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PEC Cloud Assignment - 2

# Launch EC2 instance from console & CLI

## What is EC2 Instance

An EC2 (Elastic Compute Cloud) instance is a virtual server provided by Amazon Web Services (AWS) that allows users to run applications and workloads in a flexible, scalable cloud environment. EC2 instances offer resizable compute capacity, enabling users to adjust resources according to their needs, whether for small-scale applications or large, complex systems.

## Types of EC2 instances

### General Purpose Instances

**Description:** Balanced compute, memory, and networking resources. Suitable for a wide range of workloads.

**Purpose:** Ideal for web servers, development environments, and small to medium databases.

**Examples:** t4g, m6i, m5.

## Compute Optimized Instances

**Description:** Designed for compute-intensive tasks that require high-performance processing power.

**Purpose:** Ideal for batch processing, high-performance web servers, scientific modeling, and machine learning.

**Examples:** c6i, c5.

## Memory Optimized Instances

**Description:** Offers high memory capacity for applications that require large datasets to be processed in memory.

**Purpose:** Best for in-memory databases, real-time big data analytics, and large-scale enterprise applications.

**Examples:** r6i, r5.

## Storage Optimized Instances

**Description:** Provides high, sequential read and write access to large datasets on local storage.

**Purpose:** Ideal for large-scale databases, data warehousing, and distributed file systems.

**Examples:** i4i, d3, d2.

## Accelerated Computing Instances

**Description:** Uses hardware accelerators, such as GPUs or FPGAs, to handle graphics or computational tasks.

**Purpose:** Suitable for machine learning, high-performance computing (HPC), and video encoding.

**Examples:** p4, p3, g5.

## Steps for launching EC2 instance using AWS Console

**Step 1:** Go to search bar and search EC2 instance and go to EC2 dashboard

**Step2:** Under EC2 go to network & security then go to key pairs

**Step 3:** Create a key pair. Select encryption decryption type RSA and file type '.pem'. Give name to key pair "pec-assignment-key" and then create the key pair

**Step 4:** Go to Instances section, then go to launch instances

**Step 5:** Give name of instance "pec-assignment-instance"

**Step 6:** Select **amazon linux** as AMI (Amazon Machine Image)

**Step 7:** Select the instance type; here selected instance is - **t2.micro**

**Step 8:** attach the key pair created "pec-assignment-key" to the instance

**Step 9:** Under network settings select VPC, Subnet and security group

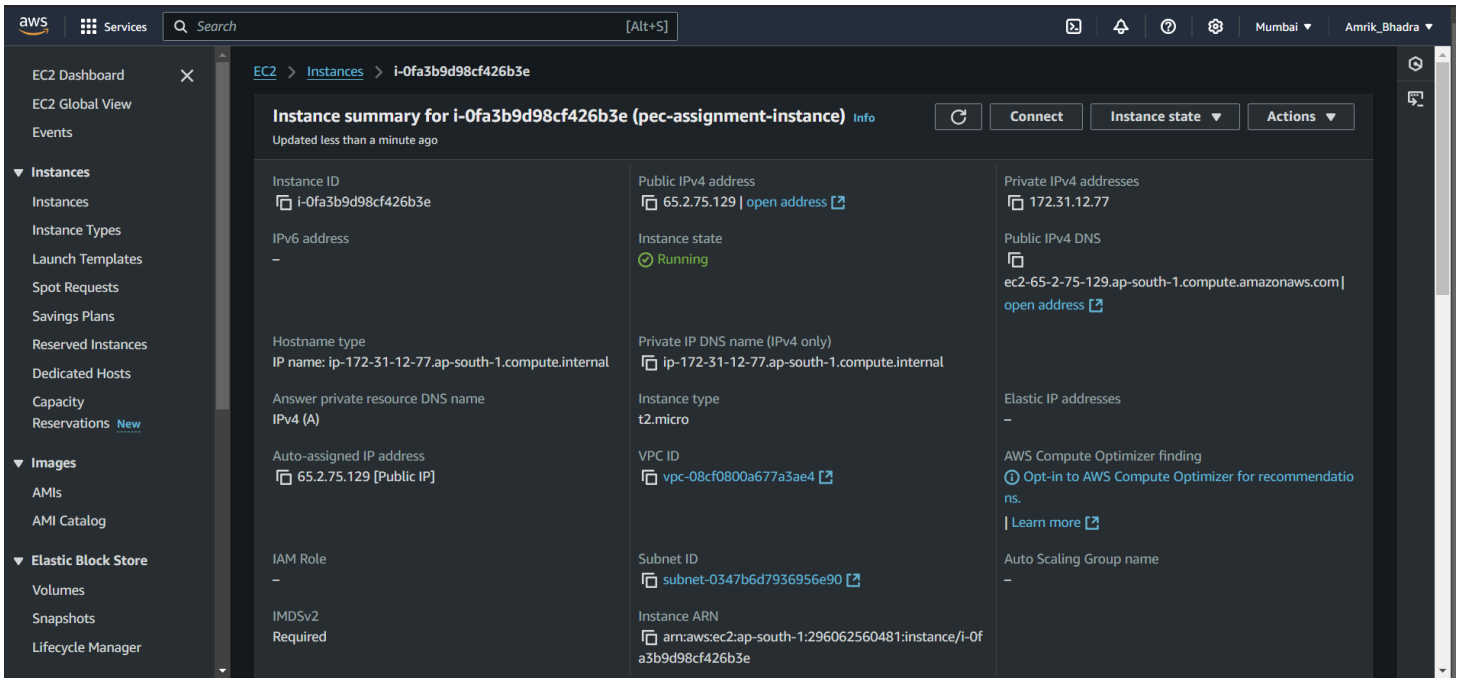
**Step 10:** For security group, allow traffic for SSH

**Step 11:** Then launch the Instance

**Step 12:** Open the command prompt and move to the directory where the key pair file **"pec-assignment-key.pem"** is downloaded

**Step 13:** Connect to the ec2 instance using the following command:

**ssh -i "pec-assignment-key.pem" ec2-user@65.2.75.129**




```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and
 CLI>ssh -i "pec-assignment-key.pem" ec2-user@65.2.75.129
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
Last login: Thu Oct 24 13:19:12 2024 from 171.48.86.159
[ec2-user@ip-172-31-12-77 ~]$
```

# Steps for launching the EC2 instance using AWS CLI

**Step 1:** Configure aws cli → **aws configure**

**Step 2:** Create key pair → **aws ec2 create-key-pair --key-name pec-assignment-cli-key.pem**

```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>aws configure
AWS Access Key ID [****************XEP2]:
AWS Secret Access Key [****************SjXu]:
Default region name [ap-south-1]:
Default output format [json]:

C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>aws ec2 create-key-pair --key-n
ame pec-assignment-cli-key.pem
{
    "KeyPairId": "key-0610a6facc74475b5",
    "KeyName": "pec-assignment-cli-key.pem",
    "KeyFingerprint": "5f:24:7f:20:c7:8d:a3:02:d0:99:50:56:67:01:6f:0b:c0:cf:cd:9a",
    "KeyMaterial": "-----BEGIN RSA PRIVATE KEY-----\nMIIEpAIBAAKCAQEA6NngAxQKALtiHHeblinKbVjKh8qfQn7K2Zo5uyUnIlGraqm7\nQTFKM/5qGpALUNlo07HDjievNY6kTudHyX3Hh
doskec98fmw8aWDuN/L2WpoExLz\nsAACLRveIWeSbYoQue5A2cLkDaqcTky/Fqtvq0LIPQZ10ThESRUE3ZOtwYawGlGA\nHIlmdtb6Mvmvh+vWL8L3XDKVDcj2gmmi1j8HGcj7IBB8HlLn4m8f9tdQOgtDK
Rh/\nZe8nmdCdyrt+dNlcGF5thMrriJcSnXlGK4/+fBcc+JnLeOzsquRH4FbgUqf7MiaC\nNUdmJ+sQn83KwIdnJoxa3MiWrZbuxJWAjJ3ahwIDAQABAoIBAQC0S6d5mrWYFX+F\nXVOadSdpfZvsgwbH3Rd
CYHmdH8pqd2RMRbpZY0n6cl9DzA8G/iB98iHiW3X9+UHe\nWpSqPnsUeHeUTcIYL+dDZI5Wwuq7oPmO81i/CXKl7PMVWHX33TTQUtviAVbGAjnf\nIuu/KOVhbWdQYUUux+uPzveifevHcQF2lOyUhrWQV1+
cocwhpASguI5Ew88jptzA\nOU34Z9koYLrlUDsrR4w5l5+MdYM+kPTT4IqAbn7aZxxv+BYRd4xtZHs7if4fBuKm\nusRtGF0QHzVjJTFSsCAG08eimkLO5+Osl3NTnbM63gYiuk9x+wSK3p4aQQTvugeQ\nC
gQg/B0pAoGBAPwSPuxnF4ihfUL0EHGi2yNTCocw2VV+rNdjQ2GgZ1W/YeY1xMJC\n4obrjtBw1mAGmU/jd1w7AF8WOml6xLY1W/5w+MU0f5JCVSWo4gHW0UUdiMOjMTyS\ndTeS2GQiU9ZnGxS296m9LgvLu
3rPyJHgqgbWrHMT3pbEPhpwWM73e9EFAoGBAOx6\n8QIDAfOXbOqq7dGR58yC7TO9n4X1E3PYGlAIk4EFwtNcyaHquKDYqyR3JCr3wjoJ\nZG0LW26vrcJsxHCNB9y1UkB8YUZ45cNgvB5ejushDuTNH9mHc
N44OnikwL9hwy4G\nSd8EWauZZgoC7jtj76Vdwdfo zUS0QV6WXesIeMMbAoGAfB5H2YPRtLc/xI4E4s97\n8+LZ1kOZYF2lodEAxruC5lf8Tqy/G6BvhlvK0JwfEt1s9Ede6I0s26VIUdPftJCF\nob3i4Me
+4TfEUWzdDGbIWK34P8zFW7wJ97lYz8WPXo0aapLFVFEQsUI6KHjTm/Dy\nB7gA5hEskzRCGCaltBNsZjkCgYAT0SmpNX9QXnwuHizXxxZZuQ8PqvBXVXZP2ug5\nlL5nrYfqFnh/LSBTulR9Nc6+Gw0Xt/n
GeZEr8WTqShscI3VpNXizFrlAIpl+ifi5\nwsrPQXHyEo58uDDpLmUX/xZ380Vb8gL2wXKSQsSeSiiUqYdHoFfCNCwfecuQlaFB\nNPCJyQKBgQC6TAx0k+i3jYhFDa1GlYilyhQ2JZhVcVP/cGdmLS+x5o2
+kFDfvgDl\n4Sa4d/AfZSFahFBbS4lOl+Yyek5T0inGzzJ5RZkXmgvXmBSHZR1Jm5wtUy9KPEL9\nMWLguEGyCd4gzTLQ1qLh4Z77TSyWYBST3KkcGBZV/0DM2QaYBJe5Xg==\n-----END RSA PRIVATE
KEY-----"
}
```

**Step 3:** Create Security Group → **aws ec2 create-security-group --group-name pec-assignment-cli-sg --description "Security group for SSH access"**

```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>aws ec2 create-security-group -
-group-name pec-assignment-cli-sg --description "Security group for SSH access"
{
    "GroupId": "sg-083ee44f254cec59a"
}
```

**Step 4:** Allow inbound SSH traffic → **aws ec2 authorize-security-group-ingress --group-name pec-assignment-cli-sg --protocol tcp --port 22 --cidr 0.0.0.0/0**

```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>aws ec2 authorize-security-grou
p-ingress --group-name pec-assignment-cli-sg --protocol tcp --port 22 --cidr 0.0.0.0/0
{
    "Return": true,
    "SecurityGroupRules": [
        {
            "SecurityGroupRuleId": "sgr-0469d017ddb9fb779",
            "GroupId": "sg-083ee44f254cec59a",
            "GroupOwnerId": "296062560481",
            "IsEgress": false,
            "IpProtocol": "tcp",
            "FromPort": 22,
            "ToPort": 22,
            "CidrIpv4": "0.0.0.0/0"
        }
    ]
}
```

**Step 5:** Allow inbound SSH traffic → **aws ec2 authorize-security-group-ingress --group-name pec-assignment-cli-sg --protocol tcp --port 22 --cidr 0.0.0.0/0**

```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>aws ec2 authorize-security-grou
p-ingress --group-name pec-assignment-cli-sg --protocol tcp --port 22 --cidr 0.0.0.0/0
{
    "Return": true,
    "SecurityGroupRules": [
        {
            "SecurityGroupRuleId": "sgr-0469d017ddb9fb779",
            "GroupId": "sg-083ee44f254cec59a",
            "GroupOwnerId": "296062560481",
            "IsEgress": false,
            "IpProtocol": "tcp",
            "FromPort": 22,
            "ToPort": 22,
            "CidrIpv4": "0.0.0.0/0"
        }
    ]
}
```

**Step 6:** Launch EC2 instance → **aws ec2 run-instances --image-id ami-052c08d70def0ac62 --count 1 --instance-type t2.micro --key-name  pec-assignment-key --security-groups pec-assignment-cli-sg**


```
{
    "ReservationId": "r-099dafe2b3a790ad7",
    "OwnerId": "296062560481",
    "Groups": [],
    "Instances": [
        {
            "Architecture": "x86_64",
            "BlockDeviceMappings": [],
            "ClientToken": "9496f517-dcf6-4958-9c9f-c2fb1740a61c",
            "EbsOptimized": false,
            "EnaSupport": true,
            "Hypervisor": "xen",
            "NetworkInterfaces": [
                {
                    "Attachment": {
                        "AttachTime": "2024-10-24T15:05:56+00:00",
                        "AttachmentId": "eni-attach-0ce799b7325e91de5",
                        "DeleteOnTermination": true,
                        "DeviceIndex": 0,
                        "Status": "attaching",
                        "NetworkCardIndex": 0
                    },
                    "Description": "",
                    "Groups": [
                        {
                            "GroupId": "sg-083ee44f254cec59a",
                            "GroupName": "pec-assignment-cli-sg"
                        }
                    ],
                    "Ipv6Addresses": [],
                    "MacAddress": "0a:90:fa:d7:1b:5f",
                    "NetworkInterfaceId": "eni-0839263281b77c966",
                    "OwnerId": "296062560481",
                    "PrivateDnsName": "ip-172-31-0-8.ap-south-1.compute.internal",
                    "PrivateIpAddress": "172.31.0.8",
                    "PrivateIpAddresses": [
                        {
                            "Primary": true,
                            "PrivateDnsName": "ip-172-31-0-8.ap-south-1.compute.internal",
                            "PrivateIpAddress": "172.31.0.8"
```


**Step 7:** connect to instance launched → **ssh -i pec-assignment-key.pem e c2-user@13.233.116.63**

```
C:\Users\amkbh\OneDrive\Documents\TY\Labs\Cloud - PEC\assignments\assginment 2 - laumch EC2 instance through console and CLI>ssh -i pec-assignment-key.pem e
c2-user@13.233.116.63
This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register
```