



DevOps Guru for the Serverless applications



COMMUNITY DAY

NL

Vadym Kazulkin, ip.labs, AWS Community Day NL, October 3 2022



Contact



Vadym Kazulkin

ip.labs GmbH Bonn, Germany

Co-Organizer of the Java User Group Bonn



v.kazulkin@gmail.com



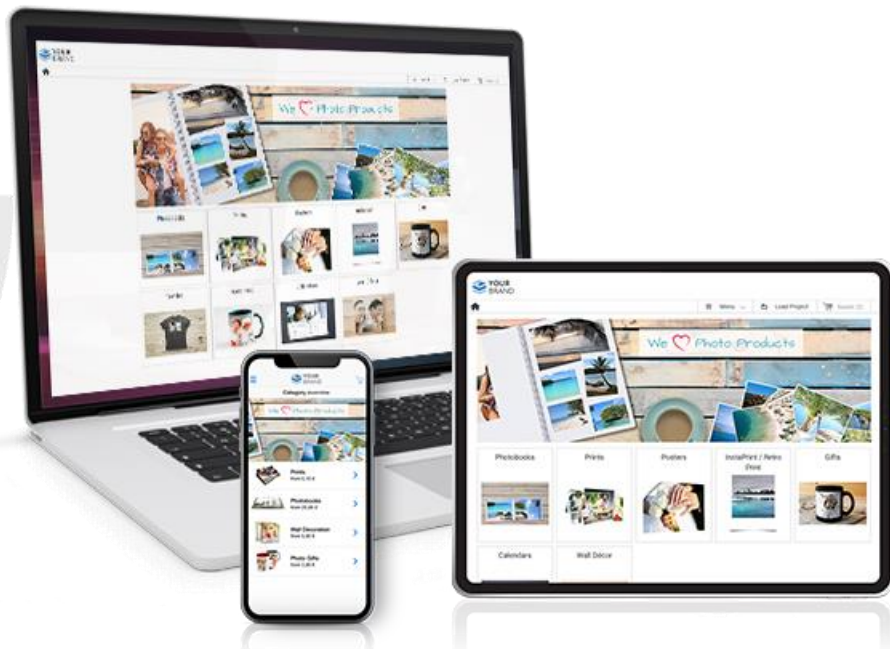
<https://www.linkedin.com/in/vadymkazulkin>



@VKazulkin



ip.labs





AWS DevOps Guru



What is AWS DevOps Guru

Amazon DevOps Guru is a service powered by machine learning (ML) that is designed to make it easy to improve an application's operational performance and availability

DevOps Guru helps detect behaviors that deviate from normal operating patterns so you can identify operational issues long before they impact your customers

- increased latency
- error rates (timeouts, throttles)
- resource constraints (exceeding AWS account limits)



Benefits of DevOps Guru



Automatically detect operational issues



Resolve issues quickly with ML-powered insights



Easily scale and maintain availability



Reduce noise and alarm fatigue



How DevOps Guru work



Select coverage

Select AWS CloudFormation stacks or AWS Account



Data sources

Automatically ingests operational data from Amazon CloudWatch, AWS Config, AWS CloudTrail, and AWS X-Ray



Amazon DevOps Guru

Continuously analyzes streams of disparate data and monitors relevant metrics to establish normal application patterns and behavior leveraging ML models informed by years of Amazon.com and AWS operational expertise



Metric analysis



Related events



Recommendations

Data enrichment

Uses ML to correlate anomalies in metrics with operational events to produce reactive or proactive contextual insights

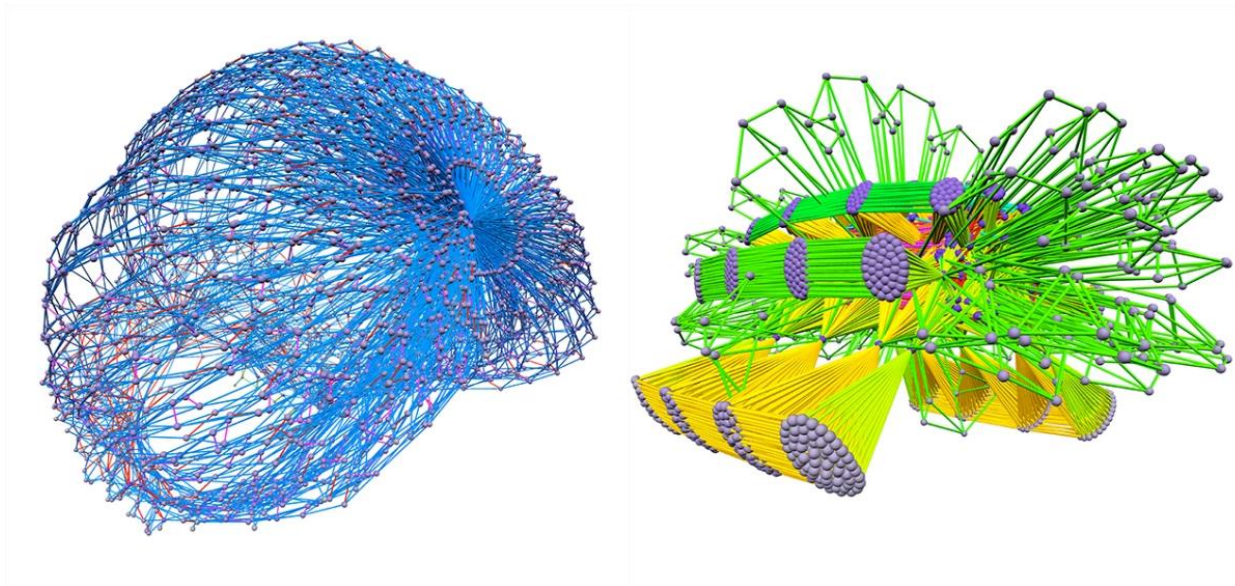


Integrations

Integrates with AWS Systems Manager OpsCenter, Amazon SNS, or third-party incident management services

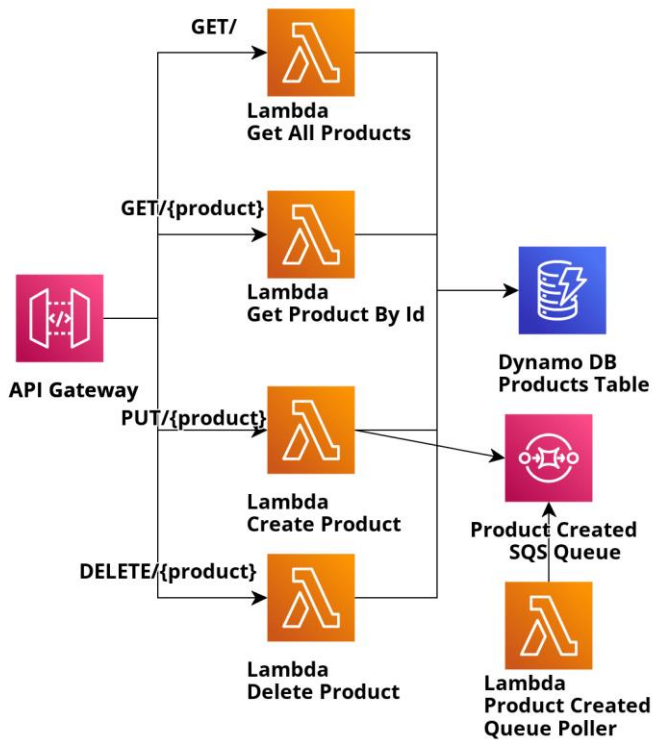


Automated reasoning's scientific frontiers





DevOps Guru Example Application





DevOps Guru Live Demo of Your Choice

DevOps Guru Live Demo of Your Choice at AWS Community Day NL

Asked by Vadym Kazulkin about a minute ago

Choose one or more options:

DynamoDB Throttling

Lambda Timeout and SQS Visibility Timeout

Lambda Throttling

API Gateway HTTP 404 Error (Not Found)

[Submit your vote](#)

[Jump to results >](#)

QR Code

Use this at a public event or conference to allow large groups of people to access the poll url easily. The QR code is unique to this poll.



[Poll Results Page](#)



DevOps Guru Set Up

[Amazon DevOps Guru](#) > [Settings](#) > [Analyzed resources](#) > Edit analyzed resources

Edit analyzed resources

Choose resources to analyze

Your application resources are grouped together based on related tags, CloudFormation stacks, or account boundaries. Choose which resources you want DevOps Guru to analyze.

Application resource grouping method



All account resources

Analyze all AWS resources in the current Region and account, grouped by CloudFormation stacks, if any exist. Resources that are not in a stack are grouped together into one application.



CloudFormation stacks

Use CloudFormation stacks to specify which resources DevOps Guru analyzes.



Tags

Use AWS tags to specify which resources DevOps Guru analyzes.



None

Don't analyze any resources.

CloudFormation stacks (1/13)

You can choose up to 1000 CloudFormation stacks.



1



Stack name



Description

Status



DevOpsGuruDemoProductsAPI

-



Enabled



DevOps Guru Dashboard

Dashboard

System health summary [Info](#)

This section displays the latest information about your system and applications. Insights are based on your overall system.

Impacted applications

1

Ongoing reactive insights

1

Ongoing proactive insights

4

Service health

Total number of active resources in the last hour.

Total resources analyzed

5

System health overview (1) [Info](#)

View the health of your currently monitored applications. You can also monitor the health of your system by choosing to view by service names. To see insights for your applications, go to the [Insights page](#).

View by Application ▼

Unhealthy applications ▼

< 1 >

DevOpsGuruDemoProductsAPI

Unhealthy

Ongoing reactive insights

1

Ongoing proactive insights

4

Application lifetime MTTR

40 Minutes



DevOps Guru Reactive Insights

Reactive

Proactive

Reactive insights (34) [Info](#)

A reactive insight lets you know about recommendations to improve the performance of your application now.

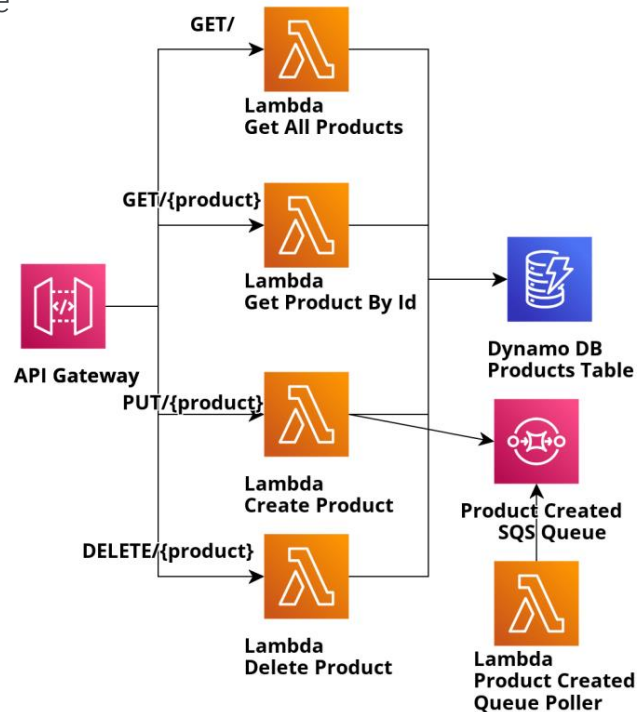
< 1 2 3 >

Name	Status	Severity	Created time	Affected applications
ApiGateway 5XXError Anomalous In Application DevOpsGuruDemoPr...	⚠ Ongoing	High	Sep 11, 2022 12:42 UT	1
ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoPr...	✅ Closed	Medium	Sep 10, 2022 11:26 UT	1
ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoPr...	✅ Closed	Medium	Sep 10, 2022 09:13 UT	1
Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI	✅ Closed	High	Sep 09, 2022 18:00 UT	1
DynamoDB ThrottledRequests Anomalous In Application DevOpsGuru...	✅ Closed	High	Sep 09, 2022 15:50 UT	1
Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI	✅ Closed	High	Sep 09, 2022 11:29 UT	1
Lambda Throttles Anomalous In Application DevOpsGuruDemoProduc...	✅ Closed	High	Sep 08, 2022 17:51 UT	1
DynamoDB ReadThrottleEvents Anomalous In Application DevOpsGur...	✅ Closed	High	Sep 08, 2022 11:25 UT	1
Lambda Duration Anomalous In Application DevOpsGuruDemoProduc...	✅ Closed	Medium	Sep 08, 2022 07:55 UT	1



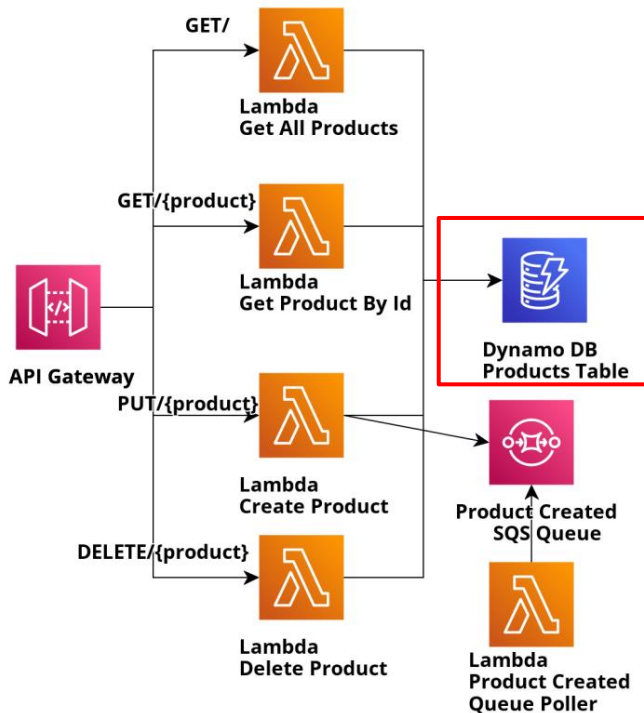
DevOps Guru Examples

- Warm up the application (takes between 1 and 24 hours) to create a base line
- Design test experiment to provoke errors and latency increase
 - Reduce the service quote of the AWS service (API Gateway, Lambda, DynamoDB)
 - Set very low service quotas for the sake of reducing AWS costs
 - Add latency artificially
- Stress test with **Hey** Tool to run into the operational issues
- See if the DevOps Guru recognized the operational issues
- Remediate the operational issues by increasing service quote, removing the artificial latency or stopping the stress test
- See whether DevOps Guru closes the incident when it's resolved





DevOps Guru: Recognize operational issues in DynamoDB





DevOps Guru Examples: DynamoDB Throttling

ProductsTable



Actions ▼

Overview

Indexes

Monitor

Global tables

Backups

Exports and streams

Additional actions

Read/write capacity

The read/write capacity mode controls how you are charged for read and write throughput and how you manage capacity.

Capacity mode

Provisioned

Table capacity

Read capacity auto scaling

Off

Provisioned read capacity units

1

Write capacity auto scaling

Off

Provisioned write capacity units

5



DevOps Guru Examples: DynamoDB Throttling stress test and empty burst credits

```
hey -q 20 -z 15m -c 20 -H "X-API-Key: XXXa6XXXX "
https://XXX.execute-api.eu-central
1.amazonaws.com/prod/products/1
```



DevOps Guru Examples: DynamoDB Throttling

Amazon DevOps Guru > Insights > DynamoDB ThrottledRequests Anomalous In Application DevOpsGuruDemoProductsAPI

DynamoDB ThrottledRequests Anomalous In Application DevOpsGuruDemoProductsAPI



Insight overview

[View recommendations](#)

Description

Starting on September 03, 2022 17:59 UTC anomalous behavior was detected on 3 metrics and 2 log groups. Review the Aggregated metrics and Log groups sections below to see the list of affected [metrics](#) and [log groups](#). DevOps Guru has provided you with 3 [recommendations](#) to investigate and resolve the issue.

Insight severity

High severity

Status

✓ Closed

Affected applications

1

Start time

September 03, 2022 18:01 UTC

End time

September 03, 2022 18:11 UTC

Last update time

September 03, 2022 18:11 UTC

Opsitem ID

[oi-43b8dd208a93](#)



DevOps Guru Examples: DynamoDB Throttling

Aggregated metrics

Graphed anomalies

Aggregated metrics (3) September 03, 18:01–September 03, 18:11 UTC [Info](#)

Group by No grouping ▼

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

< 1 > 🔍 🔄

Metrics [🔗](#)

Application | Service name | Resource names [🔗](#)

Errors Sum

DevOpsGuruDemoProductsAPi | AWS/Lambda | 4 resources

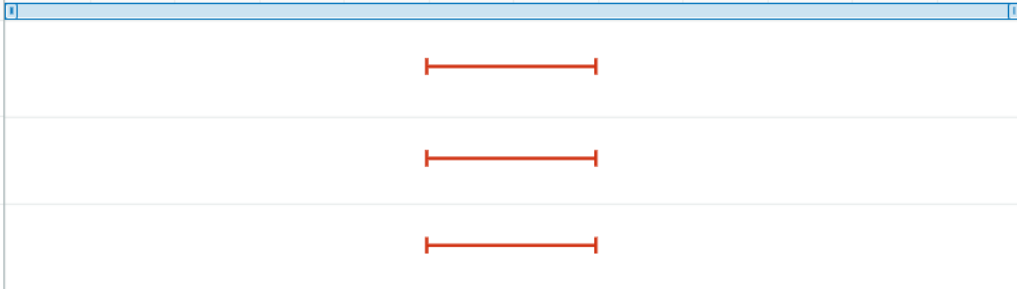
ReadThrottleEvents Sum

DevOpsGuruDemoProductsAPi | AWS/DynamoDB | [TableName:ProductsTable](#)

ThrottledRequests Sum

DevOpsGuruDemoProductsAPi | AWS/DynamoDB | [TableName:ProductsTable](#)

17:54 09/03	17:55 09/03	17:56 09/03	17:57 09/03	17:58 09/03	17:59 09/03	18:00 09/03	18:01 09/03	18:02 09/03	18:03 09/03	18:04 09/03	18:05 09/03
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DevOps Guru Examples: DynamoDB Throttling

Graphed anomalies (3) September 03, 18:01–September 03, 18:11 UTC [Info](#)

Amazon DevOps Guru captures and can display the occurrence of anomalies over time.

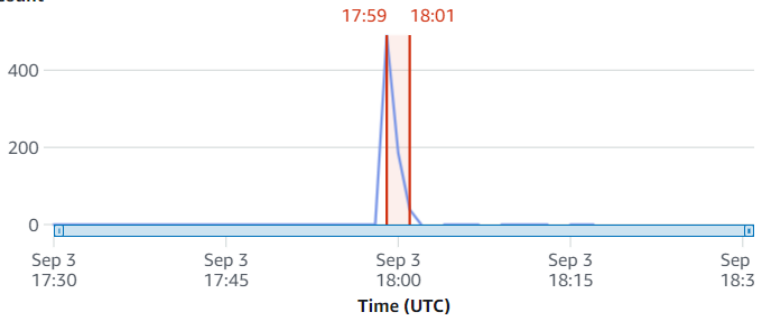
Find metric by metric name, application, service name

< 1 >

1H 3H 12H 1D 3D 1W 2W

AWS/Lambda:Errors

Count



— Errors ■ Anomaly

Service name

AWS/Lambda

Resource names

[FunctionName:GetProductById](#)

Application

DevOpsGuruDemoProductsAPI

Dimensions

FunctionName:GetProductById,

Resource:GetProductById

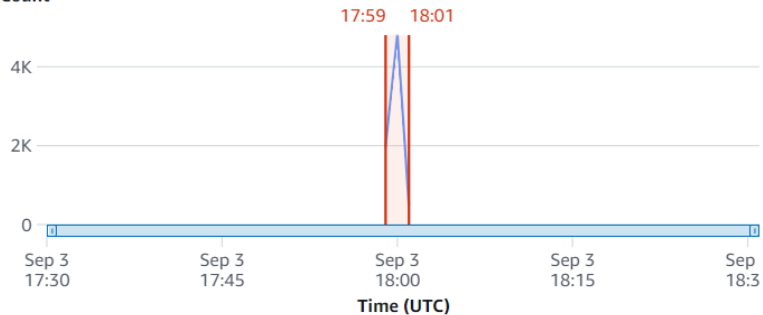
Statistics

Sum

1H 3H 12H 1D 3D 1W 2W

AWS/DynamoDB:ReadThrottleEvents

Count



— ReadThrottleEvents ■ Anomaly

Service name

AWS/DynamoDB

Resource names

[TableName:ProductsTable](#)

Application

DevOpsGuruDemoProductsAPI

Dimensions

TableName:ProductsTable

Statistics

Sum



DevOps Guru Examples: DynamoDB Throttling

Log groups (2) September 03, 18:01–September 03, 18:11 UTC [Info - new](#)

A log group lets you know critical diagnostic information about how your resources are performing and being accessed. Log groups are displayed in order of severity. Each log group can contain one or more log anomalies.

🔍 *Filter log groups by name*

< 1 > 🔍 +

Log group name

17:52 09/03	17:53 09/03	17:54 09/03	17:55 09/03	17:56 09/03	17:57 09/03	17:58 09/03	17:59 09/03	18:00 09/03	18:01 09/03	18:02 09/03	18:03 09/03
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[/aws/lambda/GetProductById](#)



[/aws/lambda/GetProducts](#)



Relevant events (32) August 31, 17:44–September 03, 18:26 UTC [Info](#)

DevOps Guru evaluated the aggregated metrics with the following events in your AWS account to generate insights. Use the aggregated metrics, events, and details in the insights to address issues that can improve your solution.

🔍 *Find events by name, application, service name*

Timeline

Table

08/31 16:00	08/31 22:00	09/01 04:00	09/01 10:00	09/01 16:00	09/01 22:00	09/02 04:00	09/02 10:00	09/02 16:00	09/02 22:00	09/03 04:00	09/03 10:00 Insight start	09/03 16:00 Insight end	09/03 22:00
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Infrastructure



Deployment





DevOps Guru Examples: DynamoDB Throttling

Recommendations (3) [Info](#)

View updates we recommend you implement to address the anomalies in this insight.

[Rollback the Amazon Dynamo DB table update](#)

An update to your DynamoDB table was detected and it is now experiencing read throttling events. Review the recent update to help you determine if you need to rollback the changes.

Why is DevOps Guru recommending this?

The UpdateTable event was detected for AWS::DynamoDB::Table. The ThrottledRequests metric in AWS::DynamoDB::TableName breached a high threshold.

Related metrics (2)

ReadThrottleEvents

AWS::DynamoDB::TableName ProductsTable

ThrottledRequests

AWS::DynamoDB::TableName ProductsTable

Related event (1)

UpdateTable

AWS::DynamoDB::Table arn:aws:dynamodb:eu-central-1:265634257610:table/ProductsTable

[Troubleshoot throttling in Amazon DynamoDB](#)

Read operations, write operations, or both on your DynamoDB table are being throttled. To learn how to fix throttle events, see [Troubleshoot throttling in Amazon DynamoDB](#).

Why is DevOps Guru recommending this?

The ThrottledRequests metric in DynamoDB breached a high threshold.

Related metrics (2)

ReadThrottleEvents

DynamoDB ProductsTable

ThrottledRequests

DynamoDB ProductsTable

[Troubleshoot errors and set up automatic retries in AWS Lambda](#)

Your Lambda function is throwing a high number of errors. To learn about common Lambda errors, their causes, and mitigation strategies, see [Troubleshoot errors and set up automatic retries in AWS Lambda](#).

Why is DevOps Guru recommending this?

The Errors metric in Lambda breached a high threshold.

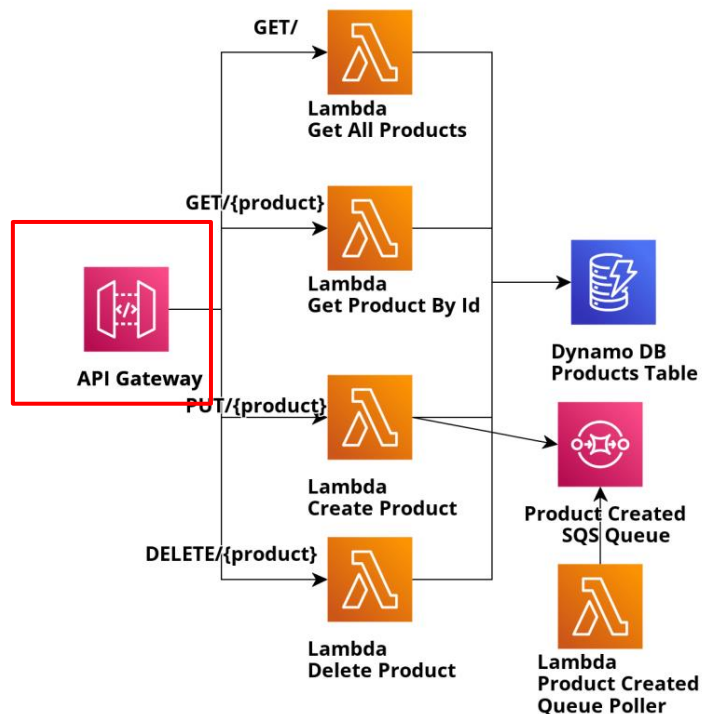
Related metric (1)

Errors

Lambda GetProductById



DevOps Guru: Recognize operational issues in API Gateway





DevOps Guru Examples: API Gateway HTTP 429 „too many requests“ Error

Usage Plans [Create](#) DevOpsGuruDemoProductsAPIUsagePlan [Action:](#)

[CurrencyExchangeUsagePlan](#)
[DevOpsGuruDemoProductsAPIUsagePlan](#)

Details **API Keys** **Marketplace**

ID 7ix1fi

Name DevOpsGuruDemoProductsAPIUsagePlan

Description Usage plan for DevOpsGuruDemoProductsAPI

Rate 1,000 requests per second ⓘ

Burst 5,000 requests ⓘ

Quota 500 requests per day ⓘ

Associated API Stages

[Add API Stage](#)

API	Stage	Method Throttling	
DevOpsGuruDemoProductsAPI	prod	No Methods Configured	Configure Method Throttling



DevOps Guru Examples: API Gateway HTTP 404 „Not Found“ Error

Query for not existing product id ,e.g. 200

```
hey -q 1 -z 15m -c 1 -H "X-API-Key: XXXa6XXXX"  
https://XXX.execute-api.eu-central-  
1.amazonaws.com/prod/products/200
```



DevOps Guru Examples: API Gateway 4XX Error

Amazon DevOps Guru > Insights > ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoProductsAPI

ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoProductsAPI

Insight overview

Description

On September 10, 2022 11:17 UTC anomalous behavior was detected on the 4XXError metric issue.

Insight severity

Medium severity

Status

Closed

Affected applications

1

Start time

September 10, 2022 11:26 UTC

End time

September 10, 2022 12:09 UTC

1H 3H 12H 1D 3D 1W 2W

AWS/ApiGateway:4XXError

Percent



— 4XXError — Anomaly

Service name

AWS/ApiGateway

Resource names

ApiName:DevOpsGuruDemoProducts

API, Stage:prod

Application

DevOpsGuruDemoProductsAPI

Dimensions

ApiName:DevOpsGuruDemoProducts

API, Stage:prod

Statistics

Average

Aggregated metrics

Graphed anomalies

Aggregated metrics (1) September 10, 11:26–September 10, 12:09 UTC [Info](#)

Group by No grouping

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

Metrics

Application Service name Resource names

4XXError Average

DevOpsGuruDemoProductsAPI AWS/ApiGateway 2 resources

11:15	11:20	11:25	11:30	11:35	11:40
09/10	09/10	09/10	09/10	09/10	09/10

Recommendations (2) [Info](#)

View updates we recommend you implement to address the anomalies in this insight.

Troubleshoot errors in Amazon API Gateway

A recent update to your API Gateway is causing errors. Review the update to help you determine if you need to rollback the changes. To learn about common API Gateway errors and how to handle them, see [Troubleshoot errors in Amazon API Gateway](#).

Why is DevOps Guru recommending this?

The UpdateStage event was detected for AWS:ApiGateway:Stage. The 4XXError metric in AWS:ApiGateway:ApiName breached a high threshold.

Related metric (1)

4XXError

AWS:ApiGateway:ApiName DevOpsGuruDemoProductsAPIprod

Related event (1)

UpdateStage

AWS:ApiGateway:Stage prod

Troubleshoot 4XX errors in Amazon API Gateway

Your API Gateway is throwing a high number of 4XX errors. To learn about common API Gateway errors, refer to [Gateway response types](#). To troubleshoot common 403 Errors, see [Troubleshooting 403 Errors From API Gateway](#). For more help on API Gateway Troubleshooting, please refer to [AWS Knowledge Center - Amazon API Gateway](#).

Why is DevOps Guru recommending this?

The 4XXError metric in ApiGateway breached a high threshold.

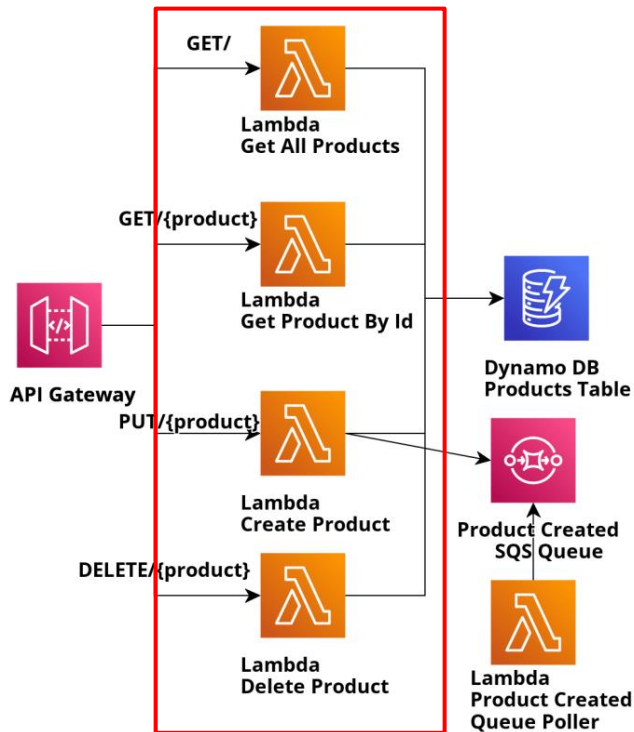
Related metric (1)

4XXError

ApiGateway DevOpsGuruDemoProductsAPIprod



DevOps Guru: Recognize operational issues in Lambda





DevOps Guru Examples: Lambda Throttling 1

GetProductById

Throttle

Copy ARN

Actions ▾

► Function overview [Info](#)

Code

Test

Monitor

Configuration

Aliases

Versions

General configuration

Triggers

Permissions

Destinations

Concurrency

Edit

Function concurrency
Use reserved concurrency

Reserved concurrency
1

```
hey -q 5 -z 15m -c 5 -H "X-API-Key: XXXa6XXXX" https://XXX.execute-api.eu-central-1.amazonaws.com/prod/products/2
```



DevOps Guru Examples: Lambda Throttling 1

Amazon DevOps Guru > Insights > Lambda Throttles Anomalous In Application DevOpsGuruDemoProductsAPI

Lambda Throttles Anomalous In Application DevOpsGuruDemoProductsAPI

Insight overview

Description
Starting on September 08, 2022 17:50 UTC anomalous behavior was detected on 2 metrics. Review the Aggregated metrics below to see the list of affect DevOps Guru has provided you with 3 recommendations to investigate and resolve the issue.

Insight severity

High severity

Status

Closed

Affected applications

1

Start time
September 08, 2022 17:51 UTC

End time
September 08, 2022 18:05 UTC

Last update time
September 08, 2022 18:05 UTC

Opsitem ID
oi-a01d70e65c87

View r

Aggregated metrics

Graphed anomalies

Aggregated metrics (2) September 08, 17:51–September 08, 18:05 UTC Info

Group by No grouping

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

Find metric by metric name, application, service name

Metrics

Application Service name Resource names

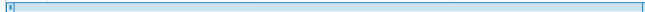
5XXError Average

DevOpsGuruDemoProductsAPI AWS/ApiGateway 2 resources

Throttles Sum

DevOpsGuruDemoProductsAPI AWS/Lambda FunctionName:GetProductById

17:45 17:50 17:55
09/08 09/08 09/08



Graphed anomalies (2) September 08, 17:51–September 08, 18:05 UTC Info

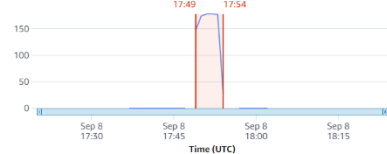
Amazon DevOps Guru captures and can display the occurrence of anomalies over time.

Find metric by metric name, application, service name

1H 3H 12H 1D 3D 1W 2W

AWS/Lambda:Throttles

Count



Throttles Anomaly

Service name
AWS/Lambda
Resource names
FunctionName:GetProductById
Application
DevOpsGuruDemoProductsAPI

Dimensions
FunctionName:GetProductById,
Resource:GetProductById
Statistics
Sum

1H 3H 12H 1D 3D 1W 2W

AWS/ApiGateway:5XXError

Percent



5XXError Anomaly

Service name
AWS/ApiGateway
Resource names
ApiName:DevOpsGuruDemoProductsAPI,
Stage:prod
Application
DevOpsGuruDemoProductsAPI

Dimensions
ApiName:DevOpsGuruDemoProductsAPI,
Stage:prod
Statistics
Average

Recommendations (3) Info

View updates we recommend you implement to address the anomalies in this insight.

Rollback IAM policy changes

Amazon DevOps Guru has detected a change to an IAM role policy that triggered this insight. Please review the recent policy changes to help you determine if you need to rollback the changes.

Why is DevOps Guru recommending this?

The PutRolePolicy event was detected for AWS:IAM:Role. The 5XXError metric in AWS:ApiGateway:ApiName breached a high threshold.

Related metric (1)

5XXError

AWS:ApiGateway:ApiName DevOpsGuruDemoProductsAPIprod

Related event (1)

PutRolePolicy

Show more resources

AWS:IAM:Role DevOpsGuruDemoProductsAPI-ProdProductFunctionRole-1814C26D2Q24D

Troubleshoot 5XX errors in Amazon API Gateway

Your API Gateway is throwing a high number of 5XX errors. To learn about common API Gateway errors, refer to Gateway response types. To troubleshoot 5XX errors, see Find 5XX Errors in API Gateway. For more help on API Gateway Troubleshooting, please refer to AWS Knowledge Center - Amazon API Gateway.

Why is DevOps Guru recommending this?

The PutRolePolicy event was detected for AWS:IAM:Role. The 5XXError metric in AWS:ApiGateway:ApiName breached a high threshold.

Related metric (1)

5XXError

Show more resources

ApiGateway DevOpsGuruDemoProductsAPIprod

Related event (1)

PutRolePolicy

Show more resources

AWS:IAM:Role DevOpsGuruDemoProductsAPI-ProdProductFunctionRole-1814C26D2Q24D

Troubleshoot throttling in AWS Lambda

Your Lambda function is being throttled. To troubleshoot the cause, see Troubleshoot throttling in AWS Lambda.

Why is DevOps Guru recommending this?

The 5XXError metric in AWS:ApiGateway:ApiName breached a high threshold. The Throttles metric in AWS:Lambda:FunctionName breached a high threshold.

Related metrics (2)

Throttles

Show more resources

Lambda:GetProductById

5XXError

AWS:ApiGateway:ApiName DevOpsGuruDemoProductsAPIprod



DevOps Guru Examples: Lambda Throttling 2

GetProductById [Throttle] [Copy ARN] [Actions]

This function belongs to an application. [Click here to manage it.](#)

Function overview info

Code Test Monitor Configuration Aliases Versions

General configuration Triggers Permissions

Concurrency [Edit]

Function concurrency 985

Use unreserved account concurrency 985

Service Quotas > AWS services > AWS Lambda

AWS Lambda

Service quotas [Request quota increase]

Find quotas

Quota name	Applied quota value	AWS default quota value	Adjustable
Asynchronous payload	Not available	256 kilobyte	No
Burst concurrency	Not available	1,000	No
Concurrent executions	1,000	1,000	Yes
Deployment package size (console editor)	Not available	3 Megabyte	No
Deployment package size (direct upload)	Not available	50 Megabyte	No
Deployment package size (unzipped)	Not available	250 Megabyte	No

```
hey -q 1 -z 15m -c 5000 -H "X-API-Key: XXXa6XXXX" https://XXX.execute-api.eu-central-1.amazonaws.com/prod/products/2
```

or reach Lambda concurrency execution account limit (without reaching function concurrency limit)

```
hey -q 1 -z 15m -c 950 https://AAA.execute-api.eu-central-1.amazonaws.com/prod/func1 ... until
```

```
hey -q 1 -z 15m -c 950 https://BBB.execute-api.eu-central-1.amazonaws.com/prod/func10
```

```
hey -q 1 -z 15m -c 950 -H "X-API-Key: XXXa6XXXX" https://XXX.execute-api.eu-central-
```

```
1.amazonaws.com/prod/products/2
```



DevOps Guru Examples: Lambda Throttling 2

Amazon DevOps Guru > Insights > Lambda Throttles Anomalous In Application DevOpsGuruDemoProductsAPI

Lambda Throttles Anomalous In Application DevOpsGuruDemoProductsAPI



Aggregated metrics

Graphed anomalies

Aggregated metrics (4) September 18, 09:39–September 18, 09:59 UTC Info

Group by No grouping

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

Find metric by metric name, application, service name

1

Insight overview

View recommendation

Description
Starting on September 18, 2022 09:38 UTC anomalous behavior was detected on 4 metrics. Review the Aggregated metrics below to see the list of affected metrics. DevOps Guru has provided you with 2 recommendations to investigate and resolve the issue.

Insight severity

High severity

Status

Closed

Affected applications

1

Start time

September 18, 2022 09:39 UTC

End time

September 18, 2022 09:59 UTC

Last update time

September 18, 2022 09:59 UTC

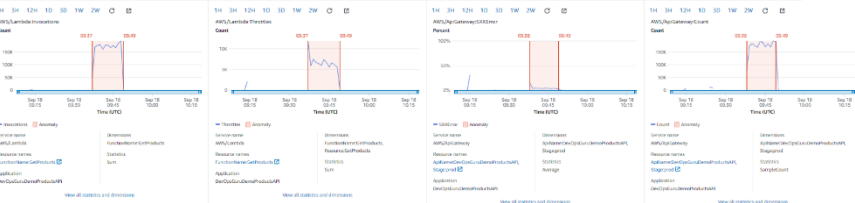
OpsItem ID

oi-8503fce2f948

Aggregated metrics

Graphed anomalies

Find metric by metric name, application, service name



Metrics

Application Service name Resource names

5XXError Average

DevOpsGuruDemoProductsAPI AWS::ApiGateway 2 resources

Count SampleCount

DevOpsGuruDemoProductsAPI AWS::ApiGateway 2 resources

Invocations Sum

DevOpsGuruDemoProductsAPI AWS::Lambda FunctionName:GetProducts

Throttles Sum

DevOpsGuruDemoProductsAPI AWS::Lambda FunctionName:GetProducts

Recommendations (2) Info

Your updates we recommend you implement to address the anomalies in this insight.

Troubleshoot throttling in AWS Lambda

Your Lambda function is being throttled. To troubleshoot the cause, see [Troubleshoot throttling in AWS Lambda](#).

Why is DevOps Guru recommending this?

The Throttles metric in AWS::Lambda:FunctionName breached a high threshold. The 5XXError metric in AWS::ApiGateway:ApiName breached a high threshold.

Related metrics (2)

Throttles

Show more resources

Lambda GetProducts

5XXError

AWS::ApiGateway:ApiName DevOpsGuruDemoProductsAPIprod

Troubleshoot 5XX errors in Amazon API Gateway

Your API Gateway is throwing a high number of 5XX errors. To learn about common API Gateway errors, refer to [Gateway response types](#). To troubleshoot 5XX Errors, see [Find 5XX Errors in API Gateway](#). For more help on API Gateway Troubleshooting, please refer to [AWS Knowledge Center - Amazon API Gateway](#).

Why is DevOps Guru recommending this?

The 5XXError metric in ApiGateway breached a high threshold.

Related metric (1)

5XXError

ApiGateway DevOpsGuruDemoProductsAPIprod



DevOps Guru Examples: Lambda Timeout Error

GetProductById

Throttle

Copy ARN

Actions ▾

► Function overview [Info](#)

Code | Test | Monitor | **Configuration** | Aliases | Versions

General configuration

Triggers

Permissions

Destinations

Function URL

General configuration [Info](#)

Edit

Description

-

Memory

128 MB

Ephemeral storage

512 MB

Timeout

0 min 30 sec

Add **31 sec** latency in the code of the Lambda function



DevOps Guru Examples: Lambda Timeout Error

GetProductById

Throttle

Copy ARN

Actions

Function overview [Info](#)

Code | Test | Monitor | **Configuration** | Aliases | Versions

General configuration

Triggers

Permissions

Destinations

Function URL

General configuration [Info](#)

Edit

Description

-

Memory

128 MB

Ephemeral storage

512 MB

Timeout

0 min 30 sec

Java runtime requires 256 MB
memory to start and execute
this function



DevOps Guru Examples: Lambda Timeout Error

Amazon DevOps Guru > Insights > Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI

Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI

Insight overview

Description
Starting on September 09, 2022 11:28 UTC anomalous behavior was detected on 5 metrics. Review the Aggregated metrics below to see the list of affected metrics. DevOps Guru has provided with 5 recommendations to investigate and resolve the issue.

Insight severity
High severity

Status
Closed

Affected applications
1

Start time
September 09, 2022 11:29 UTC

End time
September 09, 2022 11:51 UTC

Last update time
September 09, 2022 11:51 UTC

OpsItem ID
oi-6d83bb2a3b8e

[View recommendations](#)

Aggregated metrics | Graphed anomalies

Aggregated metrics (5) September 09, 11:29–September 09, 11:51 UTC Info

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

Find metric by metric name, application, service name

Application	Service name	Resource names
SXXError Average		
DevOpsGuruDemoProductsAPI	AWS/ApiGateway	2 resources
Duration p50		
DevOpsGuruDemoProductsAPI	AWS/Lambda	FunctionName:GetProductById
Errors Sum		
DevOpsGuruDemoProductsAPI	AWS/Lambda	FunctionName:GetProductById
IntegrationLatency p50		
DevOpsGuruDemoProductsAPI	AWS/ApiGateway	2 resources
Latency p50		
DevOpsGuruDemoProductsAPI	AWS/ApiGateway	2 resources



Graphed anomalies (5) September 09, 11:28–September 09, 11:51 UTC Info

Amazon DevOps Guru captures and can display the occurrence of anomalies over time.

Find metrics by metric name, application, service name



Errors Anomaly

Service name: AWS/Lambda

Resource names: FunctionName:GetProductById

Application: DevOpsGuruDemoProductsAPI

Dimensions: FunctionName:GetProductById, ResourceName:GetProductById

Statistics: Sum

[View all statistics and dimensions](#)



Duration Anomaly

Service name: AWS/Lambda

Resource names: FunctionName:GetProductById

Application: DevOpsGuruDemoProductsAPI

Dimensions: FunctionName:GetProductById, ResourceName:GetProductById

Statistics: p50

[View all statistics and dimensions](#)



SXXError Anomaly

Service name: AWS/ApiGateway

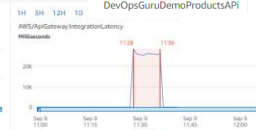
Resource names: Application:DevOpsGuruDemoProductsAPI, StageName:Prod

Application: DevOpsGuruDemoProductsAPI

Dimensions: Application:DevOpsGuruDemoProductsAPI, StageName:Prod

Statistics: Average

[View all statistics and dimensions](#)



IntegrationLatency Anomaly

Service name: AWS/ApiGateway

Resource names: Application:DevOpsGuruDemoProductsAPI, StageName:Prod

Application: DevOpsGuruDemoProductsAPI

Dimensions: Application:DevOpsGuruDemoProductsAPI, StageName:Prod

Statistics: p50

[View all statistics and dimensions](#)



Latency Anomaly

Service name: AWS/ApiGateway

Resource names: Application:DevOpsGuruDemoProductsAPI

Application: DevOpsGuruDemoProductsAPI

Dimensions: Application:DevOpsGuruDemoProductsAPI

Statistics: p50

[View all statistics and dimensions](#)



DevOps Guru Examples: Lambda Increased Latency

GetProductById

Throttle

Copy ARN

Actions ▾

► Function overview [Info](#)

Code

Test

Monitor

Configuration

Aliases

Versions

General configuration

Triggers

Permissions

Destinations

Function URL

General configuration [Info](#)

Edit

Description

-

Memory

1024 MB

Ephemeral storage

512 MB

Timeout

0 min 30 sec

Temporary add **28 sec**
latency in the code of
the Lambda function



DevOps Guru Examples: Lambda Increased Latency

Amazon DevOps Guru > Insights > Lambda Duration Anomalous In Application DevOpsGuruDemoProductsAPI

Lambda Duration Anomalous In Application DevOpsGuruDemoProductsAPI

Insight overview

Description

On September 05, 2022 16:38 UTC anomalous behavior was detected on the [Duration](#) metric. DevOps Guru has provided you with 1 record issue.

Insight severity

Medium severity

Status

Closed

Affected applications

1

Start time

September 05, 2022 16:42 UTC

End time

September 05, 2022 17:11 UTC

Last update time

September 05, 2022 17:11 UTC

OpsItem ID

oi-245095778f8d [View](#)

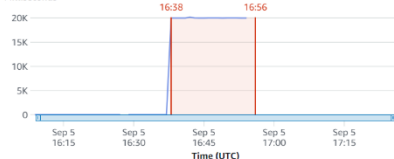
Graphed anomalies (1) September 05, 16:42-September 05, 17:11 UTC [Info](#)

Amazon DevOps Guru captures and can display the occurrence of anomalies over time.

1H 3H 12H 1D 3D 1W 2W [Refresh](#) [Share](#)

AWS/Lambda Duration

Milliseconds



— Duration ■ Anomaly

Service name

AWS/Lambda

Resource names

[FunctionName:GetProductById](#)

Application

DevOpsGuruDemoProductsAPI

Dimensions

[FunctionName:GetProductById](#),

[Resource:GetProductById](#)

Statistics

p50

Aggregated metrics

Graphed anomalies

Aggregated metrics (1) September 05, 16:42-September 05, 17:11 UTC [Info](#)

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

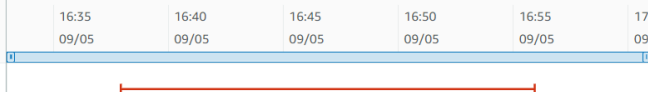
Group by No grouping

Metrics [View](#)

Application Service name Resource names [View](#)

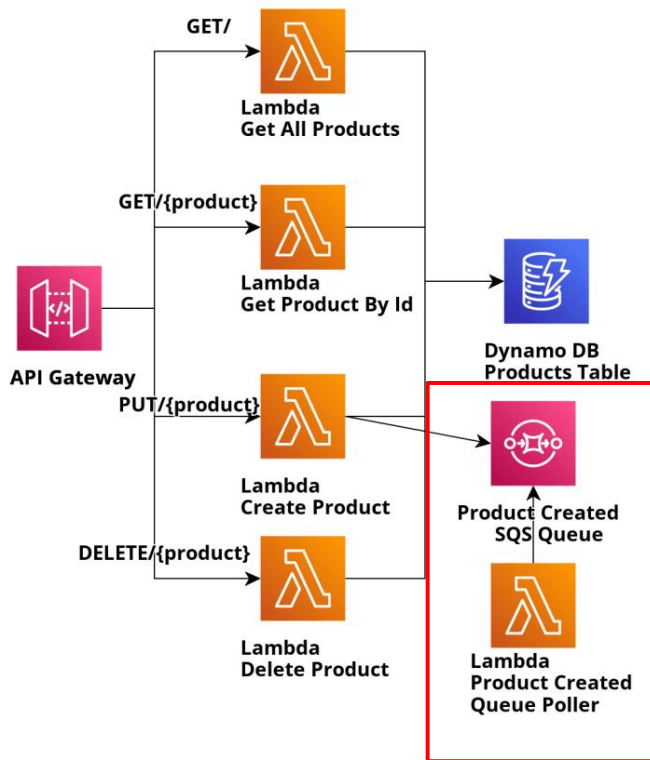
Duration p50

DevOpsGuruDemoProductsAPI | AWS/Lambda | [FunctionName:GetProductById](#)





DevOps Guru: Recognize operational issues in SQS





DevOps Guru Examples: Operational Issues in SQS

CreatedProduct Amazon SQS > Queues > new-product-created

new-product-created Edit Delete Purge Send and receive messages Start DLQ redrive

Function overview [Info](#)

Code | Test | Monitor | **Configuration** | Aliases | Versions

General configuration [Info](#)

Triggers

Permissions

Destinations

Function URL

Description

Memory 1024 MB

Timeout 0 min 25 sec

Temporary add 26 sec latency in the code of the Lambda function

Details [Info](#)

Name `new-product-created`

Type Standard

ARN `arn:aws:sqs:eu-central-1:265634257610:new-product-created`

Encryption Amazon SQS key (SSE-SQS)

URL `https://sqs.eu-central-1.amazonaws.com/265634257610/new-product-created`

Dead-letter queue -

Created 7.9.2022, 22:42:37 MESZ

Maximum message size 256 KB

Last updated 7.9.2022, 22:42:37 MESZ

Message retention period 4 Days

Default visibility timeout 30 Seconds

Messages available 0

Queues (1) Refresh Edit Delete Send and receive messages Actions Create queue

Search queues by prefix

Name	Type	Created	Messages available	Messages in flight	Encryption	Content-based deduplication
new-product-created	Standard	7.9.2022, 22:42:37 MESZ	0	1	Amazon SQS key (SSE-SQS)	-



DevOps Guru Examples: Operational Issues in SQS

Amazon DevOps Guru > Insights > Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI

Lambda Errors Anomalous In Application DevOpsGuruDemoProductsAPI

Insight overview

Description
Starting on September 09, 2022 17:58 UTC anomalous behavior was detected on 3 metrics. Review the Aggregated metrics below to see the DevOps Guru has provided you with 1 recommendation to investigate and resolve the issue.

Insight severity

High severity

Status

Closed

Affected applications

1

Start time
September 09, 2022 18:00 UTC

End time
September 09, 2022 18:22 UTC

Last update time
September 09, 2022 18:22 UTC

OpsItem ID
oi-b4fdc0750697

Aggregated metrics | Graphed anomalies

Aggregated metrics (3) September 09, 18:00–September 09, 18:22 UTC Info

Metrics in your AWS account are analyzed to find anomalies in an insight. The timeline shows the start time of the anomaly to current time.

Find metric by metric name, application, service name

Metrics

Application Service name Resource names

ApproximateNumberOfMessagesNotVisible Sum

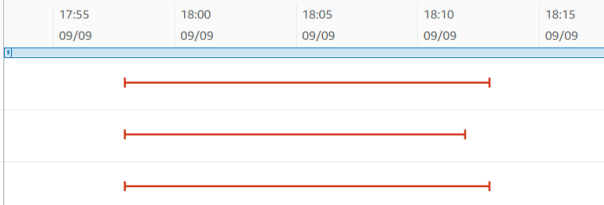
DevOpsGuruDemoProductsAPI AWS/SQS QueueName:new-product-created

Errors Sum

DevOpsGuruDemoProductsAPI AWS/Lambda FunctionName:CreatedProduct

NumberOfMessagesReceived Sum

DevOpsGuruDemoProductsAPI AWS/SQS QueueName:new-product-created



Graphed anomalies (3) September 09, 18:00–September 09, 18:22 UTC Info

Amazon DevOps Guru captures and can display the occurrence of anomalies over time.

Find metric by metric name, application, service name



Service name
AWS/Lambda

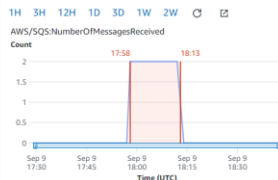
Resource names
FunctionName:CreatedProduct

Application
DevOpsGuruDemoProductsAPI

Dimensions
FunctionName:CreatedProduct, Resource:CreatedProduct

Statistics
Sum

View all statistics and dimensions



Service name
AWS/SQS

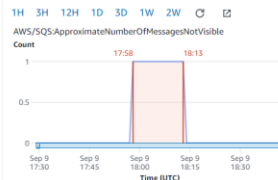
Resource names
QueueName:new-product-created

Application
DevOpsGuruDemoProductsAPI

Dimensions
QueueName:new-product-created

Statistics
Sum

View all statistics and dimensions



Service name
AWS/SQS

Resource names
QueueName:new-product-created

Application
DevOpsGuruDemoProductsAPI

Dimensions
QueueName:new-product-created

Statistics
Sum

View all statistics and dimensions



DevOps Guru Proactive Insights

Amazon DevOps Guru > Insights

Insights

Reactive

Proactive

Proactive insights (6) [Info](#)

A proactive insight lets you know about issues that are predicted to affect your application in the future.

< 1 > ⚙️

Name	Status	Severity	Created time	Affected applications	Affected
Lambda function has concurrency spillover in DevOpsGuruDemoProductsAPI	⚠️ Ongoing	Low	Sep 09, 2022 16:00	1	1
Dynamo Table Point In Time Recovery not enabled in DevOpsGuruDemoProductsAPI	⌚ Expired	Low	Sep 04, 2022 12:00	1	1
DynamoDB table writes are under utilized in DevOpsGuruDemoProductsAPI	⚠️ Ongoing	Low	Sep 03, 2022 20:00	1	1
Lambda timeout exceeds recommended SQS visibility timeout in DevOpsGuruDemoProductsAPI	⚠️ Ongoing	Low	Aug 31, 2022 20:00	1	1
DynamoDB table reads are under utilized in DevOpsGuruDemoProductsAPI	⚠️ Ongoing	Low	Aug 29, 2022 07:00	1	1
Dynamo Table Point In Time Recovery not enabled in DevOpsGuruDemoProductsAPI	⌚ Expired	Low	Aug 27, 2022 19:00	1	1



DevOps Guru Proactive Examples: Lambda timeout exceeds recommended SQS visibility

Lambda timeout exceeds recommended SQS visibility timeout in DevOpsGuruDemoProductsAPi



Insight overview

[View recommendations](#)

Starting on August 31, 2022 20:00 UTC anomalous behavior was predicted on 1 metric. Review the metrics section below to see the list of affected resources. DevOps Guru has provided you with 1 [recommendation](#) to investigate and resolve the issue.

Insight severity

Low severity

Status

Ongoing

Affected applications

1

Insight started

August 31, 2022 20:00 UTC

Insight ended

-

Last update time

August 31, 2022 20:00 UTC

Opstem ID

-

Recommendation summary [Info](#)

View updates we recommend you implement to address the anomalies in this insight.

Tune Visibility timeout of SQS Invoker

Based on your resource's usage, we recommend the following changes. To learn more about these changes, see [Tune Visibility timeout of SQS Invoker](#)

Recommendations (1/1) [Info](#)

Find recommendations by resource name, service name, or status

< 1 > ⚙

Resource name	AWS service name	Recommended custom change	Why is DevOps Guru recommending this?	Status
CreatedProduct	Lambda	Based on your usage, we recommend that you set CreatedProduct's SQS new-product-created visibility timeout to 144000 ms to ensure no other Lambda instances will process the same SQS message. To change SQS visibility timeout look at https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqs-visibility-timeout.html#changing-message-visibility-timeout	Lambda timeout exceeds recommended SQS visibility timeout.	Ongoing



DevOps Guru Proactive Examples: Lambda timeout exceeds recommended SQS visibility

CreatedProduct

Amazon SQS > Queues > new-product-created

new-product-created Edit Delete Purge Send and receive messages Start DLQ redrive

Function overview [Info](#)

Code Test Monitor **Configuration** Aliases Versions

General configuration [Info](#)

Triggers	
Permissions	
Destinations	
Function URL	

General configuration

Description	Memory
-	1024 MB
Timeout	
0 min 35 sec	

Details [Info](#)

Name	Type	ARN
new-product-created	Standard	arn:aws:sqs:eu-central-1:265634257610:new-product-created
Encryption	URL	Dead-letter queue
Amazon SQS key (SSE-SQS)	https://sqs.eu-central-1.amazonaws.com/265634257610/new-product-created	-
Created	Maximum message size	Last updated
7.9.2022, 22:42:37 MESZ	256 KB	7.9.2022, 22:42:37 MESZ
Message retention period	Default visibility timeout	Messages available
4 Days	30 Seconds	0



DevOps Guru Proactive Examples: SQS triggered Lambda does not have a DLQ

SQS triggered Lambda does not have a Dead Letter Queue in DevOpsGuruDemoProductsAPI



Insight overview

[View recommendations](#)

A proactive insight was generated. DevOps Guru has provided you with 1 [recommendation](#) to investigate and resolve the issue.

Insight severity

Medium severity

Status

Ongoing

Affected applications

1

Insight started

September 21, 2022 11:00 UTC

Insight ended

-

Last update time

September 21, 2022 11:00 UTC

OpsItem ID

-

Recommendation summary [Info](#)

View updates we recommend you implement to address the anomalies in this insight.

Prevent data loss by setting up a dead letter queue destination for your SQS queue

Based on your resource's usage, we recommend the following changes. To learn more about these changes, see [Prevent data loss by setting up a dead letter queue destination for your SQS queue](#)

Recommendations (1/1) [Info](#)

Find recommendations by resource name, service name, or status

< 1 > ⌂

Resource name	AWS service name	Recommended custom change	Why is DevOps Guru recommending this?	Status
CreatedProduct	Lambda	DevOps Guru has noticed that your SQS Queues (new-product-created) do not have a dead letter queue destination configured. DevOps Guru has provided you with recommendations to investigate and resolve the issue.	Lambda function 'CreatedProduct' is consuming SQS queues (new-product-created) without dead-letter queues. Dead-letter queues allow for isolation of messages that cannot be processed successfully and prevents retrying them indefinitely. Note that for a Lambda function triggered by SQS, the dead-letter queue must be configured on the source queue.	Ongoing



DevOps Guru Proactive Examples: Lambda function has concurrency spillover

Lambda function has concurrency spillover in DevOpsGuruDemoProductsAPI

Insight overview

Starting on September 09, 2022 16:00 UTC anomalous behavior was predicted on 1 metric. Review the metrics section below to see the list of affected resources with 1 recommendation to investigate and resolve the issue.

Insight severity

Low severity

Status

Ongoing

Affected applications

1

Insight started
September 09, 2022 16:00 UTC

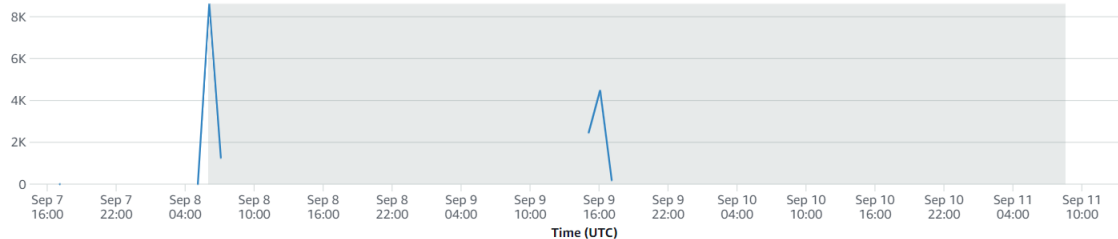
Insight ended
-

Last update time
September 09, 2022 16:00

Opsitem ID
-

DeleteProduct

Count



ProvisionedConcurrencySpilloverInvocations Anomaly detected

Service name

Application

Dimensions

Recommendations (1/1) Info

Find recommendations by resource name, service name, or status

Resource name	AWS service name	Recommended custom change	Why is DevOps Guru recommending this?	Status
DeleteProduct	Lambda	Based on your usage, we recommend that you set liveVersion provisioned concurrency to 8 to maintain balanced utilization of 65%.	Lambda Function DeleteProduct Provisioned Concurrency Capacity is too low as "ProvisionedConcurrencySpilloverInvocations" Metric reached up to 8625.0. The provisioned concurrency is configured for Alias liveVersion	Ongoing

```
hey -q 1 -z 30m -c 9 -m DELETE -H "X-API-Key: XXXa6XXXX" -H "Content-Type: application/json;charset=utf-8" https://XXX.execute-api.eu-central-1.amazonaws.com/prod/products/11
```



Other operational issues and the proactive insights 1/2

- Table or Account Level read/write capacity for DynamoDB consumption reaching account limit
 - Triggered when the account consumed capacity is approaching table or account-level limits during a period of time

Service Quotas > AWS services > Amazon DynamoDB

Amazon DynamoDB

Service quotas Request quota increase

Find quotas

Quota name	Applied quota value	AWS default quota value	Adjustable
<input type="radio"/> Account-level read throughput limit (Provisioned mode)	80,000	80,000	Yes
<input type="radio"/> Account-level write throughput limit (Provisioned mode)	80,000	80,000	Yes
<input type="radio"/> Concurrent control plane operations	500	500	Yes
<input type="radio"/> Global Secondary Indexes per table	20	20	Yes
<input type="radio"/> Maximum number of tables	2,500	2,500	Yes
<input type="radio"/> Provisioned capacity decreases per day	27	27	Yes
<input type="radio"/> Table-level read throughput limit	40,000	40,000	Yes
<input type="radio"/> Table-level write throughput limit	40,000	40,000	Yes
<input type="radio"/> Write throughput limit for DynamoDB Streams (Provisioned mode)	40,000	40,000	Yes

<https://aws.amazon.com/de/blogs/aws/automatically-detect-operational-issues-in-lambda-functions-with-amazon-devops-guru-for-serverless/>



Other operational issues and the proactive insights 2/2

- DynamoDB table consumed capacity reaching AutoScaling Maximum parameter limit
 - Triggered when table consumed capacity is reaching AutoScaling Max parameters limit over a period.

DynamoDB > Tables > ProductsTable > Edit capacity

Edit read/write capacity

Capacity mode Info

On-demand
Simplify billing by paying for the actual reads and writes your application performs.

Provisioned
Manage and optimize your costs by allocating read/write capacity in advance.

► **Capacity calculator**

Table capacity

Read capacity

Auto scaling Info
Dynamically adjusts provisioned throughput capacity on your behalf in response to actual traffic patterns.

On
 Off

Minimum capacity units	Maximum capacity units	Target utilization (%)
<input type="text" value="1"/>	<input type="text" value="10"/>	<input type="text" value="70"/>

Write capacity

Auto scaling Info
Dynamically adjusts provisioned throughput capacity on your behalf in response to actual traffic patterns.

On
 Off

Minimum capacity units	Maximum capacity units	Target utilization (%)
<input type="text" value="1"/>	<input type="text" value="10"/>	<input type="text" value="70"/>

<https://aws.amazon.com/de/blogs/aws/automatically-detect-operational-issues-in-lambda-functions-with-amazon-devops-guru-for-serverless/>



DevOps Guru integration in incident management tools

- OPsCenter
- PagerDuty
- Atlassian Opsgenie



DevOps Guru Integration Settings

Amazon DevOps Guru > Settings

Settings

You can view and manage which resources DevOps Guru is analyzing from the [Analyzed resources](#) page

SNS notifications

Edit

SNS topic name

Topic ARN

DevopsGuru-PagerDutyIntegration

arn:aws:sns:eu-central-1:123456789012:DevopsGuru-PagerDutyIntegration

DevOpsGuru-Alarms

arn:aws:sns:eu-central-1:123456789012:DevOpsGuru-Alarms

Suggested features for enhanced insights (3)

Service: AWS Systems Manager

- Enable DevOps Guru to create an OpsItem in OpsCenter for each insight.
Enabling OpsItem creation incurs additional charges per standard [AWS Systems Manager pricing](#).

Log anomaly detection [Info](#)

- Enable log anomaly detection by granting DevOps Guru permissions to display log data associated with an insight.
There is no additional charge associated with log anomaly detection. [View permission details](#).

[View details](#)



DevOps Guru Examples: DynamoDB Throttling

Amazon DevOps Guru > Insights > DynamoDB ThrottledRequests Anomalous In Application DevOpsGuruDemoProductsAPI

DynamoDB ThrottledRequests Anomalous In Application DevOpsGuruDemoProductsAPI



Insight overview

[View recommendations](#)

Description

Starting on September 03, 2022 17:59 UTC anomalous behavior was detected on 3 metrics and 2 log groups. Review the Aggregated metrics and Log groups sections below to see the list of affected [metrics](#) and [log groups](#). DevOps Guru has provided you with 3 [recommendations](#) to investigate and resolve the issue.

Insight severity

High severity

Status

✓ Closed

Affected applications

1

Start time

September 03, 2022 18:01 UTC

End time

September 03, 2022 18:11 UTC

Last update time

September 03, 2022 18:11 UTC

Opsitem ID

[oi-43b8dd208a93](#)



DevOps Guru Integration with OpsCenter

AWS Systems Manager > OpsCenter



You have 3 open incident(s)

You can view and manage incidents in Incident Manager

[View in Incident Manager](#)

Summary

OpsItems

Open and In progress OpsItems

Total count

23

Open

21

In progress

2

OpsItems by source and age



Open and in progress

< 1 >

Grouped by source	Count	0 - 30 days	31 - 90 days	> 90 days
DevOps-Guru	23	23	0	0

Sources with the most OpsItems

Source	Total count
DevOps-Guru	21



DevOps Guru Integration with OpsCenter

Summary | **OpsItems**

OpsItems (20) Edit Set Status ▼ Configure sources Create OpsItem

OpsItem type: equal: /aws/issue ✕ OpsItem type: equal: /aws/actionitem ✕ Clear filters

Open and in progress ▼ < 1 > ⚙️

<input type="checkbox"/>	ID	Title	Type	Severity	Status	Source	Created ▼	Updated
<input type="checkbox"/>	oi-fcd8532aeea5	ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoProductsAPI	/aws/issue	3	In progress	DevOps-Guru	a day ago	a minute ago
<input type="checkbox"/>	oi-ab4dd9ae0867	ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoProductsAPI	/aws/issue	3	Open	DevOps-Guru	Sep 10 2022	a day ago
<input type="checkbox"/>	oi-a01d70e65c87	Lambda Throttles Anomalous In Application DevOpsGuruDemoProductsAPI	/aws/issue	2	Open	DevOps-Guru	Sep 08 2022	Sep 08 2022
<input type="checkbox"/>	oi-cfc0e7d236dc	DynamoDB ReadThrottleEvents Anomalous In Application DevOpsGuruDemoProductsAPI	/aws/issue	2	Open	DevOps-Guru	Sep 08 2022	Sep 08 2022



DevOps Guru Integration with OpsCenter OpsItem View

ApiGateway 4XXError Anomalous In Application DevOpsGuruDemoProductsAPI In progress

Set status ▼ **Start Incident**

Associated items | Timeline | **Overview** | Related resource details

► OpsItem details: oi-fcd8532aaea5

Edit

Related resources (1)

Add

Edit

Remove

Run automation ▼

Q

< 1 >

Resource ARN

Type

arn:aws:devops-guru:eu-central-1:265634257610:insight/reactive/AFC19IVJvH8NF5y5qeu1TVIAAAAAAAAAAFB5iv77szyDp_5fcBiwAHnYI4SJPubB7

Runbooks (514)

Execute

Q Search for a runbook name. For example: EC2, ASG, or S3.

< 1 2 3 4 5 6 7 8 ... >

	Name	Type	Last run	Latest status and results
<input type="radio"/>	AWS-CreateServiceNowIncident	AWS::SSM::Automation	-	-
<input type="radio"/>	AWS-EnableCWAlarm	AWS::SSM::Automation	-	-
<input type="radio"/>	AWS-EnableCloudTrailKmsEncryption	AWS::SSM::Automation	-	-
<input type="radio"/>	AWS-SetupManagedInstance	AWS::SSM::Automation	-	-
<input type="radio"/>	AWS-EnableCLBAccessLogs	AWS::SSM::Automation	-	-

Start incident

✕

Response plan

A response plan defines who is engaged, the expected severity of the event, and automatic runbooks to initiate.

Vadym Response plan ▼

Incident title - optional

A descriptive title lets you easily find the incident on the incidents list. This will override the title provided in the response plan.

API Gateway 4XX Issue

Incident impact - optional

The impact describes the scope of the incident currently happening. This will override the impact provided by the response plan.

Medium ▼

Close

Start



DevOps Guru Integration with OpCenter Incident Manager View

AWS Systems Manager > Incident Manager

Incident Manager [Info](#)

Prepare

Open incidents (4) [Info](#)



Start incident

< 1 >

ApiGateway Issue

Impact **High** Duration 10m

Incident started
September 11, 2022 at 12:29:58 (UTC+2:00)

Dynamo DB & Lambda Incident

Impact **Critical** Duration 6d 20h 55m

Incident started
September 4, 2022 at 15:44:31 (UTC+2:00)

DynamoDB Throttled

Impact **Critical** Duration 7d 16h 31m

Incident started
September 3, 2022 at 20:08:44 (UTC+2:00)

http 404 products not found

Impact **Medium** Duration 7d 20h 40m

Incident started
September 3, 2022 at 15:59:44 (UTC+2:00)



DevOps Guru Integration with OpCenter Incident Manager View

AWS Systems Manager



Quick Setup

Operations Management

Explorer

OpsCenter

CloudWatch Dashboard

Incident Manager

Response plans

Escalation plans

Contacts

Settings

AWS Systems Manager > Incident Manager > Response plans

Response plans

Response plans provide a template for when an incident occurs. This template includes information about who is engaged, the expected severity of the event, and automatic runbooks to initiate.

Response plans (1) [Info](#)

[View details](#)

[Edit](#)

[Delete](#)

[Create response plan](#)

< 1 >

	Name	Display name	Chat channel	Engagements	Owner	Runbook
<input type="radio"/>	vadyim-response-pl...	Vadyim Response pl...	-	2 engagements	265634257610	-



DevOps Guru Integration with OpCenter Incident Configuration

AWS Systems Manager > Incident Manager > Response plans > vadyim-response-plan

vadyim-response-plan [info](#)

Edit

Delete

Response plan details

Name vadyim-response-plan	Display name Vadym Response plan
ARN arn:aws:ssm-incidents::265634257610:response-plan/vadyim-response-plan	Owner 265634257610

Incident defaults

Title Critical Incident	Impact Critical	Dedupe string -
----------------------------	--------------------	--------------------

Summary
-

Incident tags (0)

Key	Value
-----	-------

AWS Systems Manager



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Response plan details

Chat channel

-

SNS topics

-

Engagements

Contacts

- Vadym Kazulkin [↗](#)
- bonnavdym [↗](#)

Escalation plans



DevOps Guru Integration with OpCenter Incident Contacts

AWS Systems Manager > Incident Manager > Contacts

Contacts Info

Contacts are engaged during an incident to mitigate the impact and resolve the incident. Reminder: Check the contact channels of your contacts to ensure they are activated for engagement. The activation status of contact channels can be found on the detail page of a contact.

Contacts (2) View details Edit Delete Test Create contact

< 1 > ⚙️

Unique alias	Name
<input type="radio"/> vkazulkin	Vadym Kazulkin
<input type="radio"/> bonnvadym	bonnavdym

Contact details

Name: Vadym Kazulkin | Alias: vkazulkin

ARN: `arn:aws:ssm-contact:eu-central-1:265634257610:contact/vkazulkin`

Contact channels

Activate

Type	Channel name	Detail	Status
SMS	VadymSMS	+49 [phone icon]	Activated
EMAIL	VadymEmail	vkazulkin [email icon]	Activated

Engagement plan


Contact channel	Engagement time (min)
VadymEmail	1 minute
VadymSMS	2 minutes



DevOps Guru Integration with PagerDuty

DevOpsGuruService Edit

STATUS

 Awaiting response

ON CALL NOW

Vadym Kazulkin

ESCALATION POLICY

DevOpsGuruService-ep

TEAM

No team is assigned to the
[DevOpsGuruService-ep](#)
escalation policy.

COMMUNICATION

No channel for
[Add one.](#)

Activity [Integrations](#) Settings Service Dependencies

Integrations (1)

Follow the steps below to integrate and test each integration, or [add an integration](#).

Amazon DevOps Guru

Amazon DevOps Guru is an ML-powered cloud operations service that assists you in improving application availability. DevOps Guru continuously analyzes streams of disparate data and monitors thousands of metrics to establish normal bounds for application behavior. DevOps Guru automatically identifies deviations from normal conditions in your application metrics, logs, events, and traces within your account and surfaces high severity issues to alert you of downtime quickly, giving you the ability to react quickly to operational issues.

[Integration Documentation](#)


Integration Name

Amazon DevOps Guru 

Integration Key

Integration URL

<https://events.pagerduty.com/integration...> 



DevOps Guru Integration with PagerDuty

Amazon SNS > Topics > DevopsGuru-PagerDutyIntegration

DevopsGuru-PagerDutyIntegration

Edit

Delete

Publish message

Details

Name

DevopsGuru-PagerDutyIntegration

ARN

arn:aws:sns:eu-central-1:123456789012:DevopsGuru-PagerDutyIntegration

Type

Standard

Display name

-

Topic owner

123456789012

Subscriptions

Access policy

Delivery retry policy (HTTP/S)

Delivery status logging

Encryption

Tags

Subscriptions (1)

Enter „Integration URL“ generated by PagerDuty

Edit

Delete

Request confirmation

Confirm subscription

Create subscription

Search

< 1 >



ID

Endpoint

Status

Protocol



1a0577d3-2b6e-4e22-8031-142147b3373e

https://events.pagerduty.com/integration/48d0b8

Confirmed

HTTPS



DevOps Guru Integration with PagerDuty

Amazon DevOps Guru > Settings

Settings

You can view and manage which resources DevOps Guru is analyzing from the [Analyzed resources](#) page

SNS notifications

SNS topic name	Topic ARN
DevopsGuru-PagerDutyIntegration	arn:aws:sns:eu-central-1:...



DevOps Guru PagerDuty Incidents

Open Triggered Acknowledged Resolved Any Status

Assigned to me

All

<input type="checkbox"/>	Status	Urgency ▼	Title	Created ↕	Service	Assigned To
<input type="checkbox"/>	Triggered	High	4XXError ⊞ SHOW DETAILS (1 triggered alert)	#134 on Sep 10, 2022 at 1:32 PM	DevOpsGuruService	Vadym Kazulkin
<input type="checkbox"/>	Triggered	High	4XXError ⊞ SHOW DETAILS (1 triggered alert)	#132 on Sep 10, 2022 at 12:07 PM	DevOpsGuruService	Vadym Kazulkin
<input type="checkbox"/>	Triggered	High	4XXError ⊞ SHOW DETAILS (1 triggered alert)	#131 on Sep 10, 2022 at 11:19 AM	DevOpsGuruService	Vadym Kazulkin
<input type="checkbox"/>	Acknowledged	High	Errors ⊞ SHOW DETAILS (1 triggered alert)	#129 on Sep 9, 2022 at 8:06 PM	DevOpsGuruService	Vadym Kazulkin
<input type="checkbox"/>	Acknowledged	High	ThrottledRequests ⊞ SHOW DETAILS (1 triggered alert)	#127 on Sep 9, 2022 at 5:55 PM	DevOpsGuruService	Vadym Kazulkin
<input type="checkbox"/>	Acknowledged	High	Latency ⊞ SHOW DETAILS (1 triggered alert)	#125 on Sep 9, 2022 at 1:41 PM	DevOpsGuruService	Vadym Kazulkin



DevOps Guru Supported Services

Resource Price Group A

\$0.0028 per Resource per Hour

AWS Service : Resource

Lambda : Function

S3 : Bucket

Resource Price Group B

\$0.0042 per Resource per Hour

AWS Service : Resource

API Gateway : API Path/Route

Application ELB : LoadBalancer

CloudFront : Distribution

DynamoDB Streams : Stream

DynamoDB : Table

EC2(ASG):Instance*

ECS : Service**

EKS : Service**

Elastic Beanstalk : Environment

ElastiCache : Node

OpenSearch Service : Node

ELB : LoadBalancer

AWS Service : Resource

Kinesis : Stream

NATGateway (VPC) : NatGateway

Network ELB : LoadBalancer

RDS : DBInstance

Redshift : Cluster, Node

Route 53 : HostedZone

SageMaker : InvocationEndpoint

SNS : Topic

SQS : Queue

Step Functions : Activity, StateMachine

SWF : Workflow, Task



DevOps Guru Cost Estimator

Cost estimator [Info](#)

Get a free estimate of the cost for DevOps Guru to analyze AWS resources in the current AWS account and Region or AWS resources that are defined by an Application. For more details, please review the list of updated AWS service names on the DevOps Guru [pricing page](#)

Resource analysis estimation coverage

Choose the AWS resource coverage for your free cost estimate in your current Region

CloudFormation stack in the current Region

Create an estimate using the AWS resources defined by a CloudFormation stack in your Region.

Tags on AWS resources in the current Region

Create an estimate using AWS resources in your AWS account and Region that are specified by tags.

AWS account in the current Region

Create an estimate using the AWS resources in the current AWS account and Region.

CloudFormation stack name

To find the name of the stacks in your Region, go to [AWS CloudFormation](#)

DevOpsGuruDemoProductsAPI

Estimate monthly cost

This cost estimator provides only an estimate of your Amazon DevOps Guru resources analysis fees and doesn't include any taxes that might apply. Your actual fees depend on a variety of factors, including your actual usage of AWS services. [Learn more](#)

Cost estimate : \$11.088 September 08, 2022 08:33 UTC

DevOps Guru generates an estimate for DevOpsGuruDemoProductsAPI on a one-hour time period between the time you start the cost estimator and when it completes. The cost to analyze resources for one hour is calculated, then extrapolated over 30 days for an estimated cost of analyzing resources for 720 hours. For best results, start your cost estimate during a time that is typical of your AWS usage. [Learn more](#)

AWS service::resource ▲	Resources analyzed ▼	Price per hour ▼	Active resource utilization %	Estimated monthly charges ▼
ApiGateway::RESTApi	1	\$0.0042	<input type="text" value="100"/>	\$3.024
DynamoDB::Table	1	\$0.0042	<input type="text" value="100"/>	\$3.024
Lambda::Function	1	\$0.0028	<input type="text" value="100"/>	\$2.016
SQS::Queue	1	\$0.0042	<input type="text" value="100"/>	\$3.024



DevOps Guru Conclusions, Observations, Suggestions 1/4

- All errors have been correctly recognized so far
 - It took several (at least 7) minutes to create an incident after anomaly appeared
- Correctly no insights created for the temporary incidents
 - Short time Lambda, DynamoDB and API Gateway Throttling
- Recommendations for the insight reason could be more precise
 - No differentiation between Lambda throttling because of reaching individual function concurrency limit or the total AWS account concurrency limit



DevOps Guru Conclusions, Observations, Suggestions 2/4

- HTTP 4XX Errors
 - Time to create DevOps Guru insight is relatively big (more than 10 minutes). Maybe because of the medium severity
 - Are not fine granular splitted between different error codes (404, 429) which have totally different meaning and cause
 - No reference which Lambda function behind the API Gateway cause these errors (important for 404 error)



DevOps Guru Conclusions, Observations, Suggestions 3/4

- Lambda duration anomalous insights (Duration p90)
 - took huge time to create (sometimes more than 30 minutes). Maybe because of the medium severity
- DevOps Guru Proactive Insights
 - Stay ongoing long time after the insight occurred only once
 - Not always expire quickly after being fixed
 - Missed some important ones, like not used Lambda Provisioned Concurrency for a long period of time



DevOps Guru Conclusions, Observations, Suggestions 4/4

- Log Groups haven't always been displayed within DevOps Guru Insight

Log anomaly detection [Info](#)

- Enable log anomaly detection by granting DevOps Guru permissions to display log data associated with an insight.
There is no additional charge associated with log anomaly detection. [View permission details](#)

[View details](#)

Log groups (0) September 18, 09:39–September 18, 09:59 UTC [Info](#) - new

A log group lets you know critical diagnostic information about how your resources are performing and being accessed. Log groups are displayed in order of severity. Each log group can contain one or more log anomalies.

< 1 > 🔍

No log groups.
No logs to display.

- Missing Link to Tracing (e.g. AWS X-Ray)
- Easier integration into AWS Systems Manager Incident Manager



DevOps Guru for RDS

aws Services Resources Groups rds-ux-design@awsdesign N. Virginia Support

Amazon DevOps Guru > Insights > AWS-ECS_MemoryUtilization_and_others > Database performance anomaly: prod_db_678

Database performance anomaly: prod_db_678 [info](#)

[Go to application view for 6 related anomalies](#)

Resource name prod_db_678	Anomaly severity Medium	Start time Mar 07, 2021, 14:32 UTC	Duration 3 hours 2 minutes
DB engine Aurora MySQL	Anomaly summary Unusually high DB load, 7x above normal. Likely performance impact.	End time Ongoing	

Primary metric

DevOps Guru for RDS detected an anomaly in your database load. The metric measures database activity in average active sessions (AAS).

Slice DB load by: **Wait events** Last 6 hours

Database load (DB load)
(db.r5.4xlarge, 16 vCPUs)

24

 (6x spike) [info](#)
Typically: DB load up to 4

Average active sessions (AAS)

Legend: CPU, io/table/sql/handler, synch/rwlock/innodb/hash_table_locks, Anomalous DB load, High severity anomaly, Max vCPUs

[View in Performance Insights](#)

Related metrics (2)
When your DB load is high, other metrics often show anomalies. Use these metrics to help diagnose your performance issue.





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