

AWS\_ECR\_RDS\_Lambda

ECR

Створений docker image на ПК

```
dmytro@ubuntu:~$ docker build -t my-app-image .
[+] Building 74.2s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 534B
=> [internal] load metadata for docker.io/library/node:16
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/5] FROM docker.io/library/node:16@sha256:f77a1aef2da8d83e45ec990f45df50f1a286c5fe8bbfb8c6e4246c6389705c0b
=> [internal] load build context
=> => transferring context: 2.05MB
=> CACHED [2/5] WORKDIR /app
=> CACHED [3/5] COPY package*.json ./
=> CACHED [4/5] RUN npm install
=> [5/5] COPY . .
=> exporting to image
=> => exporting layers
=> => writing image sha256:606b040aff5c98b475da847ad5e1d327bfe358bf0b08f2188174bac672d86145
=> => naming to docker.io/library/my-app-image

dmytro@ubuntu:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
my-app-image        latest             c028a35a8cea       5 minutes ago      3.52GB
```

Попередньо був створений репозиторій на AWS у сервісі ECR та створені ключі доступу

IAM > Users > dimonchik06@gmail.com

dimonchik06@gmail.com

info

Delete

Summary

ARN

arn:aws:iam:746669199028:user:dimonchik06@gmail.com

Created

October 14, 2024, 18:57 (UTC+03:00)

Console access

Enabled with MFA

Last console sign-in

Today

Access key 1

AKIA23WH1Z22BBCWPQ06 - Active

Used today. Created today.

Access key 2

Create access key

Також додатково буди створені нові права для доступу до S3

Permissions policies (2)

Permissions are defined by policies attached to the user directly or through groups.

Filter by Type

All types

Policy name

Type

Attached via

aws\_s3

Customer inline

Inline

aws\_s3

Copy JSON

Edit

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "s3:*",
      "Resource": "*"
    }
  ]
}
```

Запушив створений docker-image до ECR

```
dmytro@ubuntu:~$ docker tag my-app-image:latest 746669199028.dkr.ecr.us-east-1.amazonaws.com/my-app-repo:latest
dmytro@ubuntu:~$ docker push 746669199028.dkr.ecr.us-east-1.amazonaws.com/my-app-repo:latest
The push refers to repository [746669199028.dkr.ecr.us-east-1.amazonaws.com/my-app-repo]
b97f6d310dcd: Pushed
8273466f4ac7: Pushed
024613e8787d: Pushed
a1a12c7c9af1: Pushed
be322b479aee: Pushed
d41bcd3a037b: Pushed
fe0d845e767b: Pushed
f25ec1d93a58: Pushed
794ce8b1b516: Pushed
3220beed9b06: Pushed
684f82921421: Pushed
9af5f53e8f62: Pushed
latest: digest: sha256:bbab732c073f4d918760e88038e954e0deed0b0110e1209aaa0e4a464d3d86d3 size: 2843
dmytro@ubuntu:~$ docker run -d --name my-app-container 746669199028.dkr.ecr.us-east-1.amazonaws.com
```

Amazon ECR > Private registry > Repositories

Create repository

Repositories (1)

View push commands

Delete

Actions

Search by repository substring

Repository name

URI

Created at

Tag immutability

Encryption type

my-app-repo

746669199028.dkr.ecr.us-east-1.amazonaws.com/my-app-repo

05 листопада 2024 р., 11:56:12 (UTC+02)

Mutable

AES-256

Amazon ECR > Private registry > Repositories > my-app-repo

my-app-repo View push commands

Images (2) Refresh Delete Details Scan

Search artifacts

<input type="checkbox"/>	Image tag	Artifact type	Pushed at	Size (MB)	Image URI	Digest
<input type="checkbox"/>	latest	Image	05 листопада 2024 р., 18:28:46 (UTC+02)	2942.98	Copy URI	sha256:b2e7152b0bf251e275461316d3fc7...
<input type="checkbox"/>	-	Image	05 листопада 2024 р., 18:04:37 (UTC+02)	2813.66	Copy URI	sha256:bbab732c073f4d918760e88038e95...

## RDB

Створимо нову БД, перейдемо в сервіс RDS - Database (MySQL, free tier, db.t3.micro

RDS > Create database

### Create database info

Choose a database creation method

☒ **Standard create**  
We set all of the configuration options, including ones for availability, security, backups, and maintenance.

☐ **Easy create**  
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type info

☐ Aurora (MySQL Compatible)

☐ Aurora (PostgreSQL Compatible)

☒ **MySQL**

☐ MariaDB

☐ PostgreSQL

☐ Oracle

	<a href="#">database-2</a>	Available	Instance	MySQL Com...	us-east-1a	db.t3.micro	<div><div></div></div> 3.89%	<div><div></div></div> 1 Connect	none
--	----------------------------	-----------	----------	--------------	------------	-------------	------------------------------	----------------------------------	------

## Підключення до БД через термінал

```
ubuntu@ip-10-2-114-18:~$ mysql -h database-2.ch8o8o8k4rre.us-east-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 30
Server version: 8.0.39 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

```
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.01 sec)

mysql>
```

Видаляємо всі наявні RDS

# Lambda

## Зайдемо у сервіс IAM та створимо нову політику EC2StopPolicy

Specify permissions

Info

Add permissions by selecting services, actions, resources, and conditions. Build permission statements using the JSON editor.

Policy editor

VisualJSONActions

12345678910111213

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ec2:DescribeInstances",
        "ec2:StopInstances"
      ],
      "Resource": "*"
    }
  ]
}
```

Edit statement

Select a statement

Select an existing statement in the policy or add a new statement.

+ Add new statement

## Після чого створимо нову роль StopEC2InstancesRole

Select trusted entity

Info

Trusted entity type

☒ AWS service

Allow AWS services like EC2, Lambda, or others to perform actions in this account.

☐ AWS account

Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.

☐ Web identity

Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.

☐ SAML 2.0 federation

Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.

☐ Custom trust policy

Create a custom trust policy to enable others to perform actions in this account.

Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

Service or use case

Lambda

Choose a use case for the specified service.

Use case

☒ Lambda

Allows Lambda functions to call AWS services on your behalf.

Cancel

Next

Add permissions

Info

Permissions policies (1/969)

Info

Choose one or more policies to attach to your new role.

EC2S

Filter by Type

All types

3 matches

Policy name	Type	Description
<input type="checkbox"/> AmazonEC2SpotFleetAutoscaleRole	AWS managed	Policy to enable Autoscaling for Amazon ...
<input type="checkbox"/> AmazonEC2SpotFleetTaggingRole	AWS managed	Allows EC2 Spot Fleet to request, termina...
<input checked="" type="checkbox"/> EC2StopPolicy	Customer managed	-

EC2StopPolicy

Copy JSONEdit

```
12345678910111213
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ec2:DescribeInstances",
        "ec2:StopInstances"
      ],
      "Resource": "*"
    }
  ]
}
```

Set permissions boundary - optional

## Створюємо Lambda функцію

### Create function Info

Choose one of the following options to create your function.

☒ **Author from scratch**  
Start with a simple Hello World example.

☐ **Use a blueprint**  
Build a Lambda application from sample code and configuration presets for common use cases.

☐ **Container image**  
Select a container image to deploy for your function.

#### Basic information

**Function name**  
Enter a name that describes the purpose of your function.  
  
Function name must be 1 to 64 characters, must be unique to the Region, and can't include spaces. Valid characters are a-z, A-Z, 0-9, hyphens (-), and underscores (\_).

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

**Architecture** Info  
Choose the instruction set architecture you want for your function code.  
☒ x86\_64  
☐ arm64

**Permissions** Info  
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.  
   
[View the StopEC2InstancesRole role](#) on the IAM console.

## Код до функції

```
← → StopEC2Instances

lambda_function.py X
lambda_function.py
1  import boto3
2
3  def lambda_handler(event, context):
4      ec2 = boto3.resource('ec2')
5      tag_key = "Name"
6      tag_value = "EC2_RDS"
7
8      # Знаходження інстансів з вказаним тегом
9      instances = ec2.instances.filter(
10         Filters=[{
11             'Name': 'tag:' + tag_key,
12             'Values': [tag_value]
13         }, {
14             'Name': 'instance-state-name',
15             'Values': ['running']
16         }]
17     )
18
19     # Створюємо список з інстансів
20     instances_to_stop = list(instances)
21
22     if not instances_to_stop:
23         return {
24             'statusCode': 200,
25             'body': "No running instances found with the specified tag."
26         }
27
28     # Зупинка інстансів
29     for instance in instances_to_stop:
30         instance.stop()
31         print(f'Stopping instance: {instance.id}')
32
33     return {
34         'statusCode': 200,
35         'body': "Instances stopped."
36     }
37
```

## Налаштування триггеру CloudWatch

[Lambda](#) > [Add triggers](#)

### Add trigger

#### Trigger configuration [Info](#)



EventBridge (CloudWatch Events)

aws asynchronous schedule management-tools

#### Rule

Pick an existing rule, or create a new one.

☒ Create a new rule

☐ Existing rules

#### Rule name

Enter a name to uniquely identify your rule.

StopEC2

#### Rule description

Provide an optional description for your rule.

#### Rule type

Trigger your target based on an event pattern, or based on an automated schedule.

☐ Event pattern

☒ Schedule expression

#### Schedule expression

Self-trigger your target on an automated schedule using [Cron or rate expressions](#). Cron expressions are in UTC.

cron(0 12 \* \* ? \*)

e.g. rate(1 day), cron(0 17 ? \* MON-FRI \*)

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

Cancel

Add

## Тестування через Lambda

Code

Test

Monitor

Configuration

Aliases

Versions

✓ Executing function: succeeded [logs](#)

▼ Details

The area below shows the last 4 KB of the execution log.

```
{
  "statusCode": 200,
  "body": "No running instances found with the specified tag."
}
```

Summary

Code SHA-256  
NGCLTGU0q6h1//fa2rEk3l2ldWT0ENRDR4UoL1ug=

Request ID  
af0a0e54-e94c-41ec-a3f3-9ef3f3a11a66

Init duration  
306.62 ms

Billed duration  
4490 ms

Max memory used  
89 MB

Execution time  
25 seconds ago

Function version  
\$LATEST

Duration  
4489.60 ms

Resources configured  
128 MB

Log output

The section below shows the logging calls in your code. [Click here](#) to view the corresponding CloudWatch log group.

START RequestId: af0a0e54-e94c-41ec-a3f3-9ef3f3a11a66 Version: \$LATEST

Instances (1) [Info](#)

Find Instance by attribute or tag (case-sensitive)

All states ▼

Last updated less than a minute ago [Refresh](#) [Connect](#)

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
<input type="checkbox"/>	EC2_RDS	i-0dcf20b6f62117fa8	⏸ Stopped	t2.micro	-	<a href="#">View alarms +</a>	us-east-1a	-	-

Видаляємо потім функцію Lambda, роль та політику( видалиться автоматично із роллю), EC2