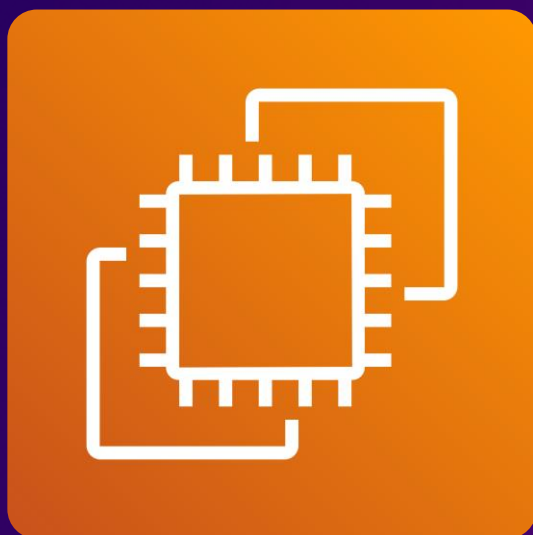




AWS
re:Start
CHALLENGE LAB

Amazon EC2 Instances Exercise



WEEK 9





Overview

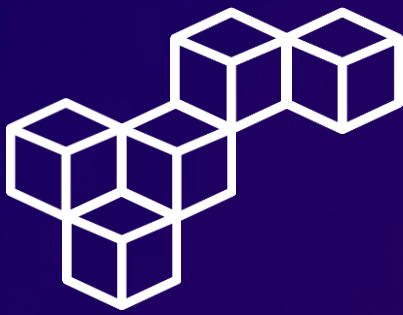
Your Challenge

Create an Amazon Linux EC2 instance to run a web application:

- Use the AWS Management Console to launch the instance.
- Use an Amazon Linux Amazon Machine Image (AMI) and a T3 instance type with a size that is smaller than medium.
- Launch the instance in a new virtual private cloud (VPC) and a new subnet, and auto-assign the instance's public IPv4 address.
- While you are creating your instance, in the user data, install and start the httpd service as your web server. Give write permission to users to the web server's document root directory (/var/www/html).
- Use a General Purpose SSD (gp2) volume type for the root volume.
- Configure the instance, and create the necessary resources so that you can connect to it by using Secure Shell (SSH).
- Capture a screenshot of the EC2 instance's system log showing that the httpd service was successfully installed.

To test your web server, deploy the web page in the following steps to your web server.

- Use EC2 Instance Connect to connect to your EC2 instance.
- Create a sample HTML file and save it as projects.html
- Place this file in the /var/www/html directory of your EC2 instance.
- Open a web browser, and navigate to this sample webpage.
- Capture a screenshot showing that the page was successfully returned and displayed.

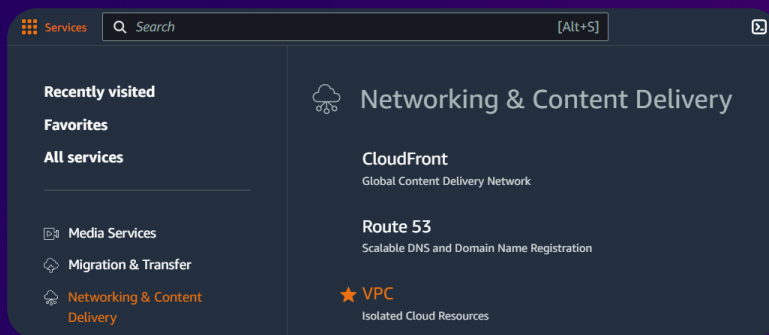


Task 1

Configure a new VPC

Step 1: Access the AWS Management Console

Open the AWS Management Console, and select VPC.



Step 2: Create a new VPC

Navigate to the **Your VPCs** section, select [Create VPC](#), and create a new virtual private cloud (VPC).

A screenshot of the 'VPC settings' form in the AWS Management Console. The form is titled 'VPC settings' and has a 'Resources to create' section with two radio buttons: 'VPC only' (selected) and 'VPC and more'. Below this is a 'Name tag - optional' section with a text input field containing 'Challenge Lab VPC'. The next section is 'IPv4 CIDR block' with two radio buttons: 'IPv4 CIDR manual input' (selected) and 'IPAM-allocated IPv4 CIDR block'. At the bottom, there is an 'IPv4 CIDR' text input field containing '10.0.0.0/24'.



Task 1

Configure a new VPC

Step 3: Create an internet gateway

Navigate to the **Internet gateways** section, select [Create internet gateway](#), create a new internet gateway, and attach it to the new VPC.

Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.

VPC
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

Available VPCs
Attach the internet gateway to this VPC.

Internet gateways (2) Info				
<input type="text" value="Search"/>				
<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID
<input type="checkbox"/>	-	igw-0ffbba16026c86b49f	Attached	vpc-0d3615fcb22fa4c0
<input type="checkbox"/>	Challenge Lab Internet Gateway	igw-050eebd6b0b9dbc9c	Attached	vpc-050062eb5cbb9f58 Challenge Lab VPC

Step 4: Create a public subnet

Navigate to the **Subnets** section, select [Create subnet](#), and create a new public subnet.

VPC

VPC ID
Create subnets in this VPC.

Associated VPC CIDRs

IPv4 CIDRs
10.0.0/24

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

IPv4 subnet CIDR block
 16 IPs



Task 1

Configure a new VPC

Step 5: Create a route table

Navigate to the **Route tables** section, select [Create route table](#), create a new route table, add a route to direct internet traffic to the internet gateway, and explicitly associate the new route table to the new public subnet.

Route table settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

Challenge Lab Route Table

VPC
The VPC to use for this route table.

vpc-050062eb5cbb9f58 (Challenge Lab VPC)

Routes (2)

Filter routes

Destination	Target	Status
0.0.0.0/0	igw-050eebd6b0b9dbc9c	Active
10.0.0.0/24	local	Active

Explicit subnet associations (1)

Find subnet association

Name	Subnet ID	IPv4 CIDR
Challenge Lab Public Subnet	subnet-07b64e9ce1ef76fae	10.0.0.0/28

Step 6: Create a security group

Navigate to the **Security groups** section, select [Create security group](#), create a new security group, and add inbound rules to allow SSH and HTTP traffic.

Basic details

Security group name *Info*

Challenge Lab Security Group

Description *Info*

Allow SSH and HTTP traffic

VPC *Info*

vpc-050062eb5cbb9f58 (Challenge Lab VPC)

Inbound rules (2)

Search

	Name	Security group r...	IP version	Type	Protocol	Port ra...	Source
<input type="checkbox"/>	-	sgr-0a3d8b3aeb7b...	IPv4	SSH	TCP	22	0.0.0.0/0
<input type="checkbox"/>	-	sgr-0ae795b519fdf...	IPv4	HTTP	TCP	80	0.0.0.0/0

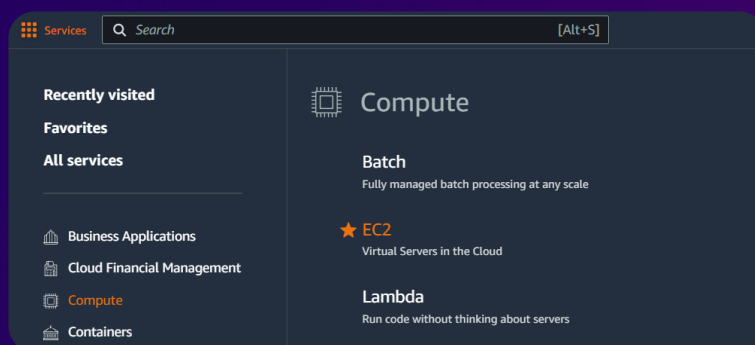


Task 2

Launch an EC2 instance

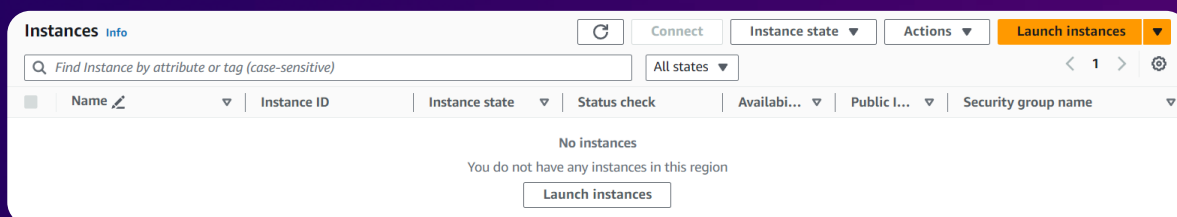
Step 1: Access the EC2 Management Console

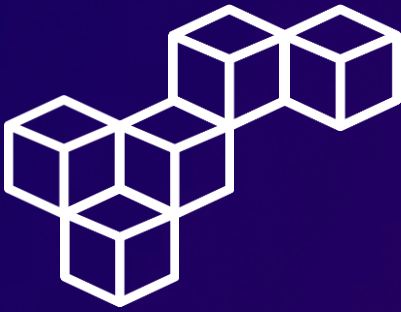
In the AWS Management Console, select EC2.



Step 2: Launch an instance

Navigate to the **Instances** section, and select [Launch instances](#).





Task 2

Launch an EC2 instance

Step 3: Set up the instance

Use the following parameters to configure the instance settings.

Name and tags [Info](#)

Name

Challenge Lab Instance

▼ Instance type

[Info](#) | [Get advice](#)

Instance type

t3.micro

Family: t3 2 vCPU 1 GiB Memory
Current generation: true
On-Demand SUSE base pricing: 0.0104 USD per Hour
On-Demand Windows base pricing: 0.0196 USD per Hour
On-Demand RHEL base pricing: 0.0704 USD per Hour
On-Demand Linux base pricing: 0.0104 USD per Hour

▼ Configure storage

[Info](#) [Advanced](#)

1x

8

GiB

gp2

Root volume (Not encrypted)

▼ Advanced details

[Info](#)

User data - optional

[Info](#)
Upload a file with your user data or enter it in the field.

Choose file

```
#!/bin/bash
# Install Apache Web Server
yum install -y httpd

# Turn on web server
systemctl enable httpd.service
systemctl start httpd.service
```

Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type

Free tier eligible

ami-0a283ac1aafe112d5 (64-bit (x86)) / ami-0a3a6ef42281968ae (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2 Kernel 5.10 AMI 2.0.20240503.0 x86_64 HVM gp2

Architecture

AMI ID

64-bit (x86)

ami-0a283ac1aafe112d5

[Verified provider](#)

▼ Network settings

[Info](#)

VPC - required

[Info](#)

vpc-050062eb5cbb9f58 (Challenge Lab VPC)

10.0.0.0/24

Subnet

[Info](#)

subnet-07b64e9ce1ef76fae

Challenge Lab Public Subnet

VPC: vpc-050062eb5cbb9f58 Owner: 851725353248
Availability Zone: us-west-2a IP addresses available: 11 CIDR: 10.0.0.0/28

Auto-assign public IP

[Info](#)

Enable

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

Common security groups

[Info](#)

Select security groups

Challenge Lab Security Group sg-02b483a9cea60bd68

X

Compare security group rules

Security groups that you add or remove here will be added to or removed from all your network interfaces.





Task 3

Test your web server

Step 3: Create an HTML file

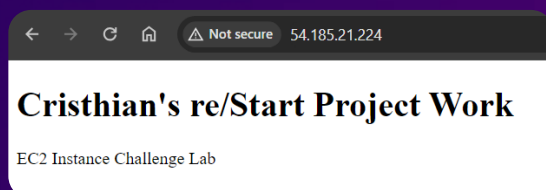
Use a text editor to create an HTML file using the following HTML code, place the file in the `/var/www/html` directory, and give write permission to users to the web server's document root directory (`/var/www/html`).

```
<!DOCTYPE html>
<html>
<body>
<h1>Cristhian's re/Start Project Work</h1>
<p>EC2 Instance Challenge Lab</p>
</body>
</html>
```

```
[ec2-user@ip-10-0-0-9 ~]$ sudo vi projects.html
[ec2-user@ip-10-0-0-9 ~]$ sudo cp projects.html /var/www/html/index.html
[ec2-user@ip-10-0-0-9 ~]$ sudo chmod 755 /var/www/html/
[ec2-user@ip-10-0-0-9 ~]$
```

Step 4: Review the webpage

Use the public IPv4 address of the instance to access your webpage. The page was successfully returned and displayed.





Conclusions

Configuring a VPC

Properly configuring a VPC with public subnets, route tables, an internet gateway, and security groups is essential for allowing public access to a web server instance.

Launching an EC2 instance

Launching an EC2 instance provides scalable compute resources, essential for deploying and managing applications in the cloud.

User Data Scripts

Using user data scripts automates the initial setup of EC2 instances, enabling efficient and consistent configuration upon launch.

The httpd service

The httpd service, part of the Apache HTTP Server, is crucial for serving web content and managing web server functionalities.

The `/var/www/html/` directory

The `/var/www/html/` directory is the default document root for Apache, where web files are stored and served to users.



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