

# EPAM University Programs

## Cloud&DevOps Fundamentals Autumn 2022

### AWS Cloud Basic

#### 1) Review Getting Started with Amazon EC2. Log Into Your AWS Account, Launch, Configure, Connect and Terminate your Instance.

I create an instance (I choose Amazon Linux AMI):

**Launch an instance** [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

**Name and tags** [Info](#)

Name  
lv\_instance [Add additional tags](#)

**Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat S

Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type  
ami-0b0dcb5067f052a63 (64-bit (x86)) / ami-01b5ec3ed8678d8b7 (64-bit (Arm))  
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description

**Summary**

Number of instances [Info](#)  
1

Software Image (AMI)  
Amazon Linux 2 Kernel 5.10 AMI...[read more](#)  
ami-0b0dcb5067f052a63

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

Cancel [Launch instance](#)

I create a key pair to connect to the instance via SSH:

**Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*  
lv\_instance\_aws\_task [Create new key pair](#)

I configure a security group:

### Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

Security group name - *required*

lv\_instance\_sg

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./()#,@[]+=&:{}!\$\*

Description - *required* [Info](#)

lv\_instance security group. AWS Task

#### Inbound security groups rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Remove

Type [Info](#)

ssh

Protocol [Info](#)

TCP

Port range [Info](#)

22

Source type [Info](#)

Anywhere

Source [Info](#)

🔍 Add CIDR, prefix list or security

0.0.0.0/0 ✕

Description - *optional* [Info](#)

e.g. SSH for admin desktop

Add security group rule

I leave the other settings as default and launch the instance:

#### ▼ Summary

Number of instances [Info](#)

1

#### Software Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)  
ami-0b0dcb5067f052a63

#### Virtual server type (instance type)

t2.micro

#### Firewall (security group)

New security group

#### Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Launch instance

I connect to the instance via SSH:

Last login: Mon Nov 21 08:22:17 2022 from ec2-18-206-107-28.compute-1.amazonaws.com

```
 _ _ _ _ _  
 _ _ _ _ _ / Amazon Linux 2 AMI  
 _ _ _ _ _
```

```
https://aws.amazon.com/amazon-linux-2/  
1 package(s) needed for security, out of 1 available  
Run "sudo yum update" to apply all updates.  
[ec2-user@ip-172-31-93-160 ~]$
```

I terminate the instance:

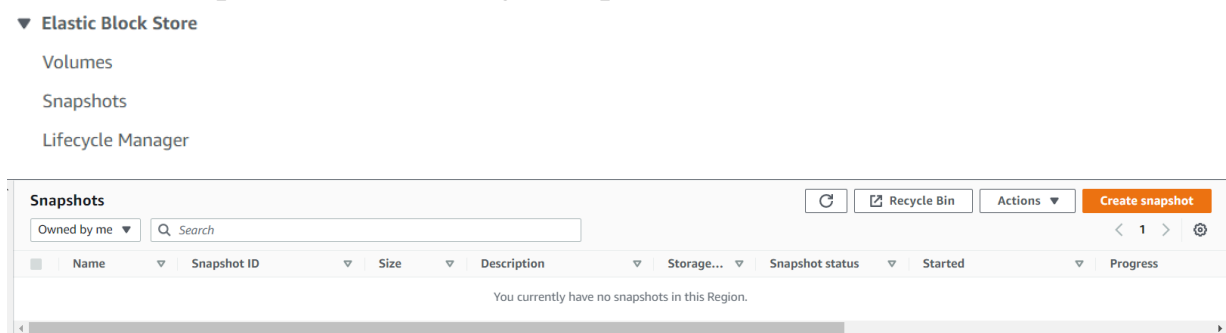
☐ lv\_instance i-0a3fb0ac146be9f63 Terminated t2.micro

## 2) Create a snapshot of your instance to keep as a backup.

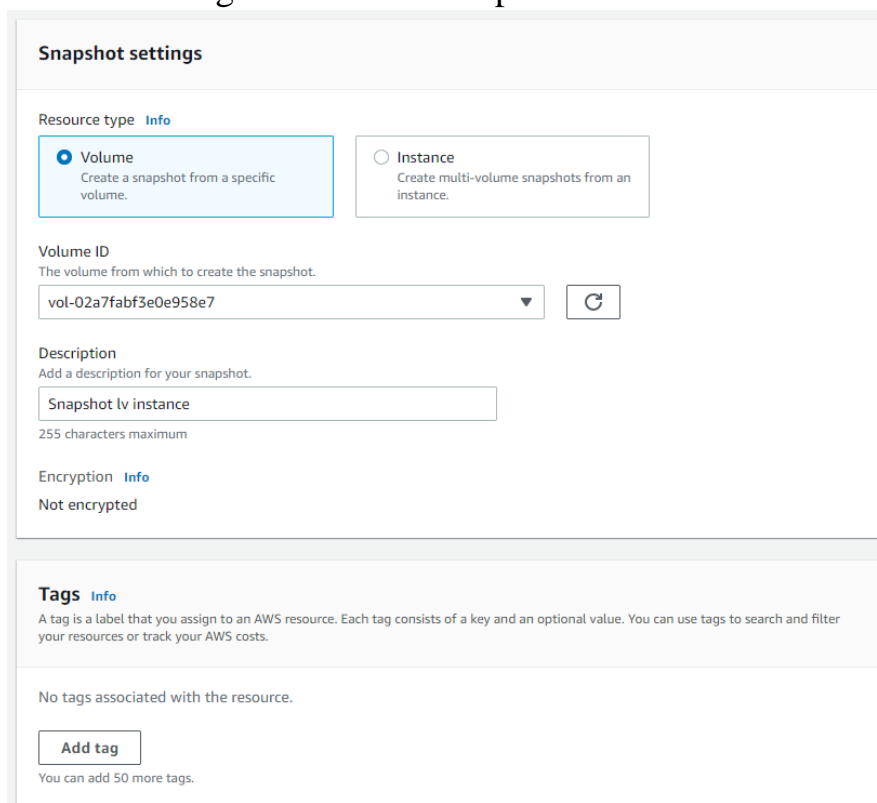
I launch a new instance with similar settings:



I choose «Snapshots» in the navigation pane:



I set the settings and create a snapshot:



## 3) Create and attach a Disk\_D (EBS) to your instance to add more storage space. Create and save some file on Disk\_D.

I create a new EBS volume:

EC2 > Volumes > Create volume

## Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

### Volume settings

Volume type [Info](#)  
General Purpose SSD (gp2) ▼

Size (GiB) [Info](#)  
  
Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS [Info](#)  
100 / 3000  
Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.

Throughput (MiB/s) [Info](#)  
Not applicable

Availability Zone [Info](#)  
us-east-1a ▼

Snapshot ID - optional [Info](#)

Encryption [Info](#)  
Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.  
☐ Encrypt this volume

I attach this volume to the created instance:

## Attach volume [Info](#)

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

### Basic details

Volume ID  
 vol-0065e45f5965eb8b1 (lv\_volume\_task)

Availability Zone  
us-east-1a

Instance [Info](#)  
   
Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)  
  
Recommended device names for Linux: /dev/sda1 for root volume, /dev/sd[f-p] for data volumes.

Newer Linux kernels may rename your devices to `/dev/xvdf` through `/dev/xvdp` internally, even when the device name entered here (and shown in the details) is `/dev/sdf` through `/dev/sdp`.

Cancel **Attach volume**

I check if the drive is attached using the terminal:

```
[ec2-user@ip-172-31-82-118 ~]$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk
└─xvda1     202:1    0   8G  0 part /
xvdf        202:80    0  10G  0 disk
[ec2-user@ip-172-31-82-118 ~]$
```

The volume is successfully attached (xvdf).

I format the volume with an ext4 file system:

```
[ec2-user@ip-172-31-82-118 ~]$ sudo mkfs.ext4 /dev/sdf
mkfs2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
655360 inodes, 2621440 blocks
131072 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2151677952
80 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
```

I create a mount point:

```
[ec2-user@ip-172-31-82-118 ~]$ sudo mkdir /mnt/new_volume
[ec2-user@ip-172-31-82-118 ~]$
```

I configure fstab file:

```
#
UUID=1377e573-627c-46ee-b7ca-9b86138b39db / xfs defaults,noatime 1 1
/dev/sdf /mnt/new_volume ext4 defaults 0 2
```

I mount the volume and check if it was mounted:

```
[ec2-user@ip-172-31-82-118 ~]$ sudo mount -a
[ec2-user@ip-172-31-82-118 ~]$ df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
devtmpfs	474M	0	474M	0%	/dev
tmpfs	483M	0	483M	0%	/dev/shm
tmpfs	483M	468K	483M	1%	/run
tmpfs	483M	0	483M	0%	/sys/fs/cgroup
/dev/xvda1	8.0G	1.6G	6.5G	20%	/
tmpfs	97M	0	97M	0%	/run/user/0
tmpfs	97M	0	97M	0%	/run/user/1000
/dev/xvdf	9.7G	24K	9.2G	1%	/mnt/new_volume

I create some files on the drive:

```
[ec2-user@ip-172-31-82-118 ~]$ sudo touch /mnt/new_volume/file{1..10}
[ec2-user@ip-172-31-82-118 ~]$ ls /mnt/new_volume/
file1 file10 file2 file3 file4 file5 file6 file7 file8 file9 lost+found
[ec2-user@ip-172-31-82-118 ~]$
```

#### 4) Launch the second instance from backup

I create a volume from the snapshot:

## Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

### Volume settings

Snapshot ID

 snap-00e471ce991b5cabe

Volume type [Info](#)

General Purpose SSD (gp2) ▼

Size (GiB) [Info](#)

8

Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS

100 / 3000

Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.


Throughput (MiB/s) [Info](#)

Not applicable

Availability Zone [Info](#)

us-east-1a ▼

Fast snapshot restore [Info](#)

 Not enabled for selected snapshot

Encryption [Info](#)


Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

☐ Encrypt this volume

I create the instance as before, but I use the created AMI:

### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

 Search our full catalog including 1000s of application and OS images

Recents

**My AMIs**

Quick Start

☒ Owned by me

☐ Shared with me



[Browse more AMIs](#)

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

lv\_instance\_image

ami-039ddd4e6160cca6d

2022-11-21T10:19:41.000Z

Virtualization: hvm

ENA enabled: true

Root device type: ebs



Description

Image from lv instance

Architecture

AMI ID

x86\_64

ami-039ddd4e6160cca6d

I check the instance via terminal:

Instances (1/2) Info

Find instance by attribute or tag (case-sensitive)

Instance state: **running** X Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availa...	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs
lv_instance	i-0bb608d38ddf2472e	Running	t2.micro	2/2 checks passed	No alarms	+	us-east-1a	ec2-44-202-54-16.com...	44.202.54.16	-
lv_instance_2	i-078e06b4e11649fb1	Running	t2.micro	2/2 checks passed	No alarms	+	us-east-1a	ec2-44-212-37-254.co...	44.212.37.254	-

Instance: i-078e06b4e11649fb1 (lv\_instance\_2)

Details Security Networking Storage Status checks Monitoring Tags

▼ Instance summary Info

Instance ID i-078e06b4e11649fb1 (lv_instance_2)	Public IPv4 address 44.212.37.254   <a href="#">open address</a>	Private IPv4 addresses 172.31.85.145
IPv6 address -	Instance state <b>Running</b>	Public IPv4 DNS ec2-44-212-37-254.compute-1.amazonaws.com   <a href="#">open address</a>

```
Last login: Mon Nov 21 11:09:31 2022 from ec2-18-206-107-28.compute-1.amazonaws.com

 _ _ | _ _ | )
 _ | ( _ | /   Amazon Linux 2 AMI
 _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
1 package(s) needed for security, out of 1 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-85-145 ~]$
```

## 5) Detach volume from the 1<sup>st</sup> instance and attach volume to the new instance.

I detach the volume from the first instance:

Detach vol-0065e45f5965eb8b1? X

After you detach a volume, you might still be charged for volume storage. If you no longer need the volume, delete it to stop incurring charges.

Are you sure that you want to detach volume vol-0065e45f5965eb8b1?

Cancel **Detach**

I attach the volume to the second instance:

EC2 > Volumes > vol-0065e45f5965eb8b1 > Attach volume

## Attach volume [Info](#)

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

### Basic details

Volume ID  
vol-0065e45f5965eb8b1 (lv\_volume\_task)

Availability Zone  
us-east-1a

Instance [Info](#)  
i-078e06b4e11649fb1

Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)  
/dev/sdf

Recommended device names for Linux: /dev/sda1 for root volume, /dev/sd[f-p] for data volumes.

Newer Linux kernels may rename your devices to **/dev/xvdf** through **/dev/xvdp** internally, even when the device name entered here (and shown in the details) is **/dev/sdf** through **/dev/sdp**.

Cancel
Attach volume

I create a directory for mounting and mount the drive there. I check the presence of created files in the previous instance.

```
[ec2-user@ip-172-31-85-145 ~]$ sudo su
[root@ip-172-31-85-145 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda         202:0    0   8G  0 disk 
└─xvda1      202:1    0   8G  0 part /
xvdf         202:80   0  10G  0 disk 
[root@ip-172-31-85-145 ec2-user]# mkdir /mnt/new_mount_dir
[root@ip-172-31-85-145 ec2-user]# mount /dev/sdf /mnt/new_mount_dir/
[root@ip-172-31-85-145 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        474M   0  474M   0% /dev
tmpfs           483M   0  483M   0% /dev/shm
tmpfs           483M 464K  483M   1% /run
tmpfs           483M   0  483M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.6G   6.5G  20% /
tmpfs           97M   0   97M   0% /run/user/0
tmpfs           97M   0   97M   0% /run/user/1000
/dev/xvdf       9.7G  24K   9.2G   1% /mnt/new_mount_dir
[root@ip-172-31-85-145 ec2-user]# ls /mnt/new_mount_dir/
file1  file10  file2  file3  file4  file5  file6  file7  file8  file9  lost+found
[root@ip-172-31-85-145 ec2-user]#
```

## 6) Review the 10-minute example. Explore the possibilities of creating your own domain and domain name for your site.

I'm going to use an already created domain that I usually use for training purposes:

Мій обліковий запис

Мої продукти
Настройки облікового запису

Пошук нового домену

Домени

:

ДОМЕНИ  
**lytvynenko.online**  
План захисту: немає  
НЕ НАЛАШТОВАНО



I install a web server to check the correctness of the settings in the future (on the first machine created):

```
[ec2-user@ip-172-31-82-118 ~]$ sudo yum install -y httpd
```

I configure the security group to allow traffic on port 80:

Edit inbound rules [info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

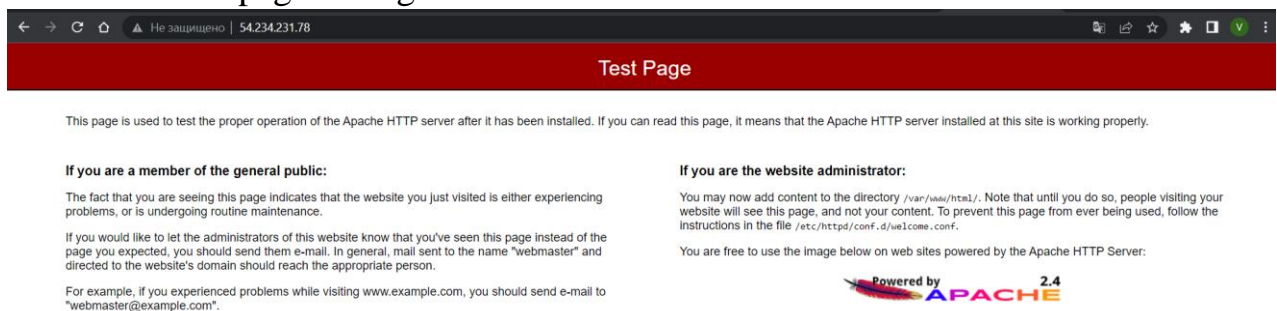
Security group rule ID	Type	Protocol	Port range	Source	Description - optional	
sgr-0dba9287d2f105957	SSH	TCP	22	Custom		Delete
-	HTTP	TCP	80	Anywhere (0.0.0.0/0)		Delete

[Add rule](#) [Cancel](#) [Preview changes](#) [Save rules](#)

I run a web server:

```
[ec2-user@ip-172-31-82-118 ~]$ sudo systemctl start httpd
```

Check the web page through the IP address:



On GoDaddy, I configure the domain records to point to the EC2 instance:

Записи DNS

<link>Записи DNS визначають поведінку вашого домену, зокрема відображення вмісту веб-сайту та доставлення електронної пошти.

Видалити Копіювати Фільтр Додати

Тип	Ім'я	Дані	TTL	Видалити	Змінити
A	@	54.234.231.78	Власний		

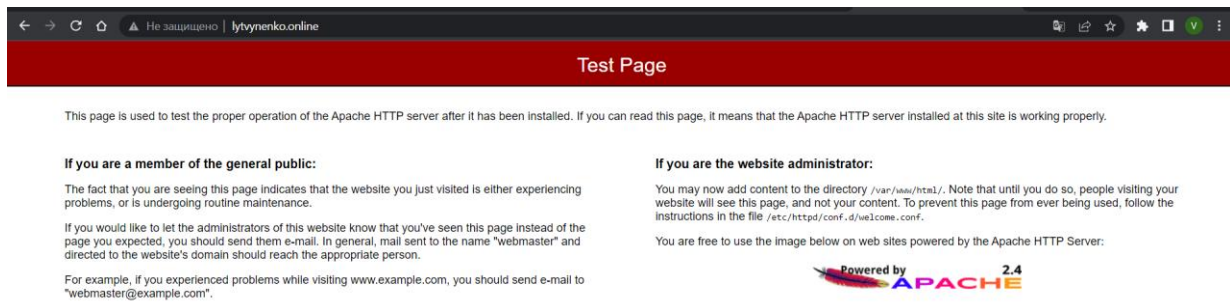
Запис А з використанням IP-адреси з'єднує ваш домен із веб-сайтом. Ці записи також використовуються для створення субдоменів, таких як `www` або `store`, які вказують на IP-адресу.

Тип: A Ім'я: @ Значення: 54.234.231.78 TTL: Власний

Секунди: 600

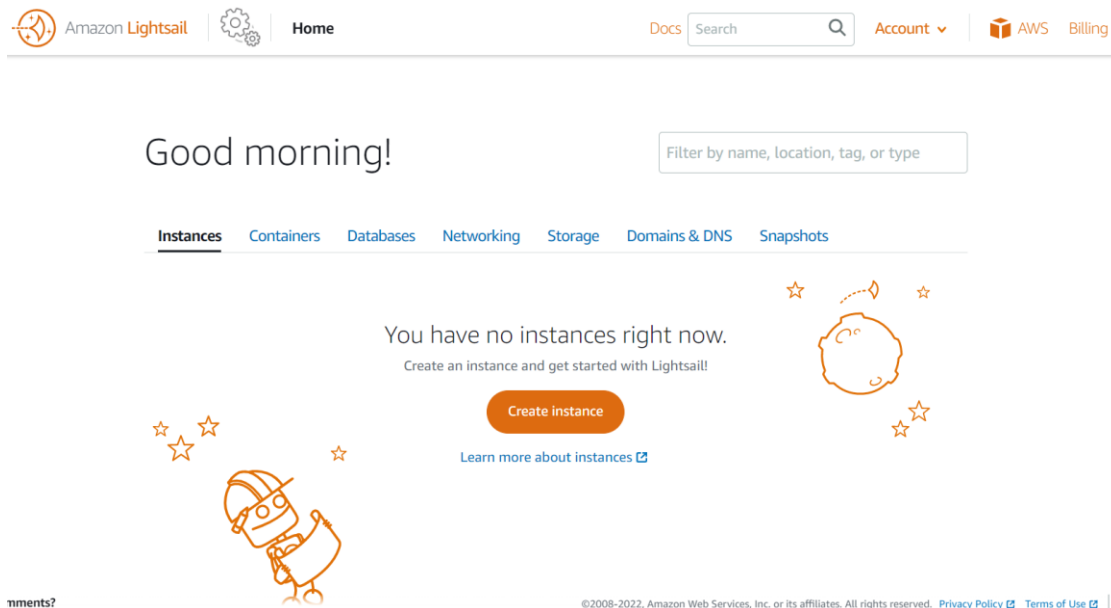
Зберегти Закрити

Everything works fine. The website can be found by its domain name

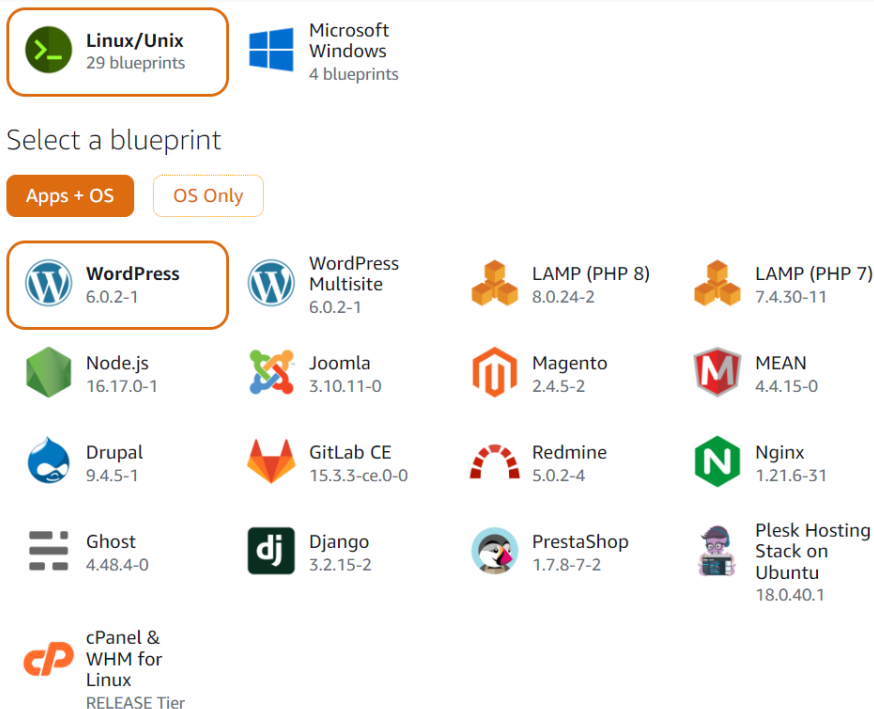


## 7) Launch and configure a WordPress instance with Amazon Lightsail

### I create an instance with Lightsail:



I choose Linux/Unix as the platform and WordPress as the blueprint:



I enter a name for my instance and choose «Create instance»:

## Identify your instance

Your Lightsail resources must have unique names.

lv\_instance\_lightsail × 1

### TAGGING OPTIONS

Use tags to filter and organize your resources in the Lightsail console. Key-value tags can also be used to organize your billing, and to control access to your resources.

[Learn more about tagging.](#)

Key-only tags ?

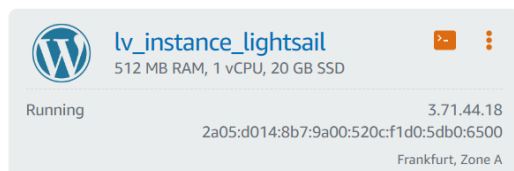
+ Add key-only tags

Key-value tags ?

+ Add key-value tag

Create instance

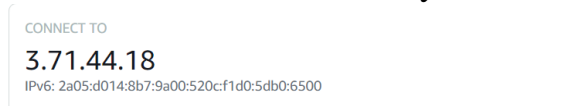
On the Instances tab of the Lightsail home page, I choose the SSH quick-connect icon:



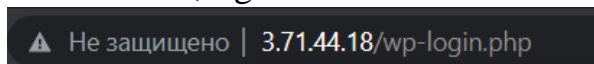
I enter the following command to retrieve the default application password:

```
bitnami@ip-172-26-12-224:~$ cat $HOME/bitnami_application_password
00C7n1q3tFmM
```

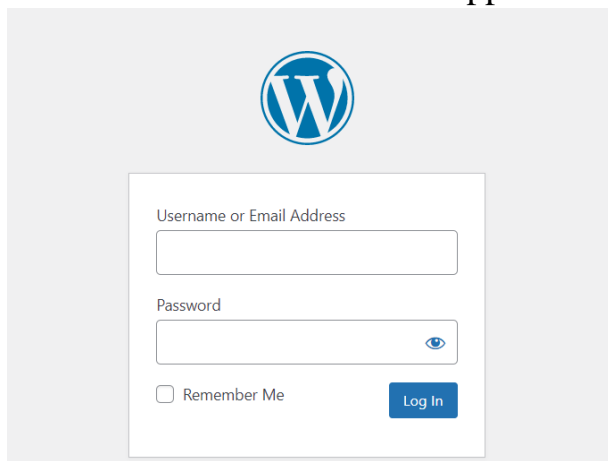
I define the IP address of my instance:



In a browser, I go to:



An administration dashboard appears:



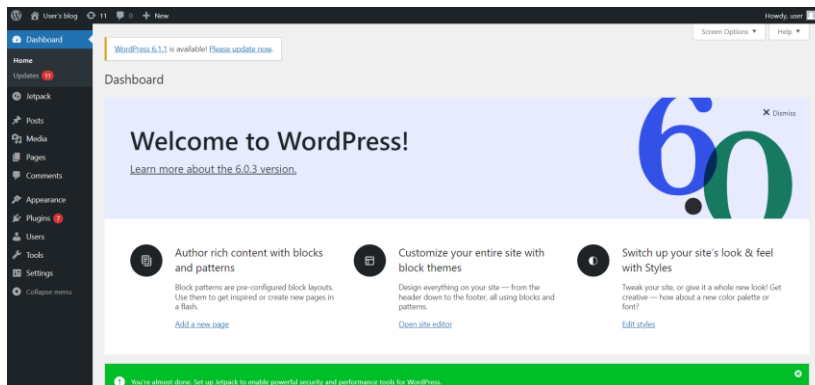
I enter a username and a password:

Username or Email Address

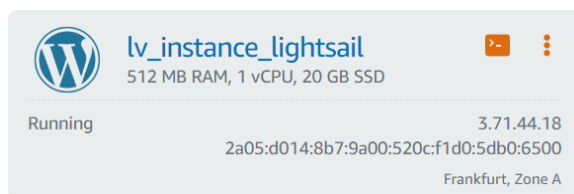
Password

☒ Remember Me

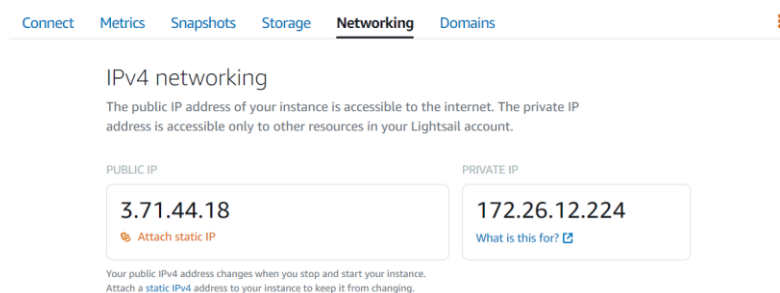
The result of the above actions:



On the Instances tab of the Lightsail home page, I choose my running WordPress instance:



I open the «Networking» tab, then choose «Attach static IP»:



### Attach static IP

Attach a **Static IP** as a stable endpoint before assigning a domain to **lv\_instance\_lightsail**.

Select a static IP to attach

A static IP is attached:

PUBLIC IP

18.158.117.128

Detach ✕

Staticip-1

Your instance is using a static IP as its public IPv4 address. A static IP doesn't change when you stop and start your instance.

On the «Domains & DNS» tab of the home page, I choose «Create DNS zone»:

Good morning!

Filter by name, location, tag, or type

Instances Containers Databases Networking Storage **Domains & DNS** Snapshots

### Create a DNS Zone

A DNS zone contains the domain name system (DNS) records for your domain. By creating a DNS zone, you can easily map your registered domain and its subdomains to your Lightsail resources. If you have a domain registered elsewhere, you can add it to Lightsail by creating a DNS zone.

[Learn more about DNS zones](#)

Create DNS zone

I enter domain configuration and create a domain zone:

### Domain configuration

You must register your domain before creating a DNS zone.

[Learn more about domain registration in Lightsail](#)


#### Domain source

- ☐ Use a domain that is registered with Amazon Route 53
- ☒ Use a domain from another registrar



#### Domain name

Specify your registered domain name.

lytvynenko.online


-  Enter the first part of the name and the extension (such as example.com), without www.

I add the received name server addresses to my domain registrar:

 Amazon Lightsail  Home Docs Search Account AWS Billing

### Domain

Use this DNS zone to manage your domain.

 Update the name servers of your domain to match the name servers of this DNS zone.

### Name servers

Lightsail assigns name servers when you create a DNS zone. To make Lightsail the DNS service for a domain, you configure the domain registration to use these name servers. [Learn more about name server records](#)

ns-357.awsdns-44.com  
ns-573.awsdns-07.net  
ns-1495.awsdns-58.org  
ns-1872.awsdns-42.co.uk

Змінити сервери імен

### Указати мої власні сервери імен

Змінення ваших серверів імен становить ризик і потенційно може призвести до зникнення веб-сайту з загального доступу.

ns-357.awsdns-44.com	🗑
ns-573.awsdns-07.net	🗑
ns-1495.awsdns-58.org	🗑
ns-1872.awsdns-42.co.uk	🗑

🔗 [Додати сервер імен](#)

Скасувати

Назад

Зберегти

## I add new DNS record to Lightsail:

[Domains](#) [Assignments](#) **[DNS records](#)**

### DNS records

Each record in a DNS zone defines how you want to route internet traffic for your domain. For example, you can add DNS records that route traffic to your Lightsail resources, another domain, or a mail server.

[Learn more about editing DNS records](#)

+ Add record

#### A RECORDS

Record name	Route traffic to

#### ✎ Edit record

Record type

A record — Routes traffic to an IPv4 address

Record name

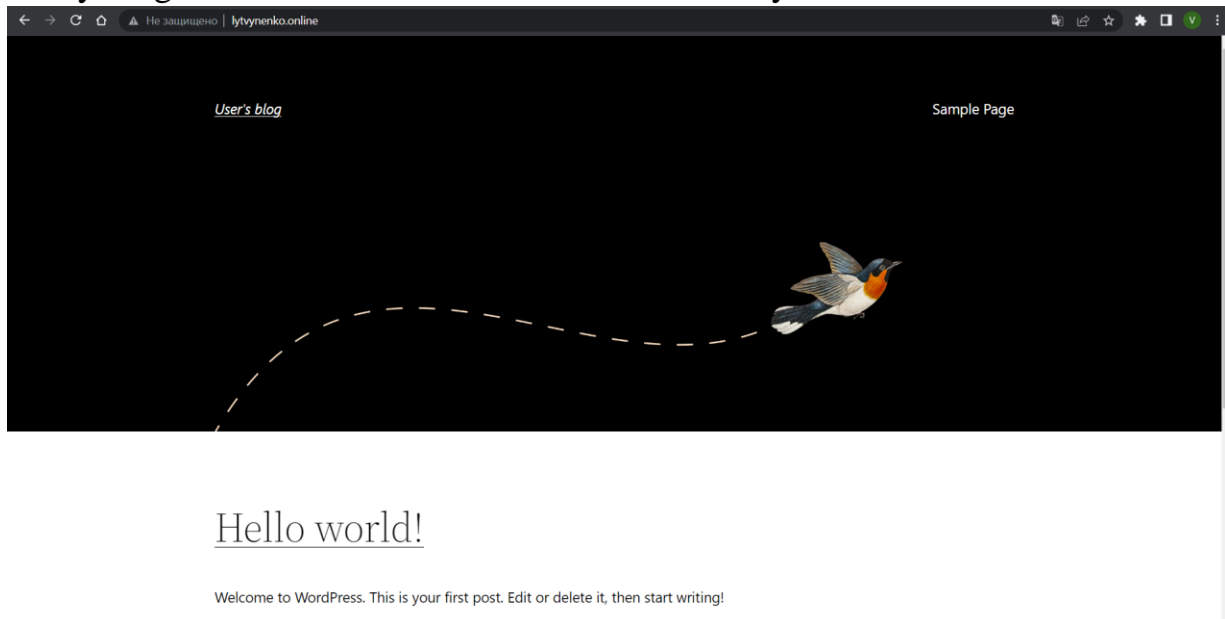
lytvynenko.online

Resolves to

18.158.117.128

Cancel Save

## Everything works fine. The website can be found by its domain name:



## I delete the instance:

Delete this instance?

Warning:

This process will completely remove this instance.

Other resources that rely on this instance might be affected.

You will continue to be billed for any resources that are detached because of this deletion.

No, cancel

Yes, delete

## 8) Review the 10-minute Store and Retrieve a File. Repeat, creating your own repository.

I enter the Amazon S3 console:



I create a new bucket:

### Create a bucket

Every object in S3 is stored in a bucket. To upload files and folders to S3, you'll need to create a bucket where the objects will be stored.

Create bucket

I enter a bucket name:

Create bucket [Info](#)

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

General configuration

Bucket name

lv-bucket-15155

Bucket name must be globally unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#)

AWS Region

US East (N. Virginia) us-east-1

Copy settings from existing bucket - optional

Only the bucket settings in the following configuration are copied.

Choose bucket

I leave all other settings as default and create a bucket:

Cancel

Create bucket

I navigate to the created bucket:

lv-bucket-15155 US East (N. Virginia) us-east-1 Bucket and objects not public November 22, 2022, 11:54:56 (UTC+02:00)

I upload a file to the bucket:

**Files and folders** (1 Total, 4.3 MB) Remove Add files Add folder

All files and folders in this table will be uploaded.

Find by name

<input type="checkbox"/>	Name	Folder	Type	Size
<input type="checkbox"/>	IMG_6714.jpg	-	image/jpeg	4.3 MB

**Destination**

Destination  
s3://lv-bucket-15155

► **Destination details**  
Bucket settings that impact new objects stored in the specified destination.

► **Permissions**  
Grant public access and access to other AWS accounts.

► **Properties**  
Specify storage class, encryption settings, tags, and more.

Cancel Upload

In the bucket, I select a file that I want to download, click «Download» button:

lv-bucket-15155 [Info](#)

[Objects](#) [Properties](#) [Permissions](#) [Metrics](#) [Management](#) [Access Points](#)

**Objects** (1)

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 Copy S3 URI Copy URL Download Open Delete Actions Create folder Upload

Find objects by prefix

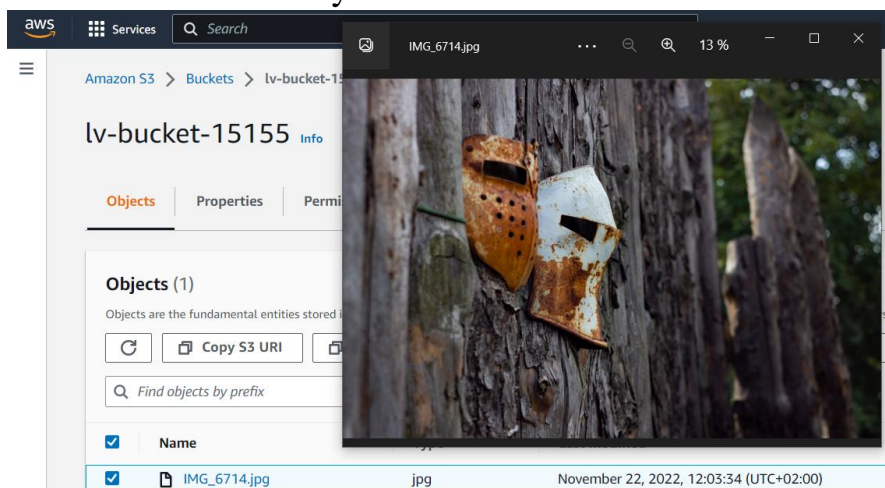
<input checked="" type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input checked="" type="checkbox"/>	IMG_6714.jpg	jpg	November 22, 2022, 12:03:34 (UTC+02:00)	4.3 MB	Standard

Feedback Looking for language selection? Find it in the new Unified Settings [Settings](#)

© 2022, Amazon Web Services, Inc. or its affiliates. [Privacy](#) [Terms](#) [Cookie preferences](#)

IMG\_6714.jpg [Show all](#)

The file is successfully downloaded:





I delete the file from the bucket:

Delete objects


- If a folder is selected for deletion, all objects in the folder will be deleted, and any new objects added while the delete action is in progress might also be deleted. If an object is selected for deletion, any new objects with the same name that are uploaded before the delete action is completed will also be deleted.
- Deleting the specified objects can't be undone.

[Learn more](#)

Specified objects

Find objects by name

< 1 >

Name	Type	Last modified	Size
 IMG_6714.jpg	jpg	November 22, 2022, 12:08:03 (UTC+02:00)	4.3 MB

Permanently delete objects?

To confirm deletion, type *permanently delete* in the text input field.

permanently delete

Cancel

Delete objects

I delete the bucket:

Delete bucket

- Deleting a bucket cannot be undone.
- Bucket names are unique. If you delete a bucket, another AWS user can use the name.

[Learn more](#)

Delete bucket "lv-bucket-15155"?

To confirm deletion, enter the name of the bucket in the text input field.

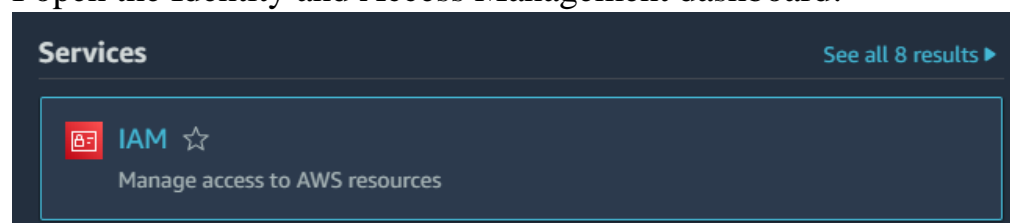
lv-bucket-15155

Cancel

Delete bucket

9) Review the 10-minute example Batch upload files to the cloud to Amazon S3 using the AWS CLI. Create a user AWS IAM, configure CLI AWS and upload any files to S3.

I open the Identity and Access Management dashboard:



I select «Users» tab:

## ▼ Access management

User groups

Users

Roles

Policies

Identity providers

Account settings

I add a new user:



I configure a user:

### Add user

1 2 3 4 5

#### Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name\*

[+ Add another user](#)

#### Select AWS access type

Select how these users will primarily access AWS. If you choose only programmatic access, it does NOT prevent users from accessing the console using an assumed role. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

- Select AWS credential type\* ☒ **Access key - Programmatic access**  
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.
- ☐ **Password - AWS Management Console access**  
Enables a **password** that allows users to sign-in to the AWS Management Console.

### Add user

1 2 3 4 5

#### ▼ Set permissions

Add user to group

Copy permissions from existing user

Attach existing policies directly

[Create policy](#)

Filter policies ▼

Showing 786 results

I leave the other settings as default and download user security credentials:

### Add user

1 2 3 4 5

**Success**  
You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.  
  
Users with AWS Management Console access can sign-in at: <https://neterlon.signin.aws.amazon.com/console>

[Download .csv](#)

	User	Access key ID	Secret access key
	AWS_Admin	AKIAVVESMKZHLYKV6J2Q	***** <a href="#">Show</a>

I type «aws configure» in console and press enter:

```
C:\Users\vlady>aws configure
AWS Access Key ID [*****LEKP]:
```

I enter user credentials:

```
C:\Users\vlady>aws configure
AWS Access Key ID [*****LEKP]: AKIAVVESMKZHLVKV6J2Q
AWS Secret Access Key [*****LIXa]: 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
Default region name [us-east-1]: us-east-1
Default output format [json]: json
```

I create a new bucket through a console:

```
C:\Users\vlady>aws s3 mb s3://my-backup-bucket-454545
make_bucket: my-backup-bucket-454545
```

I upload a file located in my local directory to the S3 bucket:

```
C:\Users\vlady>aws s3 cp "C:\Users\vlady\Desktop\IMG_6650.jpg" s3://my-backup-bucket-454545
upload: Desktop\IMG_6650.jpg to s3://my-backup-bucket-454545/IMG_6650.jpg
```

I do a reverse command and download the file:

```
C:\Users\vlady>aws s3 cp s3://my-backup-bucket-454545/IMG_6650.jpg C:\Users\vlady\Desktop\
download: s3://my-backup-bucket-454545/IMG_6650.jpg to Desktop\IMG_6650.jpg
```

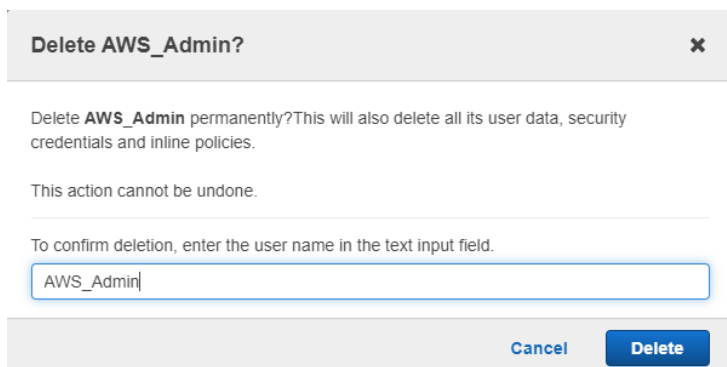
I delete the file from the bucket:

```
C:\Users\vlady>aws s3 rm s3://my-backup-bucket-454545/IMG_6650.jpg
delete: s3://my-backup-bucket-454545/IMG_6650.jpg
```

I delete the bucket:

```
C:\Users\vlady>aws s3api delete-bucket --bucket my-backup-bucket-454545
```

I delete the user:



The screenshot shows a dialog box titled "Delete AWS\_Admin?". The text inside reads: "Delete **AWS\_Admin** permanently? This will also delete all its user data, security credentials and inline policies. This action cannot be undone." Below this, it says "To confirm deletion, enter the user name in the text input field." There is a text input field containing "AWS\_Admin". At the bottom right, there are two buttons: "Cancel" and "Delete".

## 10) Review the «10-minute example Deploy Docker Containers on Amazon Elastic Container Service (Amazon ECS)».

To launch the Amazon ECS first-run wizard, I choose the «Get started» button.



In the Container definition field, I select «sample-app»:

#### Container definition

Edit

Choose an image for your container below to get started quickly or define the container image to use.

<b>sample-app</b> image : httpd:2.4 memory : 0.5GB (512) cpu : 0.25 vCPU (256)	<b>nginx</b> image : nginx:latest memory : 0.5GB (512) cpu : 0.25 vCPU (256)
<b>tomcat-webserver</b> image : tomcat memory : 2GB (2048) cpu : 1 vCPU (1024)	<b>custom</b> image : -- memory : -- cpu : -- <p>Configure</p>

I enable Application Load Balancer:

#### Define your service

Edit

A service allows you to run and maintain a specified number (the "desired count") of simultaneous instances of a task definition in an ECS cluster.

Service name	sample-app-service
Number of desired tasks	1
Security group	Automatically create new <p>Two security groups are created to secure your service: An Application Load Balancer security group that allows all traffic on the Application Load Balancer port and an Amazon ECS security group that allows all traffic ONLY from the Application Load Balancer security group. You can further configure security groups and network access outside of this wizard.</p>
Load balancer type	<input type="radio"/> None <input checked="" type="radio"/> Application Load Balancer
Load balancer listener port	80
Load balancer listener protocol	HTTP

I enter a name for a cluster:

#### Configure your cluster

The infrastructure in a Fargate cluster is fully managed by AWS. Your containers run without you managing and configuring individual Amazon EC2 instances.

To see key differences between Fargate and standard ECS clusters, see the [Amazon ECS documentation](#).

Cluster name	sample-cluster	
		Cluster names are unique per account per region. Up to 255 letters (uppercase and lowercase), numbers, and hyphens are allowed.
VPC ID	Automatically create new	<p>i</p>
Subnets	Automatically create new	<p>i</p>

I launch my resources:

**Review**

Review the configuration you've set up before creating your task definition, service, and cluster.

**Task definition** Edit

Task definition name	first-run-task-definition
Network mode	awsvpc
Task execution role	Create new
Container name	sample-app
Image	httpd:2.4
Memory	512
Port	80
Protocol	HTTP

**Service** Edit

Service name	sample-app-service
Number of desired tasks	1
Load balancer listener port	80
Load balancer listener protocol	HTTP

**Cluster** Edit

Cluster name	sample-cluster
VPC ID	Automatically create new
Subnets	Automatically create new

\*Required Cancel Previous Create

After the launch is complete, I choose «View service»:

#### Launch Status

We are creating resources for your service. This may take up to 10 minutes. When we're complete, you can view your service.

Back View service

I select the Load balancer name:

Load balancer name

[EC2Co-EcsEL-1U5BTUP76OUJC](#) 

I select the target group name:

Load balancer (1)				
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.				
<input type="text" value="Filter by property or value"/>				
<input type="checkbox"/>	Name	DNS name	State	VPC ID
<input type="checkbox"/>	EC2Co-EcsEL-1U5BTUP76OUJC	EC2Co-EcsEL-1U5BTUP76OUJC-849101939.us-east-1.elb.amazonaws.com	Active	vpc-048eae0ccfe85a576

I copy the DNS name and paste it into a new browser window:

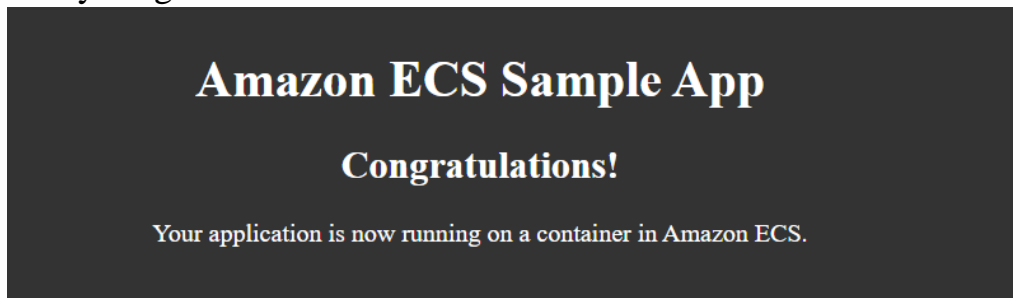
DNS name

EC2Co-EcsEL-1U5BTUP76OUJC-

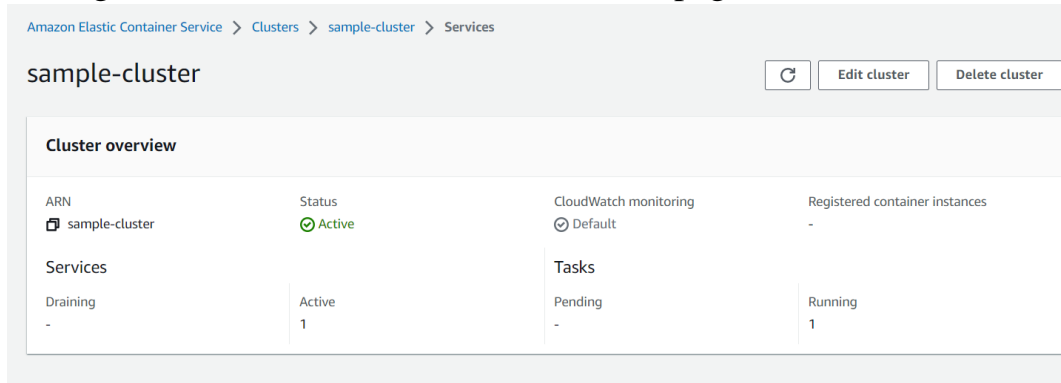
849101939.us-east-1.elb.amazonaws.com

(A Record)

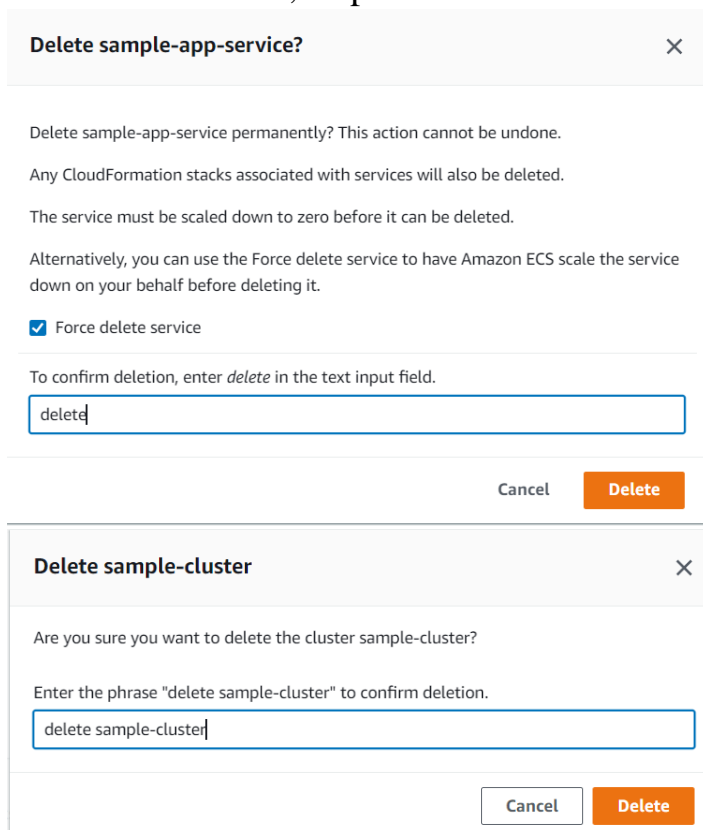
Everything works fine:



I navigate back to the Amazon ECS console page and select the cluster name:

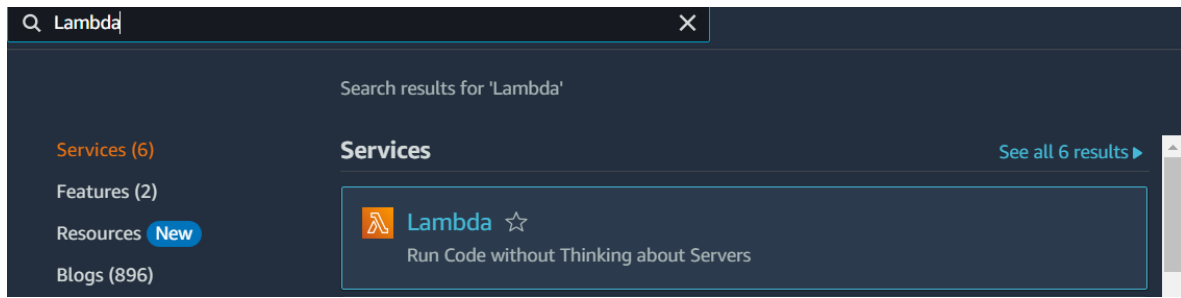


I delete the service, stop the task and then delete the cluster:



## 11) Run a Serverless "Hello, World!" with AWS Lambda.

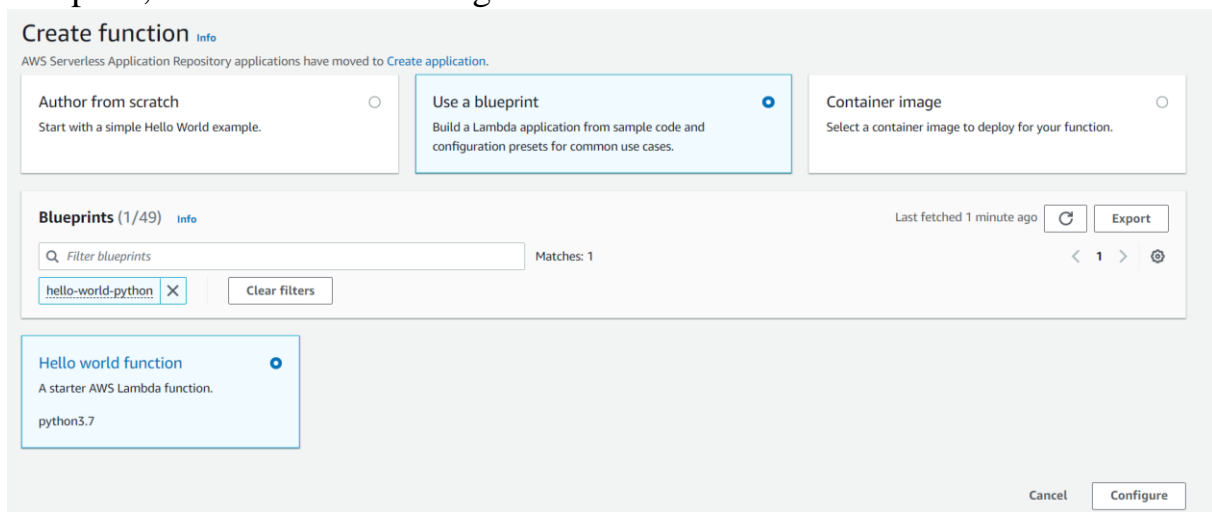
I open the AWS Lambda Console:



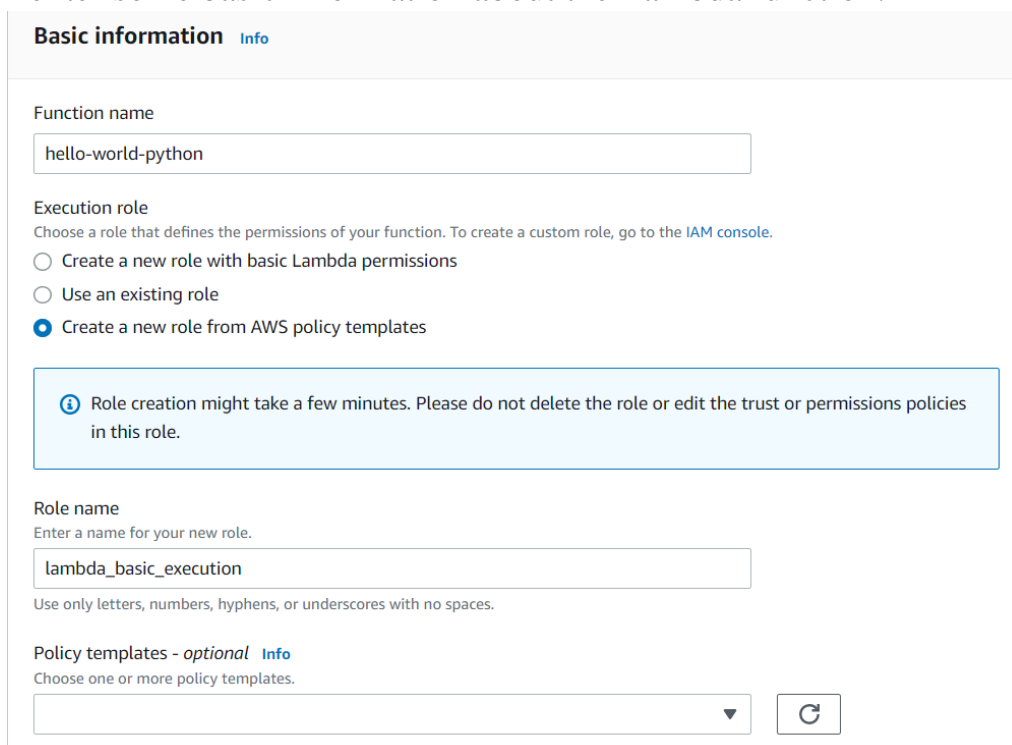
In the AWS Lambda console, I choose «Create function»:



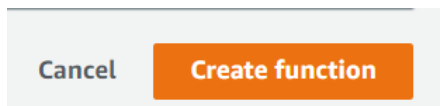
I select «use a blueprint». In the filter box, I enter «hello-world-python» and select the blueprint, then I choose «Configure»:



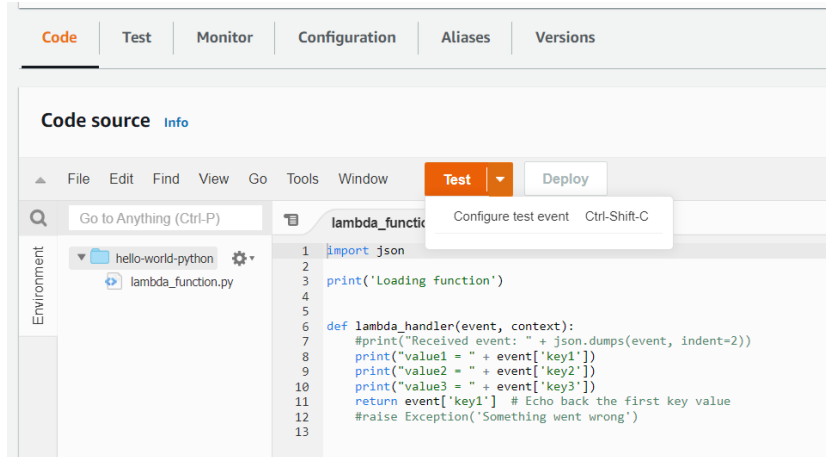
I enter some basic information about the Lambda function:



I select «Create function»:



I select «Configure Test Event» from the drop-down menu called «Test» to test the function:



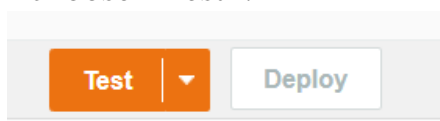
I create a new event:

A screenshot of the 'Configure test event' dialog box. It contains the following fields and options:

- Test event action:** Radio buttons for 'Create new event' (selected) and 'Edit saved event'.
- Event name:** Text input field containing 'HelloWorldEvent'. Below it, a note says 'Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.'
- Event sharing settings:** Radio buttons for 'Private' (selected) and 'Shareable'. Below each is a description and a 'Learn more' link.
- Template - optional:** A dropdown menu showing 'hello-world'.
- Event JSON:** A text area with a 'Format JSON' button. The JSON content is: 

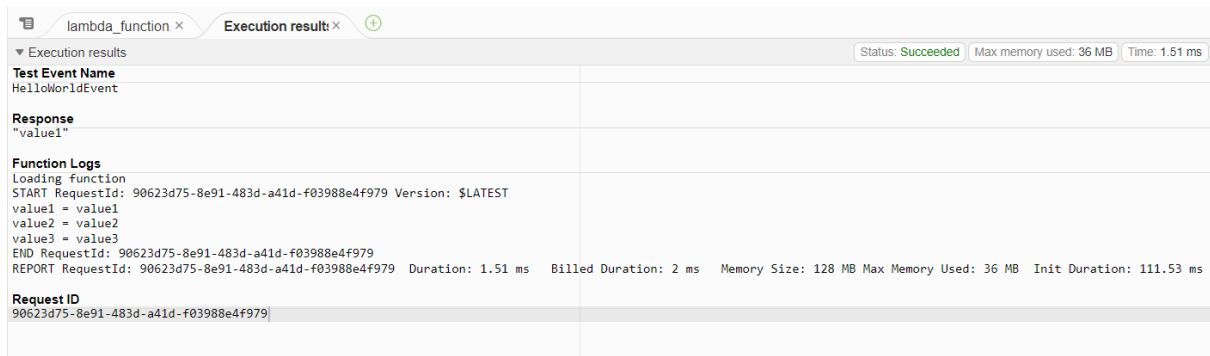
```
1 {
2   "key1": "value1".
```

I choose «Test»:

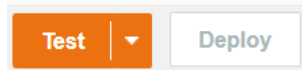


Upon successful execution, I view the results in the console:

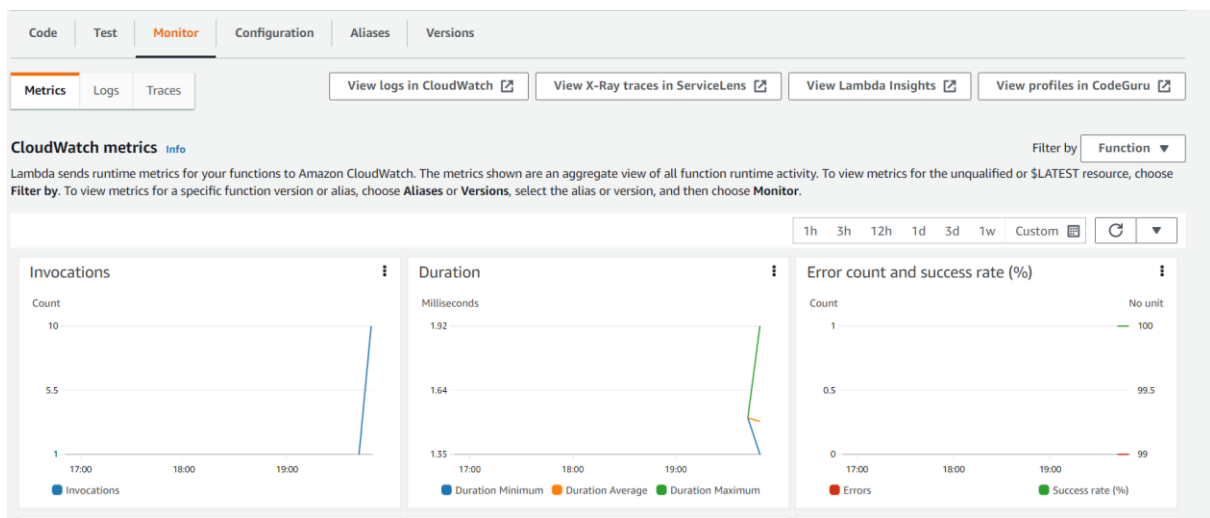




I invoke the Lambda function a few more times by repeatedly choosing the «Test» button to generate metrics:



I select the «Monitor» tab to view the results:



I delete the Lambda function:

Delete 1 functions

⚠ Deleting a function permanently removes the function code. The related logs, roles, test event schemas, and triggers are retained in your account.

hello-world-python

To confirm deletion, type **delete** in the field.

delete

Cancel Delete

- 12) Create a static website on Amazon S3, publicly available (using a custom domain). Post on the page your own photo, the name of the educational program, the list of AWS services with which the student worked within the educational program or earlier and the full list with links of completed labs.

I create a bucket:

## Create bucket [Info](#)

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

### General configuration

Bucket name

Bucket name must be globally unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#)

AWS Region

US East (N. Virginia) us-east-1

Copy settings from existing bucket - *optional*

Only the bucket settings in the following configuration are copied.

[Choose bucket](#)

### 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.

I upload files to the bucket (including an html page):

## Upload [Info](#)

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose **Add files**, or **Add folders**.

### Files and folders (2 Total, 2.8 MB)

All files and folders in this table will be uploaded.

< 1 >

<input type="checkbox"/>	Name	Folder	Type	Size
<input type="checkbox"/>	S3_index.html	-	text/html	4.9 KB
<input type="checkbox"/>	photo.jpg	-	image/jpeg	2.8 MB

### Destination

Destination

s3://lytvynenko.online

► **Destination details**

Bucket settings that impact new objects stored in the specified destination.

In properties, I enable static website hosting:

## Edit static website hosting [Info](#)

### Static website hosting

Use this bucket to host a website or redirect requests. [Learn more](#)

#### Static website hosting

- ☐ Disable
- ☒ Enable

#### Hosting type

- ☒ Host a static website  
Use the bucket endpoint as the web address. [Learn more](#)
- ☐ Redirect requests for an object  
Redirect requests to another bucket or domain. [Learn more](#)

**i** For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more information, see [Using Amazon S3 Block Public Access](#)

#### Index document

Specify the home or default page of the website.

S3\_index.html

In permissions, I clear «Block all public access»:

## Edit Block public access (bucket settings) [Info](#)

### Block public access (bucket settings)

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 all your S3 buckets and 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 your buckets 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.

Cancel

Save changes

I grant public read access for the website (Bucket policy editor):


## Edit bucket policy [Info](#)

### Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

[Policy examples](#)[Policy generator](#)

Bucket ARN

 arn:aws:s3:::lytvynenko.online

### Policy

```
1 {
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Sid": "PublicReadGetObject",
6       "Effect": "Allow",
7       "Principal": "*",
8       "Action": "s3:GetObject",
9       "Resource": "arn:aws:s3:::lytvynenko.online/*"
10    }
11  ]
12 }
```

Edit statement  
**PublicReadGetObject** Remove

1. Add actions

Choose a service

Included

S3

Available

I open the Route 53 dashboard:

Search results for 'route'

Services (4)

Features (13)

Resources **New**

Blogs (229)


Documentation (44,486)


Knowledge Articles (30)


Tutorials (2)


Marketplace (597)

### Services

 **Route 53** ☆  
Scalable DNS and Domain Name Registration

 **Route 53 Resolver**  
Resolve DNS queries in your Amazon VPC and on-premises network.

 **Route 53 Application Recovery Controller** ☆  
Monitor application recovery readiness and manage failovers

 **Amazon Location Service** ☆  
Securely and easily add location data to applications.

I create a new hosted zone:

### DNS management

A hosted zone tells Route 53 how to respond to DNS queries for a domain such as example.com.

Create hosted zone

I enter a domain name and choose «Create hosted zone» button:

## Create hosted zone [Info](#)

### Hosted zone configuration

A hosted zone is a container that holds information about how you want to route traffic for a domain, such as example.com, and its subdomains.

#### Domain name [Info](#)

This is the name of the domain that you want to route traffic for.

Valid characters: a-z, 0-9, ! " # \$ % & ' ( ) \* + , - / : ; < = > ? @ [ \ ] ^ \_ ` { | } . ~

#### Description - optional [Info](#)

This value lets you distinguish hosted zones that have the same name.

The description can have up to 256 characters. 0/256

#### Type [Info](#)

The type indicates whether you want to route traffic on the internet or in an Amazon VPC.



##### Public hosted zone

A public hosted zone determines how traffic is routed on the internet.



##### Private hosted zone

A private hosted zone determines how traffic is routed within an Amazon VPC.

I add the received name server addresses to my domain registrar:

### Records (2) [Info](#)

Automatic mode is the current search behavior optimized for best filter results. [To change modes go to settings.](#)

[Delete record](#)[Import zone file](#)[Create record](#)[Type](#) ▼[Routing policy](#) ▼[Alias](#) ▼

&lt; 1 &gt;



<input type="checkbox"/>	Record name ▼	Type ▼	Routin... ▼	Differ... ▼	Value/Route traffic to ▼
<input type="checkbox"/>	lytvynenko.o...	NS	Simple	-	ns-10.awsdns-01.com. ns-1132.awsdns-13.org. ns-1828.awsdns-36.co.uk. ns-731.awsdns-27.net.
<input type="checkbox"/>	lytvynenko.o...	SOA	Simple	-	ns-10.awsdns-01.com. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 8...

## Змінити сервери імен

### Указати мої власні сервери імен

Змінення ваших серверів імен становить ризик і потенційно може призвести до зникнення веб-сайту з загального доступу.

[+ Додати сервер імен](#)[Скасувати](#)[Назад](#)[Зберегти](#)

I create a new record in the DNS zone (pointing to the S3 bucket):

Create record [Info](#)

Quick create record [Switch to wizard](#)

▼ Record 1 [Delete](#)

Record name [Info](#)  lytvynenko.online Record type [Info](#)

Keep blank to create a record for the root domain.

☒ Alias

Route traffic to [Info](#)

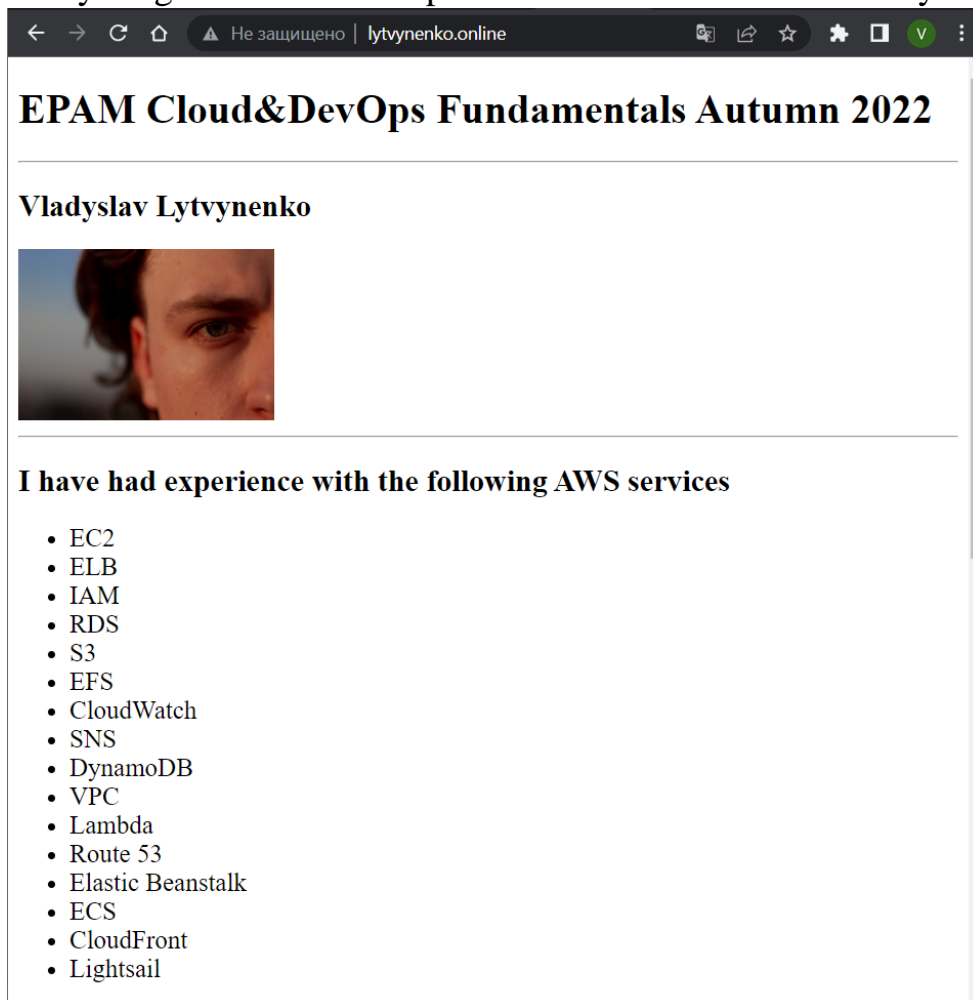
Routing policy [Info](#)

Evaluate target health ☐ No

[Add another record](#)

[Cancel](#) [Create records](#)

Everything works fine. It is possible to reach the S3 bucket by its domain name:



## Completed AWS labs in this course

### AWS Educate

- [Introduction to Cloud 101](#)
- [Getting Started with Compute](#)
- [Getting Started with Storage](#)

### AWS hands-on tutorials

- [Protect Data on Amazon S3 Against Accidental Deletion or Application Bugs Using S3 Versioning, S3 Object Lock, and S3 Replication](#)
- [Deploy a LAMP Stack Application to Amazon Lightsail](#)
- [Connecting a WordPress website to an Amazon Lightsail bucket and distribution](#)
- [Amazon EC2 Auto Scaling with EC2 Spot Instances](#)
- [Getting started using the Amazon S3 Glacier storage classes](#)

### AWS Skillbuilder


- [AWS Cloud Practitioner Essentials: Core Services](#)
- [AWS Cloud Practitioner Essentials: Cloud Concepts](#)


### Amazon qwiklabs

- [Security on AWS](#)
- [Introduction to Amazon DynamoDB](#)
- [Introduction to Amazon Elastic Block Store \(Amazon EBS\)](#)
- [Introduction to Amazon CloudFront](#)
- [Introduction to AWS Identity and Access Management \(IAM\)](#)
- [Introduction to Amazon Redshift](#)
- [Introduction to AWS Key Management Service](#)
- [Introduction to Amazon Simple Storage Service \(S3\)](#)
- [Troubleshooting connectivity using EC2 Serial Console](#)

## I delete the bucket and the DNS zone:

### Delete bucket [Info](#)

-  • Deleting a bucket cannot be undone.
- Bucket names are unique. If you delete a bucket, another AWS user can use the name.
  - This bucket is configured to host a static website. We recommend that you clean up the Route 53 hosted zone settings that are related to the bucket.

[Learn more](#) 

#### Delete bucket "lytvynenko.online"?

To confirm deletion, enter the name of the bucket in the text input field.

Cancel

Delete bucket

#### Delete hosted zone lytvynenko.online?



Delete the hosted zone permanently? This action cannot be undone. Your domain might become unavailable on the internet.

To confirm that you want to delete the hosted zone, enter *delete* in the field.

Cancel

Delete