

# Elastic IP

An **Elastic IP (EIP)** is a **static, public IPv4 address** that you can allocate to your AWS account and associate with EC2 instances, NAT gateways, or other AWS resources. It allows you to maintain a **consistent IP address** even if the underlying instance stops or fails.

## Key Features of Elastic IP:

- ✓ **Static Public IPv4 Address** → Unlike regular public IPs, an Elastic IP remains the same even if you restart your EC2 instance.
- ✓ **Easily Reassignable** → You can move an Elastic IP from one EC2 instance to another within the same AWS region.
- ✓ **Fault Tolerance** → If an instance fails, you can quickly remap the Elastic IP to a backup instance to ensure high availability.
- ✓ **One Free Elastic IP per Running Instance** → AWS provides one free Elastic IP as long as it is attached to a running instance. If it's **not associated with any instance**, AWS charges you for it.

## Why Use Elastic IP?

- ♦ **High Availability** – If an EC2 instance fails, you can quickly reassign the Elastic IP to a new instance.
- ♦ **Static IP for External Access** – Useful for setting up DNS records, remote access, or hosting applications that require a fixed IP.
- ♦ **Disaster Recovery** – Quickly switch traffic to a backup instance in case of failure.

## How to Create and Assign an Elastic IP in AWS?

### Step 1: Allocate an Elastic IP

- ① Go to **AWS Management Console** → **EC2 Dashboard**.
- ② Click on **Elastic IPs** (under "Network & Security").
- ③ Click **Allocate Elastic IP address**.
- ④ Choose "Amazon's pool of IPv4 addresses" and click **Allocate**.

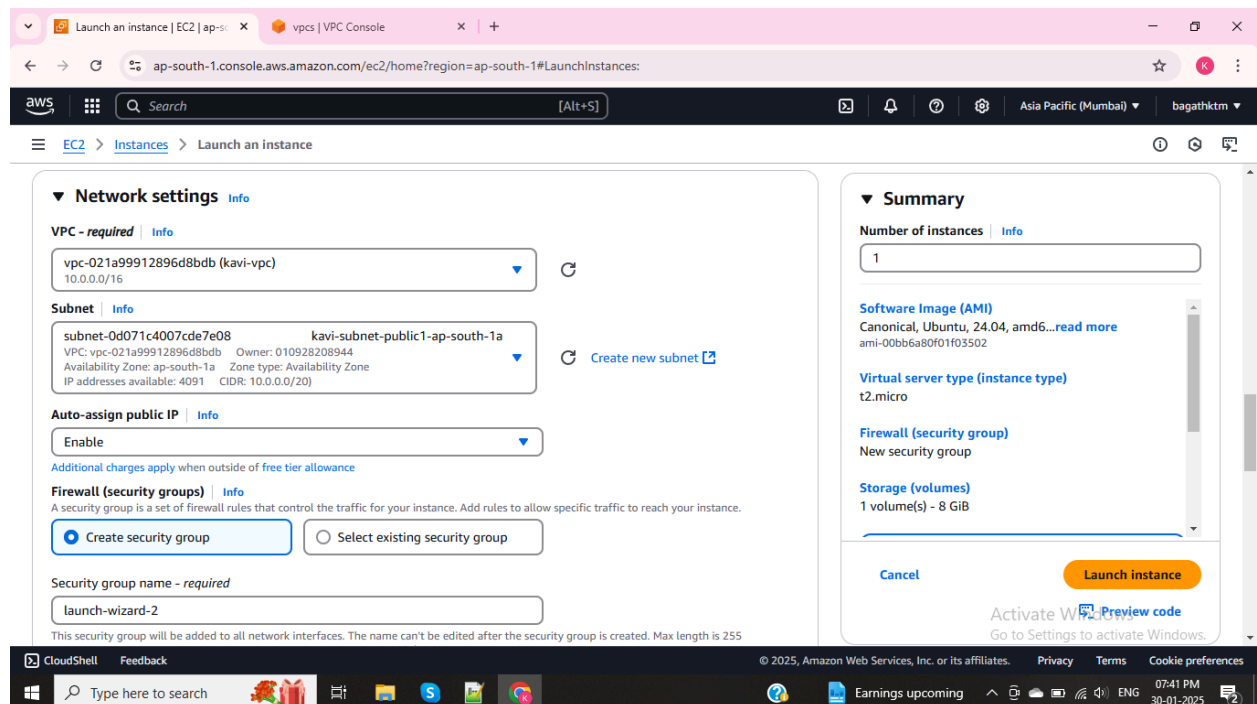
## Step 2: Associate Elastic IP with an EC2 Instance

- 1 Select the allocated Elastic IP.
- 2 Click **Actions** → **Associate Elastic IP address**.
- 3 Select the EC2 instance.
- 4 Click **Associate**.

**TASK** : Create an EC2 instance that deploy Jenkins and application access with Elastic IP.

Go to **AWS Management Console** → **EC2 Dashboard**.

Creating an EC2 instance with **Customized VPC**.



EC2 Instance created. Noted **Public IPV4 address - 13.233.64.38** & **Private IPV4 address - 10.0.13.7**

The screenshot shows the AWS Management Console for the 'ap-south-1' region. The 'Instances' page displays a table with one instance, 'Jenkins\_EIP', with ID 'i-04e31ef511cc11d51', in a 'Running' state, using a 't2.micro' instance type. Below the table, the 'Details' tab for this instance is selected, showing the 'Instance summary' with the Instance ID, Public IPv4 address (13.233.64.38), Private IPv4 addresses (10.0.13.7), and Instance state (Running).

Connect EC2 instance > For Install Jenkins requires Java (Prerequisites ).

The screenshot shows the AWS CloudShell terminal interface. The terminal output displays the command 'java --version' and its output, which includes the OpenJDK Runtime Environment version (17.0.13) and the OpenJDK 64-Bit Server VM version (17.0.13+11-Ubuntu-2ubuntu124.04). Below the terminal output, the instance details for 'i-04e31ef511cc11d51 (Jenkins\_EIP)' are shown, including the Public IP (13.233.64.38) and Private IP (10.0.13.7).

## Installed Jenkins and it is active state

The screenshot shows the AWS Management Console with the Jenkins service status and a CloudShell terminal window.

**Jenkins Service Status:**

- Instance ID: i-04e31ef511cc11d51 (Jenkins\_EIP)
- Public IP: 13.233.64.38
- Private IP: 10.0.13.7
- Status: Active (running) since Thu 2025-01-30 14:19:44 UTC; 1min 12s ago

**CloudShell Terminal Output:**

```
ubuntu@ip-10-0-13-7:~$ sudo systemctl status jenkins
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
Active: active (running) since Thu 2025-01-30 14:19:44 UTC; 1min 12s ago
Main PID: 5147 (java)
Tasks: 38 (limit: 1130)
Memory: 275.5M (peak: 301.7M)
CPU: 19.359s
CGroup: /system.slice/jenkins.service
└─5147 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Jan 30 14:19:35 ip-10-0-13-7 jenkins[5147]: d81c19f7c6d74f8b8411199b9997a8ab
Jan 30 14:19:35 ip-10-0-13-7 jenkins[5147]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Jan 30 14:19:35 ip-10-0-13-7 jenkins[5147]: *****
Jan 30 14:19:35 ip-10-0-13-7 jenkins[5147]: *****
Jan 30 14:19:35 ip-10-0-13-7 jenkins[5147]: *****
Jan 30 14:19:44 ip-10-0-13-7 jenkins[5147]: 2025-01-30 14:19:44.499+0000 [id=30] INFO jenkins.InitReactorRunner$1onAttained: Completed
Jan 30 14:19:44 ip-10-0-13-7 jenkins[5147]: 2025-01-30 14:19:44.529+0000 [id=23] INFO hudson.lifecycle.Lifecycle$onReady: Jenkins is fu
Jan 30 14:19:44 ip-10-0-13-7 systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Jan 30 14:19:46 ip-10-0-13-7 jenkins[5147]: 2025-01-30 14:19:46.692+0000 [id=46] INFO h.m.DownloadService$Downloadable$load: Obtained t
Jan 30 14:19:46 ip-10-0-13-7 jenkins[5147]: 2025-01-30 14:19:46.693+0000 [id=46] INFO hudson.util.Retrier$start: Performed the action c
lines 1-20/20 (END)
```

## To access Jenkins application > In security groups open jenkins default port 8080

The screenshot shows the AWS Management Console 'Edit inbound rules' page for a security group.

**Edit inbound rules**

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

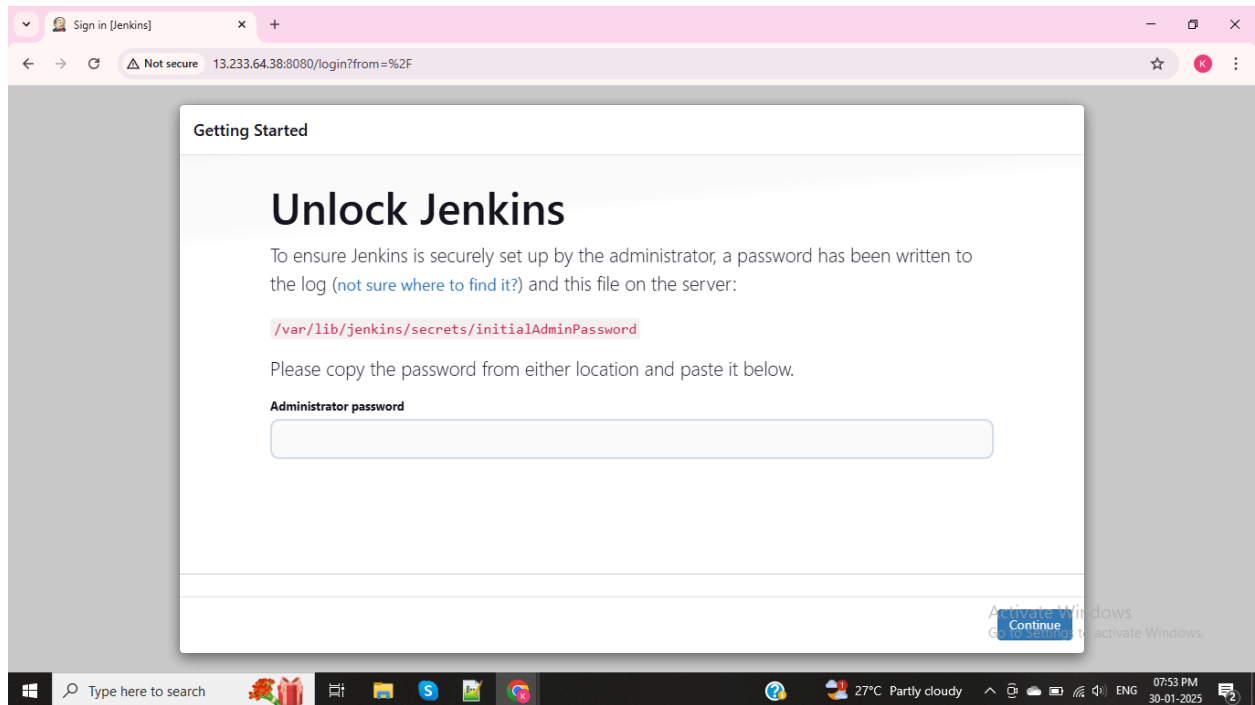
**Inbound rules**

Security group rule ID	Type	Protocol	Port range	Source	Description - optional	Actions
sgr-02ff23d35e6cc14e5	SSH	TCP	22	Cu...		Delete
-	Custom TCP	TCP	8080	An...	0.0.0.0/0	Delete

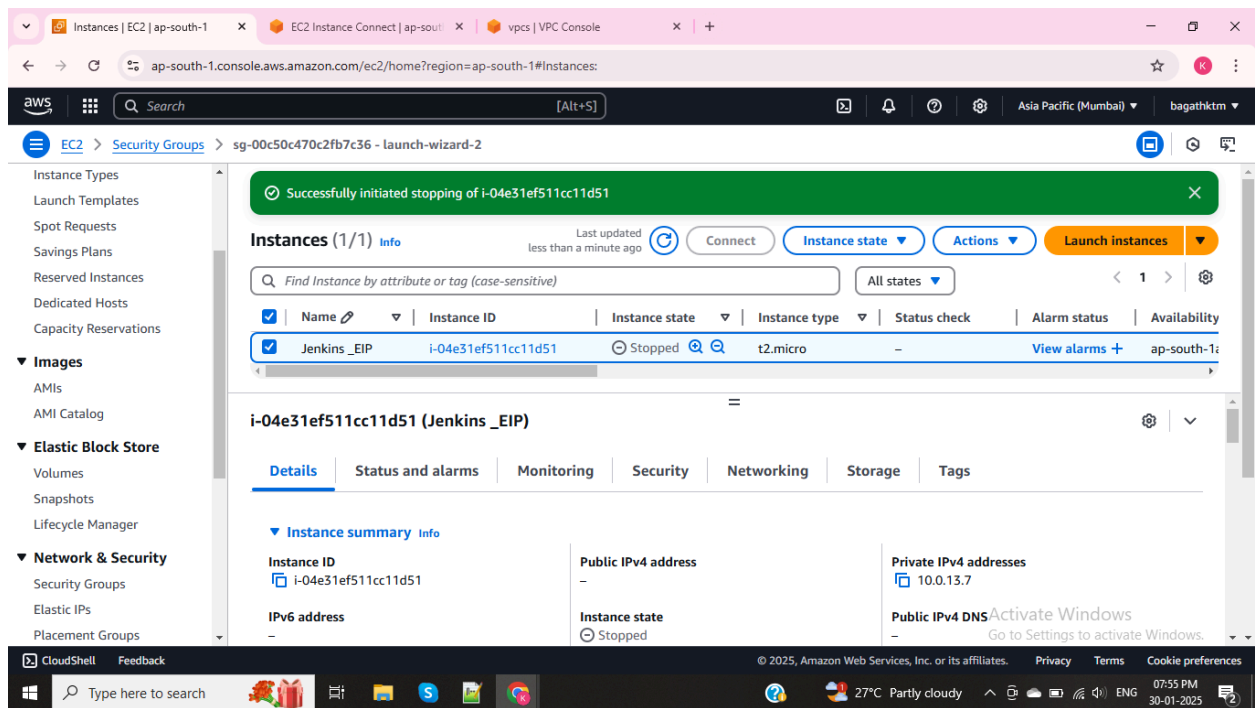
[Add rule](#)

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Jenkins access with Public IP address : **13.233.64.38:8080**



Now, EC2 instance is stopped - In public IP address shows none & private IP address remains same.



Again same EC2 instance is started now public IP address is changed **13.233.64.38 to 13.201.61.101** so its dynamic (always changing when it stop or start).

The screenshot shows the AWS Management Console for the 'ap-south-1' region. A notification at the top indicates the successful initiation of starting instance 'i-04e31ef511cc11d51'. The 'Instances' page shows a table with one instance, 'Jenkins\_EIP', in the 'Running' state. The instance details for 'i-04e31ef511cc11d51 (Jenkins\_EIP)' are displayed below the table, showing a public IPv4 address of 13.201.61.101. The instance is of type 't2.micro' and is in the 'Initializing' state. The console also shows a sidebar with navigation options like 'Images', 'Elastic Block Store', and 'Network & Security'.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
Jenkins_EIP	i-04e31ef511cc11d51	Running	t2.micro	Initializing	View alarms +	ap-south-1

**i-04e31ef511cc11d51 (Jenkins\_EIP)**

**Instance summary**

Instance ID	Public IPv4 address	Private IPv4 addresses
i-04e31ef511cc11d51	13.201.61.101   open address	10.0.13.7

**Instance state**

Running

For this, Creating **ELASTIC IP** (its a static IP)

The screenshot shows the AWS Management Console for the 'ap-south-1' region. The 'Elastic IP addresses' page shows a table with one Elastic IP address, '3.108.135.124', in the 'Public' state. The Elastic IP address is of type 'Public IP' and has an allocation ID of 'eipalloc-03f1c25355c3e6d38'. The console also shows a sidebar with navigation options like 'Instances', 'Images', and 'Elastic Block Store'.

Name	Allocated IPv4 address	Type	Allocation ID	Reverse
Elastic IP	3.108.135.124	Public IP	eipalloc-03f1c25355c3e6d38	-

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

## Associate Elastic IP address with running EC2 instance

**Elastic IP address: 3.108.135.124**

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

☒ Instance  
☐ Network interface

**Warning:** 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-04e31ef511cc11d51

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

Activate Windows  
Go to Settings to activate Windows.

## Output of Elastic IP : 3.108.135.124 its attached with EC2 instance

**Instances (1/1) Info**

Last updated less than a minute ago

[Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

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

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
Jenkins_EIP	i-04e31ef511cc11d51	Running	t2.micro	Initializing	View alarms	ap-south-1:

**i-04e31ef511cc11d51 (Jenkins\_EIP)**

**Hostname type**  
IP name: ip-10-0-13-7.ap-south-1.compute.internal

**Private IP DNS name (IPv4 only)**  
ip-10-0-13-7.ap-south-1.compute.internal

**Instance type**  
t2.micro

**Elastic IP addresses**  
3.108.135.124 (Elastic IP) (Public IP)

## Jenkins application accessing with Elastic IP

