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)
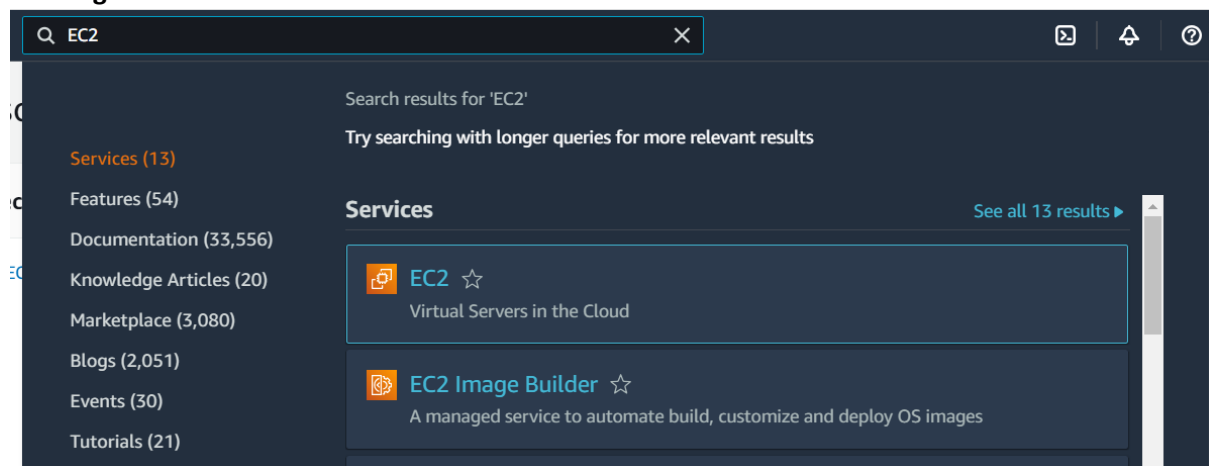
Objectives

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:

    o Key pair name:**myKeyPair**

    o KeyPairKey pair type: **RSA**

    o Private key file format: **.pem**

- Network settings: (Click **"Create security group"**)

    o Auto-assign public IP: Select **Enable**

    o Firewall (security groups): tick on the **Create security group**

       ▪ Ensure that **Allow SSH traffic from** is **checked** and is **My IP**
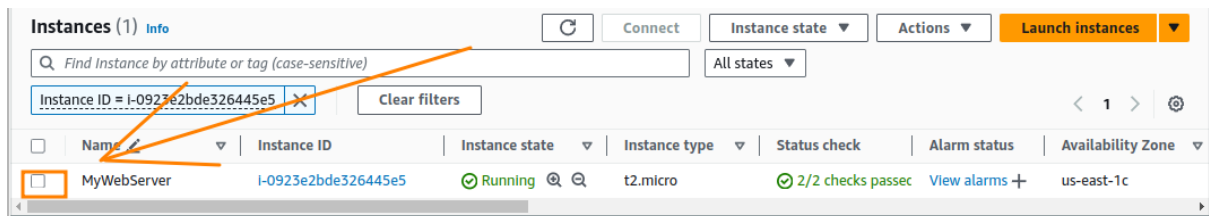

- Click Launch Instance.

Checking the IP address of the Instance

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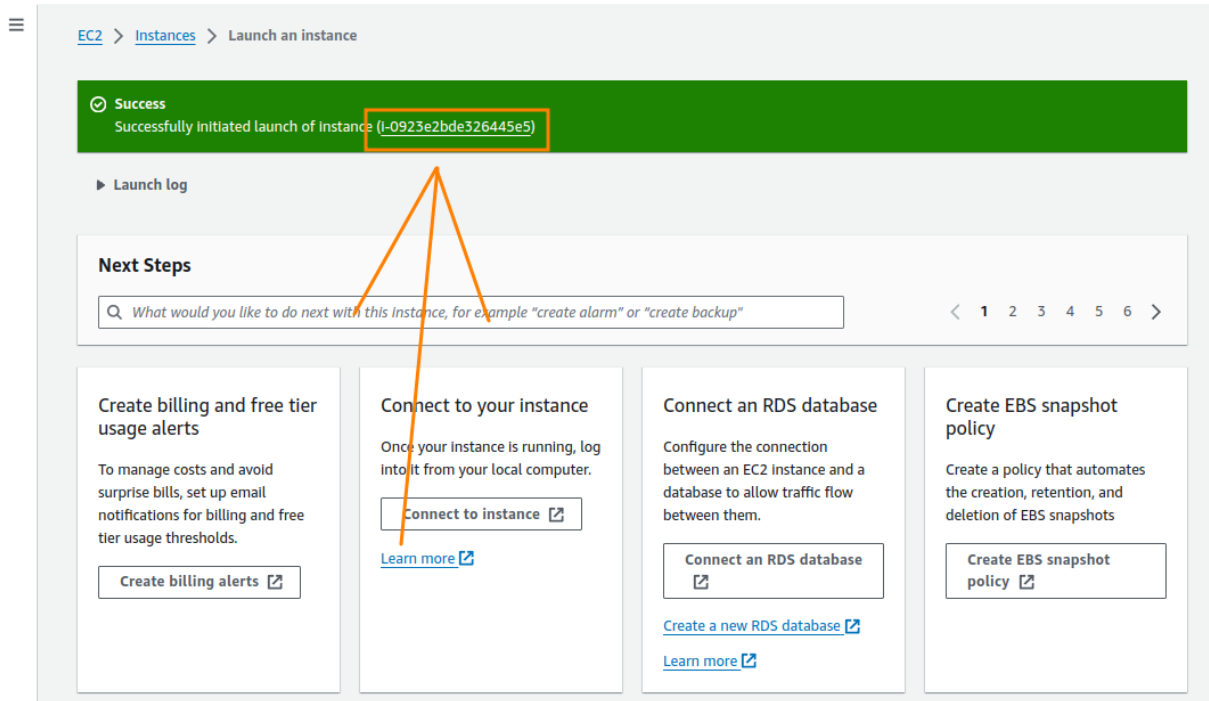
2. Click on the **Select Box** beside **MyWebServer Instance** to check the **Public IPv4 address**

3. **Check the IP Address**:

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

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:

Then, start it again:

Allocate an Elastic IP Address

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

2. Click on the "**Allocate Elastic IP address**" button at the top.

3. Choose "**Amazon's pool of IPv4 addresses**" , leave the rest as default and click "**Allocate**".

Allocate Elastic IP address Info

Elastic IP address settings Info

Public IPv4 address pool

- ● Amazon's pool of IPv4 addresses
- ○ Public IPv4 address that you bring to your AWS account with BYOIP. (option disabled because no pools found) Learn more 🔗
- ○ Customer-owned pool of IPv4 addresses created from your on-premises network for use with an Outpost. (option disabled because no customer owned pools found) Learn more 🔗

Network border group Info

🔍 us-east-1 ✕

Global static IP addresses

AWS Global Accelerator can provide global static IP addresses that are announced worldwide using anycast from AWS edge locations. This can help improve the availability and latency for your user traffic by using the Amazon global network. Learn more 🔗

Create accelerator 🔗

Tags - *optional*

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add new tag

You can add up to 50 more tag

Cancel   **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 ✕   Clear filters   ⟨ 1 ⟩   ⚙

	Name	Allocated IPv4 addr...	Type	Allocation ID
☐	–	18.209.53.97	Public IP	eipalloc-0e41e8aae82433761

Associate the Elastic IP Address with Your EC2 Instance

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

2. Click on the "**Actions**" button at the top and select "Associate Elastic IP address".
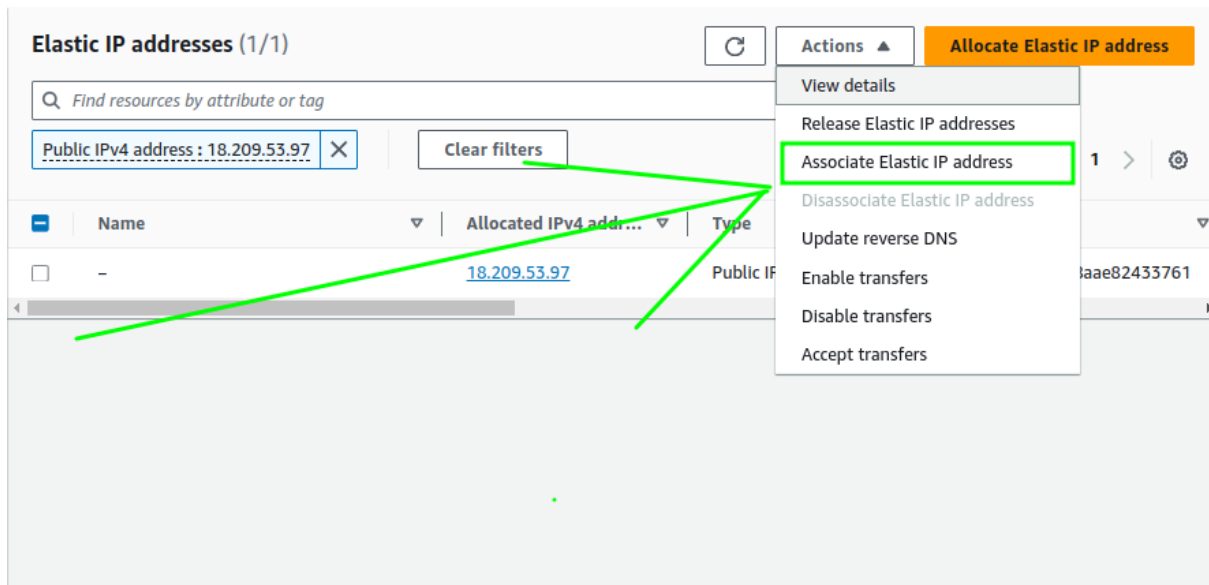
3. In the **"Associate Elastic IP address"** dialog box:

- For "**Instance**", select your EC2 instance from the dropdown list.
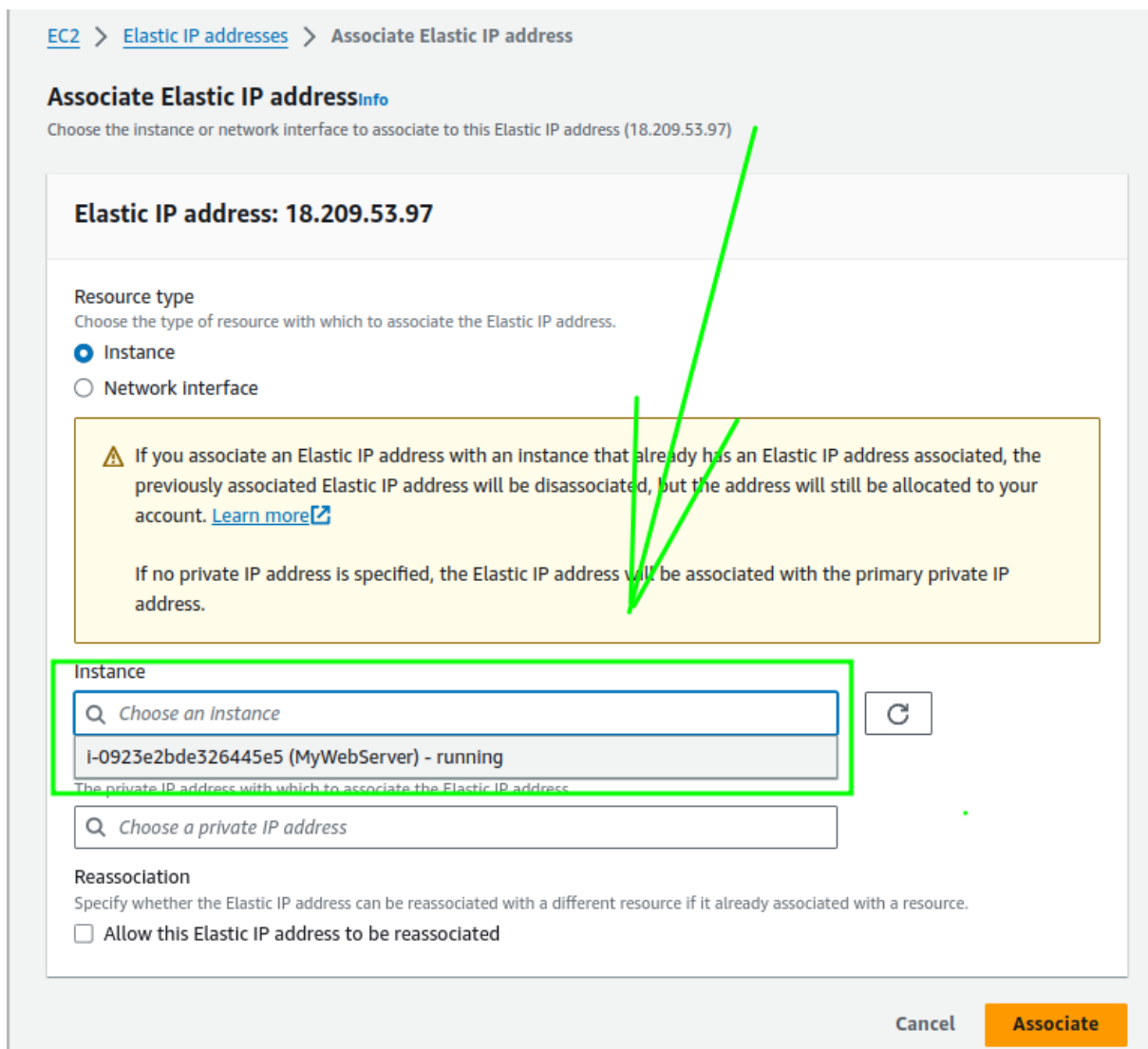
- For "Private IP address", select the private IP address of the instance (usually pre-filled).

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
🔍 i-0923e2bde326445e5 ✕ | ↻

Private IP address
The private IP address with which to associate the Elastic IP address.
🔍 192.168.5.41 ✕

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

Cancel | **Associate**

- 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) ↻ | Actions ▼ | **Allocate Elastic IP address**

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Public IPv4 address : 18.209.53.97 ✕ | Clear filters ⟨ 1 ⟩ ⚙

☐	Name	▽	Allocated IPv4 addr... ▽	Type	▽	Allocation ID	▽
☐	–		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.
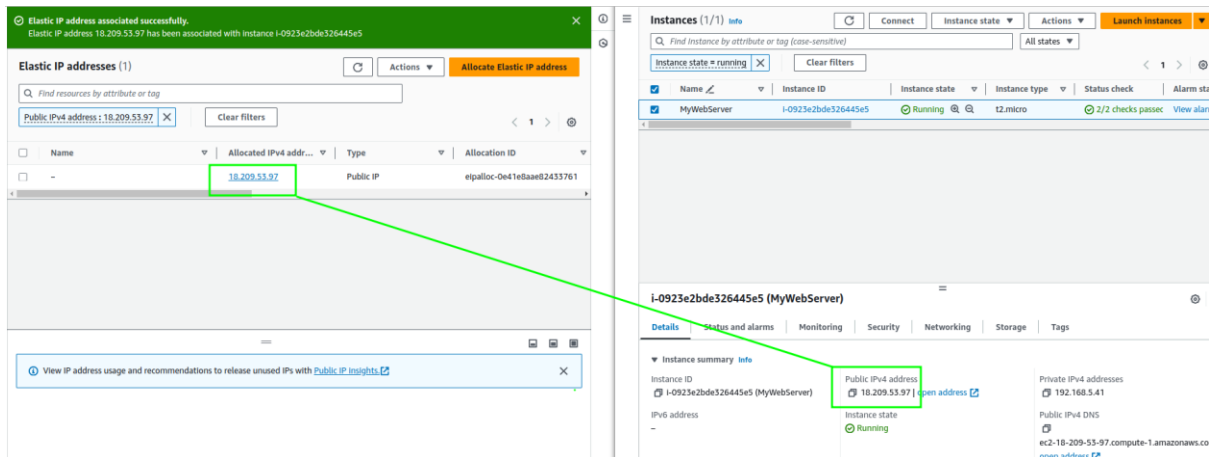
By allocating and associating an Elastic IP address with your EC2 instance, you ensure that your application remains accessible even when the instance is stopped and restarted. This process helps maintain the continuity and reliability of your services by preventing disruptions caused by changing IP 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!