

# Lambda Function

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## **Problem Statement:**

You work for XYZ Corporation. Your corporation wants to launch a new web-based application and they do not want their servers to be running all the time. It should also be managed by AWS. Implement suitable solutions.

## **Tasks To Be Performed:**

1. Create a sample Python Lambda function.
2. Set the Lambda Trigger as SQS and send a message to test invocations.

# Create bucket [Info](#)

Buckets are containers for data stored in S3. [Learn more](#)

## General configuration

AWS Region

Europe (Stockholm) eu-north-1

Bucket type [Info](#)

☒ General purpose  
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

☐ Directory - *New*  
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name [Info](#)

lamdabucket

Bucket name must be unique within the global namespace and follow the bucket naming rules. [See rules for bucket naming](#)

Copy settings from existing bucket - *optional*  
Only the bucket settings in the following configuration are copied.

Choose bucket

Format: s3://bucket/prefix

## Object Ownership [Info](#)

Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

☒ ACLs disabled (recommended)  
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.

☐ ACLs enabled  
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.

Object Ownership  
Bucket owner enforced

## Block Public Access settings for this bucket

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to this bucket or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

☒ Block *all* public access  
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

☒ Block public access to buckets and objects granted through *new* access control lists (ACLs)  
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.

☒ Block public access to buckets and objects granted through *any* access control lists (ACLs)  
S3 will ignore all ACLs that grant public access to buckets and objects.

☒ Block public access to buckets and objects granted through *new* public bucket or access point policies  
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.

☒ Block public and cross-account access to buckets and objects through *any* public bucket or access point policies  
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

## Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore

## Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

Bucket Versioning

☒ Disable

☐ Enable

## Tags - *optional* (0)

You can use bucket tags to track storage costs and organize buckets. [Learn more](#)

No tags associated with this bucket.

Add tag

## Default encryption [Info](#)

Server-side encryption is automatically applied to new objects stored in this bucket.

Encryption type [Info](#)

☒ Server-side encryption with Amazon S3 managed keys (SSE-S3)

☐ Server-side encryption with AWS Key Management Service keys (SSE-KMS)

☐ Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)  
Secure your objects with two separate layers of encryption. For details on pricing, see [DSSE-KMS pricing](#) on the **Storage** tab of the [Amazon S3 pricing page](#).

Bucket Key  
Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. [Learn more](#)

☐ Disable

☒ Enable

## ► Advanced settings

[Info](#) After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.

	Name	AWS Region	Access	Creation date
<input type="radio"/>	elasticbeanstalk-eu-north-1-170303796048	Europe (Stockholm) eu-north-1	Objects can be public	November 29, 2023, 14:36:38 (UTC+05:30)
<input type="radio"/>	lamdafunctionbucket	Europe (Stockholm) eu-north-1	Bucket and objects not public	December 4, 2023, 14:10:37 (UTC+05:30)

## Create a IAM role with Administrator Access

<input type="checkbox"/>	<a href="#">AWSServiceRoleForTrustedAdvisor</a>	AWS Service: trustedadvisor (Service: -
<input type="checkbox"/>	<a href="#">lambdafunctionHandson</a>	AWS Service: lambda -

AWS Lambda

Dashboard

Applications

Functions

▼ Additional resources

Code signing configurations

Layers

Replicas

▼ Related AWS resources

Step Functions state machines

Lambda > Functions

Functions (0)

Last fetched 12 seconds ago

Actions

Create function

Filter by tags and attributes or search by keyword

< 1 >

Function name

Description

Package type

Runtime

Last modified

There is no data to display.

Lambda > Functions > lambda\_python

lambda\_python

Throttle

Copy ARN

Actions

▼ Function overview

Diagram

Template

+ Add trigger

Diagram showing lambda\_python function with layers and triggers.

+ Add destination

Description

Last modified

56 seconds ago

Function ARN

arn:aws:lambda:eu-north-1:170303796048:function:lambda\_python

Function URL

Go to add trigger.

Lambda > Functions > Create function

Create function

Choose one of the following options to create your function.

☒ Author from scratch

☐ Use a blueprint

☐ Container image

☐ Browse serverless app repository

Basic information

Function name

Enter a name that describes the purpose of your function.

lambda\_python

Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime

Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.11

Architecture

Choose the instruction set architecture you want for your function code.

☒ x86\_64

☐ arm64

Permissions

By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ Change default execution role

Execution role

Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.

☐ Create a new role with basic Lambda permissions

☒ Use an existing role

☐ Create a new role from AWS policy templates

Existing role

Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.

lambdafunctionHandson

View the lambdafunctionHandson role on the IAM console.

▼ Advanced settings

# Add trigger

## Trigger configuration [Info](#)



S3

aws asynchronous storage

### Bucket

Please select the S3 bucket that serves as the event source. The bucket must be in the same region as the function.

×

↺

Bucket region: eu-north-1

### Event types

Select the events that you want to have trigger the Lambda function. You can optionally set up a prefix or suffix for an event. However, for each bucket, individual events cannot have multiple configurations with overlapping prefixes or suffixes that could match the same object key.

▼

All object create events ×

### Prefix - optional

Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters.

### Suffix - optional

Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters.

### Recursive invocation

If your function writes objects to an S3 bucket, ensure that you are using different S3 buckets for input and output. Writing to the same

### Recursive invocation

If your function writes objects to an S3 bucket, ensure that you are using different S3 buckets for input and output. Writing to the same bucket increases the risk of creating a recursive invocation, which can result in increased Lambda usage and increased costs. [Learn more](#)

☒ I acknowledge that using the same S3 bucket for both input and output is not recommended and that this configuration can cause recursive invocations, increased Lambda usage, and increased costs.

Lambda will add the necessary permissions for AWS S3 to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

Cancel

Add

✓ The trigger lamdafumctionbucket was successfully added to function lambda\_python. The function is now receiving events from the trigger.

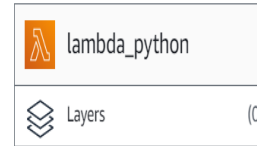
## Function overview [Info](#)

[Export to Application Composer](#)

[Download function](#)

Diagram

Template



S3

+ Add trigger

+ Add destination

Description

-

Last modified

9 minutes ago

Function ARN

arn:aws:lambda:eu-north-1:170303796048:function:lam  
bda\_python

Function URL [Info](#)

-

Deploy the code.

CodeTestMonitorConfigurationAliasesVersions

Code sourceInfo

FileEditFindViewGoToolsWindowTestDeployChanges not deployed

Go to Anything (Ctrl-P)

Environment

lambda\_function x Environment Vari x

```
1 import json
2 import boto3
3 import urllib
4
5 def lambda_handler(event, context):
6     s3_client = boto3.client('s3')
7     bucket_name = event['Records'][0]['s3']['bucket']['name']
8     key = event['Records'][0]['s3']['object']['key']
9     key = urllib.parse.unquote_plus(key, encoding='utf-8')
10
11     message = 'File' + key + ' is successfully uploaded in bucket ' + bucket_name
12     print(message)
13
14     response = s3_client.get_object(Bucket=bucket_name,Key=key)
15     contents = response["Body"].read().decode()
16     contents = json.loads(contents)
17
18     print("The data in the file is: \n", contents)
19
```

Once deploy the code then upload the any txt file in Json format which will trigger the lambda function.

[Amazon S3](#) > [Buckets](#) > lamdafumctionbucket

lamdafumctionbucket [Info](#)

Objects

Properties

Permissions

Metrics

Management

Access Points

Objects (1) [Info](#)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Copy S3 URI

Copy URL

Download

Open

Delete

Actions

Create folder

Upload

Find objects by prefix

< 1 >

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	<a href="#">sid's k8s file.txt</a>	txt	December 4, 2023, 18:17:49 (UTC+05:30)	1.4 KB	Standard

In Monitor click on view in CloudWatch logs.

Code

Test

Monitor

Configuration

Aliases

Versions

Monitor [Info](#)

View CloudWatch logs

View X-Ray traces

View Lambda Insights

View CodeGuru profiles

Filter metrics by

Function

☐ Alarm recommendations

1h

3h

12h

1d

3d

1w

Custom

UTC timezone

In CloudWatch Scroll down , log stream is created. Click on the log stream.

Log streams

Tags

Anomaly detection - new

Metric filters

Subscription filters

Contributor Insights

Data protection

Log streams (1)

Delete

Create log stream

Search all log streams

Filter log streams or try prefix search

☐ Exact match

☐ Show expired

Info

< 1 >

☐

Log stream

Last event time

☐

2023/12/04/[\$LATEST]9ea177b7463648a995b56a0bd1728b05

2023-12-04 18:17:52 (UTC+05:30)

File data is uploaded. Now then we going to create a queue.

Log events

You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Actions

Start tailing

Create metric filter

Filter events

Clear

1m

30m

1h

12h

Custom

Local timezone

Display

Timestamp

Message

No older events at this moment. [Retry](#)

2023-12-04T18:40:49.528+05:30

INIT\_START Runtime Version: python:3.11.v18 Runtime Version ARN: arn:aws:lambda:eu-north-1::runtime:6ebff6b58cf714d30879...

2023-12-04T18:40:49.779+05:30

START RequestId: fef5df6e-c30a-4210-8499-3ef51910ef2d Version: \$LATEST

2023-12-04T18:40:51.632+05:30

Filegits3sample.txt is successfully uploaded in bucket lamdafumctionbucket

2023-12-04T18:40:51.909+05:30

The data in the file is:

2023-12-04T18:40:51.909+05:30

[{'title': 'Dawn of the Planet of the Apes', 'image': 'http://api.androidhive.info/json/movies/1.jpg', 'rating': 8.3, 'r...

2023-12-04T18:40:51.951+05:30

END RequestId: fef5df6e-c30a-4210-8499-3ef51910ef2d

2023-12-04T18:40:51.951+05:30

REPORT RequestId: fef5df6e-c30a-4210-8499-3ef51910ef2d Duration: 2171.16 ms Billed Duration: 2172 ms Memory Size: 128 MB...

No newer events at this moment. [Auto retry paused.](#) [Resume](#)

Sets a destination.

Successfully updated the function `lambda_python`.

Diagram

Template

lambda\_python

Layers

(0)

S3

+ Add trigger

+ Add destination

Description

-

Last modified

4 hours ago

Function ARN

arn:aws:lambda:eu-north-1:170303796048:function:lam

bda\_python

Function URL

Info

-

## Create queue

### Details

#### Type

Choose the queue type for your application or cloud infrastructure.

☒ Standard Info

At-least-once delivery, message ordering isn't preserved

- At-least once delivery
- Best-effort ordering

☐ FIFO Info

First-in-first-out delivery, message ordering is preserved

- First-in-first-out delivery
- Exactly-once processing

ⓘ

You can't change the queue type after you create a queue.

#### Name

mylambdaqueue

A queue name is case-sensitive and can have up to 80 characters. You can use alphanumeric characters, hyphens (-), and underscores ( \_ ).

### Configuration Info

Set the maximum message size, visibility to other consumers, and message retention.

Visibility timeout Info

30

Seconds

Should be between 0 seconds and 12 hours.

Delivery delay Info

0

Seconds

Should be between 0 seconds and 15 minutes.

Receive message wait time Info

0

Seconds

Should be between 0 and 20 seconds.

Message retention period Info

4

Days

Should be between 1 minute and 14 days.

Maximum message size Info

256

KB

Should be between 1 KB and 256 KB.

### Encryption Info

Amazon SQS provides in-transit encryption by default. To add at-rest encryption to your queue, enable server-side encryption.

#### Server-side encryption

☒ Disabled

☐ Enabled

### Access policy Info

Define who can access your queue.

#### Choose method

☒ Basic

Use simple criteria to define a basic access policy.

☐ Advanced

Use a JSON object to define an advanced access policy.

#### Define who can send messages to the queue

☒ Only the queue owner

Only the owner of the queue can send messages to the queue.

☐ Only the specified AWS accounts, IAM users and roles

Only the specified AWS account IDs, IAM users and roles can send messages to the queue.

#### Define who can receive messages from the queue

☒ Only the queue owner

Only the owner of the queue can receive messages from the queue.

☐ Only the specified AWS accounts, IAM users and roles

Only the specified AWS account IDs, IAM users and roles can receive messages from the queue.

#### JSON (read-only)

```
{  "Version": "2012-10-17",  "Id": "__default_policy_ID",  "Statement": [    {      "Sid": "__owner_statement",      "Effect": "Allow",      "Principal": {        "AWS": "170303796048"      },      "Action": [        "SQS:*"      ],      "Resource": "arn:aws:sqs:eu-north-1:170303796048:mylambdaqueue"    }  ]}
```

### Redrive allow policy - Optional Info

Identify which source queues can use this queue as the dead-letter queue.

#### Select which source queues can use this queue as the dead-letter queue.

☒ Disabled

☐ Enabled

### Dead-letter queue - Optional Info

Send undeliverable messages to a dead-letter queue.

#### Set this queue to receive undeliverable messages.

☒ Disabled

☐ Enabled

### Tags - Optional Info

A tag is a label assigned to an AWS resource. Use tags to search and filter your resources or track your AWS costs.

Key

Q Enter key

Value - optional

Q Enter value

Remove

#### Add new tag

You can add 49 more tags.



## Add destination

### Destination configuration [Info](#)

Configure a destination to receive invocation records. Lambda can send records when your function is invoked asynchronously, or when your function processes records from an event source mapping.

#### Source

Choose the invocation type that Lambda sends records for.

- ☒ Asynchronous invocation  
☐ Event source mapping invocation

#### Condition

Choose whether to send invocation records for event processing failures or for successful invocations.

- ☐ On failure  
☒ On success

#### Destination type

Choose the destination type that Lambda sends invocation records to.

SQS queue

#### Destination

Choose the ARN of the destination, or enter the ARN manually.

arn:aws:sqs:eu-north-1:170303796048:mylambdaqueue

### ► Permissions

If your execution role doesn't have the required permissions for the selected destination, then Lambda will attempt to add the permissions to the role.

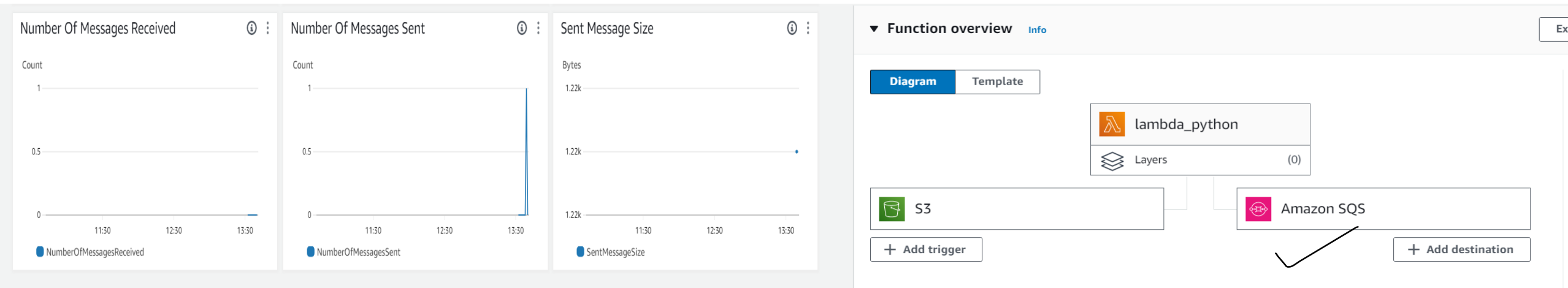
Cancel

Save

Now upload new txt file in S3 and check the SQS.

Log streams		Tags	Anomaly detection - new	Metric filters	Subscription filters	Contributor Insights	Data protection
Log streams (3)							
<input type="text" value="Filter log streams or try prefix search"/>							
<input type="checkbox"/>	Log stream					Last event time	
<input type="checkbox"/>	2023/12/04/[\$LATEST]49b71922b885473d9600399669aa2e7a					2023-12-04 19:01:25 (UTC+05:30)	
<input type="checkbox"/>	2023/12/04/[\$LATEST]b32b573203854f089b8a3d385f013ab7					2023-12-04 18:40:51 (UTC+05:30)	

Go to SQS check in monitoring , one massage sent.



# Elastic Beanstalk

## **Problem Statement:**

You work for XYZ Corporation. Your corporation wants to launch a new web-based application and they do not want their servers to be running all the time. It should also be managed by AWS. Implement suitable solutions.

## **Tasks To Be Performed:**

1. Create an Elastic Beanstalk environment with the runtime as PHP.
2. Upload a simple PHP file to the environment once created.

# Configure environment [Info](#)

Go to elastic beanstalk – create application.

## Environment tier [Info](#)

Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.

- ☒ Web server environment  
Run a website, web application, or web API that serves HTTP requests. [Learn more](#)
- ☐ Worker environment  
Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. [Learn more](#)

## Application information [Info](#)

Application name

beanstalk-5dec

Maximum length of 100 characters.

► Application tags (optional)

## Environment information [Info](#)

Choose the name, subdomain and description for your environment. These cannot be changed later.

Environment name

Beanstalk-5dec-env

Must be from 4 to 40 characters in length. The name can contain only letters, numbers, and hyphens. It can't start or end with a hyphen. This name must be unique within a region in your account.

Domain

Leave blank for autogenerated value

.eu-north-1.elasticbeanstalk.com

Check availability

Environment description

## Platform [Info](#)

Platform type

- ☒ Managed platform  
Platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#)
- ☐ Custom platform  
Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform

PHP

Platform branch

PHP 8.2 running on 64bit Amazon Linux 2023

Platform version

4.0.3 (Recommended)

## Application code [Info](#)

## Application code [Info](#)

- ☒ Sample application
- ☐ Existing version  
Application versions that you have uploaded.
- ☐ Upload your code  
Upload a source bundle from your computer or copy one from Amazon S3.

## Presets [Info](#)

Start from a preset that matches your use case or choose custom configuration to unset recommended values and use the service's default values.

### Configuration presets

- ☒ Single instance (free tier eligible)
- ☐ Single instance (using spot instance)
- ☐ High availability
- ☐ High availability (using spot and on-demand instances)
- ☐ Custom configuration

Cancel

Next

## Configure service access [Info](#)

### Service access

IAM roles, assumed by Elastic Beanstalk as a service role, and EC2 instance profiles allow Elastic Beanstalk to create and manage your environment. Both the IAM role and instance profile must be attached to IAM managed policies that contain the required permissions. [Learn more](#)

#### Service role

- ☐ Create and use new service role
- ☒ Use an existing service role

#### Existing service roles

Choose an existing IAM role for Elastic Beanstalk to assume as a service role. The existing IAM role must have the required IAM managed policies.

aws-elasticbeanstalk-service-role



#### EC2 key pair

Select an EC2 key pair to securely log in to your EC2 instances. [Learn more](#)

aws\_capstone\_project1



#### EC2 instance profile

Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

AWSElasticBenstalkEC2Role



[View permission details](#)

Cancel

Skip to review

Previous

Next

Skip to review and submit.

Aws-EC-SR policies are  
And AWSBSEC2R has custom based Json policy.

<input type="checkbox"/>	Policy name <a href="#">Info</a>	Type
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkEnhancedHealth</a>	AWS managed
<input type="checkbox"/>	<a href="#">AWSElasticBeanstalkManagedUpda...</a>	AWS managed

Environment successfully launched.

[Elastic Beanstalk](#) > [Environments](#) > Beanstalk-5dec-env

## Beanstalk-5dec-env [Info](#)

### Environment overview

#### Health

Ok

#### Domain

[Beanstalk-5dec-env.eba-kpqnetey.eu-north-1.elasticbeanstalk.com](#)

#### Environment ID

e-bnmi3srpai

#### Application name

beanstalk-5dec

### Platform

[Change version](#)

#### Platform

PHP 8.2 running on 64bit Amazon Linux 2023/4.0.3

#### Running version

-

#### Platform state

Supported

Click on this link.

[Events](#)

[Health](#)

[Logs](#)

[Monitoring](#)

[Alarms](#)

[Managed updates](#)

[Tags](#)

## Upload and deploy

 To deploy a previous version, go to the [Application versions page](#)

### Upload application

 **Choose file**

 **File name: index.php**

File must be less than 500MB max file size

### Version label

Unique name for this version of your application code.

beanstalk-5dec-version-1

Current number of EC2 instances: 1

Cancel

Deploy

Upload any zip file in PHP format and deploy.

# Congratulations!

Your AWS Elastic Beanstalk *PHP* application is now running on your own dedicated environment in the AWS Cloud

You are running PHP version 8.2.9

This environment is launched with Elastic Beanstalk PHP Platform

## What's Next?

- [AWS Elastic Beanstalk overview](#)
- [Deploying AWS Elastic Beanstalk Applications in PHP Using Eb and Git](#)
- [Using Amazon RDS with PHP](#)
- [Customizing the Software on EC2 Instances](#)
- [Customizing Environment Resources](#)

## AWS SDK for PHP

- [AWS SDK for PHP home](#)
- [PHP developer center](#)
- [AWS SDK for PHP on GitHub](#)