
AWS
re:Invent
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SVS310

From serverful to serverless Java with AWS Lambda

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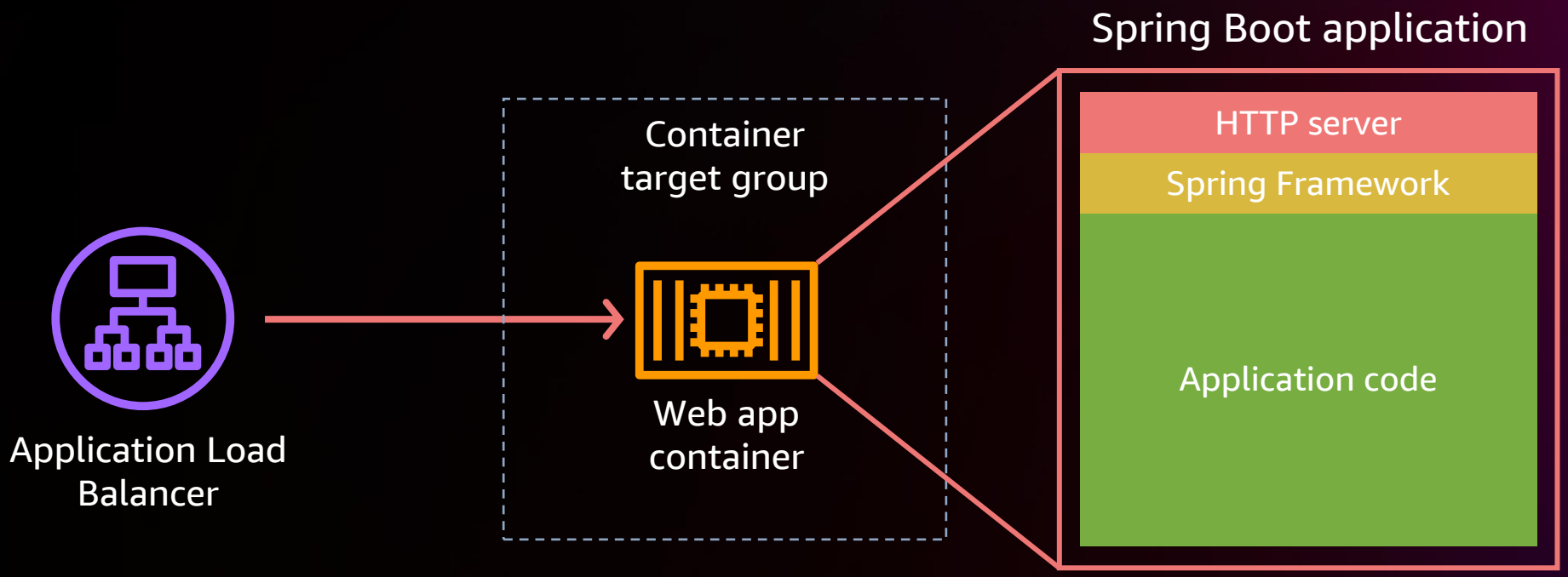
Serverful Spring Boot overview

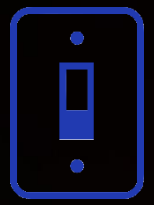


What is serverless?

No infrastructure provisioning, no management

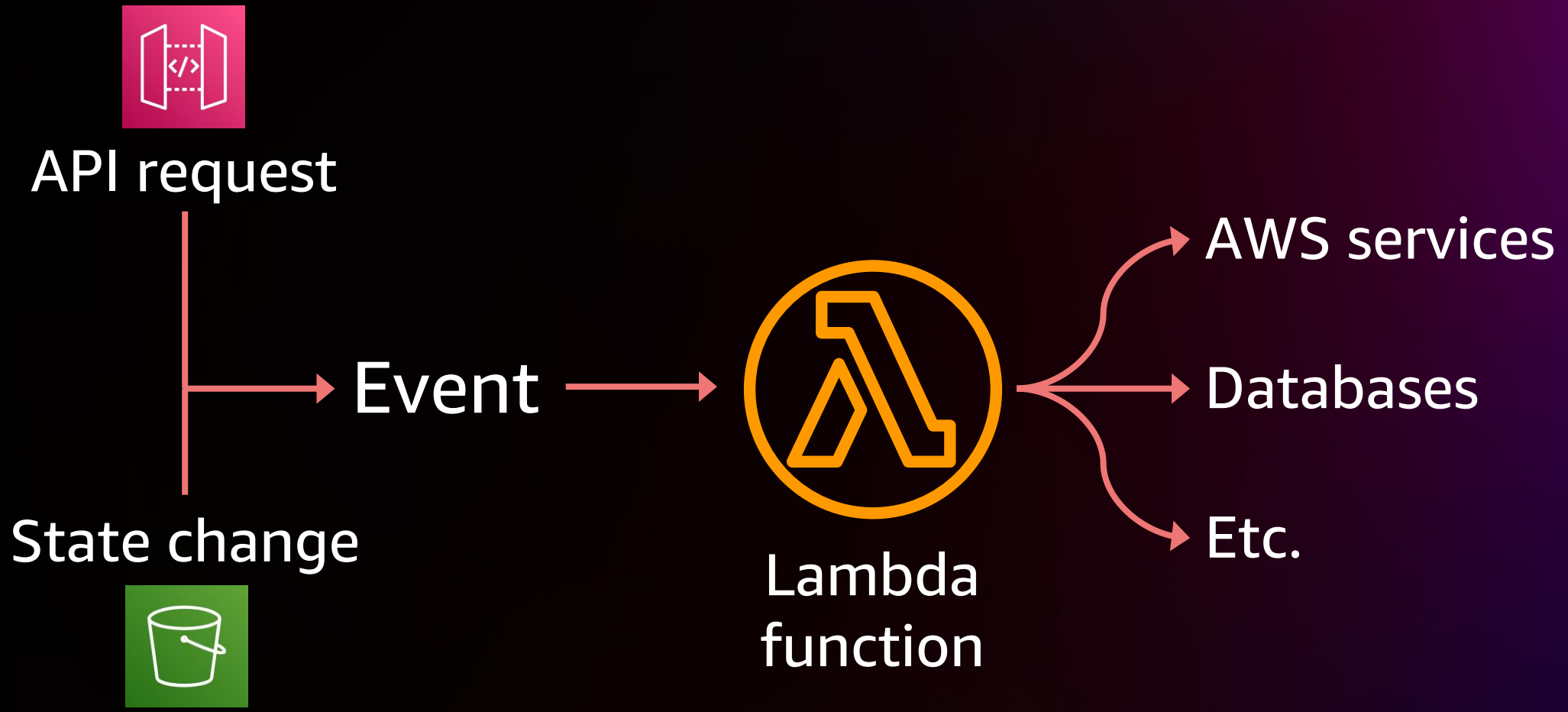
Automatic scaling

Pay for value



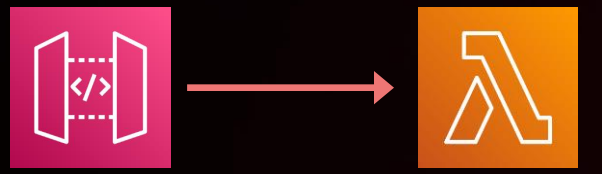
Highly available and secure

AWS Lambda is triggered by events



API Gateway invokes Lambda via events

```
POST /v1/pets HTTP/2
Host: x.execute-api.eu-west-1..
User-Agent: curl/7.64.1
Accept: */*
Content-Type: application/json
Content-Length: 39
Body: {“data:“ : “test“}
```



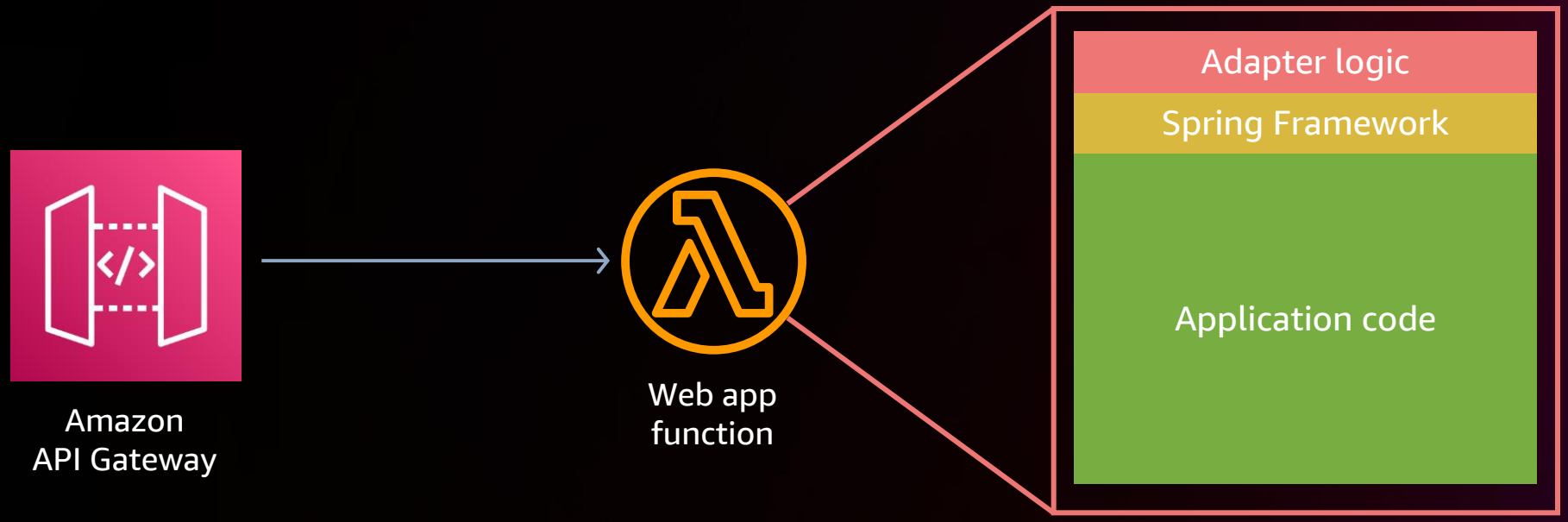
Amazon API Gateway

AWS Lambda

```
{
  "body": “{“data“: “test“}“ ,
  "resource": "/{proxy+}",
  "path": "/v1/pets",
  "httpMethod": "POST",
  "isBase64Encoded": true,
  "headers": {
    "Content-Type": "application/json",
    "Content-Length": "39"
  },
   },
  "requestContext": {
    "accountId": "123456789012",
    "requestId": "c6af9ac6-7b61-..",
    ...
  }
}
```

Serverless Spring Boot overview

Web application wrapped in adapter logic. HTTP server removed.



How Lambda scales: A primer on Lambda concurrency

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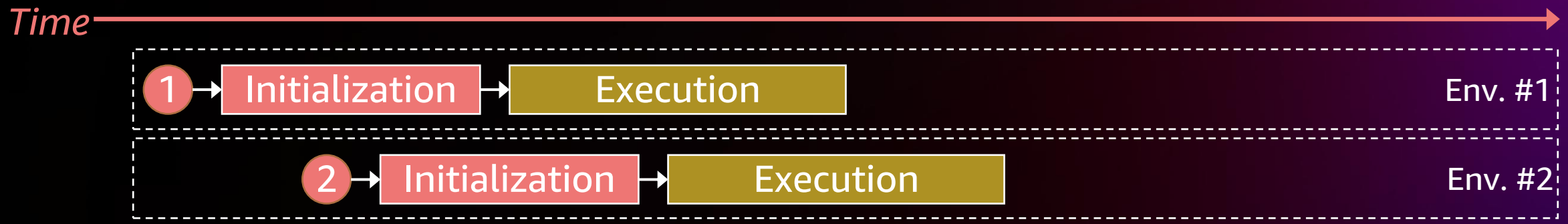
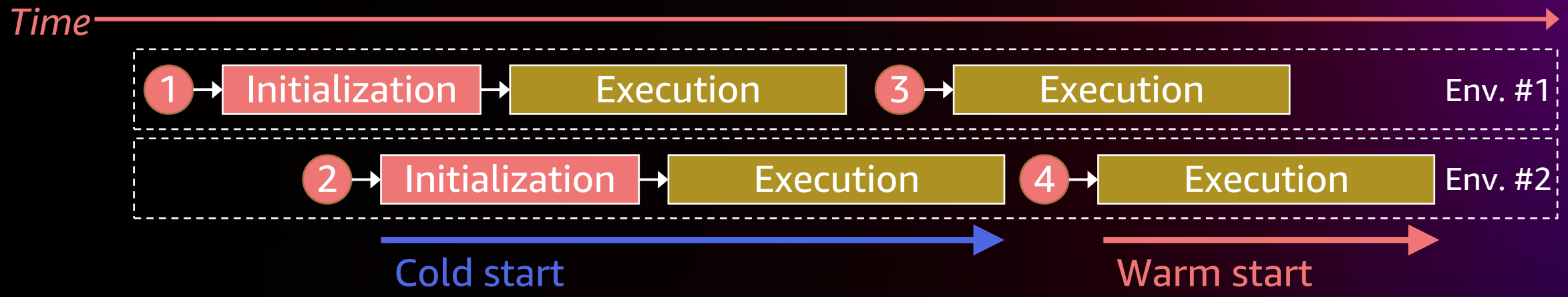
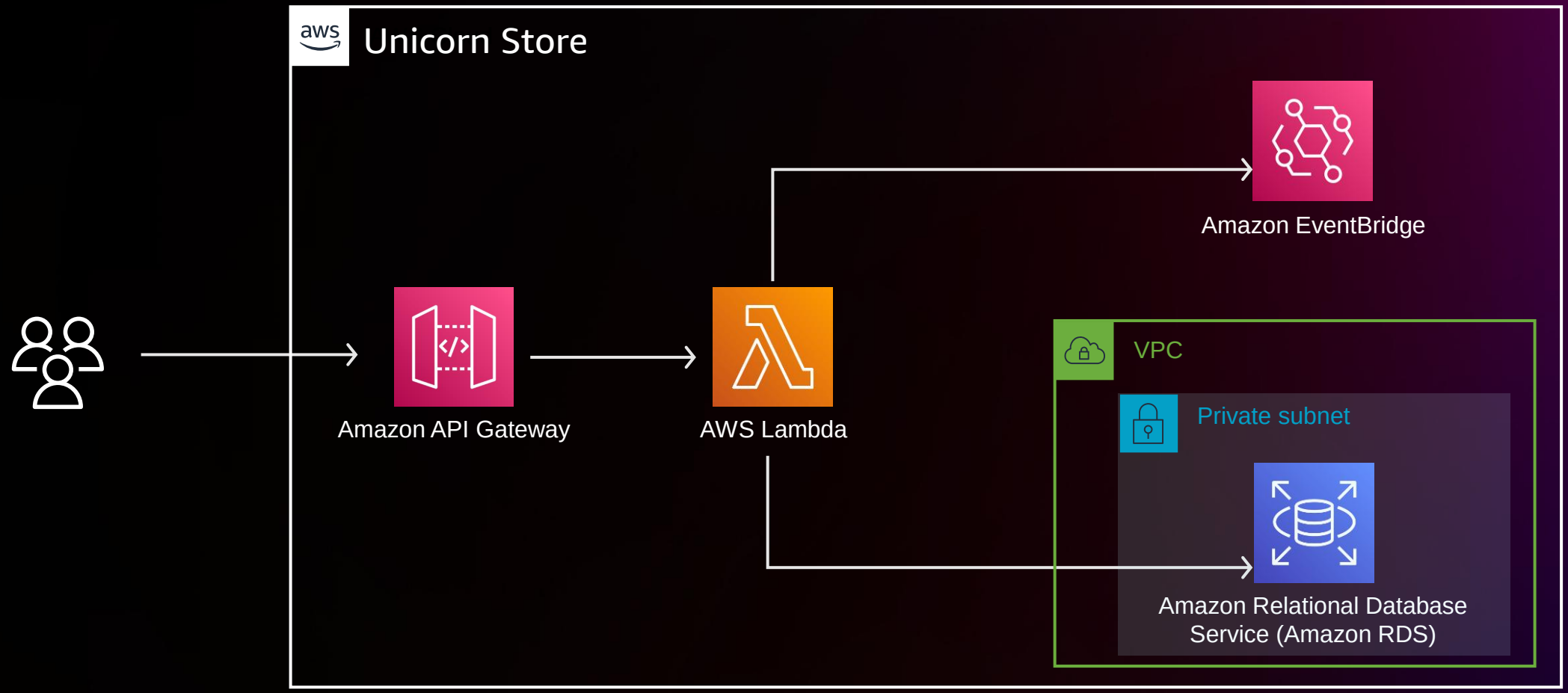


How Lambda scales: A primer on Lambda concurrency



What are you going to build?



What are we going to optimize?

Memory configuration

JVM parameters

Lightweight dependencies

Spring Cloud Functions

Micronaut

GraalVM Native Image

AWS Cloud Development Kit (AWS CDK)

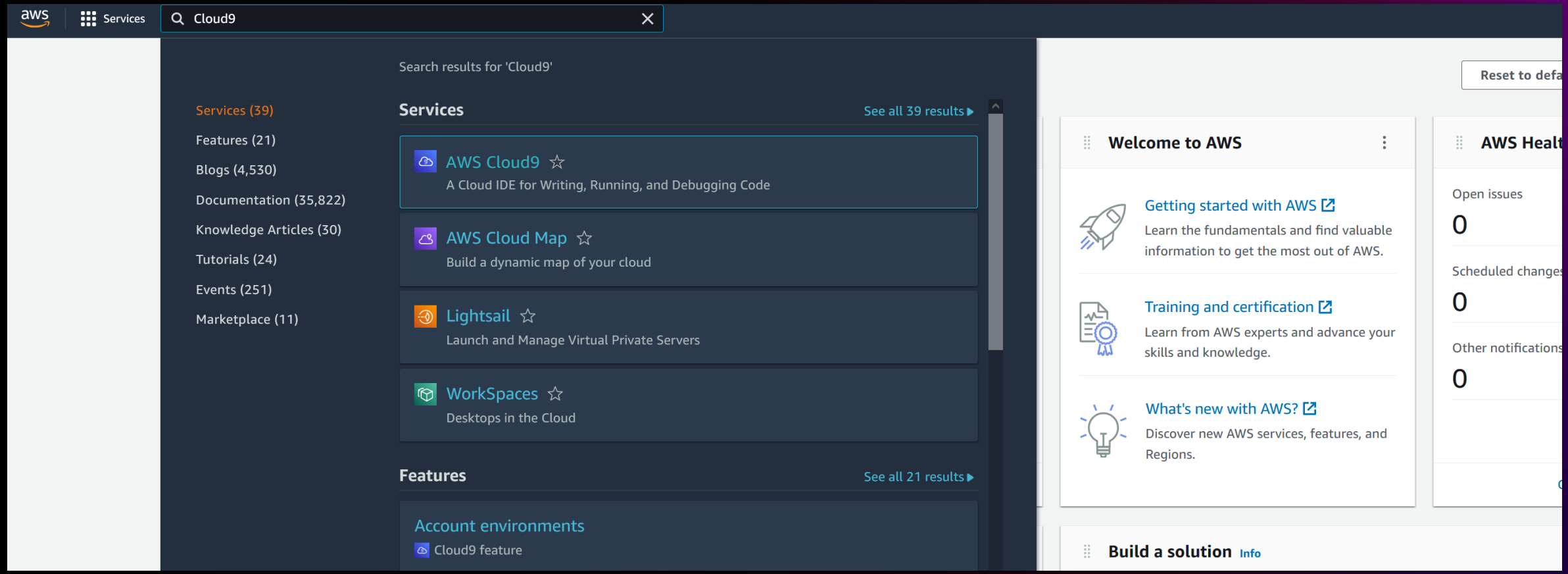
AWS CDK

```
var restApi = LambdaRestApi.Builder.create(this, "UnicornStoreBasicApi")
        .restApiName("UnicornStoreBasicApi")
        .handler(postLambda)
        .proxy(false)
        .build();

Resource unicornResource = restApi.getRoot().addResource("unicorns");
unicornResource.addMethod("POST", new LambdaIntegration(postLambda));

Resource unicornResourceById = unicornResource.addResource("{id}");
unicornResourceById.addMethod("GET", new LambdaIntegration(getLambda));
unicornResourceById.addMethod("PUT", new LambdaIntegration(putLambda));
unicornResourceById.addMethod("DELETE", new LambdaIntegration(deleteLambda));
```

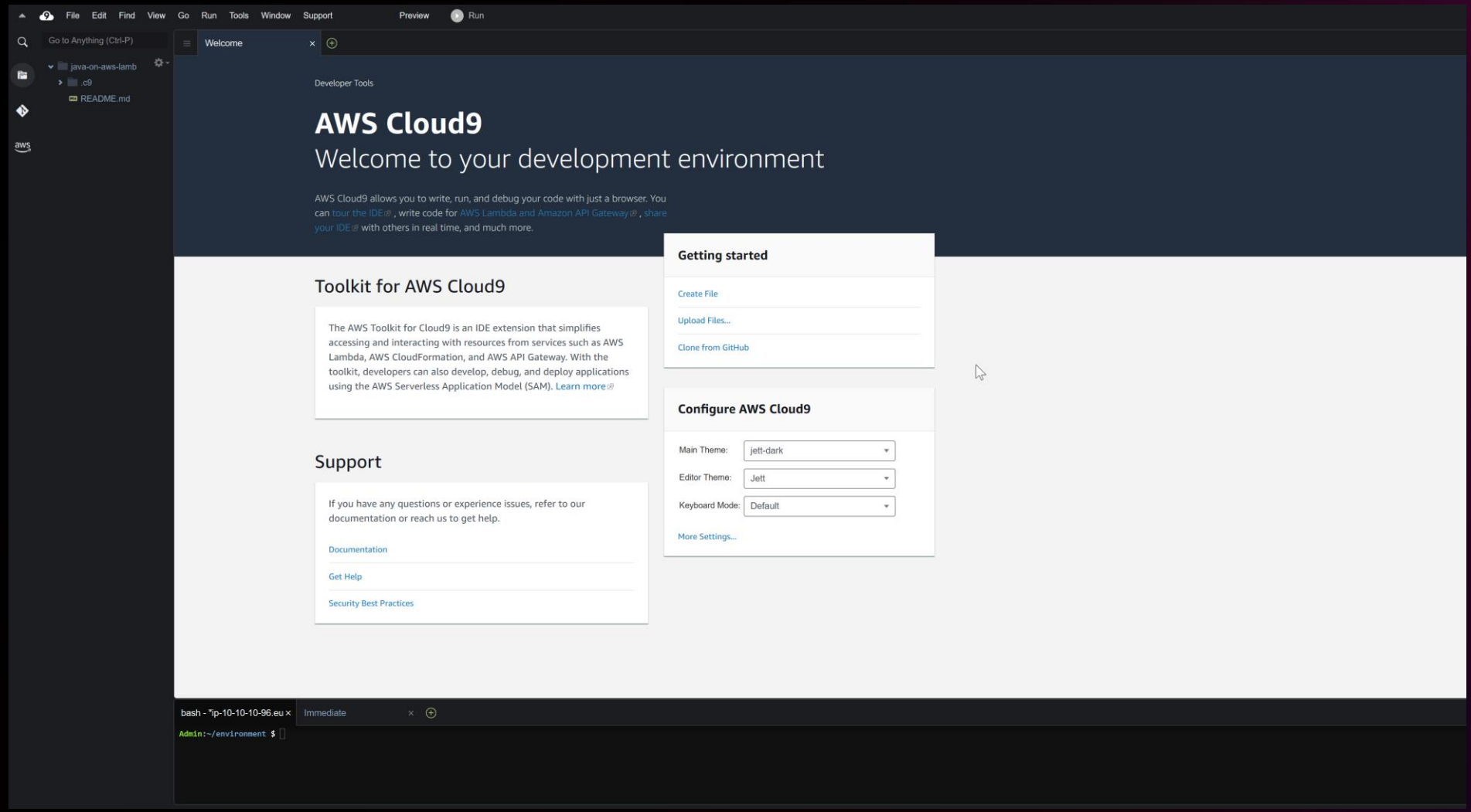
Getting started with this workshop

- 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 in the account.

Our IDE today: AWS Cloud9



Our IDE today: AWS Cloud9



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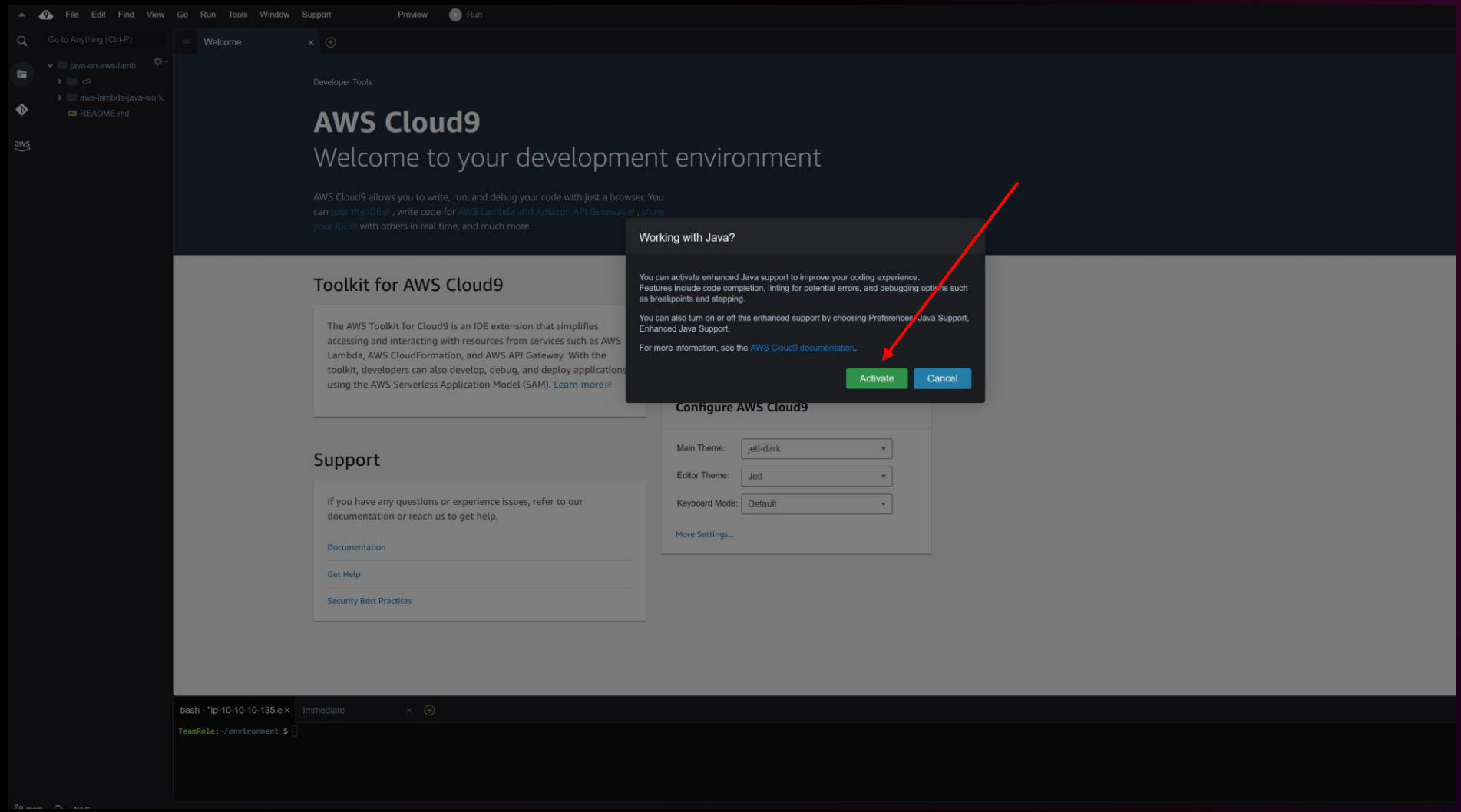
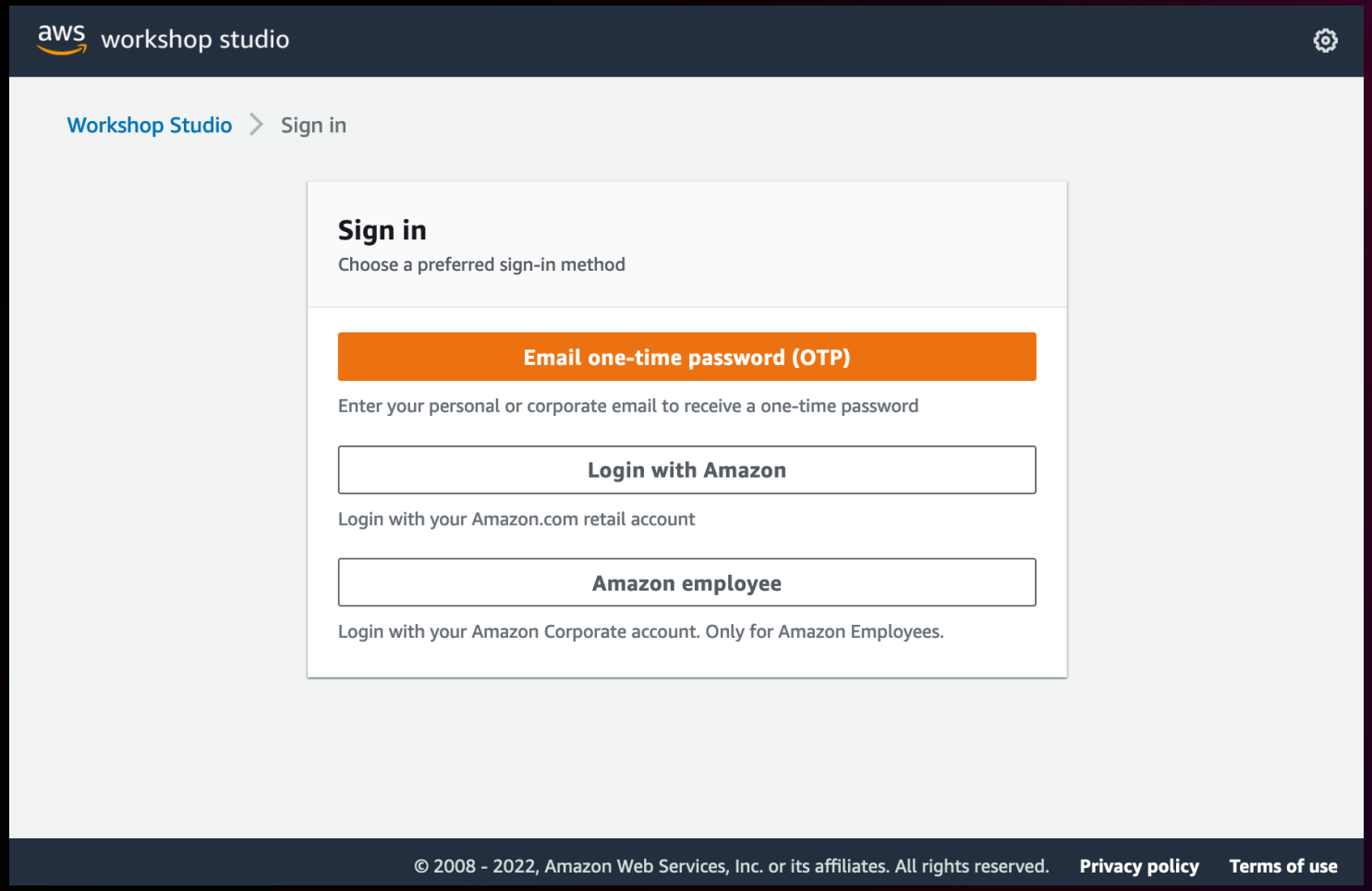
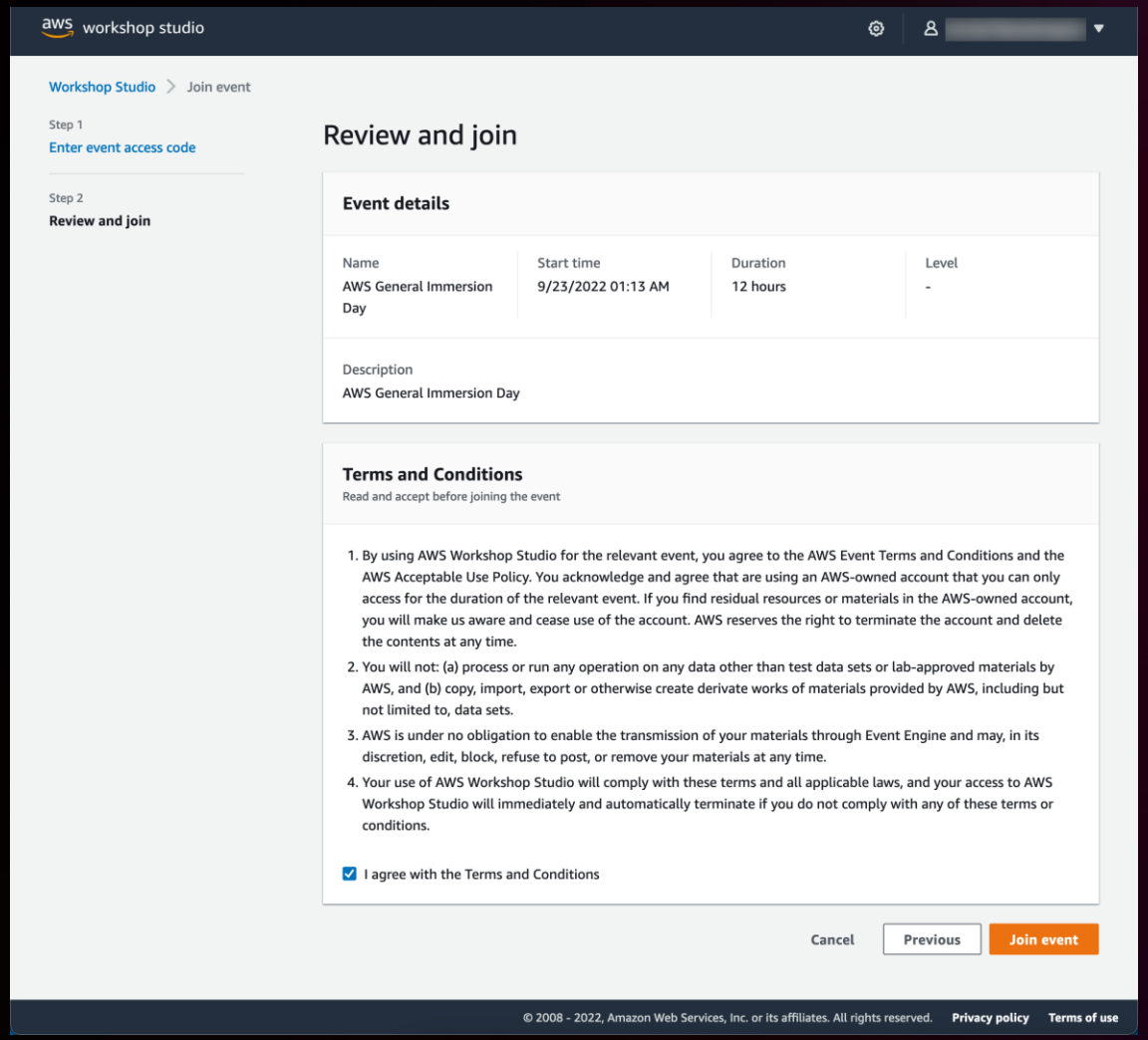


Step 1: Sign in with your preferred method

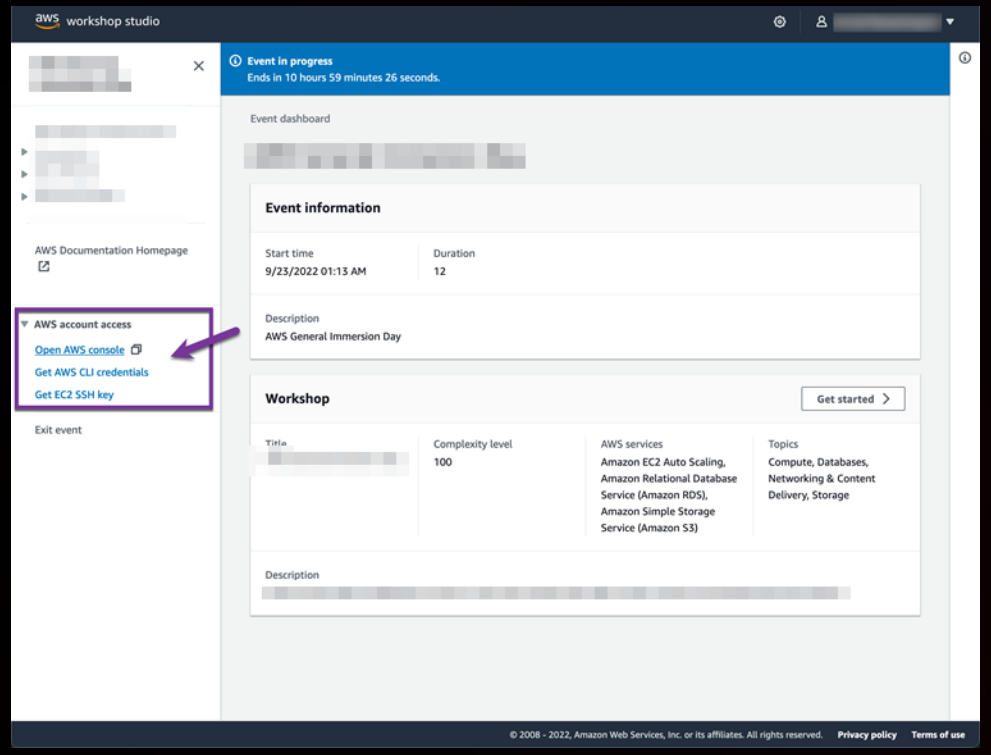


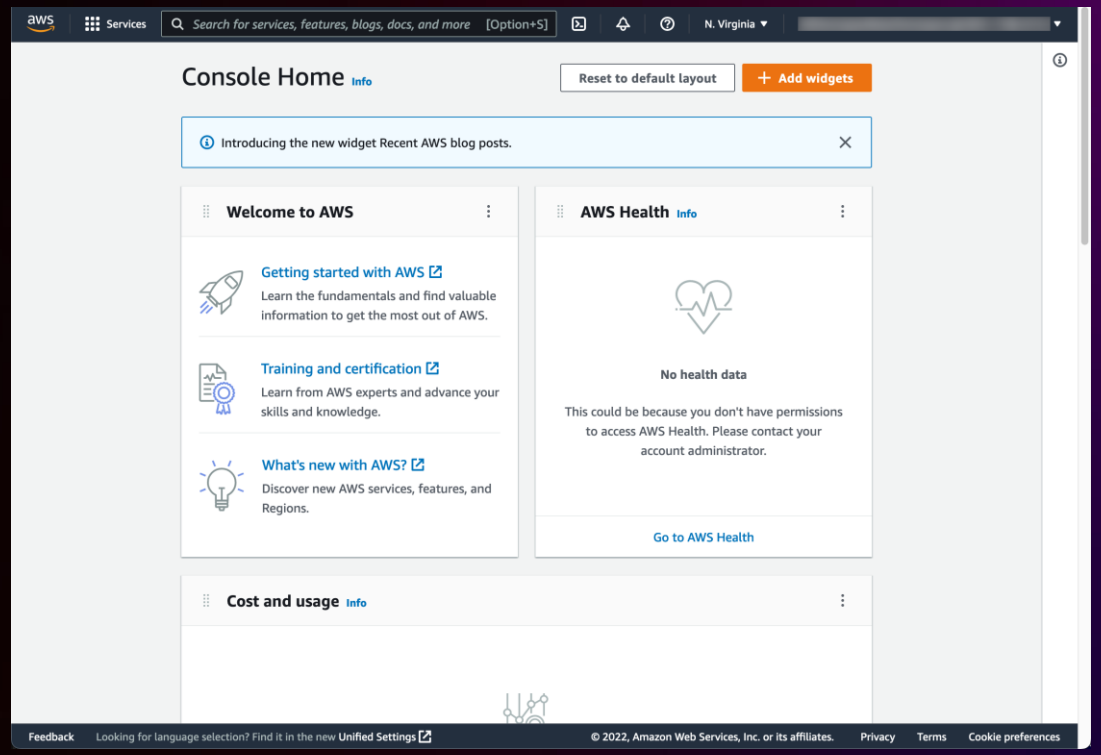
Step 2: Review terms and join event



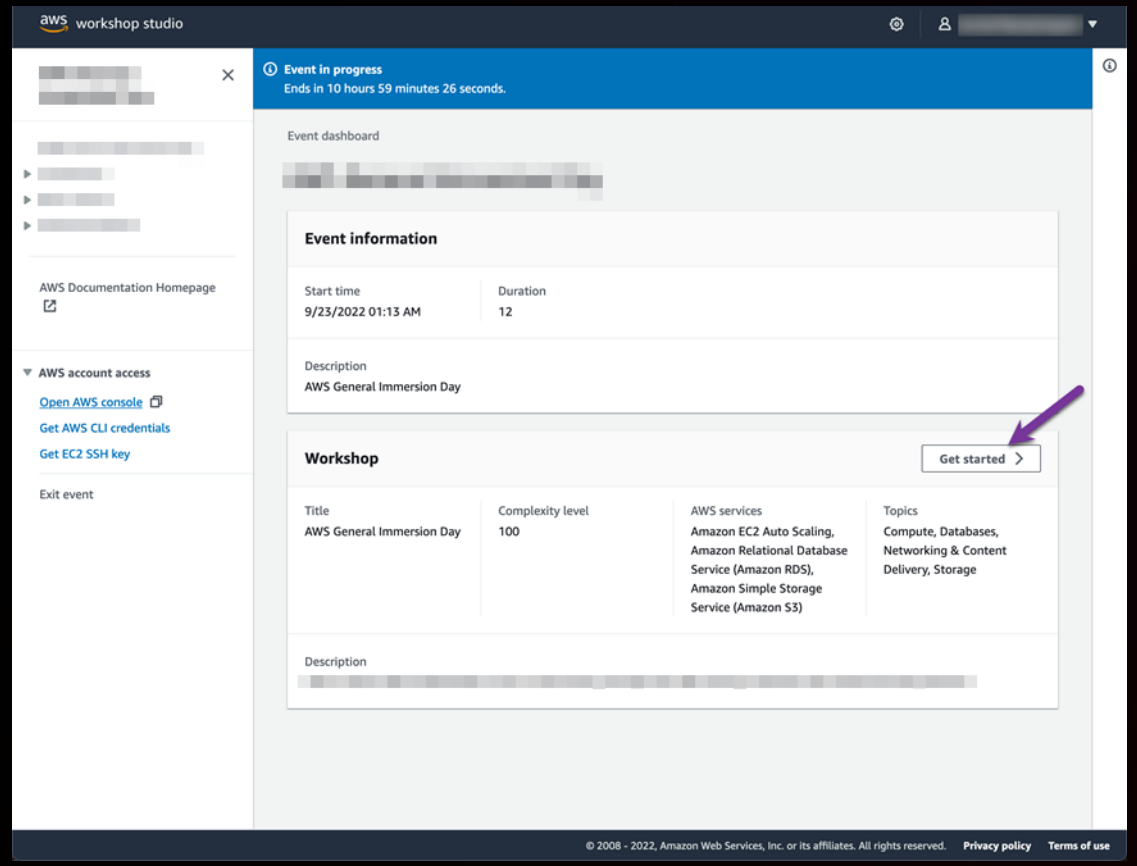
Step 3: Access AWS account

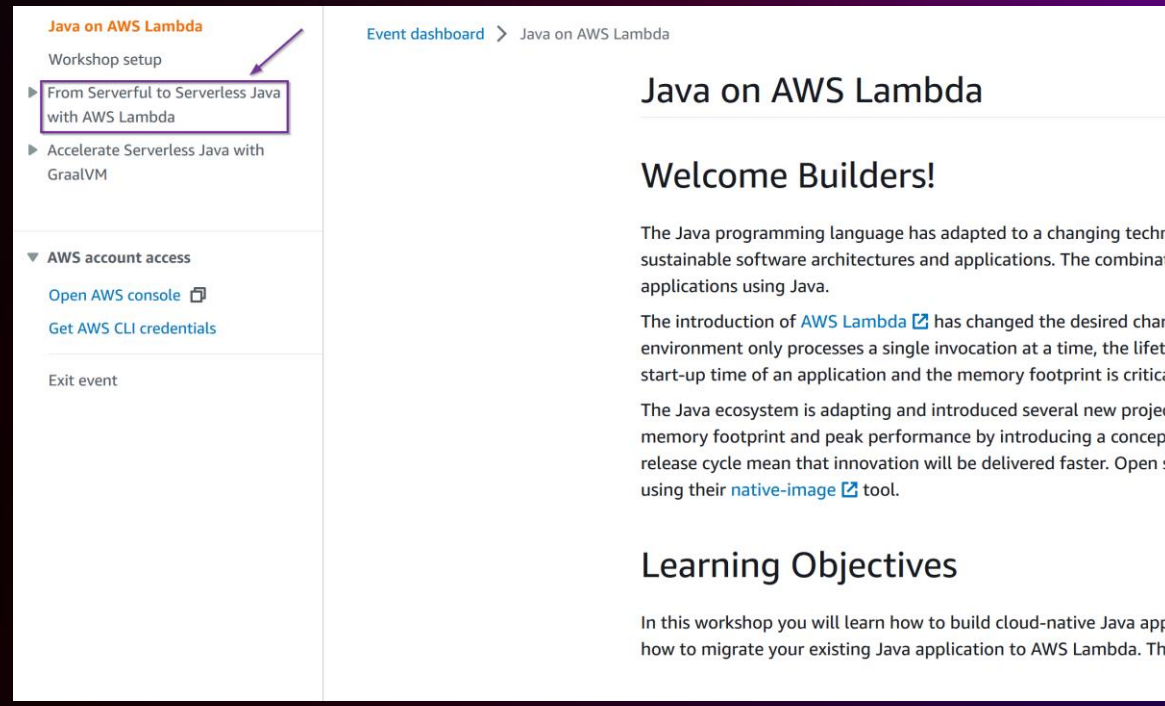
Access the AWS Management Console or generate AWS CLI credentials as needed





Step 4: Get started with the workshop





Help and hints

2. Navigate to the UnicornPostLocationHandler and define the logger according to the SLF4J API specification:

```
1  private final Logger logger = LoggerFactory.getLogger(UnicornPostLocationHandler.class);
```

▼ Imports

```
1  import org.slf4j.Logger;
2  import org.slf4j.LoggerFactory
```

1. Run the benchmark

1. Execute the following command to run the benchmark:

```
1  ./benchmark.sh spring
```

▼ Under the hood

The shell script executes the Artillery load test defined in `loadtest.yaml`. As a target it uses the API-Gateway Url that has been generated after the deployment.

```
1  artillery run -t $(cat infrastructure/cdk/output-basic.json | jq -r '.UnicornStoreBasicApp.apibasicendpoint') -v{
```

Let‘s get started!

https://s12d.com/reinvent22-SVS310

Resources and examples

https://serverlessland.com/reinvent2022/svs310

Related sessions

SVS307: Easily add observability with AWS Lambda Powertools for Java

Wednesday, 30. November 1:00 PM – 2:00 PM

Level 1, Academy 417, Caesars Forum

SVS403: Effectively using Java on Serverless

Thursday, 1. December 3:30 PM – 4:30 PM

Convention Promenade, Palmer 2, Wynn

Thank you!

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