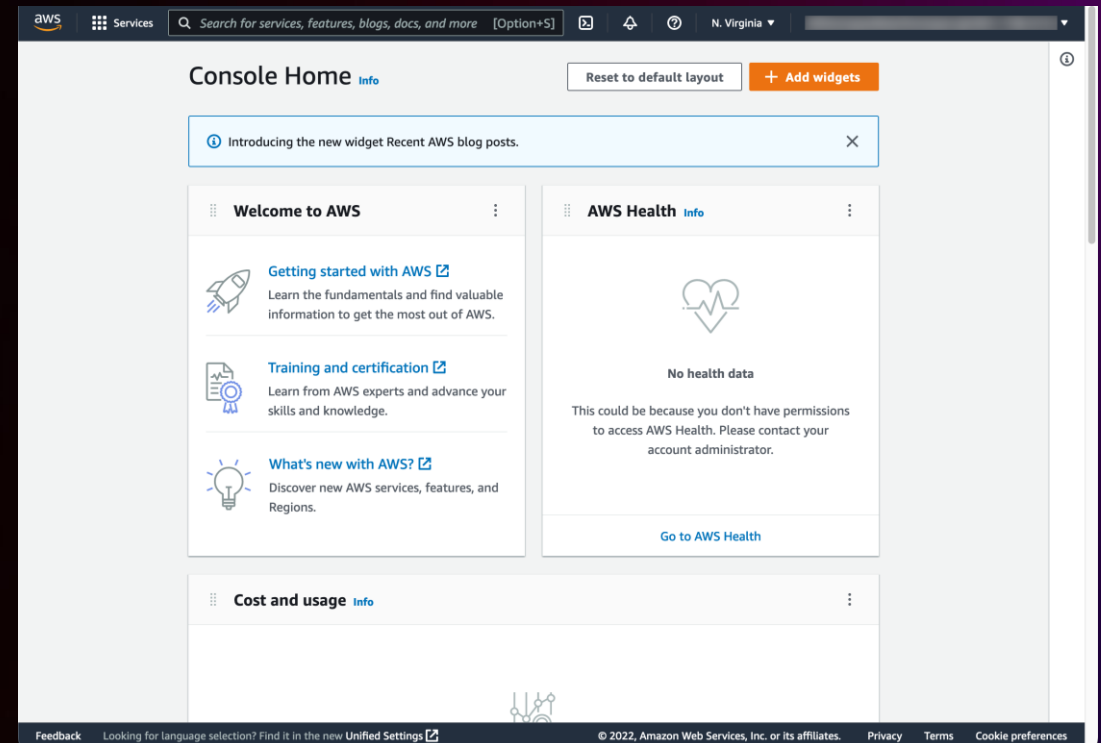
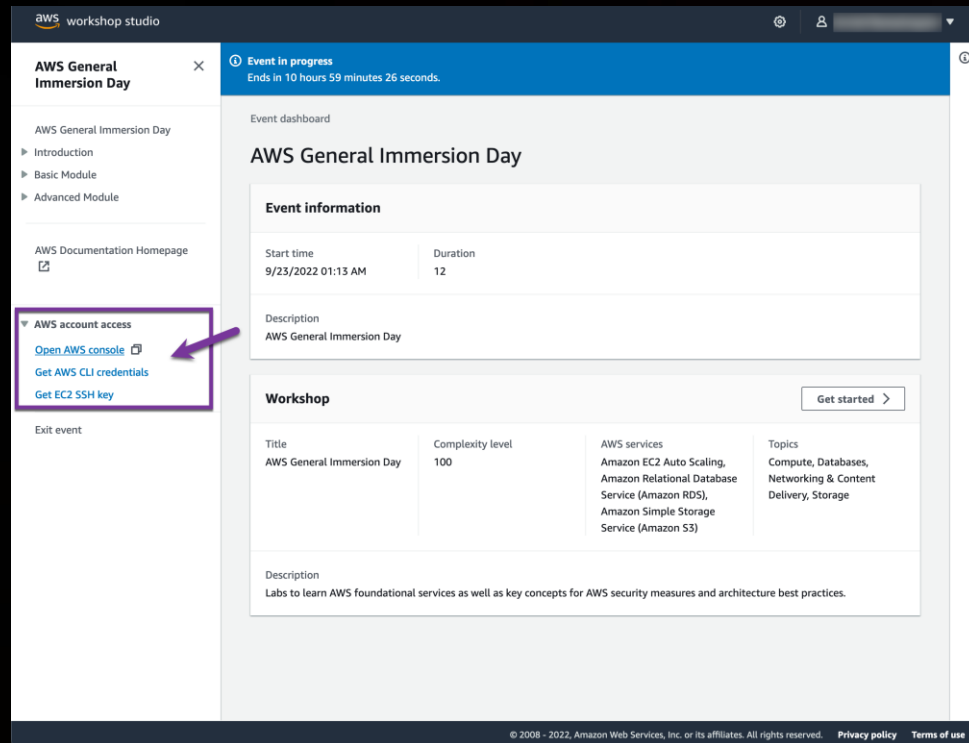
[Privacy policy](#)

[Terms of use](#)

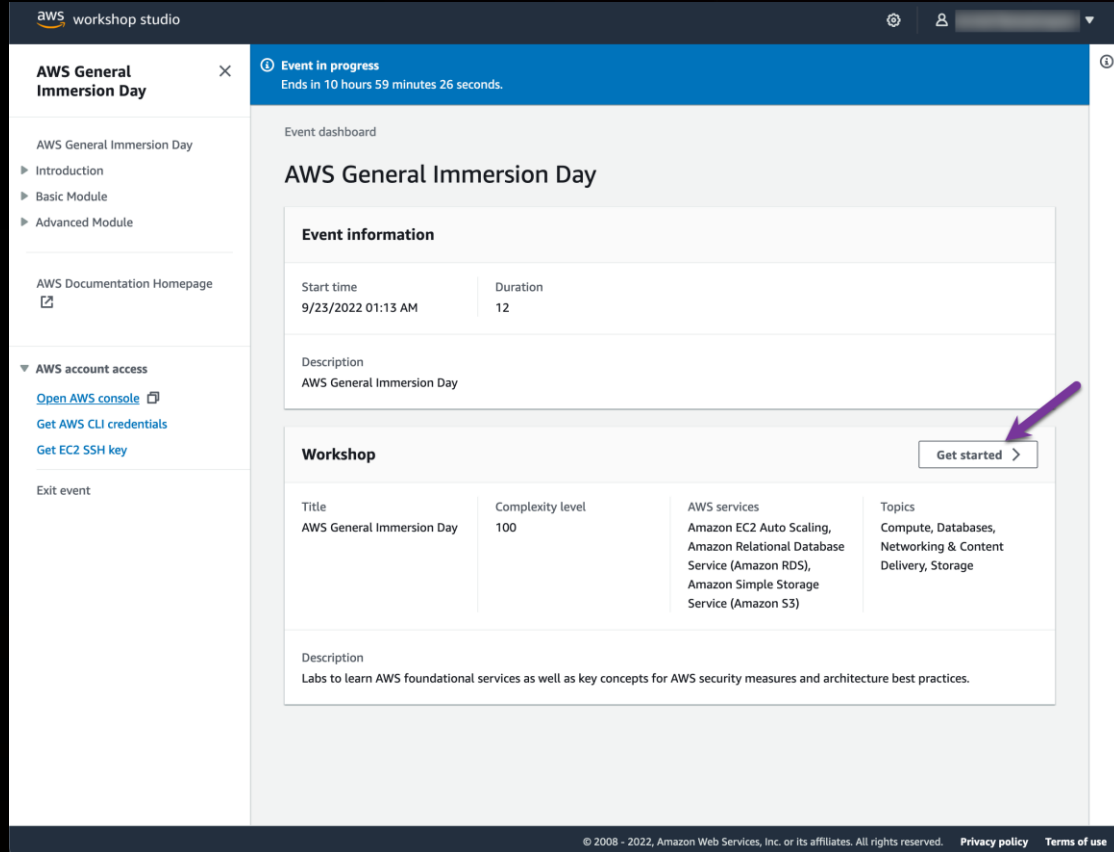


Step 4: Access AWS account

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



Step 5: Get started with the workshop



aws workshop studio

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

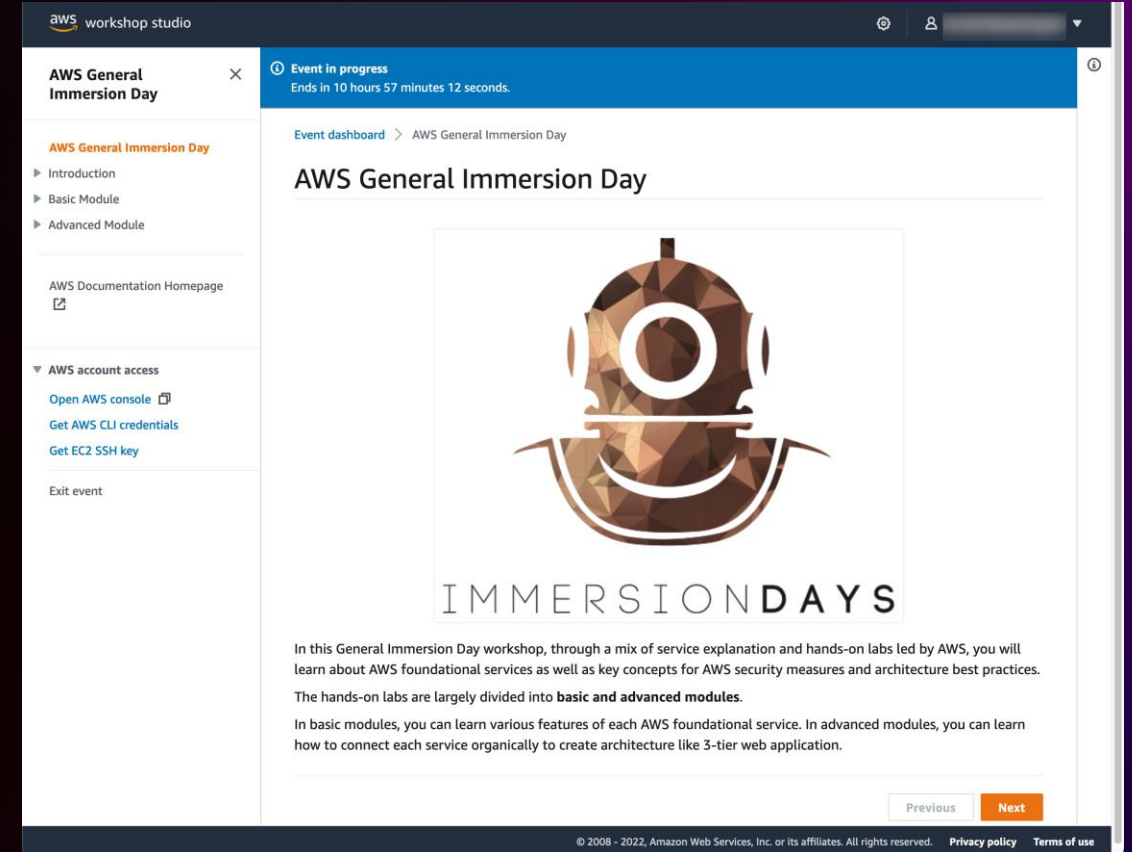
Workshop

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

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**.

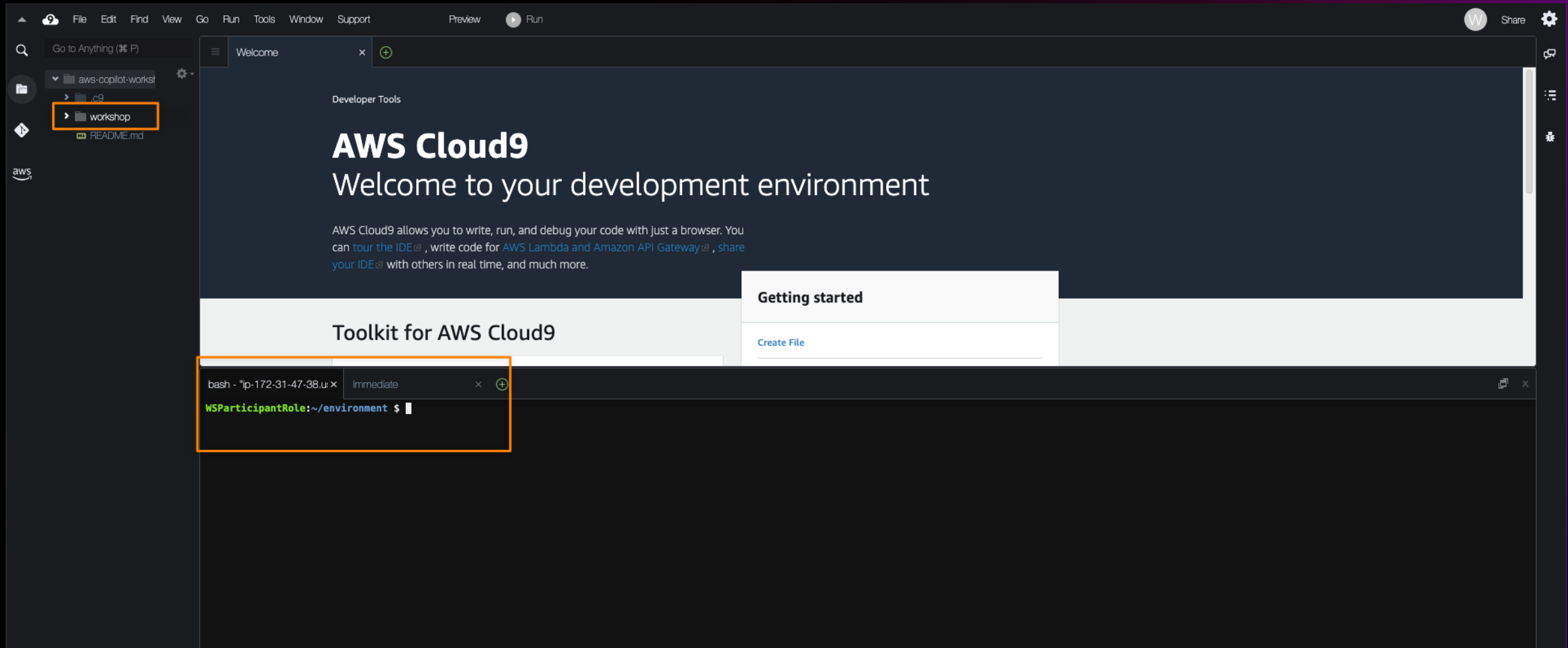
In basic modules, you can learn various features of each AWS foundational service. In advanced modules, you can learn how to connect each service organically to create architecture like 3-tier web application.

Previous Next

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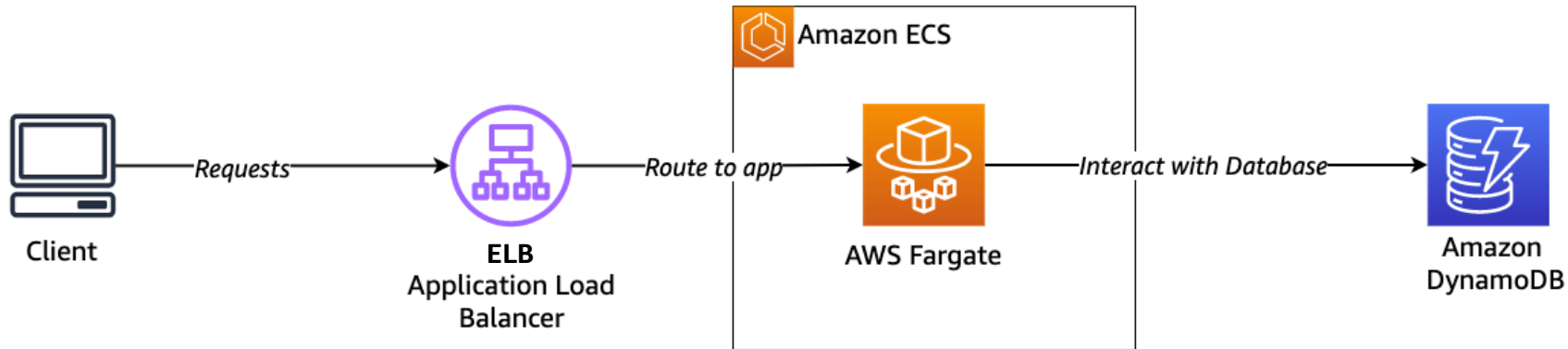
Step 6: Log in to AWS Cloud9 IDE



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

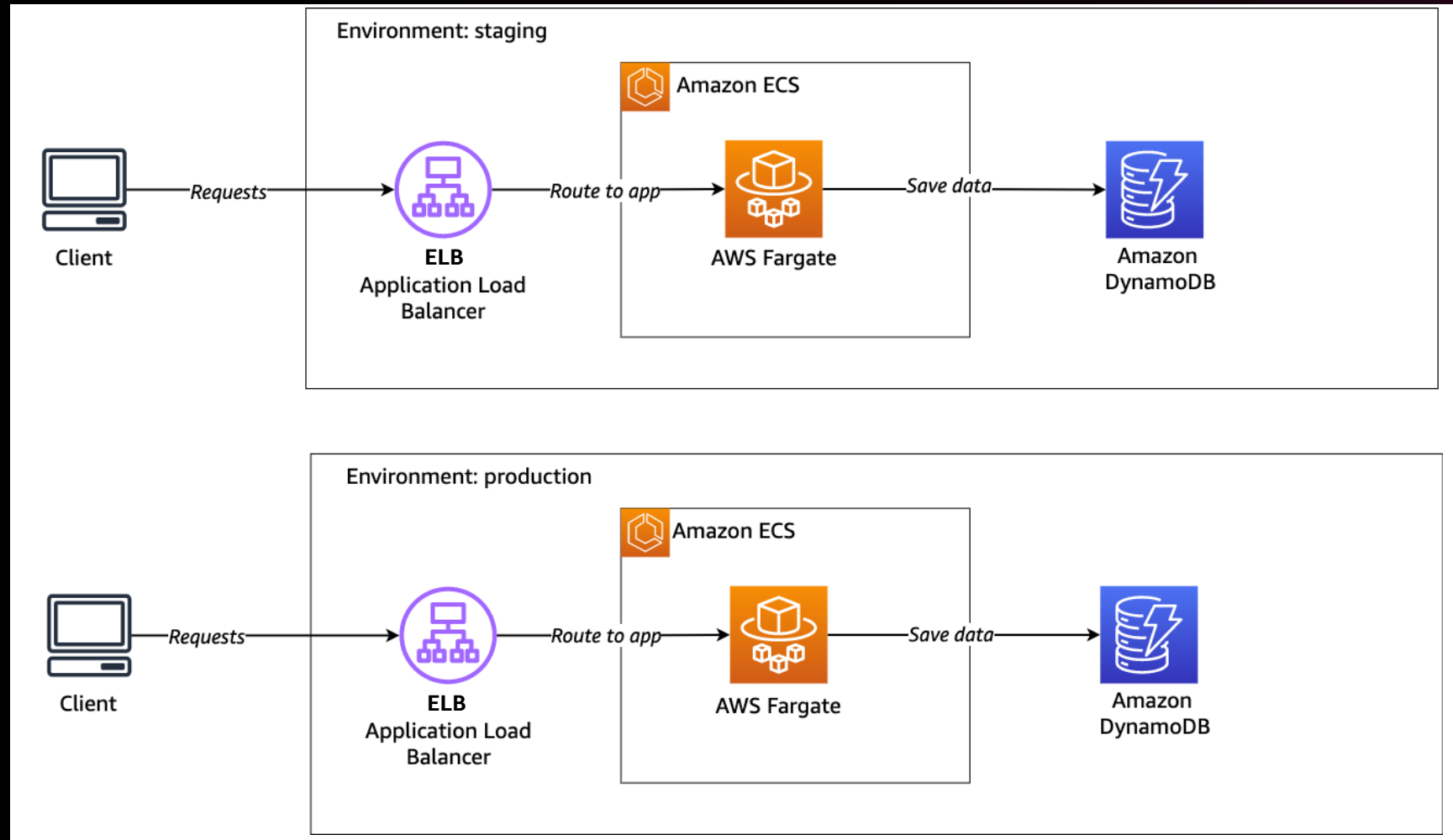
Basic architecture to interact with API and data retrieval and manipulation from/to database

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



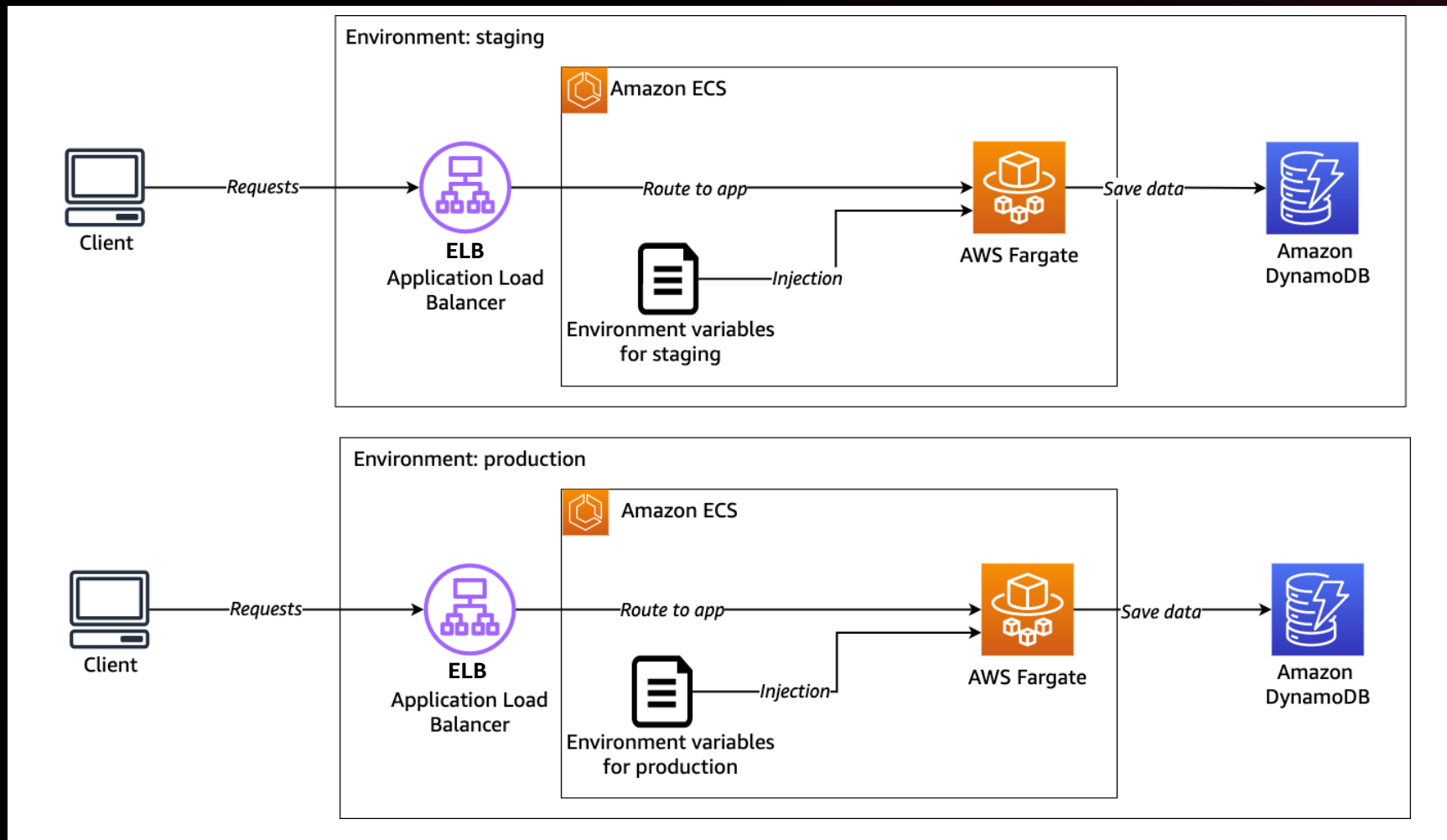
What we are going to build

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



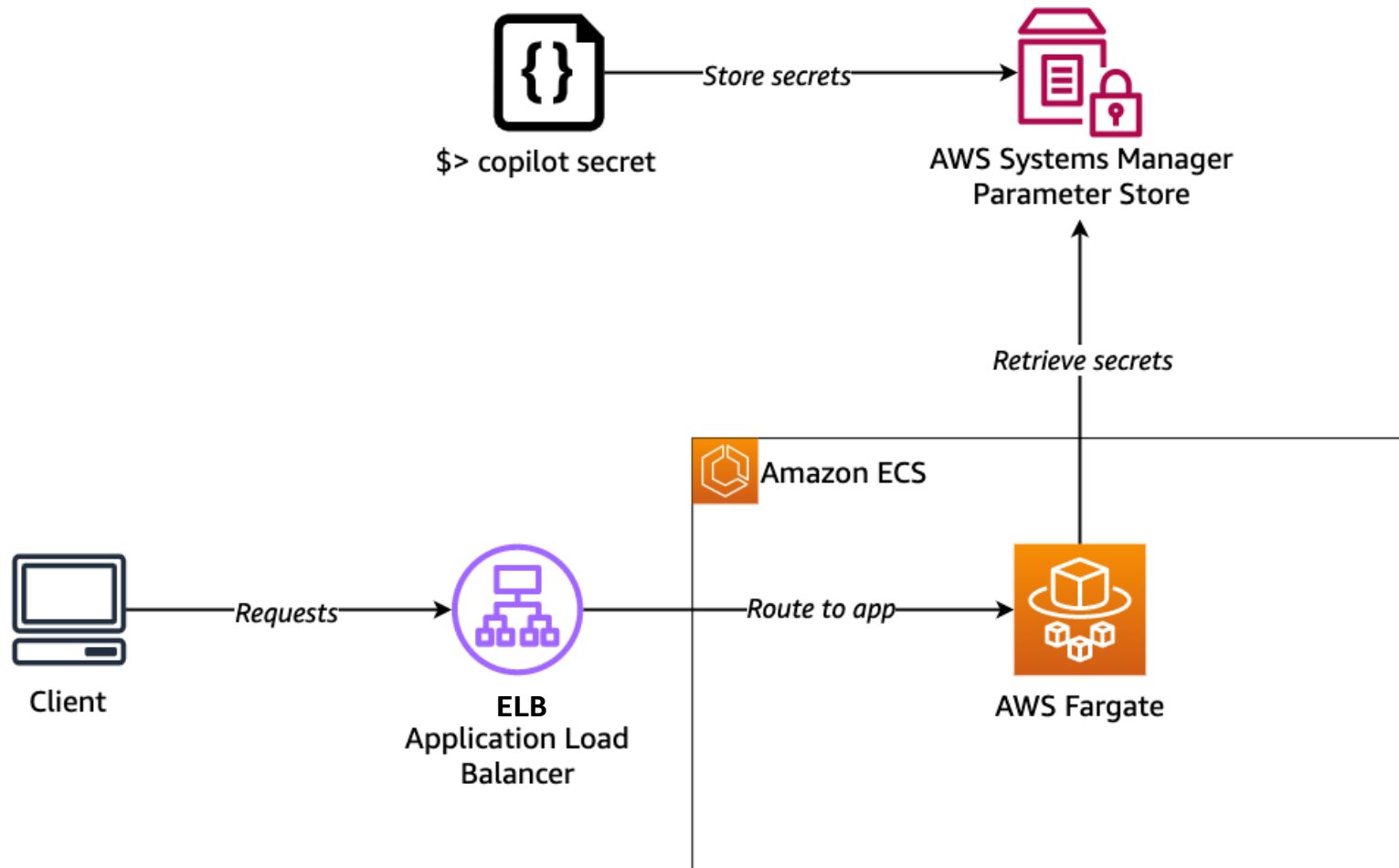
What we are going to build

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

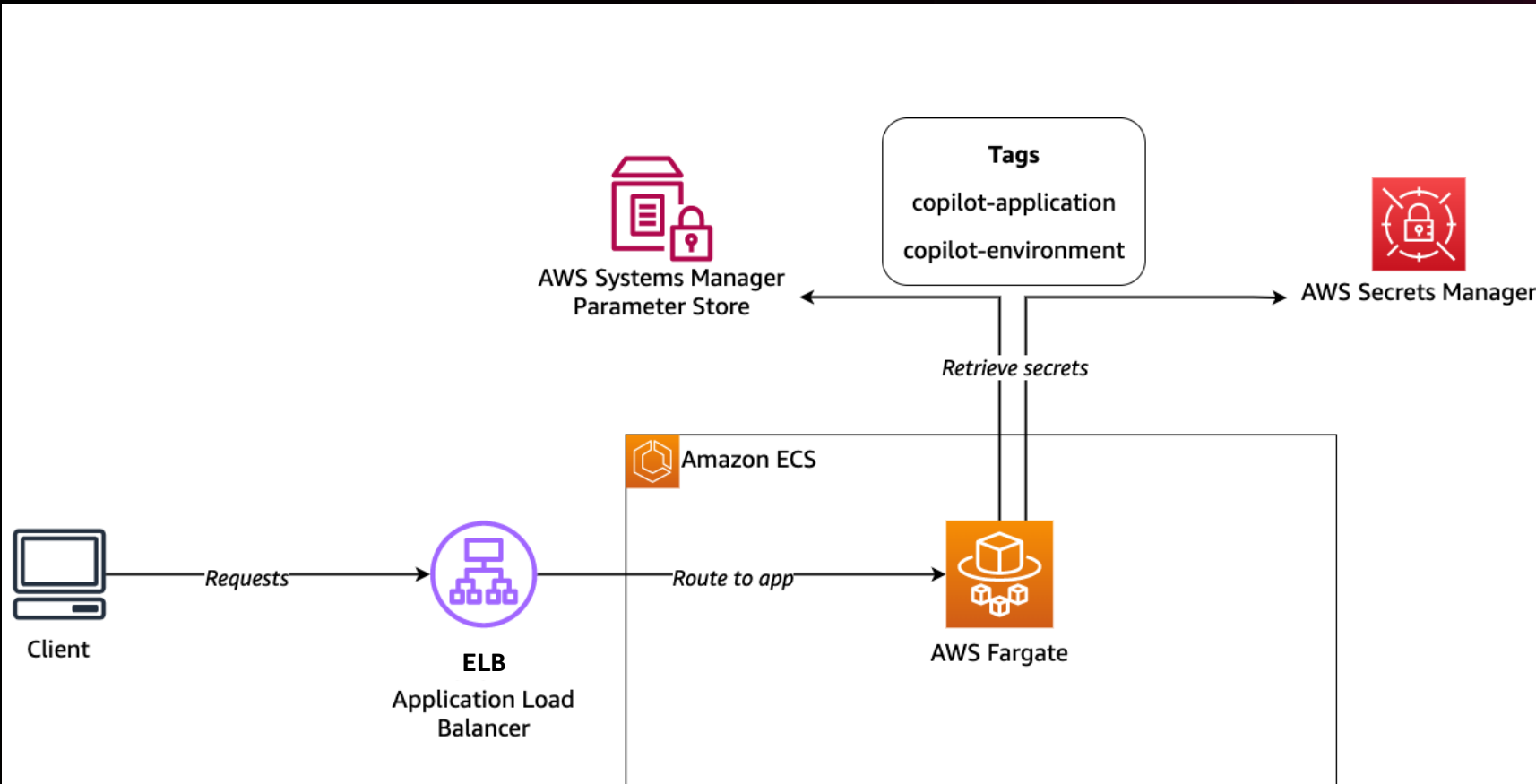
Add secret(s) with AWS Copilot and retrieve secret(s) from Parameter Store, a capability of AWS Systems Manager

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



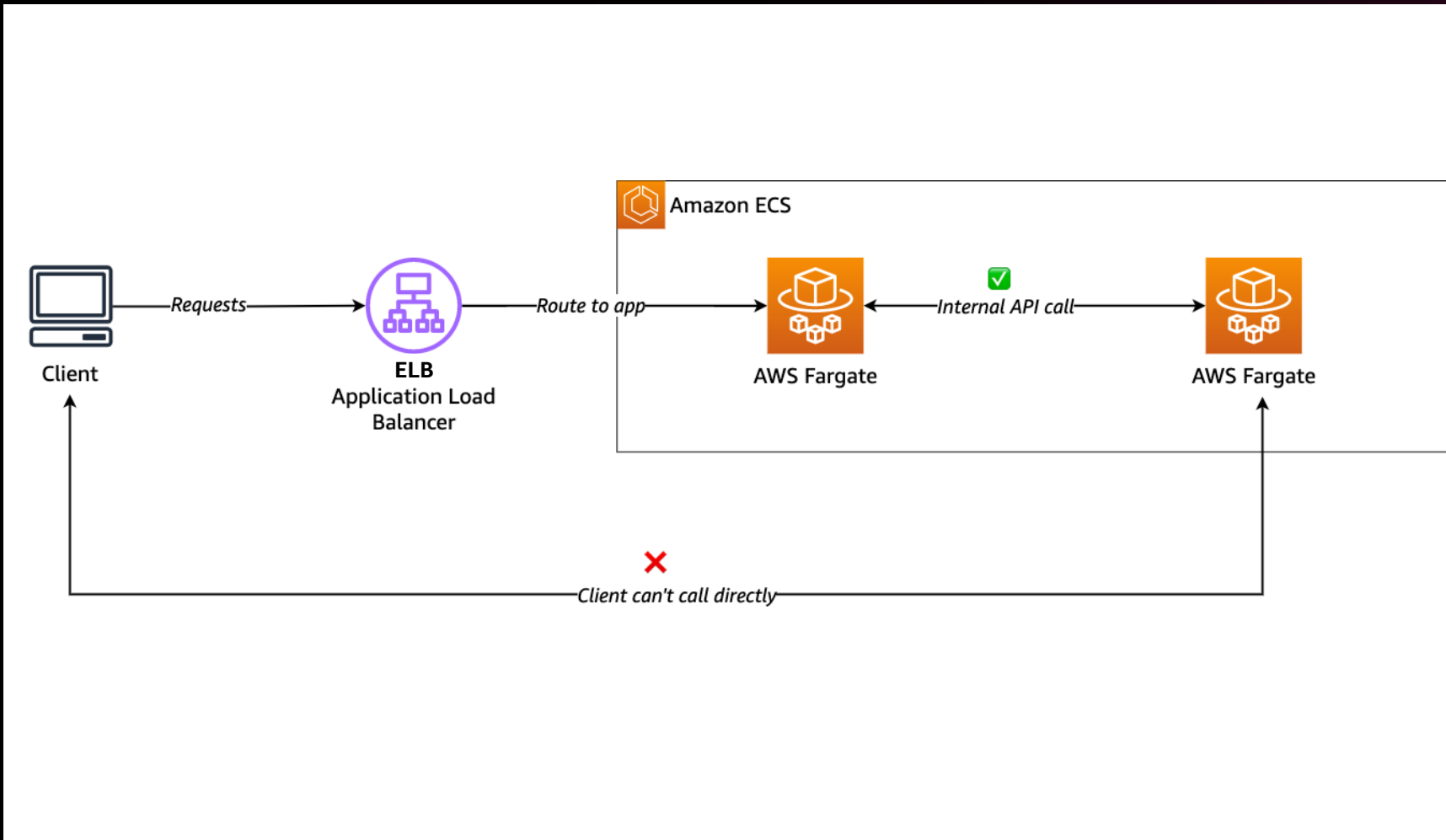
What we are going to build

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



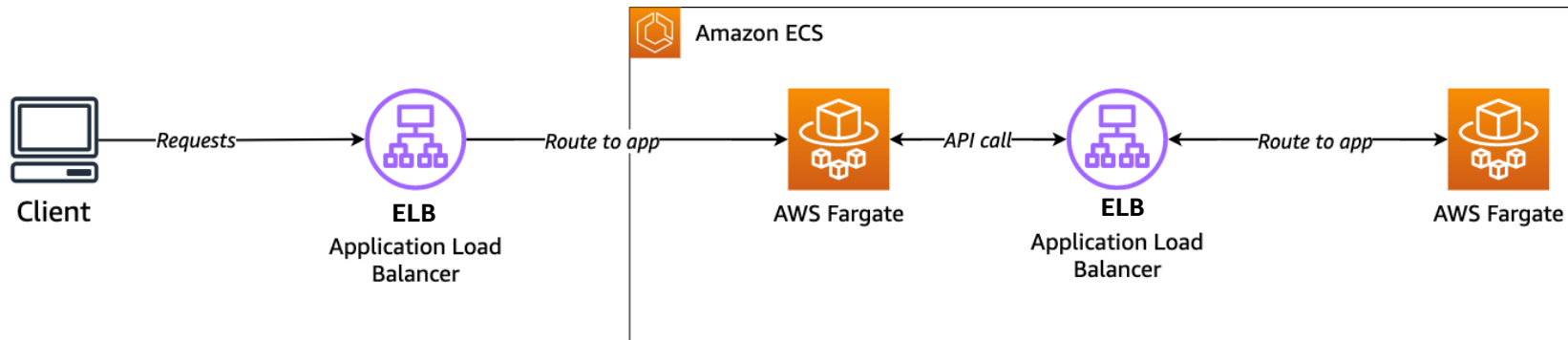
What we are going to build

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

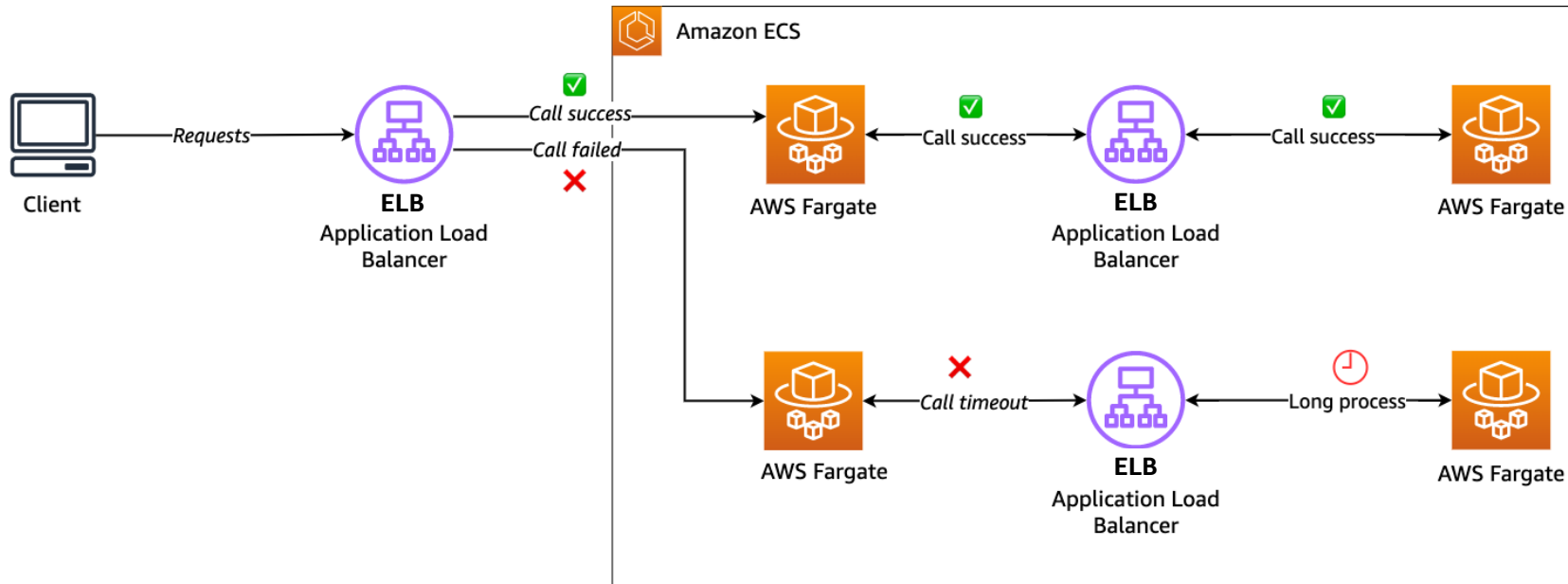
1. AWS Copilot
2. ELB + internal ELB
3. Amazon ECS
4. AWS Fargate

Start Module 3: Load-balanced private API

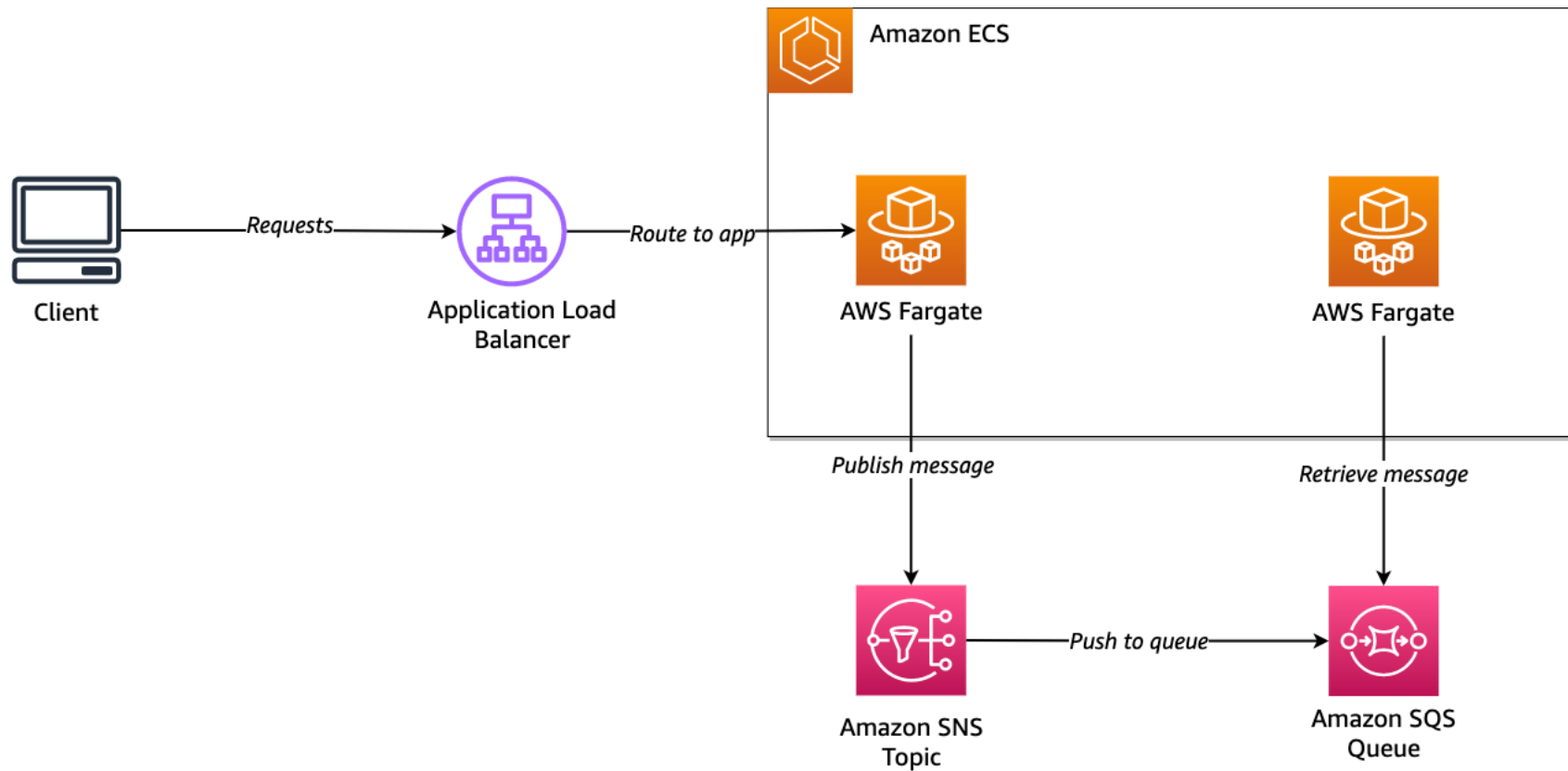
But . . . my application is very slow

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



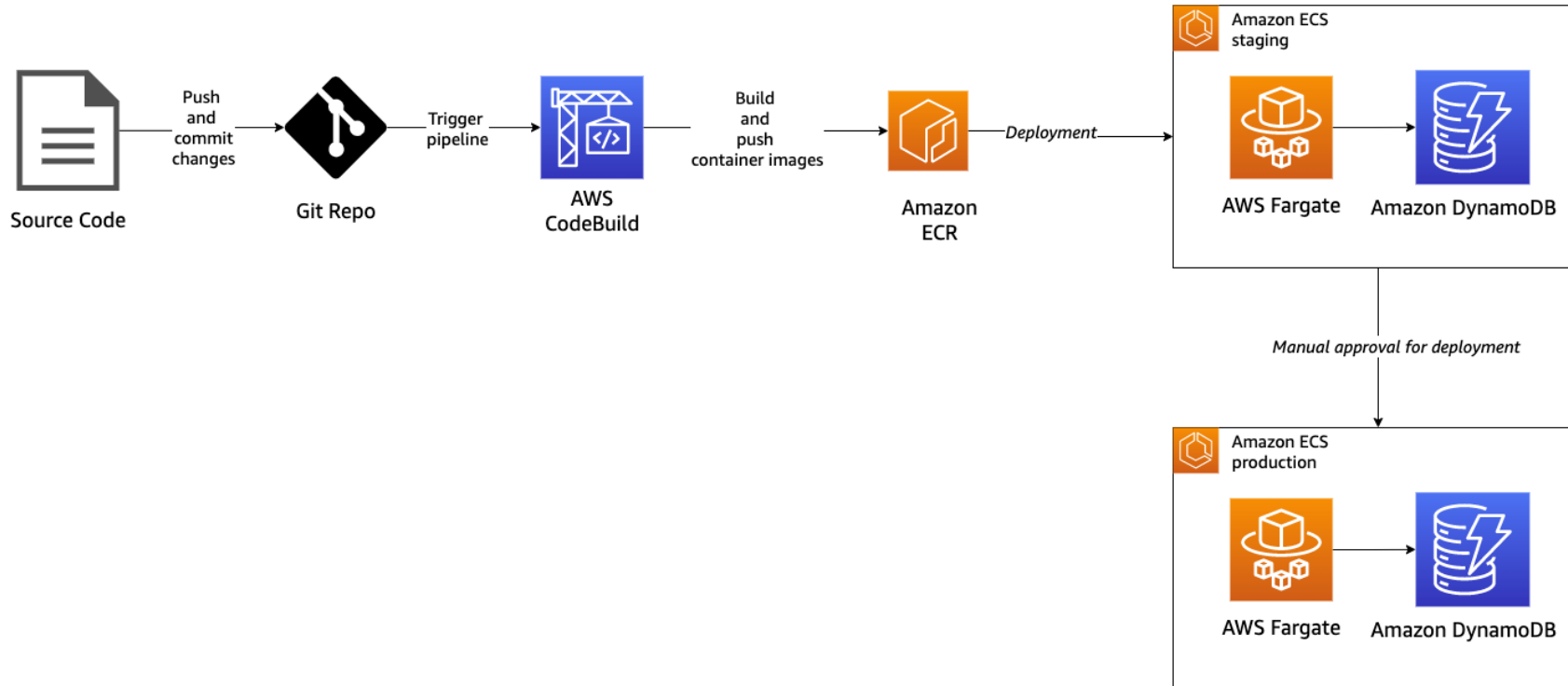
What we are going to build

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



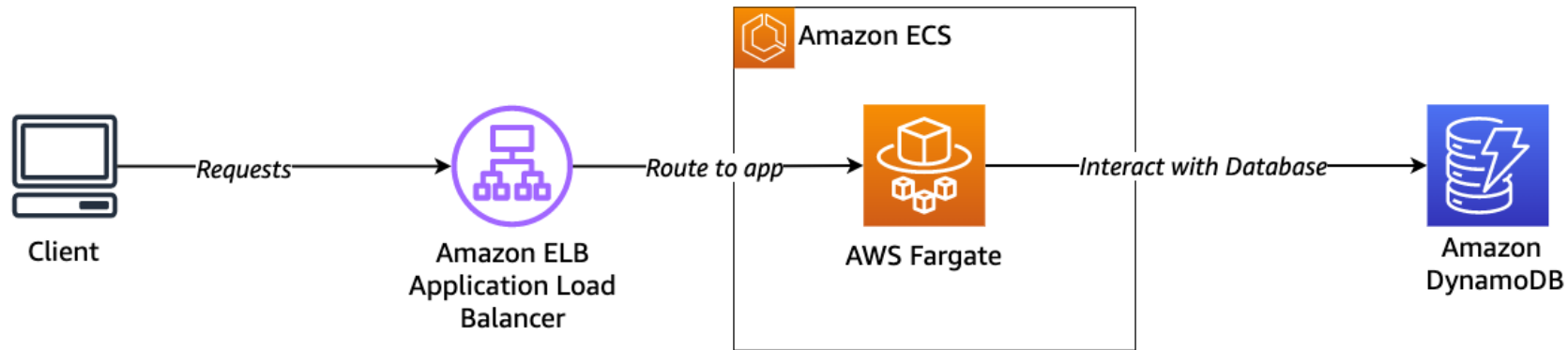
What we are going to build

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

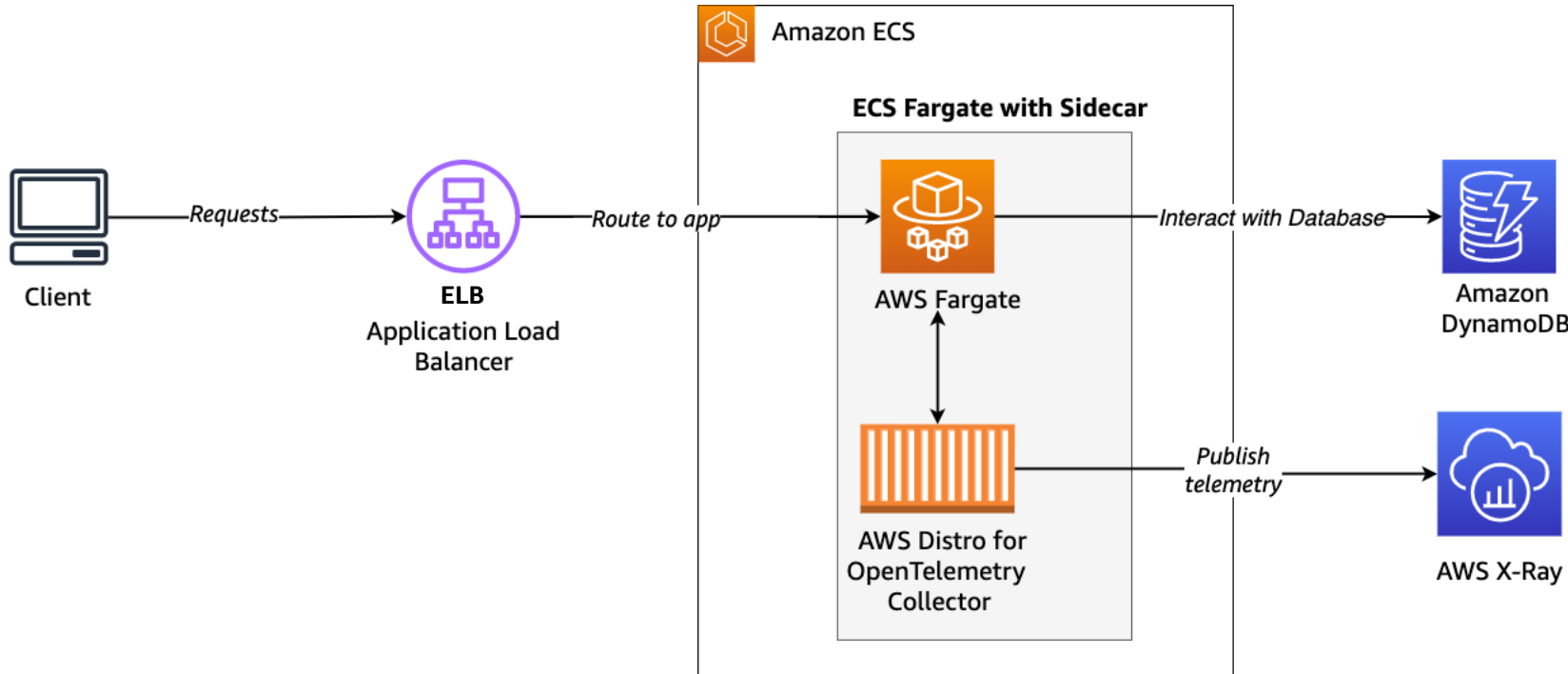
What's happening with my application?



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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survey in the **mobile app**



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