



aws SUMMIT

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GSAWS001

Improving developer productivity with Amazon CodeGuru

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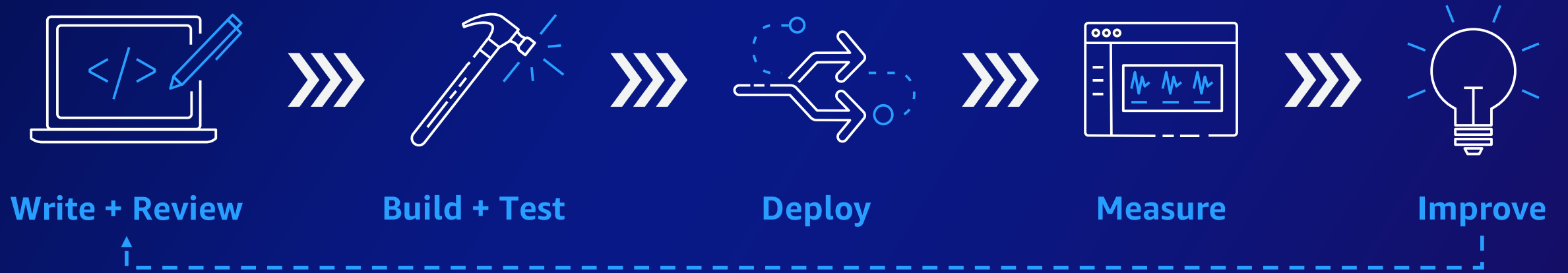
Technical Account Manager
AWS India



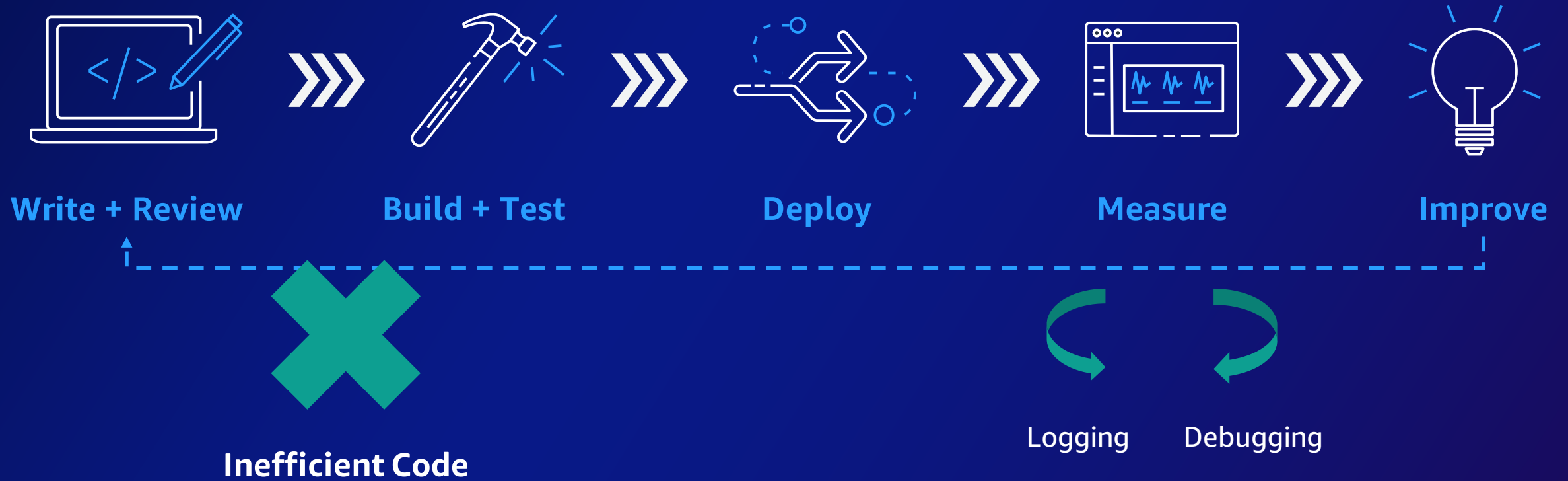
Agenda

- Typical software workflow
- Challenges in the application lifecycle
- Getting started with Amazon CodeGuru
- Demo
- Key takeaways
- Additional resources

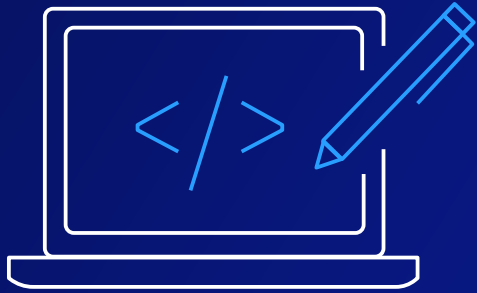
A typical software workflow



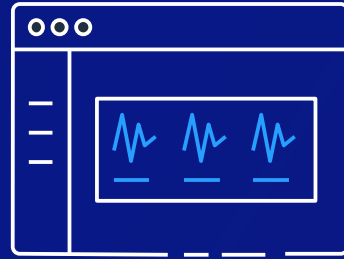
A typical software workflow



Challenges in the application life cycle



It is time consuming for developers to identify problematic code



Code analysis tools lack industry standard best practices for code quality and efficiency



It is difficult to visualize the most expensive lines of code and how to fix them

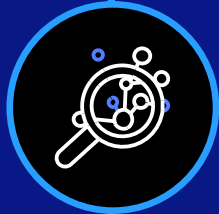
Amazon CodeGuru



Accelerate your developer workflow



Minimize bottlenecks, maintain consistency, improve team agility



Catch the “difficult to find defects” at an early stage of development

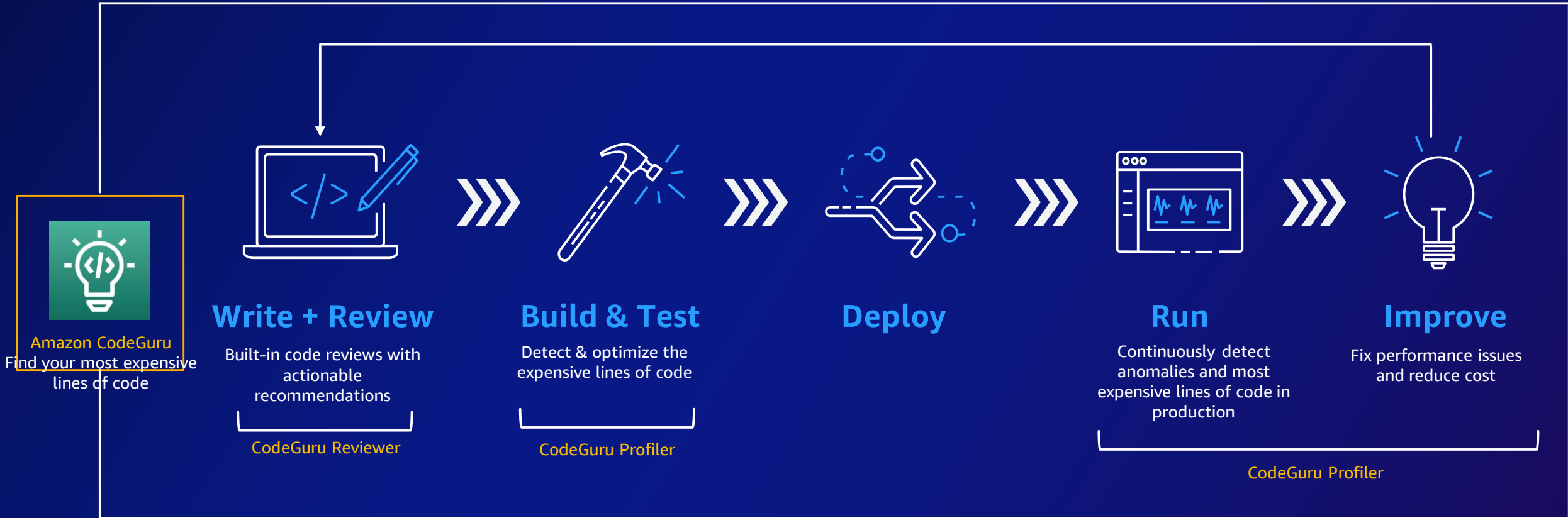


Continuously improve your application performance



Save operational costs

Amazon CodeGuru – How it works ?



Amazon CodeGuru Reviewer



Amazon CodeGuru Reviewer



GitHub, GitHub Enterprise, CodeCommit, Bitbucket



Catch code problems before they hit production



Fix security vulnerabilities



Proactively improve code quality with continuous monitoring

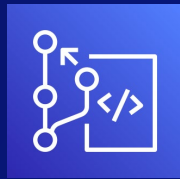


Run automated code reviews

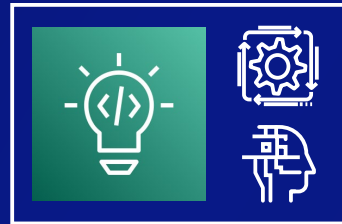
CodeGuru onboarding – Reviewer



AWS Regional Cloud



CodeCommit



CodeGuru service

Create repository
and associate
with CodeGuru

Associate repository and create a code review [Info](#)

Associate repository

After you create your repository association, the code in each new pull request in the repository is reviewed which might result in charges to your AWS account.

Select source provider [Info](#)

☒ AWS CodeCommit

☐ Bitbucket

☐ GitHub or GitHub Enterprise Cloud

☐ GitHub Enterprise Server

IAM role

An IAM role will be created to analyze your code, listen to pull request notifications, and comment on pull requests.

Repository location

CodeGuruReviewerRepo

► Encryption key - optional

Run a repository analysis [Info](#)

When you associate a repository, CodeGuru Reviewer performs a full code review on the repository. After the repository association is created, code in all pull requests are reviewed and you can create new repository code reviews.

Source branch

Select a source branch for CodeGuru Reviewer to scan.

Q master

Code review name - optional

Enter your code review name.

CodeGuruReviewerRepo-master-07f9ff7a-9b2b-4ddc-b53b-145586159311

► Analysis configuration file - optional

Suppress recommendations from CodeGuru Reviewer.

► Tags - optional

A tag is a label that you assign to an associated repository. Each tag consists of a key and an optional value. You can use tags to search and filter your associated repositories or track your AWS costs.

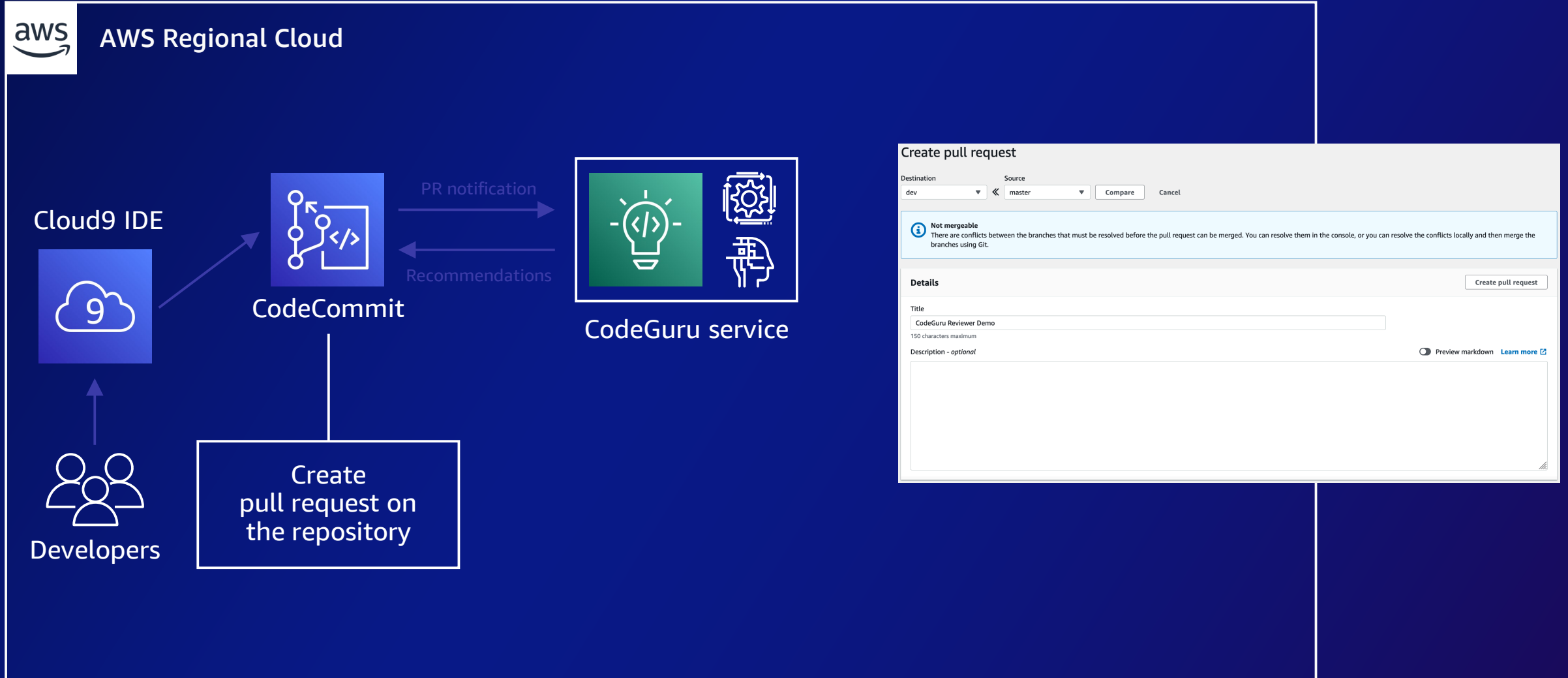
③ It may take 30 seconds to associate a repository, and 5 to 10 minutes to create full repository analysis.

Cancel

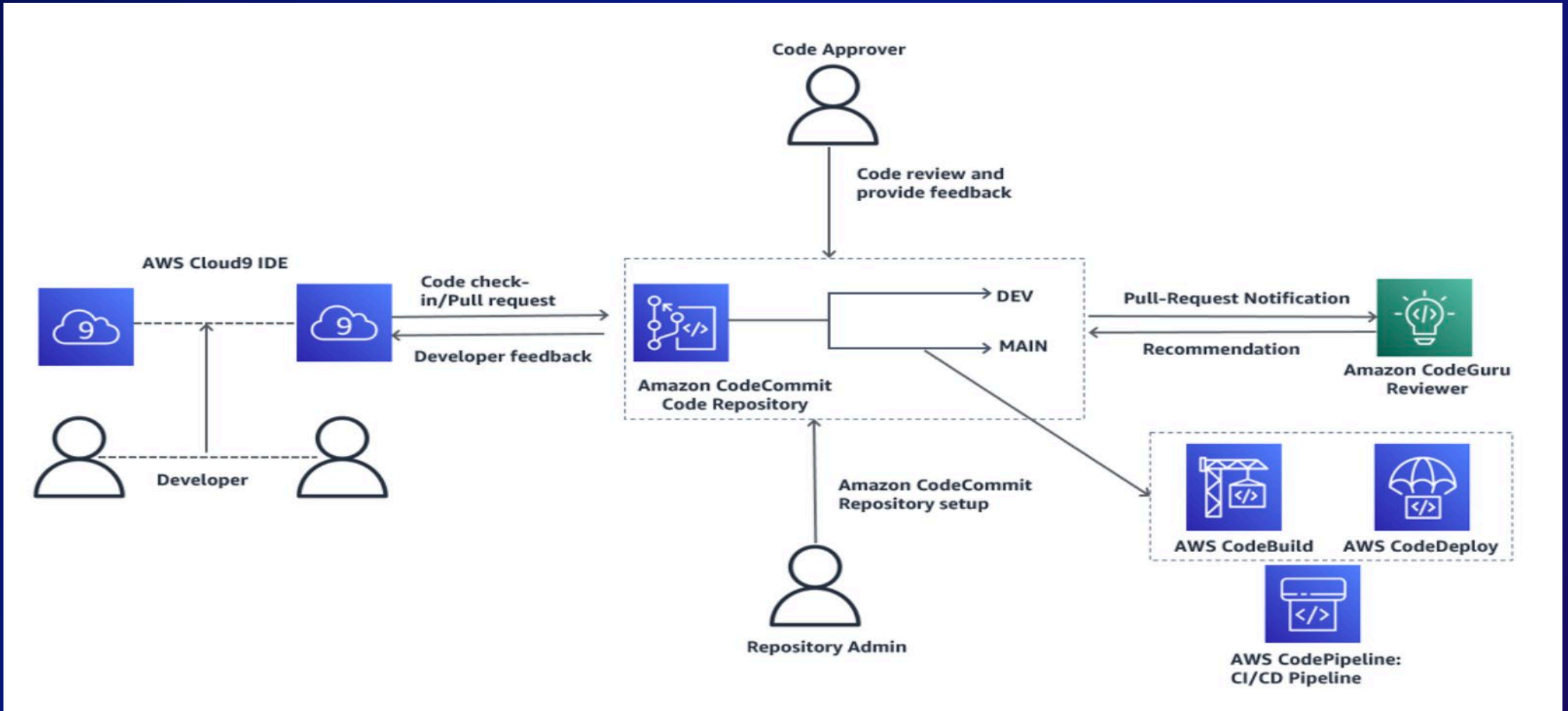
Associate repository and run analysis



Triggering CodeGuru code review



Code review with Amazon CodeGuru Reviewer



Amazon CodeGuru Reviewer output

Recommendations (169)

Find resources

Security

25 matches

BaselineCommands.java Line: 412

Security

Your XML parser doesn't appear to be strongly configured. An **eXternal Entity Injection (XXE)** attack can occur when XML input references an external payload that is parsed by a weakly configured XML parser. [Learn more](#). We recommend that you configure your XML parser more strongly by disabling DTDs (External Entities) or disabling parser specific properties. For information about how to do this in your XML parser, see [here](#).

Relevant Locations:

- biz.aQuote.bnd_bnd_2.4.0-sources/aQuote/bnd/main/BaselineCommands.java, line: 411
- biz.aQuote.bnd_bnd_2.4.0-sources/aQuote/bnd/main/BaselineCommands.java, line: 412

Was this helpful?

bnd.java Line: 2444

Security

It looks like your XML parser is not strongly configured. An **eXternal Entity Injection (XXE)** attack can occur when XML input references an external payload that is parsed by a weakly configured XML parser. [Learn more](#). We recommend that you configure your XML parser more strongly by disabling DTDs (External Entities) or disabling parser specific properties. For information about how to do this in your XML parser, see [here](#).

Relevant Locations:

- biz.aQuote.bnd_bnd_2.4.0-sources/aQuote/bnd/main/bnd.java, line: 2443
- biz.aQuote.bnd_bnd_2.4.0-sources/aQuote/bnd/main/bnd.java, line: 2444

Was this helpful?

Security Vulnerabilities

CodeGuru > Code reviews > mw2tsa56o0000000

RepositoryAnalysis-amazon-codeguru-reviewer-sample-app-master-mw2tsa56o0000000

Details

Status

Completed

Details

CodeGuru Reviewer successfully finished reviewing the source code.

ARN

arn:aws:codeguru-reviewer:us-west-2:033467977803:code-review:RepositoryAnalysis-amazon-codeguru-reviewer-sample-app-master-mw2tsa56o0000000

Recommendations

4

Metered lines of code

80

Time created

10 Nov 2020 08:08:47 AM GMT-0800

Last updated

10 Nov 2020 08:11:44 AM GMT-0800

Type

RepositoryAnalysis

Provider

GitHub

Repository

[amazon-codeguru-reviewer-sample-app](#)

Branch name

[master](#)

Recommendations (4)

Search recommendations

EventHandler.java Line: 79

This code appears to be waiting for a resource before it runs. You could use the waiters feature to help improve efficiency. Consider using ObjectExists or ObjectNotExists. For more information, see [https://aws.amazon.com/blogs/developer/waiters-in-the-aws-sdk-for-java/](#)

Was this helpful?

EventHandler.java Line: 100

This code might not produce accurate results if the operation returns paginated results instead of all results. Consider adding another call to check for additional results.

Was this helpful?

EventHandler.java Line: 100

This code uses an outdated API. ListObjectsV2 is the revised List Objects API, and we recommend you use this revised API for new application developments.

Was this helpful?

Repository Analysis & Recommendations

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Demo

Evaluate Source Code using ML

CODEGURU IN PIPELINE



Amazon CodeGuru Profiler



Amazon CodeGuru Profiler



Powerful visualization



Troubleshoot performance issues



Discover anomalies and common issues in your application performance

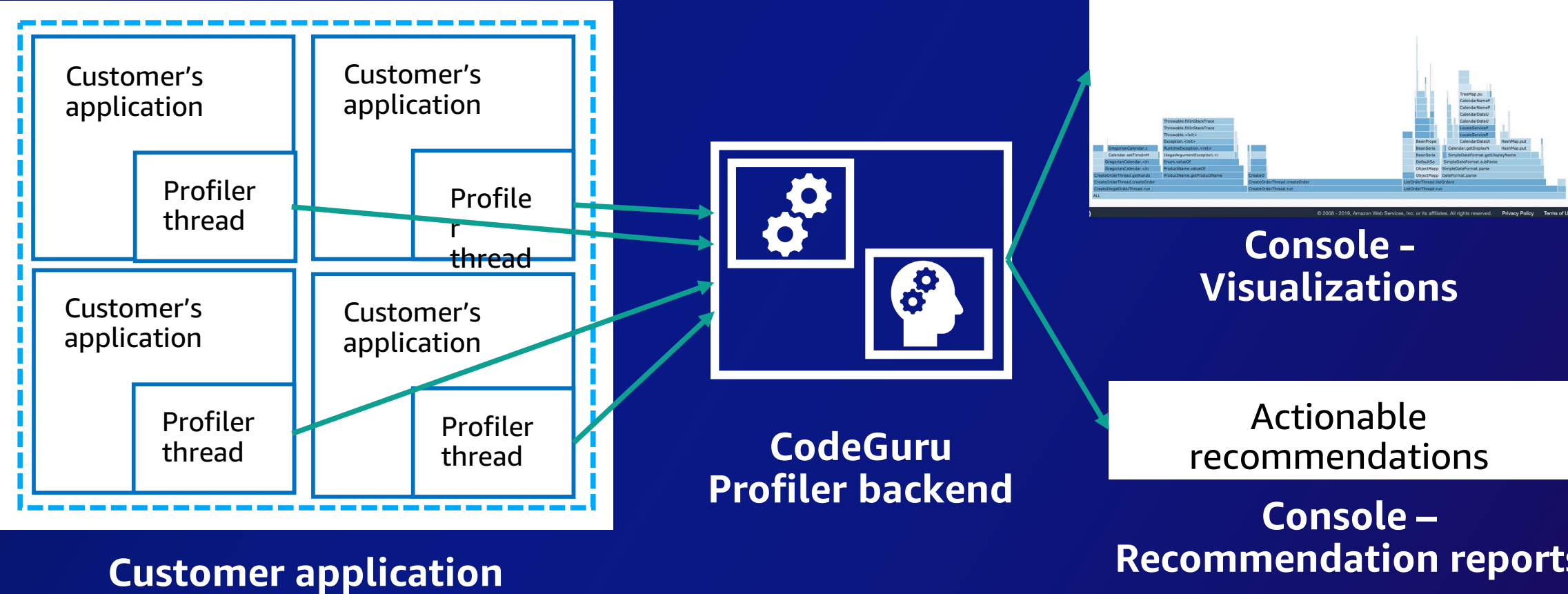


Java and Python support



Catch your most expensive line of code today

CodeGuru Profiler – How it works



Amazon CodeGuru Profiler Agent –

Run via command line (Java):

```
-javaagent:/path/to/codeguru-profiler-java-agent-standalone-1.0.1.jar'...
```


Run via code (Java):

```
import software.amazon.codeguruprofilerjavaagent.Profiler;
public static void main(String[] args) {
    Profiler.builder() .profilingGroupName("MyProfilingGroup")
        .build()
        .start();
    ... }
```


Run via code (Python):

```
pip install codeguru_profiler_agent
```

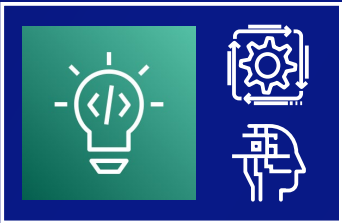
CodeGuru onboarding – Profiler



AWS Regional Cloud



CodeCommit



CodeGuru service

Create profiling group
for CodeGuru

Create profiling group

Profiling group details

A profiling group is a set of applications that are profiled together as a single unit. For example, you can profile a set of microservices to find hotspots. CodeGuru is available for JVM and Python applications.

Name

CodeGuruDemoProfilerGroup

The name should be between 1 and 255 characters long and contain only letters, numbers, dashes (-), and underscores (_).

Choose compute platform

[Info](#)

Choose the compute platform that your applications run on.

Compute platform

☒ Other

Choose if your applications run on a compute platform other than AWS Lambda, such as EC2, on-premise servers, or a different platform.

☐ Lambda

Choose if your applications run on AWS Lambda.

Tags (0)

[Info](#)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.


No tags associated with the resource.

Add new tag

You can add 50 more tags

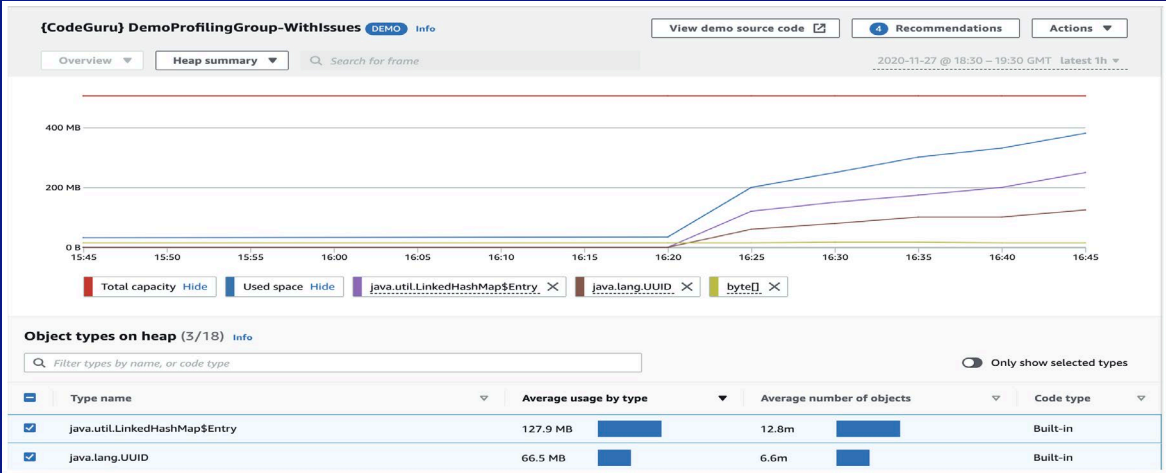
Cancel

Create



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CodeGuru output



Application performance visualization

Recommendations



Customer success stories – Amazon CodeGuru



"At Atlassian, many of our services have hundreds of check-ins per deployment. While code reviews from our development team do a great job of preventing bugs from reaching production, it's not always possible to predict how systems will behave under stress or manage complex data shapes, especially as we have multiple deployments per day. When we detect anomalies in production, we have been able to reduce the investigation time from days to hours and sometimes minutes thanks to Amazon CodeGuru's continuous profiling feature. Our developers now focus more of their energy on delivering differentiated capabilities and less time investigating problems in our production environment."

Zak Islam, Head of Engineering, Tech Teams - Atlassian



"Amazon CodeGuru helps Cognizant development teams deliver mission critical software for our customer's digital transformation programs. Incorporating CodeGuru in our development workflows improves and automates code reviews, helps our DevOps teams proactively identify and fix functional and non-functional issues and ensures that the deployments exceeds the performance, security and compliance requirements of our customers across industries and regions."

Todd Carey, Global Head - Cognizant AWS Business Group



"With CodeGuru, we have built automated code reviews directly into our pipelines, which means my team can deploy code faster and with more confidence. We use CodeGuru Reviewer's recommendations based on ML and automated reasoning, to focus on fixing and improving the code, instead of manually finding flaws. The addition of Python has made CodeGuru even more accessible for us."

Edwn Nikoi, Technical Manager - IT Consortium

Prime Day with CodeGuru

+325%

Efficiency increase in CPU utilization
YoY

-39%

Lower cost
YoY

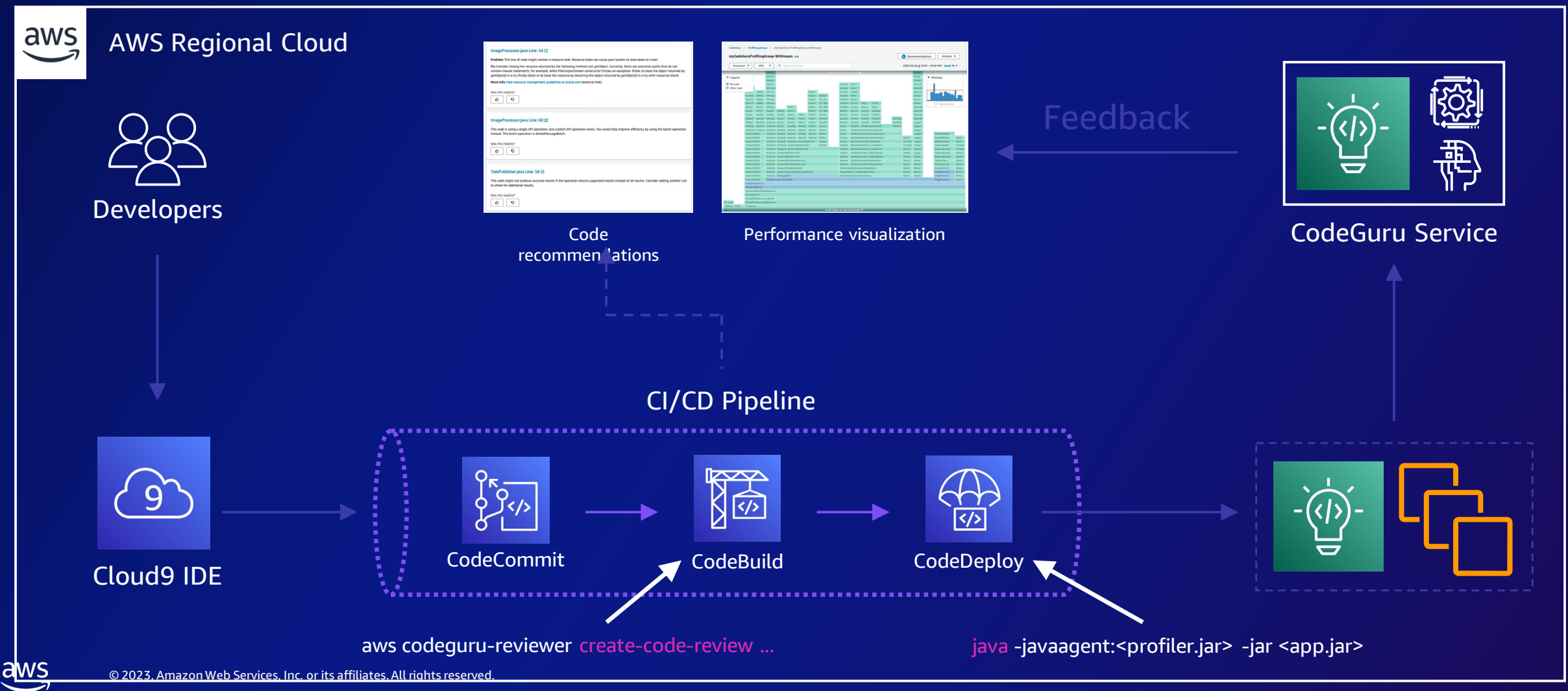
Demo

Profile Running Applications using ML

Key takeaways

Key Architecture summary

CODEGURU IN PIPELINE



Key takeaways

Recap



Team agility

Increase throughput of code reviews using CodeGuru



High bar of code quality

Actionable recommendations from CodeGuru



Amazon CodeGuru Reviewer

- › Identifies code defects and provides actionable recommendations on code fixes
- › Integrates with pull request code reviews
- › Integrated with static code analysis in a CI / CD pipeline



Amazon CodeGuru Profiler

- › Actionable recommendations on performance issues
- › Integrates within a CI / CD pipeline
- › Rich visualizations to help troubleshoot issues

Additional resources



[Amazon CodeGuru](#)

Automate code reviews and optimize application performance with ML-powered recommendations.



[Amazon CodeGuru Documentation](#)

User Guide for Amazon CodeGuru Reviewer and its Detector Library;
Amazon CodeGuru Profiler



[Blogs](#)

More knowledge more practical examples !



[Code Quality Workshop](#)

AWS CI/CD pipeline with CodeGuru & UnitTest to improve
code quality

skillbuilder.aws 

Your time is now

Build in-demand cloud skills *your way*



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Thank you!

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Technical Account Manager
AWS India

Bittu Singh
Technical Account Manager
AWS India



Please complete the
session survey