

Guided Lab: Assigning an Elastic IP on Amazon EC2

Description

Elastic IP addresses are static IPv4 addresses designed for dynamic cloud computing. Unlike traditional IP addresses, which can change if an instance is stopped or terminated, an Elastic IP address remains associated with your AWS account until you decide to release it. This makes Elastic IPs useful for maintaining a consistent IP address for applications that require stable endpoints, such as web servers or applications with DNS dependencies. Assigning an Elastic IP to your EC2 instance ensures that your application remains accessible even if the instance it runs on is stopped and restarted, providing continuity and reliability.

Prerequisites

This lab assumes you have a basic understanding and knowledge of Amazon EC2 and Elastic IP Address.

If you find any gaps in your knowledge, consider taking the following lab:

- Creating an Amazon EC2 instance (Linux)

Objectives

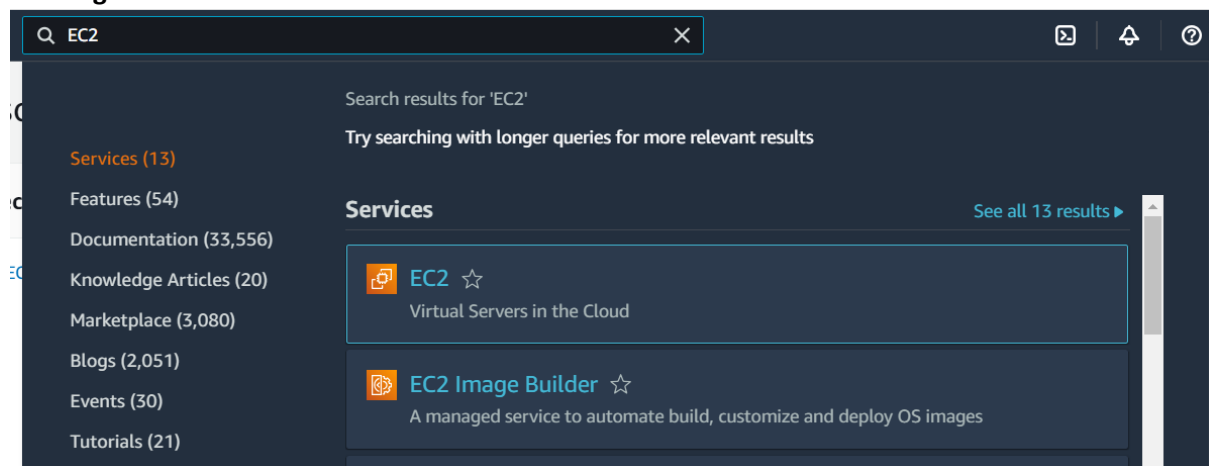
By the end of this lab, you will be able to:

- Launch an EC2 instance
- Allocate an Elastic IP address
- Associate the Elastic IP address with your EC2 instance
- Verify the Elastic IP address remains consistent after stopping and starting the instance

Lab Steps

Create an EC2 Instance

1. Navigate to EC2 Dashboard



2. Launch an EC2 Instance with the following configuration:

- Name: **MyWebServer**
- AMI: **Amazon Linux**

- Instance type: **t2.micro**
- Key pair: (**You can either create a new one or Proceed without a key pair in this lab.**)
If you choose to create a new one follow the following:
 - Key pair name: **myKeyPair**
 - KeyPairKey pair type: **RSA**
 - Private key file format: **.pem**
- Network settings: (Click **“Create security group”**)
 - Auto-assign public IP: Select **Enable**
 - Firewall (security groups): tick on the **Create security group**
 - Ensure that **Allow SSH traffic from** is checked and is **My IP**

Network settings [Info](#) Edit

Network [Info](#)
vpc-065e6cebb3e8814ed

Subnet [Info](#)
subnet-0f3d02a8f7918ce45

Auto-assign public IP [Info](#)
Enable
Additional charges apply when outside of free tier allowance

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

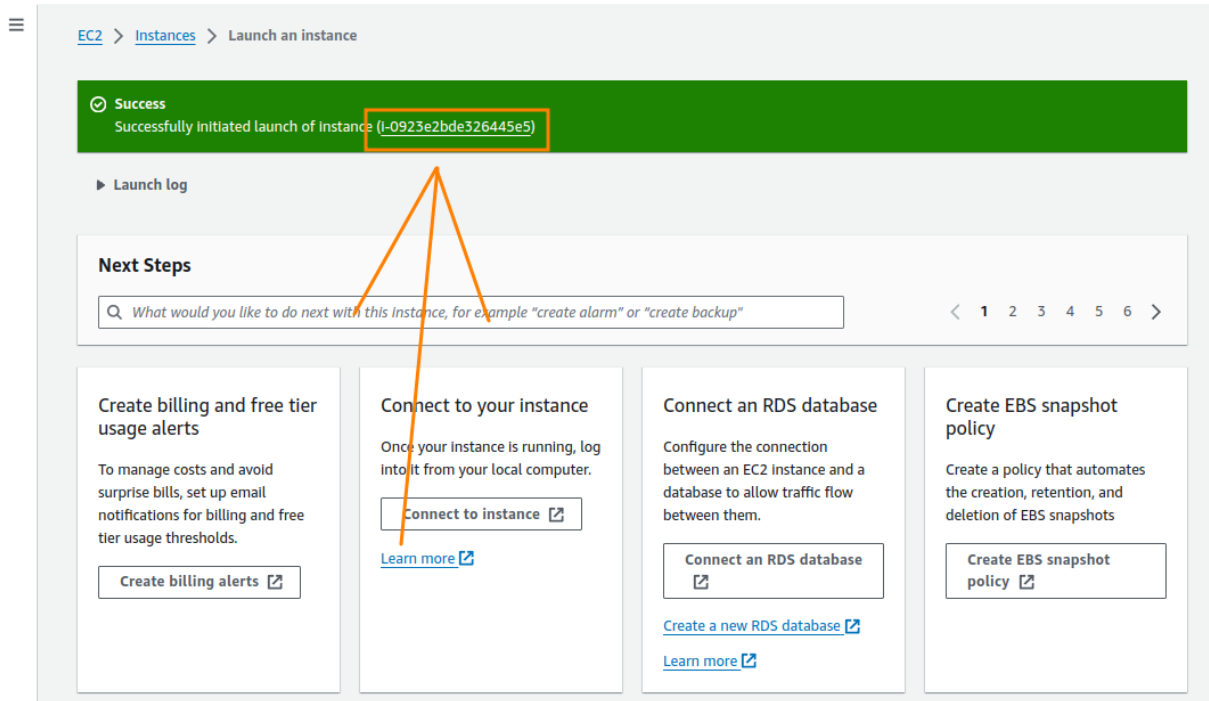
We'll create a new security group called 'launch-wizard-2' with the following rules:

- ☒ **Allow SSH traffic from**
Helps you connect to your instance My IP
119.111.230.25/32 ▼
- ☐ **Allow HTTPS traffic from the internet**
To set up an endpoint, for example when creating a web server
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To set up an endpoint, for example when creating a web server

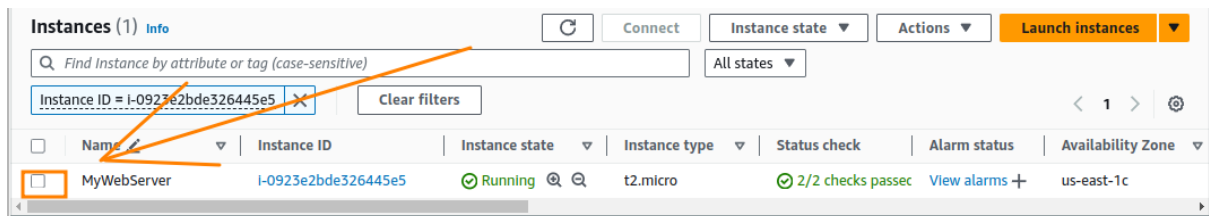
- Click Launch Instance.

Checking the IP address of the Instance

1. Click on the newly created Instance



2. Click on the **Select Box** beside **MyWebServer** Instance to check the **Public IPv4** address



3. Check the IP Address:

- Under the **“Details”** tab, note the **“Public IPv4 address”**. This is the current IP address assigned to your instance.

The screenshot displays the AWS Management Console interface for an EC2 instance. At the top, the 'Instances (1/1)' section shows a table with one instance: 'MyWebServer' (ID: i-0923e2bde326445e5), which is in a 'Running' state. Below the table, the 'Details' tab for this instance is selected. The 'Instance summary' section shows various attributes. The 'Public IPv4 address' is highlighted with an orange box and labeled as 44.208.167.87. An orange arrow originates from the instance ID in the table above and points directly to this public IP address field.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
MyWebServer	i-0923e2bde326445e5	Running	t2.micro	2/2 checks passed	View alarms	us-east-1c

i-0923e2bde326445e5 (MyWebServer)

Instance summary

Instance ID i-0923e2bde326445e5 (MyWebServer)	Public IPv4 address 44.208.167.87 open address	Private IPv4 addresses 192.168.5.41
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-44-208-167-87.compute-1.amazonaws.com open address
Hostname type IP name: ip-192-168-5-41.ec2.internal	Private IP DNS name (IPv4 only) ip-192-168-5-41.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding
Auto-assigned IP address	VPC ID	

Note: When an EC2 instance is stopped and started again, it may receive a new public IP address if it was previously using a dynamic public IP assigned by AWS. This can cause disruptions in connectivity as the previous IP address becomes invalid and the instance is assigned a new IP address. Services dependent on the old IP will fail to connect until they are updated with the new IP address.

You can test this by stopping your instance:

Successfully Initiated stopping of i-0923e2bde326445e5

Instances (1/1) Info Refresh Connect Instance state ▼ Actions ▼ Launch instances ▼

All states ▼



Instance ID = i-0923e2bde326445e5 Clear filters < 1 > ⚙️

<input checked="" type="checkbox"/>	Name ✎	Instance ID	Instance state	Instance type	Status check	Alarm status
<input checked="" type="checkbox"/>	MyWebServer	i-0923e2bde326445e5	⏹ Stopped	t2.micro	✔ 2/2 checks passed	View alarms

i-0923e2bde326445e5 (MyWebServer) ⚙️ ✕

[Details](#) | [Status and alarms](#) | [Monitoring](#) | [Security](#) | [Networking](#) | [Storage](#) | [Tags](#)

▼ Instance summary [Info](#)

Instance ID	Public IPv4 address	Private IPv4 addresses
 i-0923e2bde326445e5 (MyWebServer)	-	 192.168.5.41
IPv6 address	Instance state	Public IPv4 DNS
-	⏹ Stopped	-

Then, start it again:

Successfully initiated starting of i-0923e2bde326445e5

Instances (1/1) [Info](#) Refresh Connect Instance state ▼ Actions ▼ Launch instances ▼

All states ▼

Instance ID = i-0923e2bde326445e5 Clear filters < 1 > Settings

<input checked="" type="checkbox"/>	Name ↗	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status
<input checked="" type="checkbox"/>	MyWebServer	i-0923e2bde326445e5	Running	t2.micro	2/2 checks passed	View alarms

i-0923e2bde326445e5 (MyWebServer) Settings Close

[Details](#) | [Status and alarms](#) | [Monitoring](#) | [Security](#) | [Networking](#) | [Storage](#) | [Tags](#)

▼ **Instance summary** [Info](#)

Instance ID i-0923e2bde326445e5 (MyWebServer)	Public IPv4 address 44.203.99.80 open address	Private IPv4 addresses 192.168.5.41
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-44-203-99-80.compute-1.amazonaws.com open address

Allocate an Elastic IP Address

1. In the EC2 Dashboard, click on **"Elastic IPs"** under the **"Network & Security"** section in the left-hand menu.

Console-to-Code [Preview](#)

▼ Instances

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts
- Capacity Reservations

▼ Images

- AMIs
- AMI Catalog

▼ Elastic Block Store

- Volumes
- Snapshots
- Lifecycle Manager

▼ Network & Security

- Security Groups
- Elastic IPs**
- Placement Groups
- Key Pairs
- Network Interfaces

▼ Load Balancing

Find Instance by attribute or tag (case-sensitive) All states ▼

Instance ID = i-0923e2bde326445e5 X Clear filters

< 1 > ⚙

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status
<input checked="" type="checkbox"/>	MyWebServer	i-0923e2bde326445e5	Running	t2.micro	2/

i-0923e2bde326445e5 (MyWebServer)

Details | Status and alarms | Monitoring | Security | Networking | Storage | Tags

▼ Instance summary [Info](#)

Instance ID i-0923e2bde326445e5 (MyWebServer)	Public IPv4 address 44.203.99.80 open address	Private IPv4 addresses 192.168.5.41
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-44-203-99-80.compute-1.amazonaws.com open address
Hostname type IP name: ip-192-168-5-41.ec2.internal	Private IP DNS name (IPv4 only) ip-192-168-5-41.ec2.internal	

2. Click on the “Allocate Elastic IP address” button at the top.

EC2 Dashboard

EC2 Global View

Events

Console-to-Code [Preview](#)

▼ **Instances**

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts
- Capacity Reservations

▼ **Images**

- AMIs
- AMI Catalog

▼ **Elastic Block Store**

- Volumes
- Snapshots
- Lifecycle Manager

▼ **Network & Security**

- Security Groups
- [Elastic IPs](#)

Elastic IP addresses

Find resources by attribute or tag

Name	Allocated IPv4 address	Type
No Elastic IP addresses found in this Region		

Allocate Elastic IP address

View IP address usage and recommendations to release unused IPs with [Public IP Insights](#)

3. Choose “**Amazon’s pool of IPv4 addresses**”, leave the rest as default and click “**Allocate**”.

Info

Info

- Amazon's pool of IPv4 addresses

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Info

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[↗](#)

ts.

You can add up to 50 more tag

Allocate

4. Confirm Allocation:

✔ Elastic IP address associated successfully.

Elastic IP address 18.209.53.97 has been associated with Instance i-0923e2bde326445e5

Elastic IP addresses (1)

Actions

Allocate Elastic IP address

Find resources by attribute or tag

Public IPv4 address : 18.209.53.97	X
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Clear filters

< 1 >

<input type="checkbox"/>	Name ▾	Allocated IPv4 addr... ▾	Type ▾	Allocation ID ▾
<input type="checkbox"/>	-	18.209.53.97	Public IP	eipalloc-0e41e8aae82433761

	-	18.209.53.97	Public IP	eipalloc-0e41e8aae82433761
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Associate the Elastic IP Address with Your EC2 Instance

1. In the “**Elastic IPs**” section, select the Elastic IP address you just allocated.

Elastic IP address allocated successfully.
Elastic IP address 18.209.53.97

Associate this Elastic IP address

Elastic IP addresses (1/1)

Find resources by attribute or tag

Public IPv4 address : 18.209.53.97 X Clear filters

< 1 >

Allocate Elastic IP address

<input checked="" type="checkbox"/>	Name	Allocated IPv4 addr...	Type	Allocation ID
<input checked="" type="checkbox"/>	-	18.209.53.97	Public IP	eipalloc-0e41e8aae82433761

View IP address usage and recommendations to release unused IPs with [Public IP insights.](#)

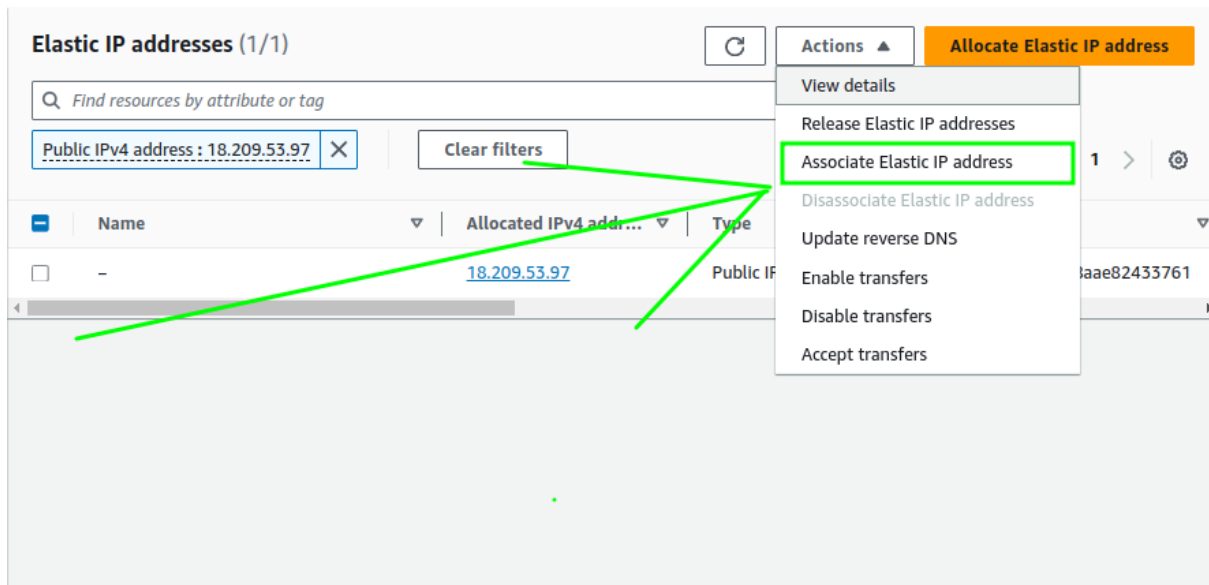
18.209.53.97

Summary Tags

Summary

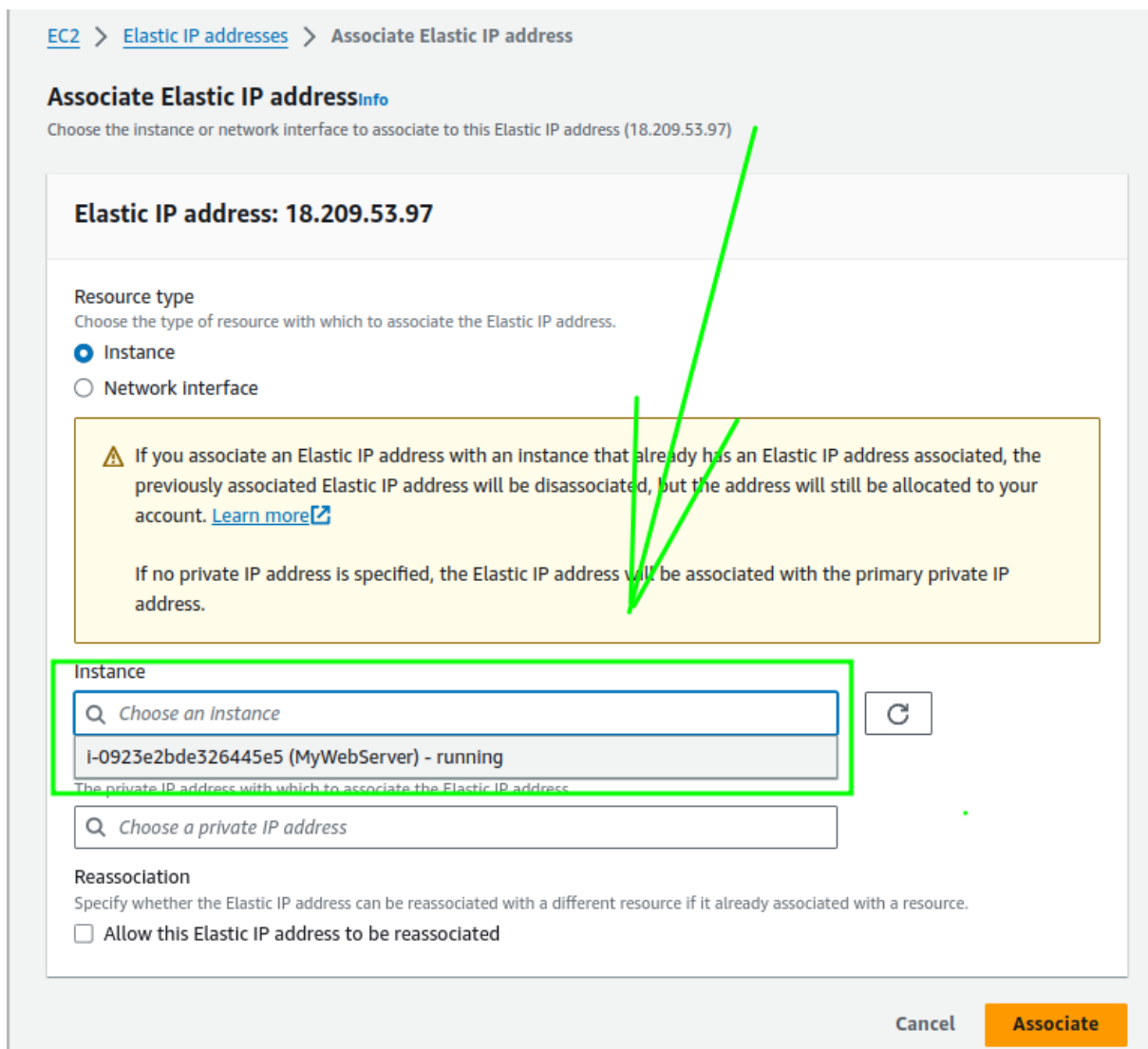
Allocated IPv4 address 18.209.53.97	Type Public IP	Allocation ID eipalloc-0e41e8aae82433761	Reverse DNS record -
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2. Click on the **“Actions”** button at the top and select “Associate Elastic IP address”.



3. In the “Associate Elastic IP address” dialog box:

- For “Instance”, select your EC2 instance from the dropdown list.



- For “Private IP address”, select the private IP address of the instance (usually pre-filled).

[EC2](#) > [Elastic IP addresses](#) > [Associate Elastic IP address](#)

Associate Elastic IP address Info

Choose the instance or network interface to associate to this Elastic IP address (18.209.53.97)

Elastic IP address: 18.209.53.97

Resource type
Choose the type of resource with which to associate the Elastic IP address.

☒ Instance

☐ Network Interface

⚠ If you associate an Elastic IP address with an instance that already has an Elastic IP address associated, the previously associated Elastic IP address will be disassociated, but the address will still be allocated to your account. [Learn more](#)

If no private IP address is specified, the Elastic IP address will be associated with the primary private IP address.

Instance

Private IP address
The private IP address with which to associate the Elastic IP address.

Reassociation
Specify whether the Elastic IP address can be reassociated with a different resource if it already associated with a resource.

☐ Allow this Elastic IP address to be reassociated

- Click “Associate”.

✓ Elastic IP address associated successfully.
Elastic IP address 18.209.53.97 has been associated with Instance I-0923e2bde326445e5

Elastic IP addresses (1)

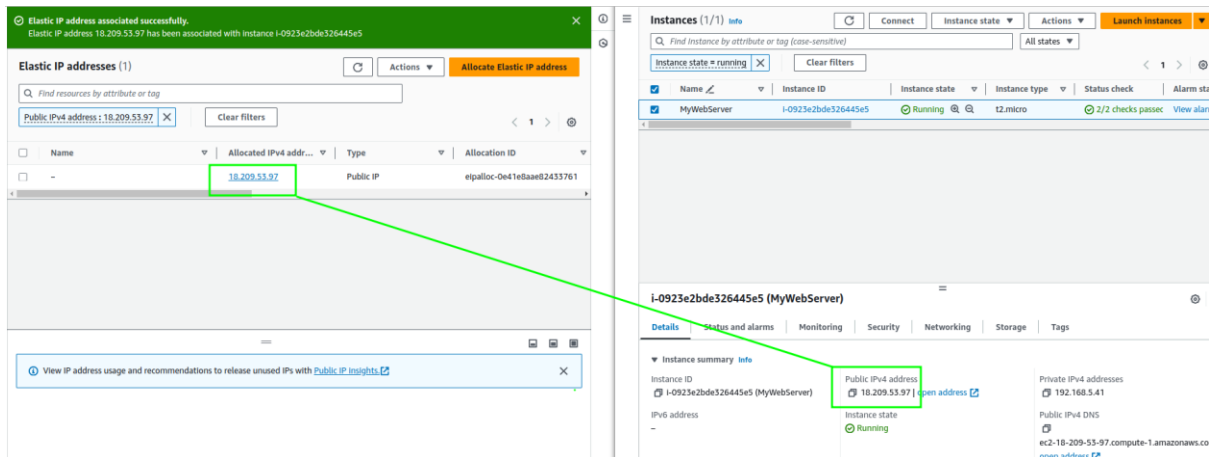
Public IPv4 address : 18.209.53.97

<input type="checkbox"/>	Name	Allocated IPv4 addr...	Type	Allocation ID
<input type="checkbox"/>	-	18.209.53.97	Public IP	eipalloc-0e41e8aae82433761

4. Verify Association:

- Go back to the “Instances” section and select your instance.

- Under the “Description” tab, verify that the “Public IPv4 address” now shows the Elastic IP address you allocated.



By allocating and associating an Elastic IP address with your EC2 instance, you ensure that your application remains accessible even when the instance is stopped and restarted. This process helps maintain the continuity and reliability of your services by preventing disruptions caused by changing IP addresses. Elastic IP addresses are a crucial feature for applications that require stable endpoints, such as web servers or applications with DNS dependencies.

Through this lab, you have gained hands-on experience in managing Elastic IP addresses, an essential skill for maintaining high availability and consistency in a dynamic cloud environment. Happy Learning!