



SUMMIT
ONLINE

A modern application builder's guide to testing

Bikram Bora

Solutions Architect
Amazon Web Services

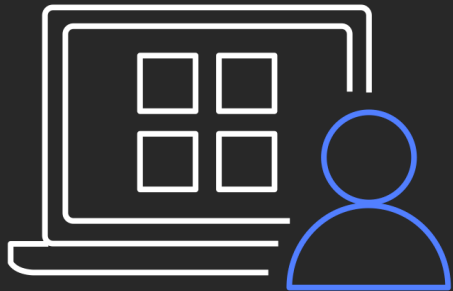
The journey of a line of code



The journey of a line of code

Dev

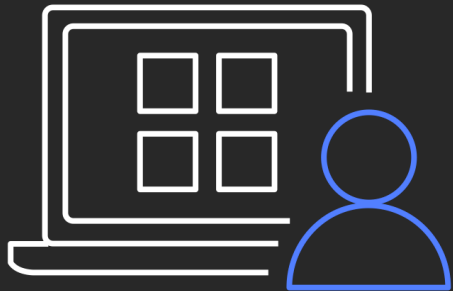
Iteratively write, test, debug



The journey of a line of code

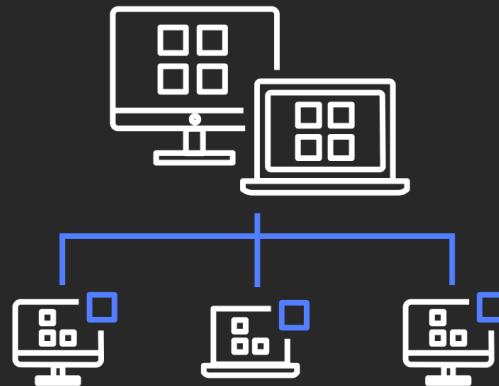
Dev

Iteratively write, test, debug



Integration

Integration, performance, acceptance criteria



The journey of a line of code

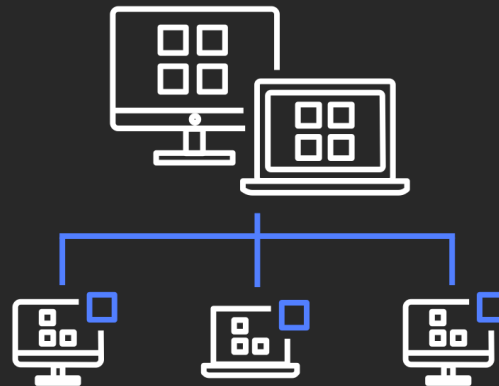
Dev

Iteratively write, test, debug



Integration

Integration, performance, acceptance criteria



Deploy

Performance, load, monitoring

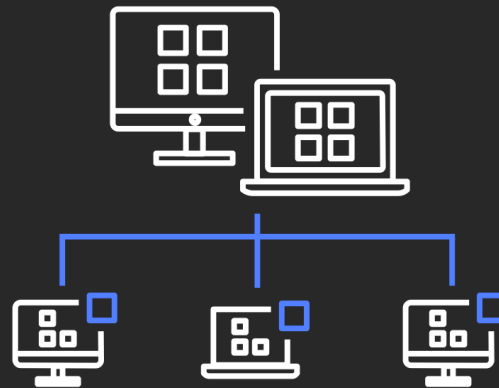


The journey of a line of code

Dev
and test



Integration
and test



Deploy
and test

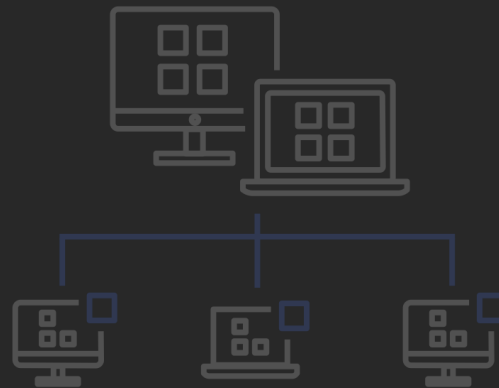


The journey of a line of code

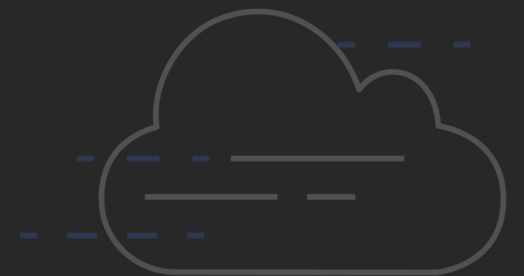
Dev
and test



Integration
and test



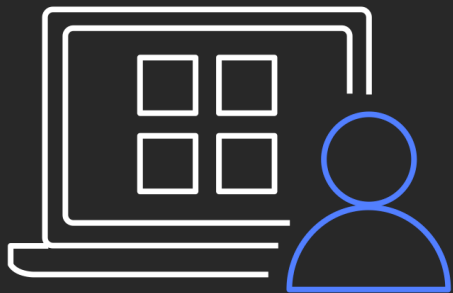
Deploy
and test



The dev phase

Dev and test

Iteratively write, test, debug



Native AWS integration for IDEs & dev platforms

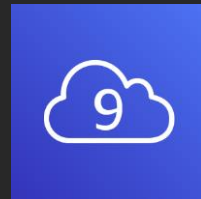
The dev phase

Dev and test

Iteratively write, test, debug



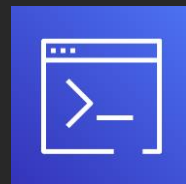
Native AWS integration for IDEs & dev platforms



AWS Cloud9



Eclipse

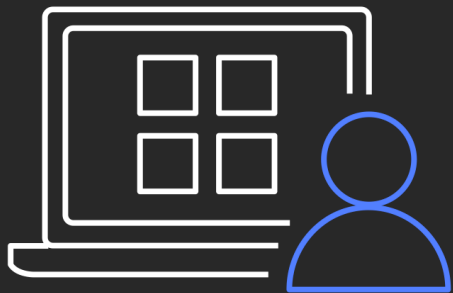


AWS Command Line Interface
version 2

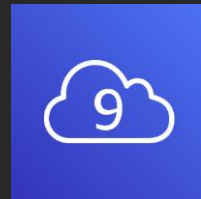
The dev phase

Dev and test

Iteratively write, test, debug



Native AWS integration for IDEs & dev platforms



AWS Cloud9



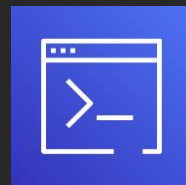
Visual Studio



VS Code



Eclipse

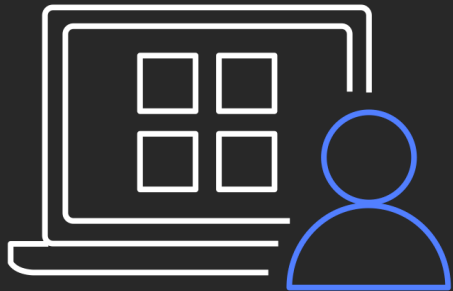


AWS Command Line Interface
version 2

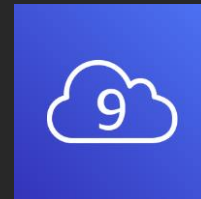
The dev phase

Dev and test

Iteratively write, test, debug



Native AWS integration for IDEs & dev platforms



AWS Cloud9



Visual Studio



VS Code



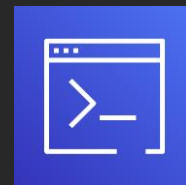
Eclipse



IntelliJ IDEA



PyCharm



AWS Command Line Interface
version 2

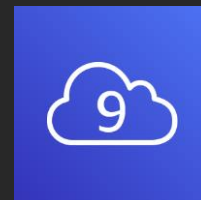
The dev phase

Dev and test

Iteratively write, test, debug



Native AWS integration for IDEs & dev platforms



AWS Cloud9



Visual Studio



VS Code



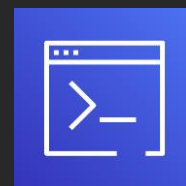
Eclipse



IntelliJ IDEA



PyCharm



AWS Command Line Interface
version 2



AWS Amplify for
iOS



AWS Amplify for
Android

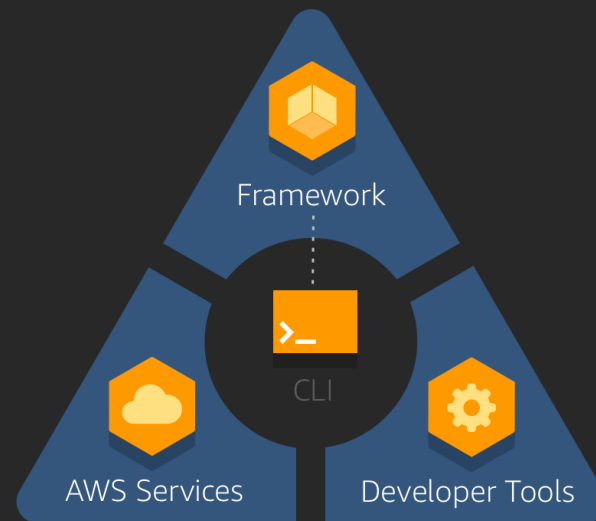
The dev phase

Dev and test

Iteratively write, test, debug



AWS Amplify



AWS Serverless Application Model (AWS SAM)



The dev phase

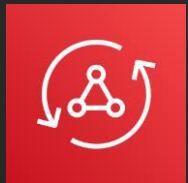
Locally run and test cloud services

The dev phase

Locally run and test cloud services



Amazon API Gateway local



AWS AppSync local

The dev phase

Locally run and test cloud services



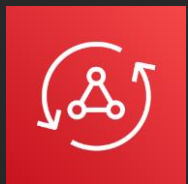
Amazon API Gateway local



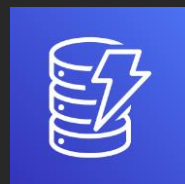
AWS Lambda
local



AWS Step Functions
local



AWS AppSync local



Amazon DynamoDB
local

The dev phase

Locally run and test cloud services



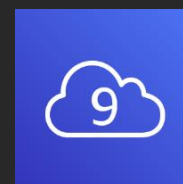
Amazon API Gateway local



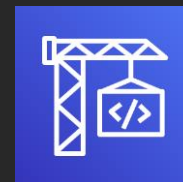
AWS Lambda
local



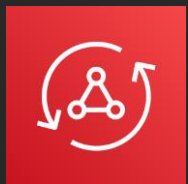
AWS Step Functions
local



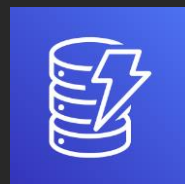
AWS Cloud9
local



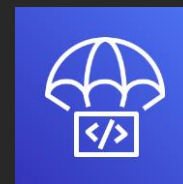
AWS CodeBuild local



AWS AppSync local



Amazon DynamoDB
local



AWS CodeDeploy
local

The dev phase

Locally run and test cloud services



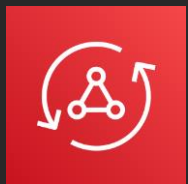
Amazon API Gateway local



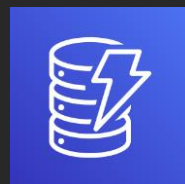
AWS Lambda
local



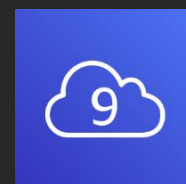
AWS Step Functions
Local



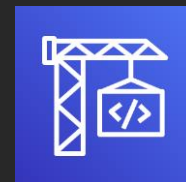
AWS AppSync local



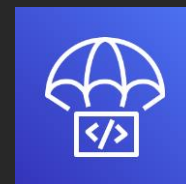
Amazon DynamoDB
local



AWS Cloud9
local



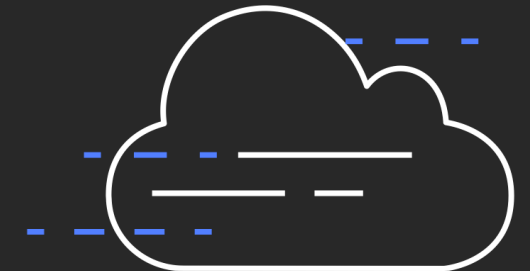
AWS CodeBuild local



AWS CodeDeploy
local

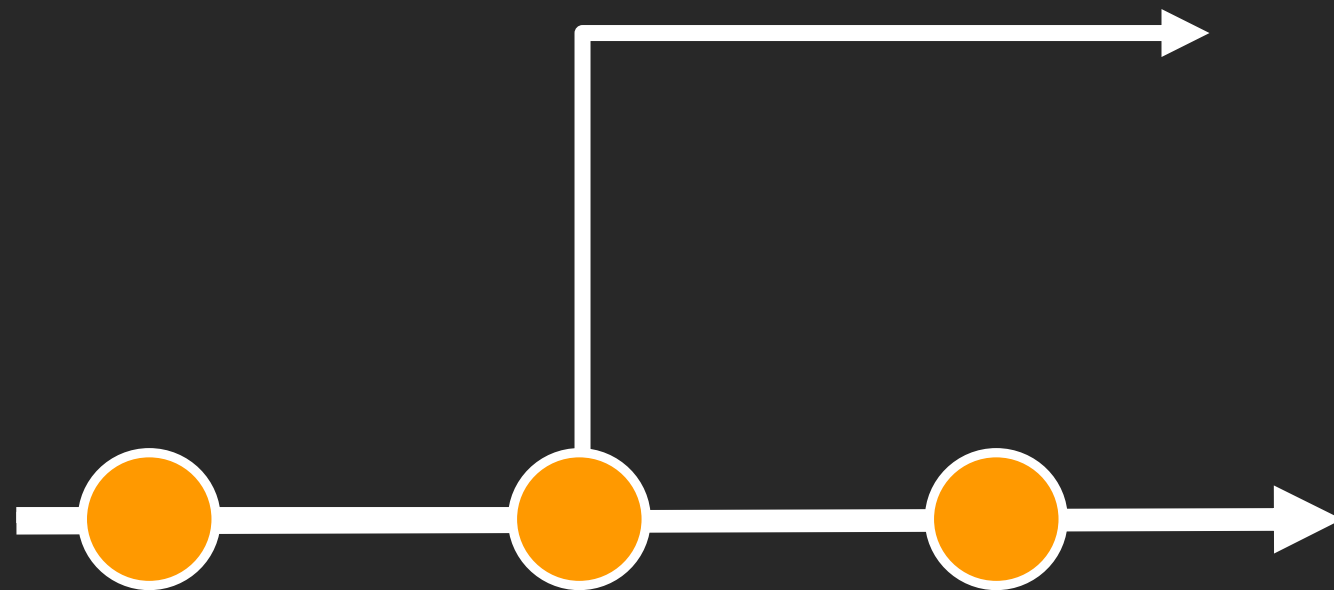


Deploy in AWS



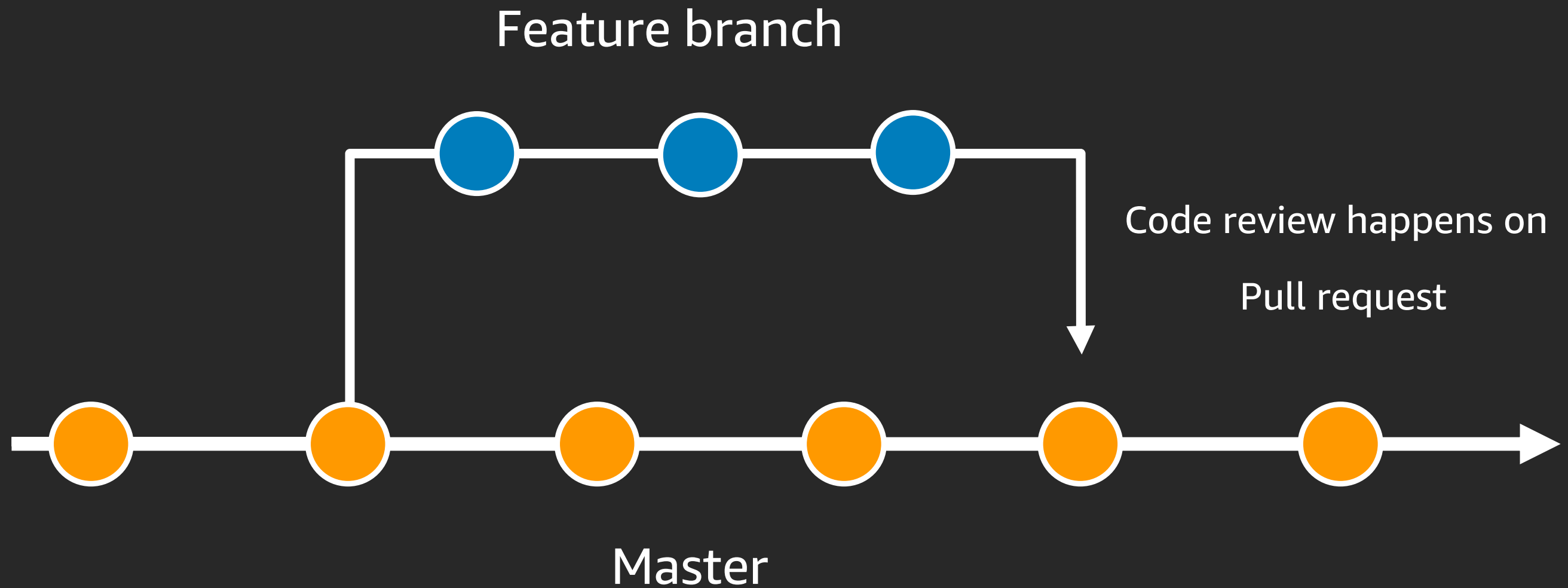
New branch

Feature branch



Master

Branch to be merged



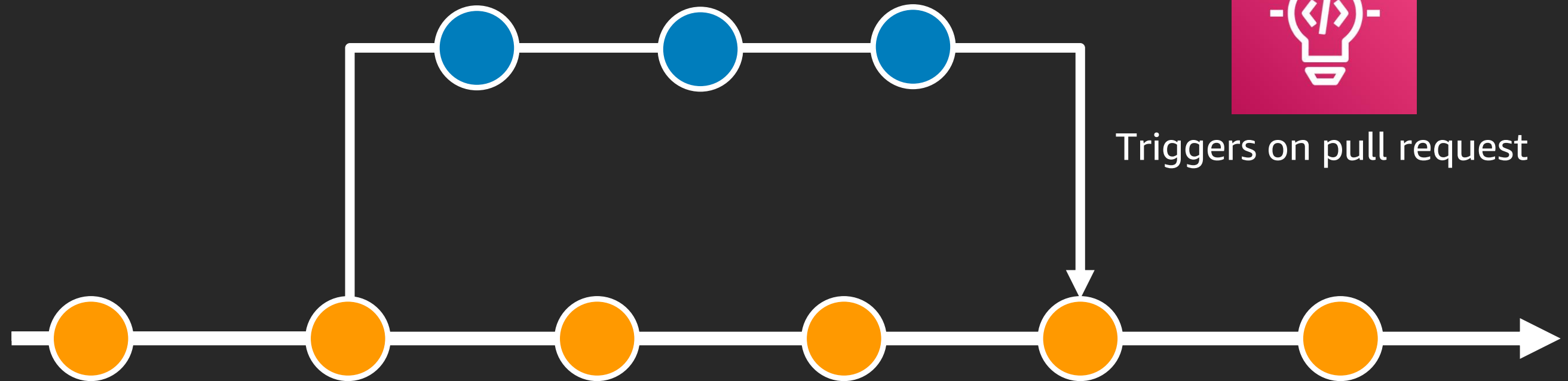
Amazon CodeGuru: Reviewer

CodeGuru Reviewer

Feature branch



Triggers on pull request



Master

Amazon CodeGuru: Reviewer

CodeGuru Reviewer

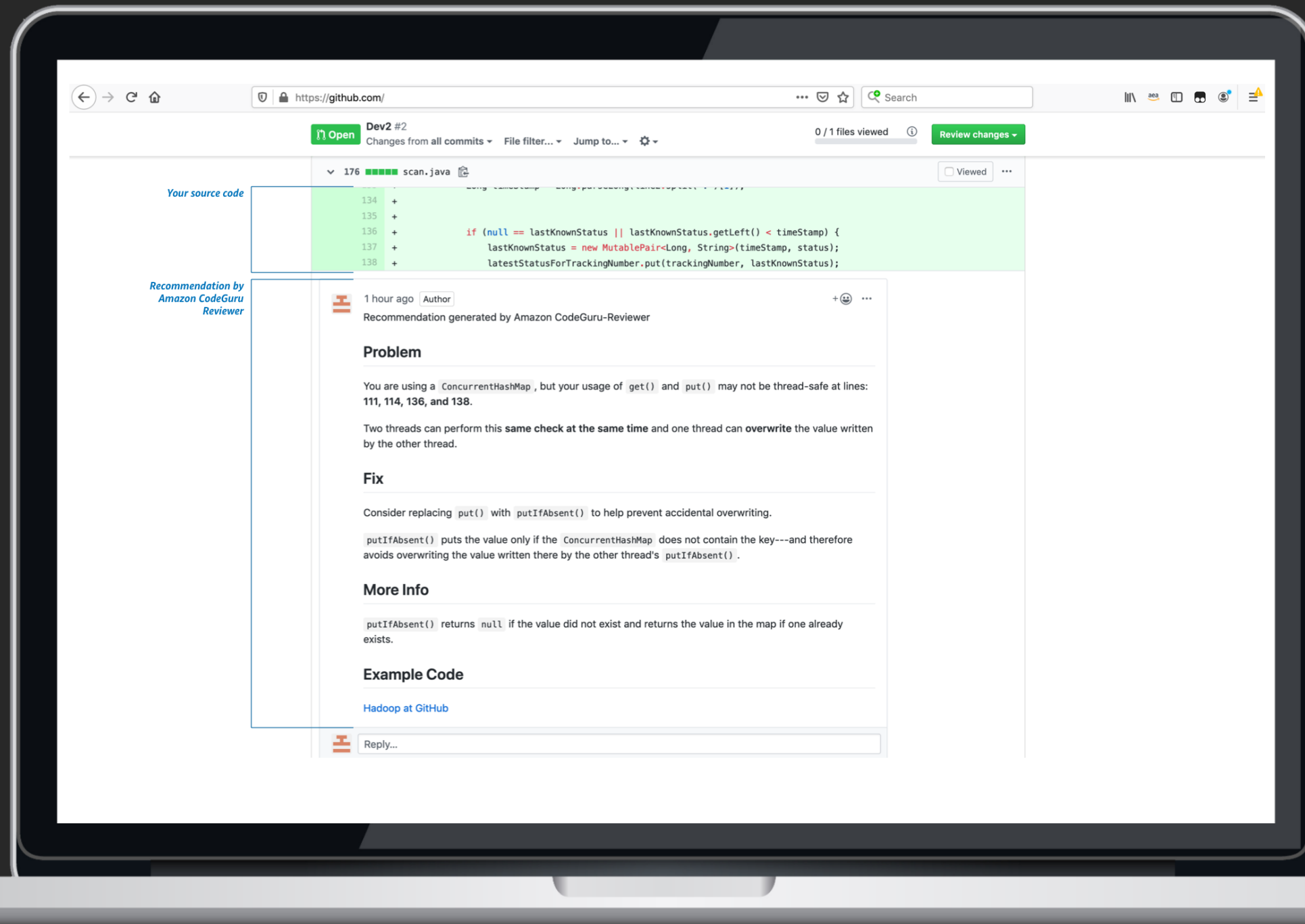


- Finds issues in your code and recommends ways to remediate them
- You can associate existing code repositories on GitHub or AWS CodeCommit

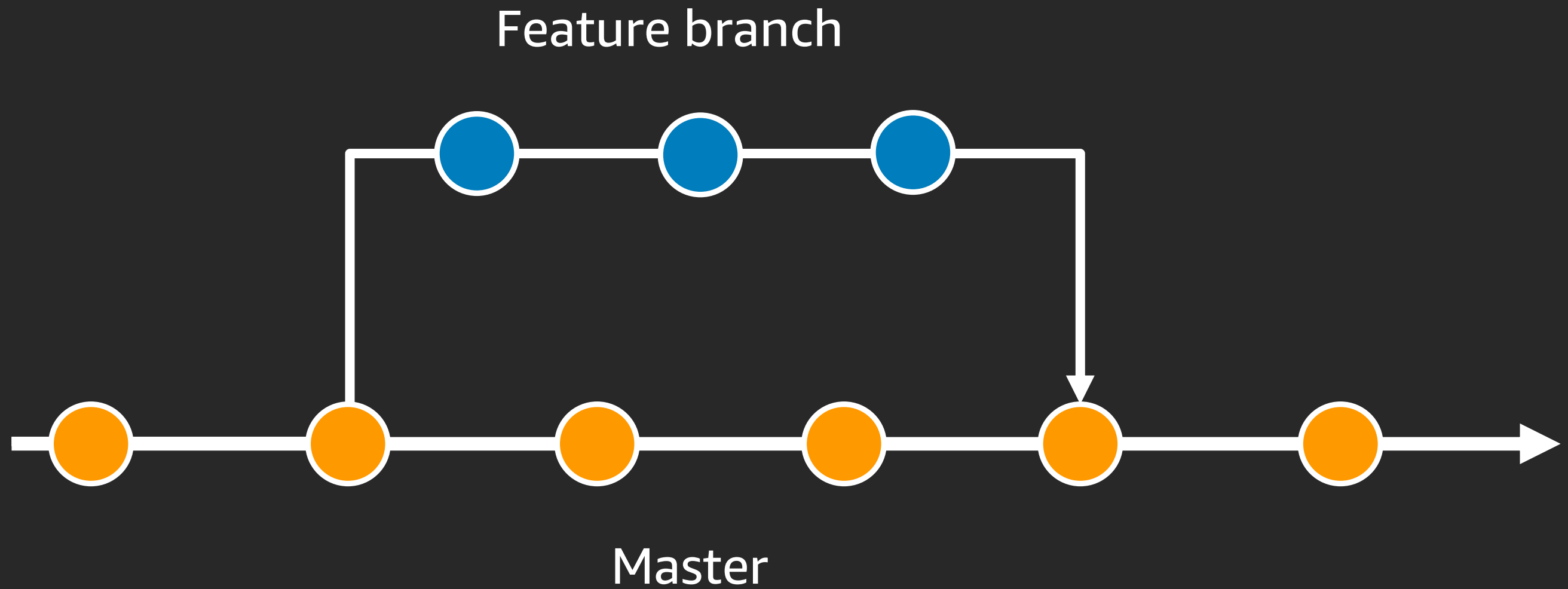


AWS CodeCommit

Amazon CodeGuru: Reviewer demo



Pull request accepted

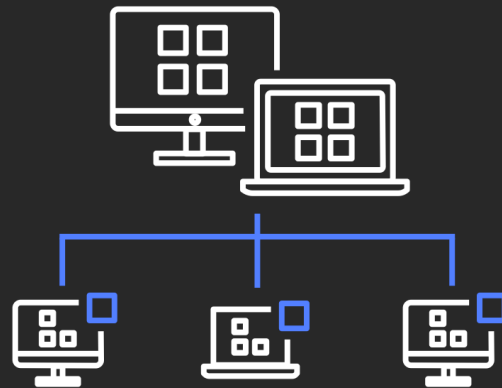


The journey of a line of code

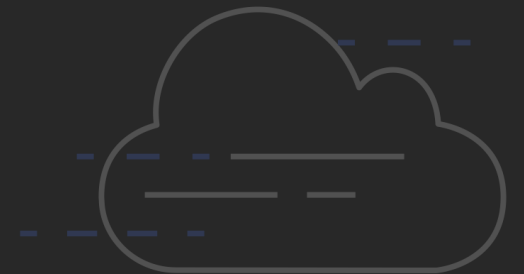
Dev &
test



Integration &
test



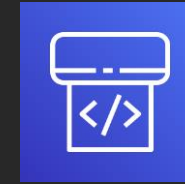
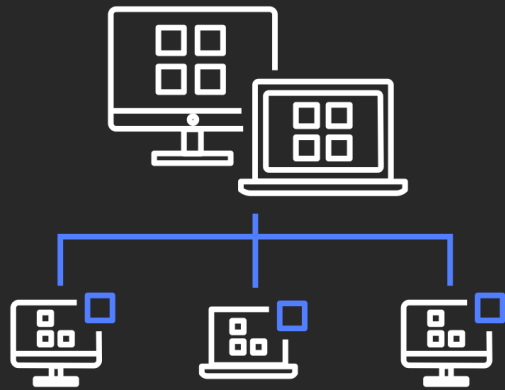
Deploy &
test



The build environment

Integration and test

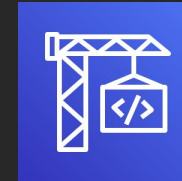
Integration, performance,
acceptance criteria



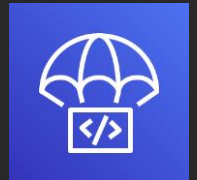
AWS CodePipeline



AWS CodeCommit

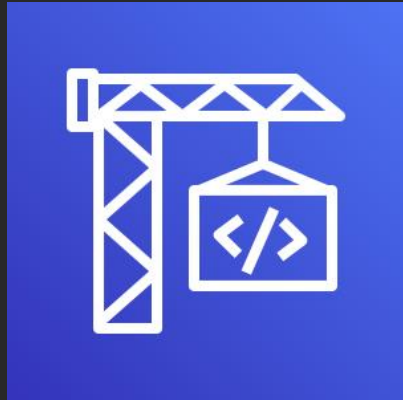


AWS CodeBuild

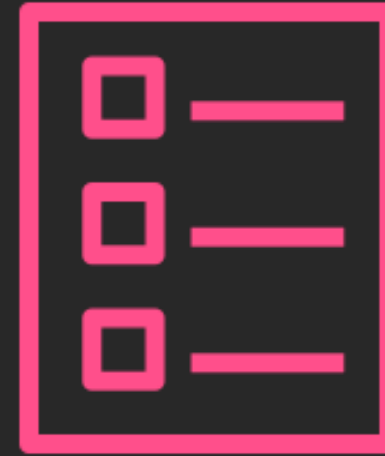


AWS CodeDeploy

AWS CodeBuild



AWS CodeBuild



Buildspec.yml

1. Set up environment



```
version: 0.2
```

```
run-as: Linux-user-name
```

```
env:
```

```
  variables:  
    key: "value"  
  parameter-store:  
    key: "value"  
  exported-variables:  
    - variable  
    - variable  
  secrets-manager:  
    key: secret-id:json-key:version-stage:version-id  
  git-credential-helper: yes
```

1. Set up environment
2. Configure phases



phases:

install:

```
run-as: Linux-user-name
runtime-versions:
runtime: version
commands:
- command
finally:
- command
```

pre_build:

```
run-as: Linux-user-name
commands:
- command
finally:
- command
```

build:

```
run-as: Linux-user-name
commands:
- command
finally:
- command
```

post_build:

```
run-as: Linux-user-name
commands:
- command
finally:
- command
```

1. Set up environment
2. Configure phases
3. Set up output reports



reports:

```
report-name-or-arn:  
files:  
- location  
base-directory: location  
discard-paths: yes  
file-format: JunitXml | CucumberJson | VisualStudioTrx | TestNGXml
```

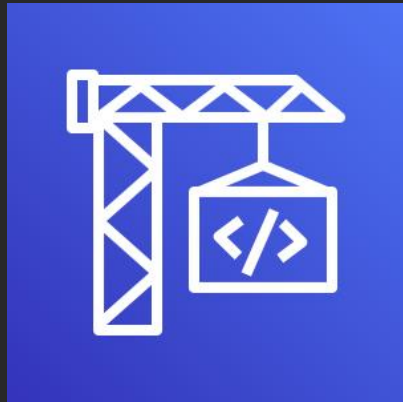
1. Set up environment
2. Configure phases
3. Set up output reports
4. Save build artifacts



artifacts:

```
files:
- location
name: artifact-name
discard-paths: yes
base-directory: location
secondary-artifacts:
artifactIdentifier:
files:
- location
name: secondary-artifact-name
discard-paths: yes
base-directory: location
artifactIdentifier:
files:
- location
discard-paths: yes
base-directory: location
cache:
paths:
- path
```


AWS CodeBuild



AWS CodeBuild



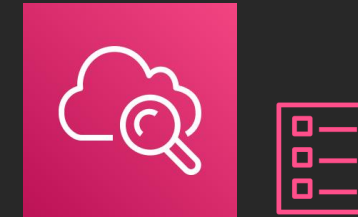
1. Download source code



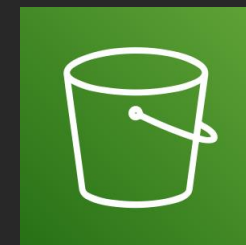
2. Build the code in a managed fresh environment



3. Run testing suite



4. Stream logs to Amazon CloudWatch



5. Get build artifacts in Amazon S3

UI testing at scale on AWS



Blackboard LMS

UI testing at scale on AWS



Blackboard LMS



Selenium UI tests

UI testing at scale on AWS



Blackboard LMS



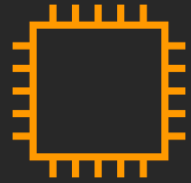
Selenium UI tests



Reduce test time

UI testing at scale on AWS

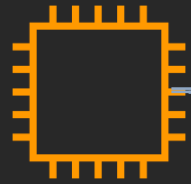
Test runner initiates tests



UI testing at scale on AWS

Selenium + Chromium
running in AWS Lambda

Test runner initiates tests

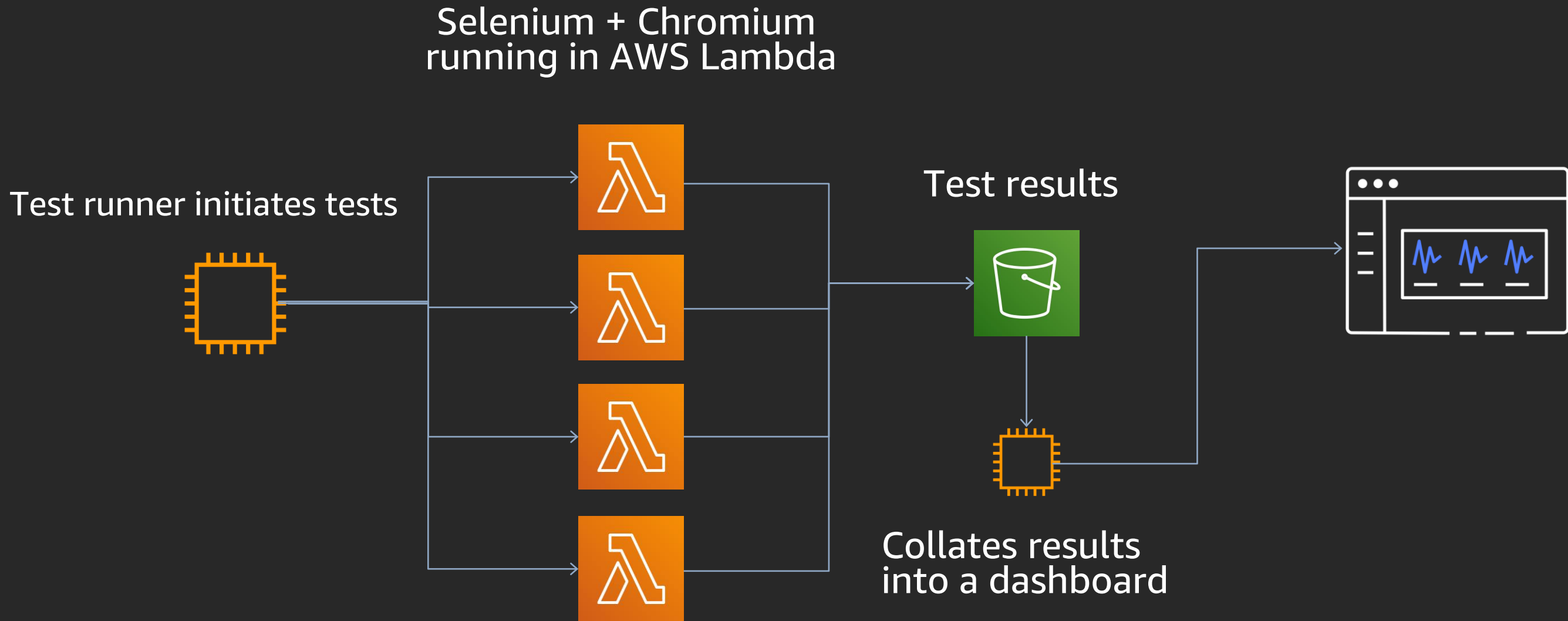


UI testing at scale on AWS

Selenium + Chromium
running in AWS Lambda



UI testing at scale on AWS

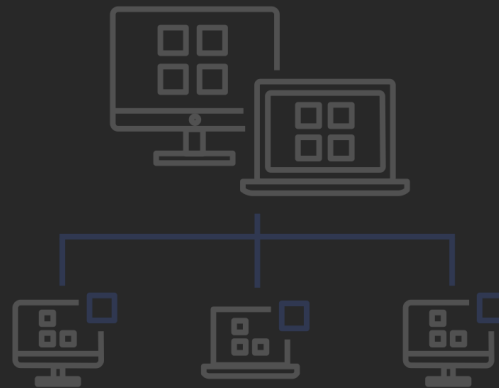


The journey of a line of code

Dev
and test



Integration
and test



Deploy
and test



The staging environment

Deploy and test

Performance, load, monitoring



Performance and load testing

Canary deployments

A/B testing

Monitoring and optimization

Load testing tooling

Load testing tooling



Locust.io

Load testing tooling



Locust.io



Apache JMeter

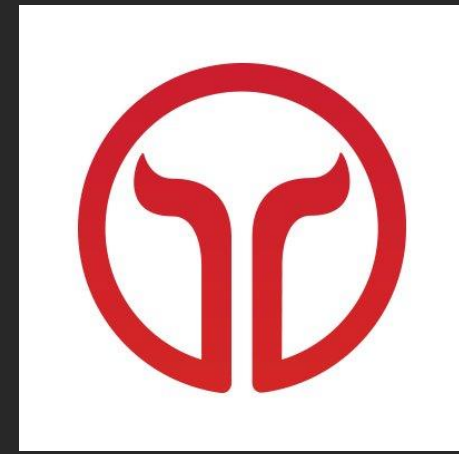
Load testing tooling



Locust.io



Apache JMeter



Taurus

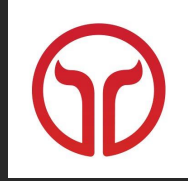
Distributed load testing on AWS



AWS Cloud

Distributed load testing on AWS

 AWS Cloud

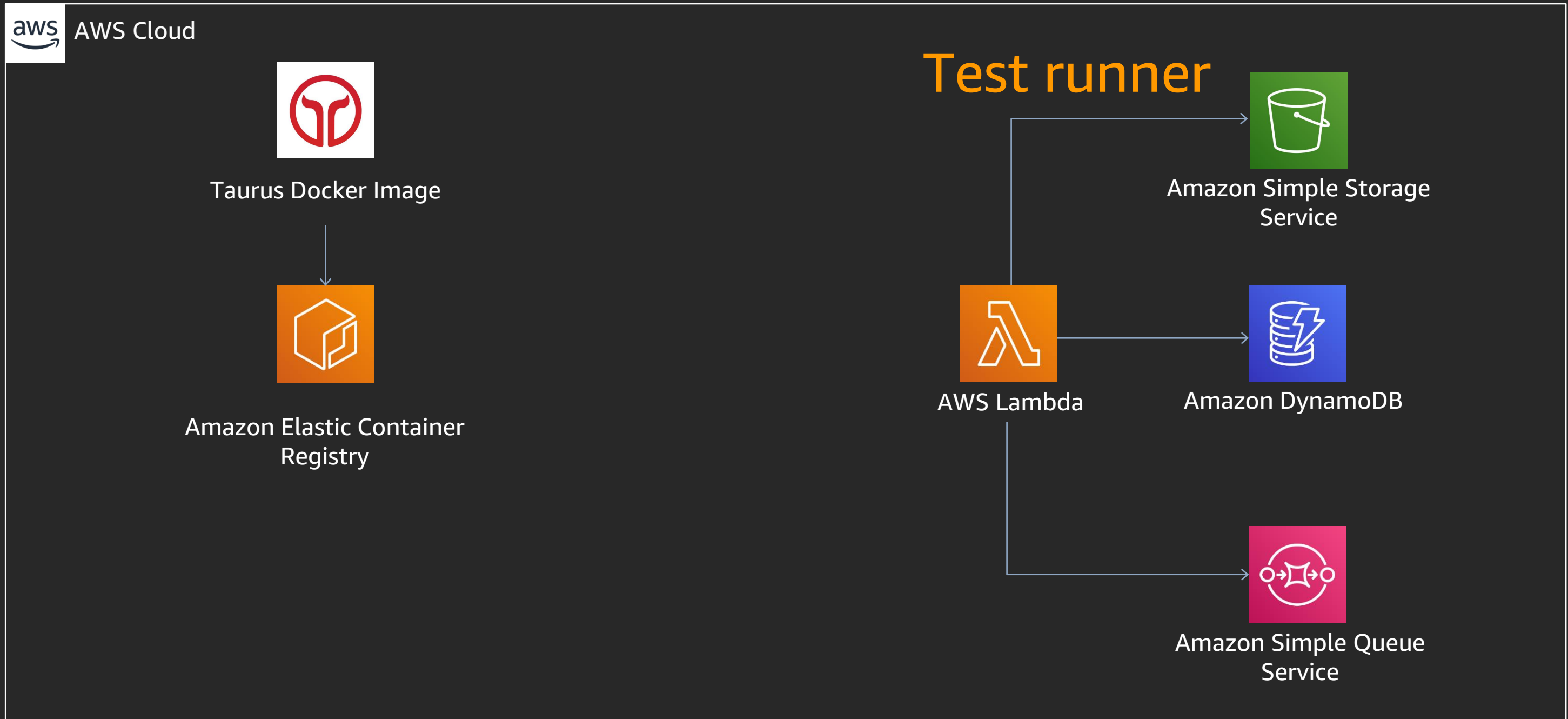


Taurus Docker Image

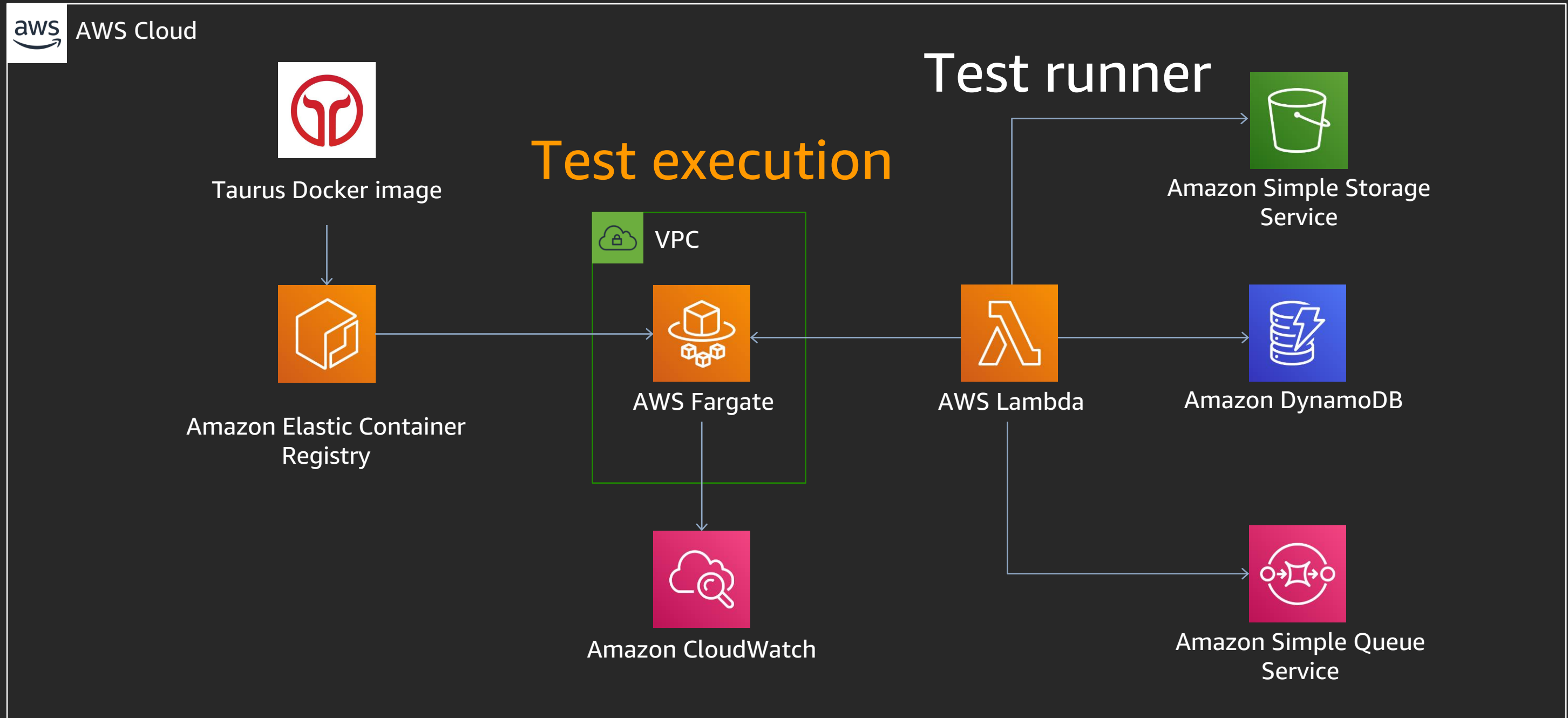


Amazon Elastic Container
Registry

Distributed load testing on AWS

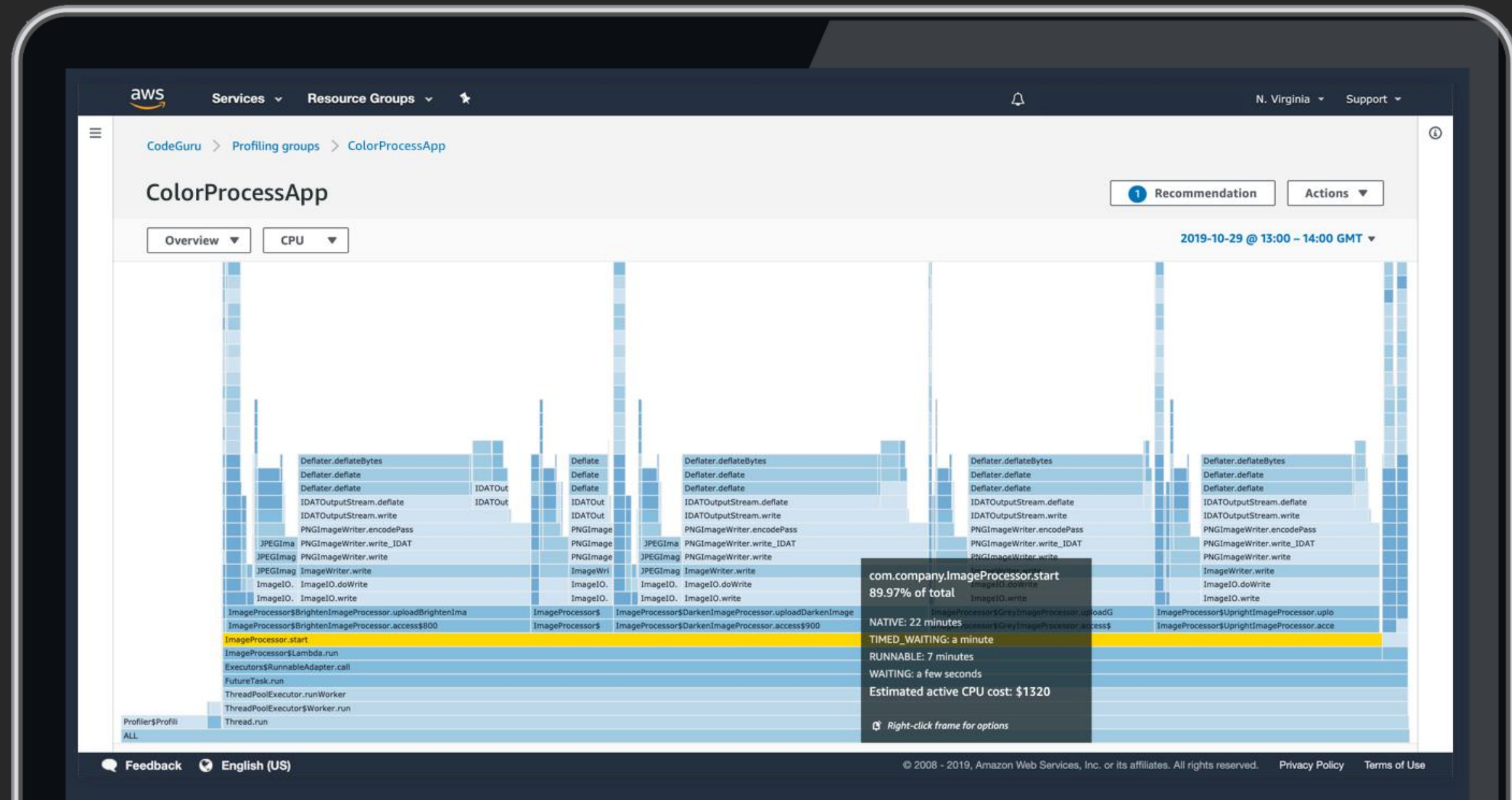


Distributed load testing on AWS



Amazon CodeGuru: Profiler demo

Find your most expensive lines of code



The journey of a line of code



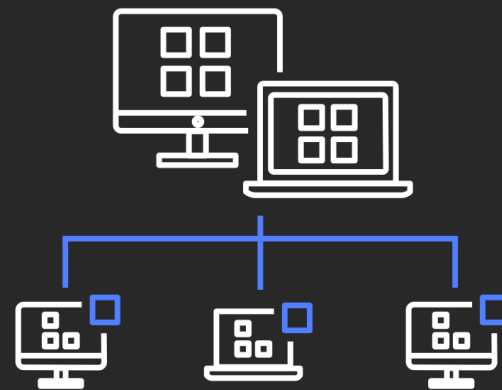
Dev and test

Iteratively write, test, debug



Integration and test

Integration, performance, acceptance criteria



Deploy and test

Performance, load, monitoring

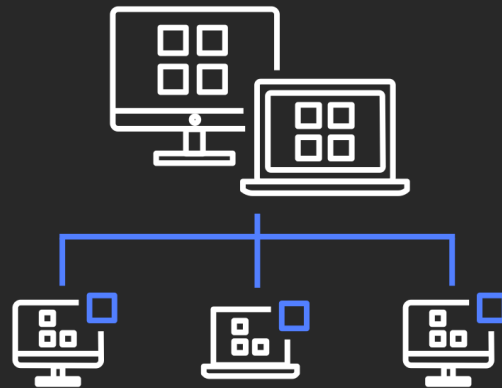


The journey of a line of code

Dev
and test



Integration
and test



Deploy
and test



Thank you!