

AWS RE:INVENT

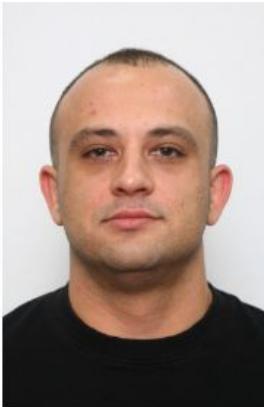
re:Cap

# About me

- In IT-u since 2010.
- **Working with AWS since 2011.**
- L1 Support -> System Administrator / DBA -> AWS Consultant -> DevOps Lead -> Production Engineer -> Production Engineer Lead
- Multiple AWS / Database / Security certificates
- **Certified AWS Instructor**
- [AWS Community Bosnia leader](#)
- [AWS Community Hero](#)

Developer / Community / Heroes

## Dzenan Dzevljan



Connect with Dzenan

**Dzenan Dzevljan, Cloud and DevOps Expert at TN-TECH**  
Mostar, Bosnia and Herzegovina  
Hero since 2020

Dzenan is currently working as a part of the Production Engineering team for [Yahoo](#). He is also providing his expertise and services as Cloud and DevOps expert at [TN-TECH](#). Dzenan has been an AWS user since 2011 and has worked on many AWS projects: including migration from on-premises and other public cloud platforms to AWS, and implementing HIPAA compliant infrastructure on AWS with various kinds of companies, from startups to enterprises.

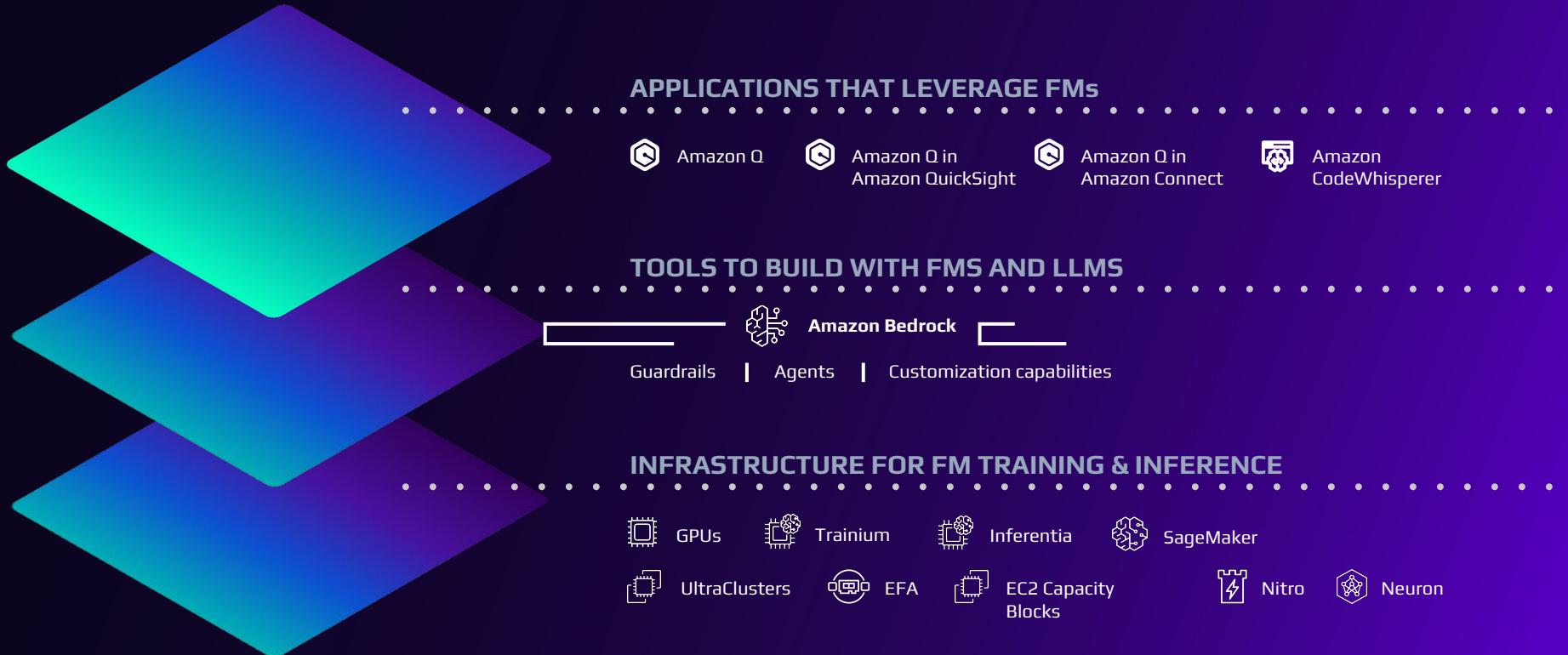
In 2016, Dzenan founded [AWS User Group Bosnia](#) and helped it grow to three user groups with more than 600 members. This AWS community is now the largest IT community in Bosnia. As part of his activities, he runs online meetups, a [YouTube channel](#), and the [sqlheisenberg.com](#) blog (in Bosnian language) to help people in the Balkans region achieve their AWS certification and start working with AWS. In close collaboration with his sister Dzenana, he works with other community members in South-Eastern Europe to help them start and grow AWS user groups in their countries.

Dzenan is passionate about AWS, databases, and security. He holds several AWS, security, and database related certificates and often speaks at various technical meetups and conferences.

aws community **HERO**



# The Generative AI Stack



IN PREVIEW



Trained on 17 years of AWS knowledge

Assists you everywhere you work – in the console, IDE, and documentation

Works with you to build new features, refactor, and troubleshoot on AWS

IN PREVIEW

A screenshot of a dark-themed IDE, likely Visual Studio Code, showing a project named "support-cases". The Explorer sidebar on the left lists files and folders: \_\_pycache\_\_, .aws-sam, preparation, app.py (which is selected), requirements.txt, samconfig.toml, and template.yaml. The main editor pane displays Python code for "app.py":

```
30     # Proceed with creating a case using the provided data
31
32     # Generate a unique case ID
33     caseid = str(uuid.uuid4())
34
35     # Put the new item into the DynamoDB table
36     ddbtable.put_item(Item={
37         'caseid': caseid,
38         'title': data['title'],
39         'description': data['description'],
40         'status': 'open',
41         # Add any other fields you need
42     })
43
44     # Return a successful response
```

The status bar at the bottom shows the terminal tab is active, and the output tab is labeled "support-cases".



# Amazon Q

... in CodeCatalyst

IN PREVIEW



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Amazon  
CodeCatalyst

reinvent-2023 ▾ reinvent2023application ▾

X #10 Created 7 days ago by @wvogels Updated 5 days ago by @wvogels

▼ Comments (2)

Amazon Q 5 days ago

Good news! I've completed my work on this issue and created a pull request for review:  
PR 9 Change the get\_all\_mysfits() API to return mysfits sorted by the Age attribute

- ✔ Evaluate prerequisites
- ✔ Read repository
- ✔ Generate background
- ▶ ✔ Generate approach
- ▼ ✔

You're right, no need to change the model unit tests. Here is a revised approach:

1. src/app.py

1. src/app.py

1. Modify get\_all\_mysfits() to sort the response before returning:

1. Call MysfitsModel.list\_items() to get all unsorted items
2. Sort the items list using Python's built-in sorted() function, passing 'Age' as the key
3. Return the sorted list

IN PREVIEW



Upgrade Java applications in a fraction of  
the time

Enhance the security and performance of  
your code

Accelerate the migration from Windows  
to Linux (coming soon)



# Amazon **CodeWhisperer**

New enhancements

Customization capabilities

Support for CloudFormation (YAML, JSON), AWS CDK (TypeScript, Python), and Hashicorp Terraform (HCL)

Available in Visual Studio (in preview)



# Amazon Bedrock

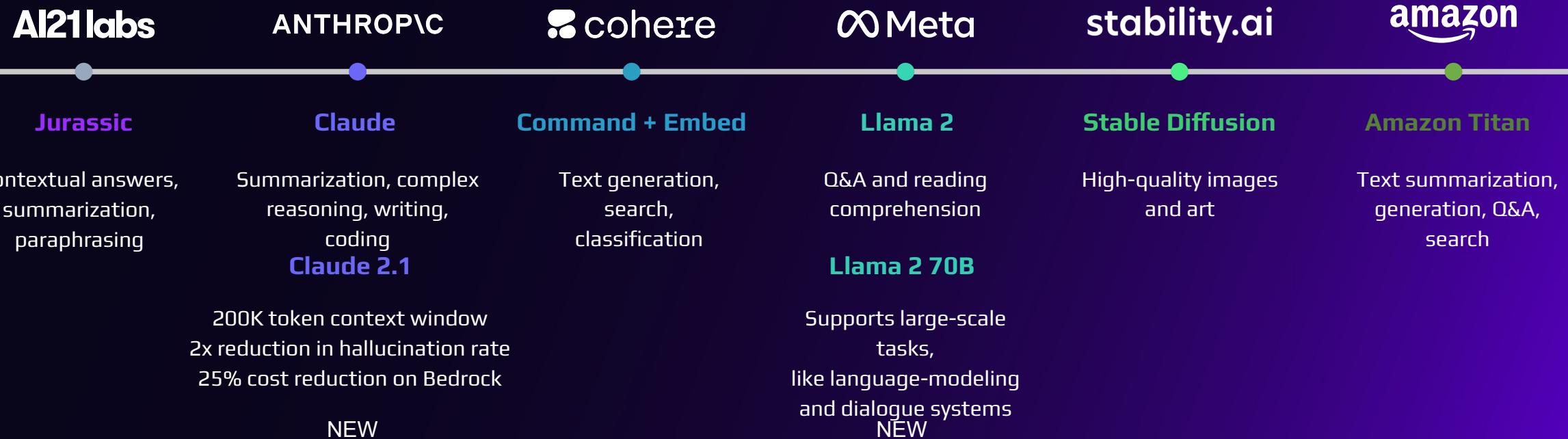
The easiest way to build and scale generative AI applications with LLMs and other foundation models

Broad choice of foundation models

Customize foundation models using your organization's data

Enterprise-grade security and privacy

# Amazon Bedrock



# Amazon Titan Foundation Models



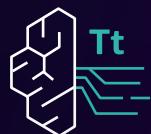
## TITAN TEXT EMBEDDINGS

Translates text into numerical representations



## TITAN TEXT LITE

Summarization, copywriting, fine-tuning



## TITAN TEXT EXPRESS

Open-ended text generation, conversational chat, RAG support



## TITAN MULTIMODAL EMBEDDINGS

Search, recommendation, personalization



## TITAN IMAGE GENERATOR

Generate realistic, studio-quality images

NEW

NEW

NEW

IN PREVIEW

## Amazon Bedrock customization capabilities

Fine-tuning Cohere Command Lite,  
Meta Llama 2, Amazon Titan Text  
Lite & Express generally available

Fine-tuning Anthropic Claude  
coming soon

Continued pre-training for Amazon  
Titan Text Lite & Express in  
preview

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# Knowledge Bases for Amazon Bedrock

Fully-managed native support for retrieval augmented generation (RAG)

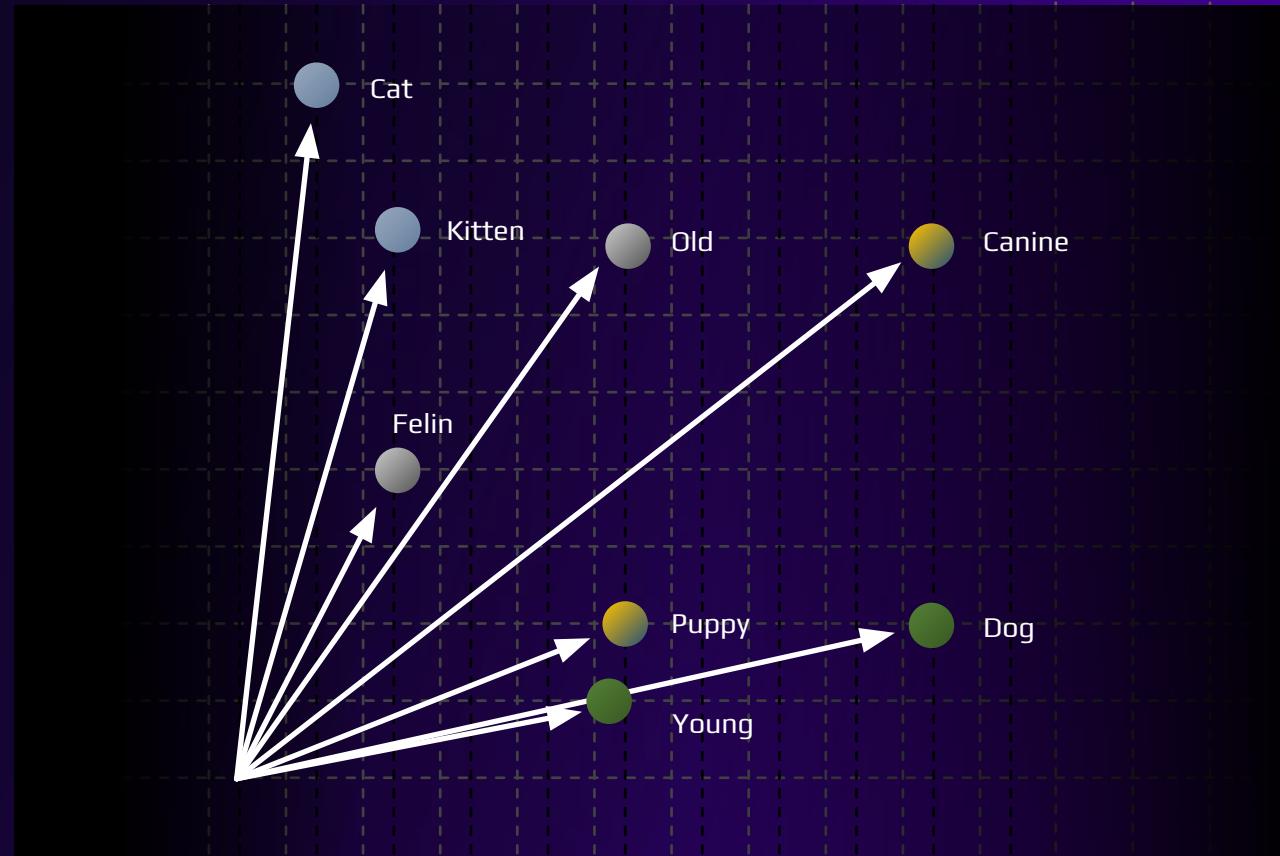
Automatically convert text documents into embeddings

Store embeddings in your vector database

Retrieve embeddings and augment prompts



**Vectors are critical for  
customizing generative AI  
applications**



# Vector support for Amazon **DocumentDB**

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# Vector support for Amazon **DynamoDB**

GENERALLY AVAILABLE



# Vector databases for Amazon Bedrock



Vector Engine For  
Amazon OpenSearch  
Serverless



Redis Enterprise  
Cloud



Pinecone

COMING SOON



Amazon  
Aurora

COMING SOON



MongoDB

GENERALLY AVAILABLE

# Agents for Amazon Bedrock

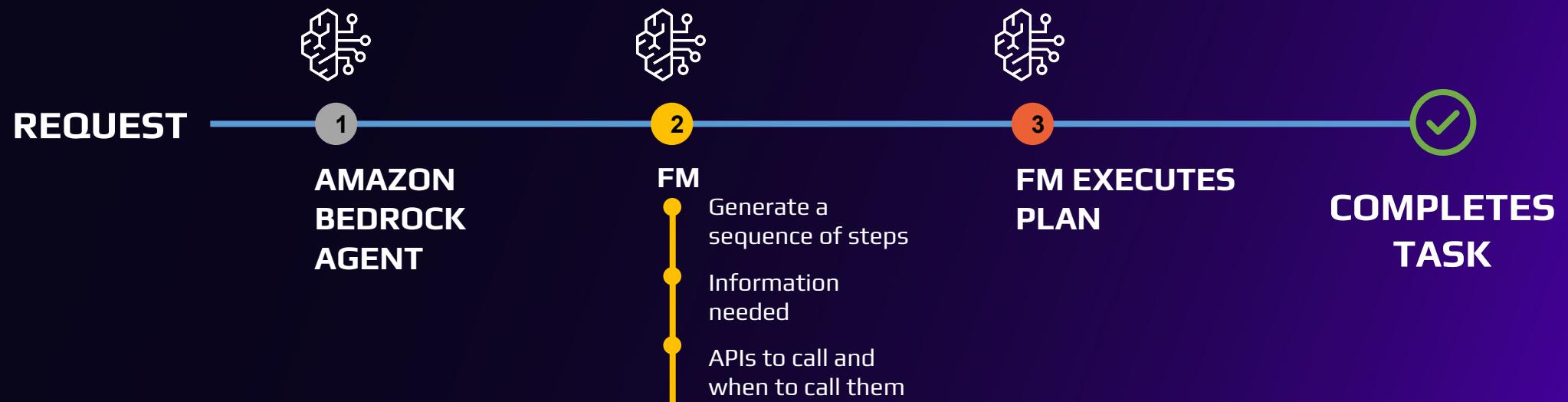
Execute multi-step tasks across  
company systems and data sources

Enable generative AI applications to  
take actions in just a few clicks

Break down and orchestrates tasks  
and executes API calls on your  
behalf

Securely access and retrieve  
company data

# Resolving tasks with Agents for Amazon Bedrock



IN PREVIEW

# Model Evaluation on Amazon Bedrock

Evaluate, compare, and select the best foundation model for any use case



IN PREVIEW

# Guardrails for Amazon Bedrock

Safeguard your generative AI  
applications with your custom  
responsible AI policies

Easily configure harmful  
content filtering

Apply your guardrails to any  
foundation model or agent

Redact personally identifiable  
information (PII) in model  
responses (coming soon)



GENERALLY AVAILABLE

# AWS Application Composer in VS Code

Visually compose infrastructure as code directly in your IDE

Drag, drop, and connect AWS resources using a visual canvas

Use generative AI-based code suggestions to use any of 1,000+ CloudFormation resources

AWS Application Composer is now part of the AWS Toolkit for VS Code



AMAZON Q (PREVIEW): CHAT

Chat x +

Hi, I am Amazon Q (Preview). I can answer your software development questions. Ask me to explain, debug, or optimize your code. You can enter / to see a list of quick actions.

How do I use Amazon EventBridge with GameLift FlexMatch to trigger Lambda when a potential match is created? I want CloudFormation for this.

To use Amazon EventBridge with GameLift FlexMatch to trigger a Lambda function when a potential match is created, you can create a CloudFormation template that sets this up. Here are the basic steps [1]:

1. Create an Amazon EventBridge rule that matches the "PotentialMatchCreated" event from your GameLift FlexMatch configuration [12] (<https://docs.aws.amazon.com/gamelift/latest/events.html>). The rule would target a Lambda function.
2. Create an AWS Lambda function that will be invoked when the event is matched. This function could process the match data and take actions like notifying players.
3. Use CloudFormation to define the Lambda function resource, an IAM role for it to assume, and the EventBridge rule resource linking the two.
4. Deploy the CloudFormation stack. EventBridge will then start routing "PotentialMatchCreated" events to invoke your Lambda function.

The AWS documentation has more details on setting up FlexMatch event notification and using EventBridge with CloudFormation. Let me know if you have any other questions [3]!

Sources

[1] Set up FlexMatch event notifications - Amazon GameLift  
<https://aws.amazon.com/gamelift/setup/> > match-> Show more

Suggested follow up questions:

How do I define the EventBridge rule?

What permissions does the Lambda role...

What does the Lambda function do?

Ask a question or enter "/" for quick commands ➤

4000/4000

Amazon Q may produce inaccurate information. Verify all provided

template.yaml (Application Composer) x

Arrange Sync :

The diagram illustrates the architecture defined in the CloudFormation template. It includes:

- API Gateway:** PlayerAPI, which handles three routes:
  - GET /playerdata
  - POST /playeravatar
  - POST /playersession
- Lambda Functions:** PlayerDataManager, AvatarProcessing, and GameSessionManager.
- Databases:** PlayerDataTable (DynamoDB Table) and PlayerAvatar (S3 Bucket).
- Standard Components:** Fleets (Fleet ID: !Ref Fleets) and West.

Connections show the API Gateway routes triggering the Lambda functions, which in turn interact with the databases and components.

! template.yaml x

template.yaml > CloudFormation Linter > Resources

```
171 GameSessionManager:
172 Type: AWS::Serverless::Function
173 Properties:
174 Handler: index.handler
175 Runtime: nodejs18.x
176 Policies:
177 - AWSLambdaBasicExecutionRole
178 Environment:
179 Variables:
180 FLEET_ID: !Ref Fleets
181 CodeUri: src/GameSessionManager
182 MemorySize: 3008
183 Timeout: 30
184 AWS::CloudFormation::Interface:
185 Events:
186 PlayerAPIPOSTplayersession:
187 Type: Api
188 Properties:
189 Path: /playersession
190 Method: POST
191 RestApiId: !Ref PlayerAPI
```

NEW

# Generative AI CDK Constructs

[github.com/awslabs/  
generative-ai-cdk-constructs](https://github.com/awslabs/generative-ai-cdk-constructs)



github.com/awslabs/generative-ai-cdk-constructs Public

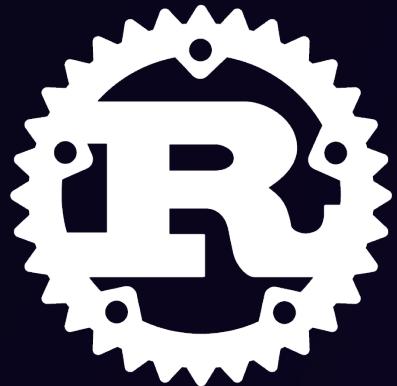
Code Issues Pull requests Discussions Actions Projects Security Insights

main 2 branches 89 tags Go to file Code

github-actions and krokoko chore(deps): upgrade dependencies ... 1b11e6b 2 hours ago 239 commits

File / Commit	Description	Time Ago
.github	fix(bandit): Correct GitHub workflow for Bandit	2 weeks ago
.projen	added cdk-nag dependency	yesterday
docs	fix architecture diragrams	2 weeks ago
lambda	fix issue where bytes and not str are passed to response in case of e...	last week
layers	chore(deps): bump langchain in /layers/langchain-common-deps	2 weeks ago
projencrc	fix(bandit): Correct GitHub workflow for Bandit	2 weeks ago
resources/gen-ai	added valition on qa schema for qainput	last week
src	Updated port to 8686 for testing.	yesterday
test/patterns/gen-ai	cdk nag fixes	last week
.eslintrc.json	feat: Feature/ingestion construct (#8)	last month
.gitattributes	feat(bandit): Add Bandit (#108)	2 weeks ago
.gitignore	feat(bandit): Add Bandit (#108)	2 weeks ago
.mergify.yml	feat(construct): enable pypi (#46)	last month

# AWS SDKs for Rust & Kotlin



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# AWS Step Functions

HTTP endpoint integration

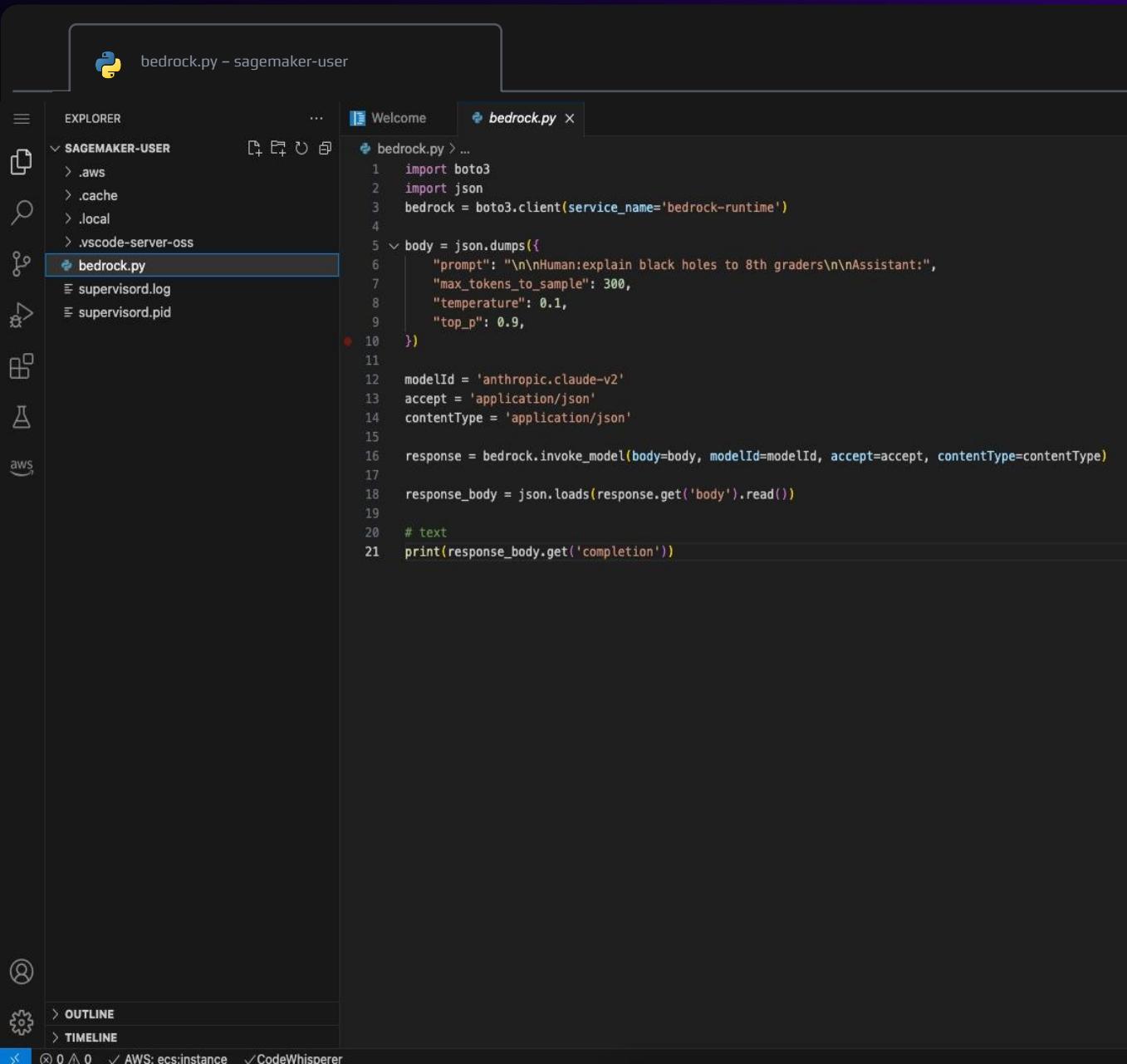
Native Amazon Bedrock integration

New Test States API

GENERALLY AVAILABLE

# Amazon SageMaker Studio Code Editor

A new IDE option based on Code-OSS



The screenshot shows the Amazon SageMaker Studio Code Editor interface. The top bar displays the title "bedrock.py – sagemaker-user". The left sidebar has sections for "EXPLORER", "SAGEMAKER-USER" (with items ".aws", ".cache", ".local", ".vscode-server-oss", "bedrock.py", "supervisord.log", and "supervisord.pid"), and "aws" (with icons for S3, Lambda, and CloudWatch). The main area is titled "bedrock.py" and contains Python code for interacting with the AWS Bedrock service. The bottom bar includes icons for Help, Settings, Outline, Timeline, and AWS status (AWS: ecs:instance, CodeWhisperer), along with a status bar showing "0 △ 0" and "CodeWhisperer".

```
1 import boto3
2 import json
3 bedrock = boto3.client(service_name='bedrock-runtime')
4
5 body = json.dumps({
6     "prompt": "\n\nHuman:explain black holes to 8th graders\n\nAssistant:",
7     "max_tokens_to_sample": 300,
8     "temperature": 0.1,
9     "top_p": 0.9,
10 })
11
12 modelId = 'anthropic.claude-v2'
13 accept = 'application/json'
14 contentType = 'application/json'
15
16 response = bedrock.invoke_model(body=body, modelId=modelId, accept=accept, contentType=contentType)
17
18 response_body = json.loads(response.get('body').read())
19
20 # text
21 print(response_body.get('completion'))
```

GENERALLY AVAILABLE

## **Amazon CloudWatch** Pattern Analysis and Anomaly Detection

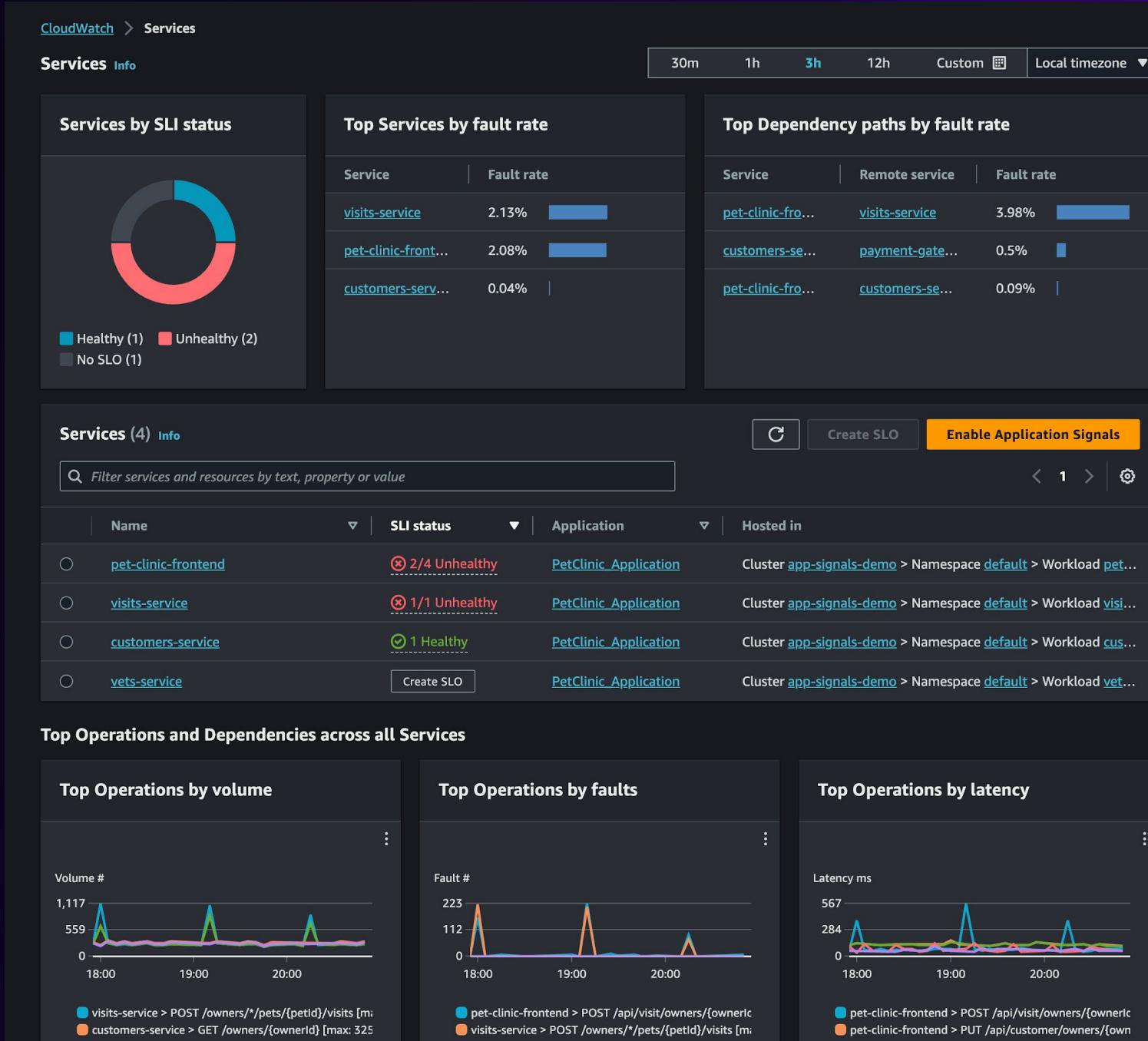
Patterns view visualizes recurring patterns while querying your logs

Compare mode helps you quickly find changes over time

Anomaly detection evaluates incoming logs against historical baselines

IN PREVIEW

# Amazon CloudWatch Application Signals



GENERALLY AVAILABLE

## AWS Secrets Manager batch-retrieval of secrets

**BatchGetSecretValue** identifies  
and retrieves secret groups with a  
single API call

Use with list of secret names or ARNs,  
along with filter criteria, such as tags

GENERALLY AVAILABLE

## **Amazon Inspector**

### Lambda code scanning with generative AI

Assess function code for security issues like injection risks, data leaks, and weak or missing encryption

Actionable security findings including affected code snippets and remediation suggestions

GENERALLY AVAILABLE

## Amazon Inspector container image security

Scans container images for security issues from within the CI/CD pipeline

Works with CI/CD tools hosted in AWS, on-premises, or hybrid clouds

IN PREVIEW

# Amazon Inspector

## agentless vulnerability assessments for EC2

Continuous EC2 instance monitoring without the need for an agent

Takes EBS volume snapshots to perform vulnerability analysis



ECS: GA / EC2: IN PREVIEW

# AWS Guard Duty

## ECS and EC2 runtime monitoring

GuardDuty > Runtime Monitoring

### Runtime Monitoring Info

Monitor runtime activity to detect threats to your compute workloads on Amazon ECS (including AWS Fargate), Amazon EKS, and Amazon EC2. To use this feature, you need to manage a GuardDuty security agent that will ingest runtime activity for your resource.

Configuration    Runtime coverage

#### Coverage statistics Info

Healthy EKS clusters	Healthy ECS clusters	Healthy EC2 instances
0/0 (100%)	1/1 (100.0%)	0/0 (100%)

EKS clusters runtime coverage    **ECS clusters runtime coverage**    EC2 instance runtime coverage

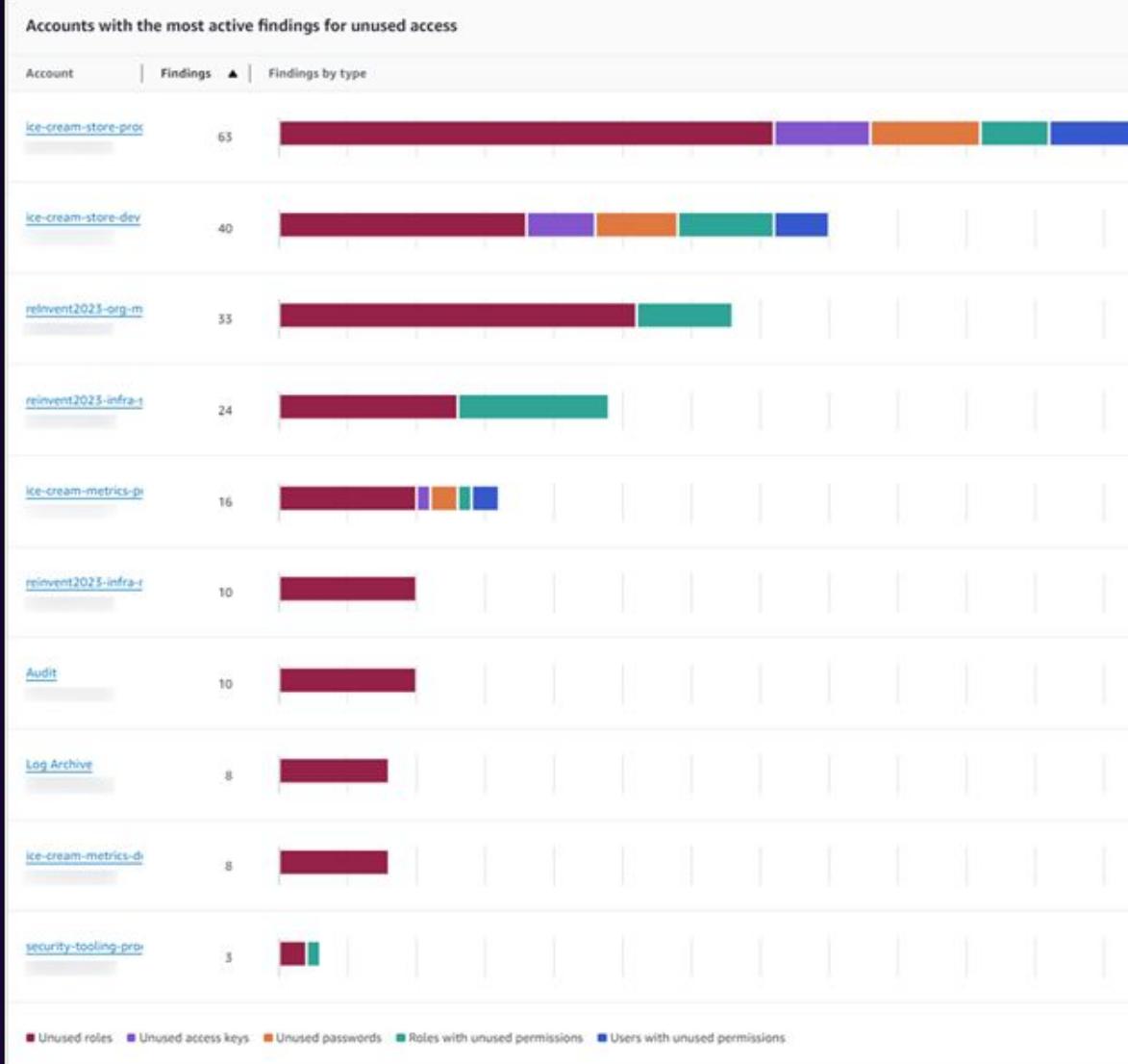
#### Clusters list (1)

Search

Cluster name	Account ID	Agent management type (Fargate)	Coverage status
SpaceTwin-Infra-SpaceTwinCluster3D77526A-5D6rTXjgdSb2	636183562745	Auto-managed	<span>✓ Healthy</span>

GENERALLY AVAILABLE

# IAM Access Analyzer simplified access inspection



[Reset layout](#)

## Billing and Cost Management home [Info](#)

### Cost summary [Info](#)

Month-to-date cost

**\$5.87**

↓ 2% compared to last month for same period

Last month's cost for same time period

**\$6.00**

Nov 1 – 5

Total forecasted cost for current month

**\$11.66**

↓ 2% compared to last month's total costs

Last month's total cost

**\$11.90**

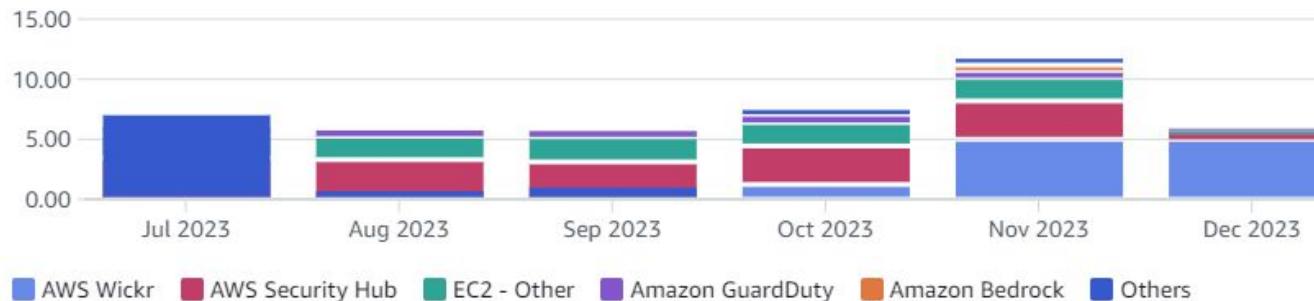
[View bill](#)

### Cost breakdown [Info](#)

Group costs by

Service ▾

Costs (\$)



[AWS Wickr](#) [AWS Security Hub](#) [EC2 - Other](#) [Amazon GuardDuty](#) [Amazon Bedrock](#) [Others](#)

Analyze your costs in Cost Explorer

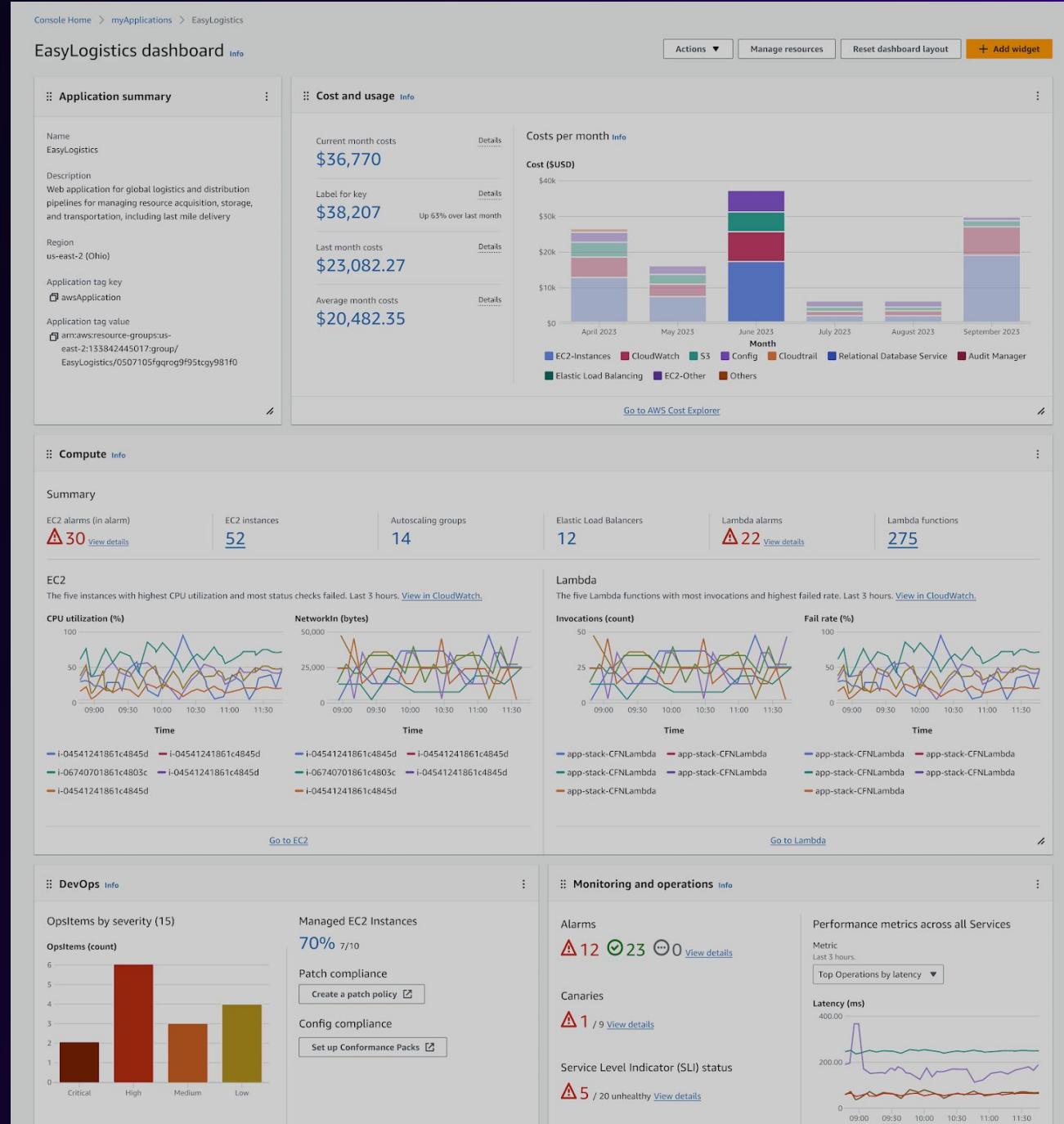


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# AWS Management Console myApplications

Monitor and manage the cost, health, security posture, and performance of your applications



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## AWS Free Tier usage API

Compare forecasted usage to the free tier for each service to avoid unintended charges

Programmatically track free tier usage against monthly usage limits

GENERALLY AVAILABLE

## Amazon CloudWatch Infrequent Access class

A new log class for cost-effective  
log consolidation

Best suited for logs that require  
infrequent querying, e.g. for  
forensic analysis

GENERALLY AVAILABLE

## **AWS Systems Manager Automation low-code Runbook design**

Drag and drop automation actions and AWS APIs and connect them as steps

Features a guided flow, best practice recommendations, and error highlighting

Integrates with Amazon CodeGuru Security for embedded Python scripts

# Amazon S3 Express One Zone

The fastest cloud object storage class for performance-critical applications

Millions of access requests per minute with single-digit millisecond latency

New bucket type, pinned to the Availability Zone of your choice

# Mountpoint for Amazon S3

Container Storage Interface (CSI)  
driver for Kubernetes now available

Added support for the new S3  
Express One Zone storage class



# Amazon EFS

New Archive storage class optimized for long-lived file data that is accessed a few times a year or less

Infrequent Access storage class price reduction by 36%

Now supports up to 250,000 read and up to 50,000 write IOPS per file system

# AWS Backup

Now supports automatic archival of EBS Snapshots into the EBS Snapshot Archive

Restore testing helps perform automated and periodic restore tests of backed up resources

IN PREVIEW

# Amazon Aurora Limitless Database

Managed horizontal scale-out beyond  
the limits of a single database instance



GENERALLY AVAILABLE

# Amazon ElastiCache Serverless

Serverless Amazon ElastiCache  
configuration for Redis and  
Memcached



GENERALLY AVAILABLE

# Amazon Q generative SQL in **Amazon Redshift**

Simplify query authoring by  
expressing queries in natural  
language



# Zero-ETL integrations with Amazon Redshift

**Amazon Aurora  
PostgreSQL**

**Amazon RDS  
for MySQL**

**Amazon  
DynamoDB**

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AVAILABLE IN PREVIEW

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# Zero-ETL integrations

**Amazon  
OpenSearch**  
with  
**Amazon S3**

**Amazon  
DynamoDB**  
with  
**Amazon OpenSearch**

**Amazon Athena**  
with  
**AWS CloudTrail**  
**DataLake**

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AVAILABLE IN PREVIEW

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ANNOUNCEMENT

# Project Kuiper

## Private connectivity to AWS





# PartyRock

Join the party!



# Thank you!



Please complete the session  
survey in the mobile app