### **Lab Guide: Creating a Linux EC2 Instance on AWS**

### **Objective**

This lab provides a detailed step-by-step guide to create a Linux EC2 instance on AWS. By the end of this lab, you will have a running Linux EC2 instance that you can connect to using SSH.

### **Prerequisites**

1. An active AWS account.
2. AWS CLI installed and configured on your local system (optional but recommended for advanced tasks).
3. An SSH client (e.g., PuTTY on Windows or Terminal on macOS/Linux).

### **Step 1: Log In to AWS Management Console**

1. Open your web browser and navigate to the [AWS Management Console](https://aws.amazon.com/console/).
2. Sign in with your credentials.

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### **Step 2: Navigate to the EC2 Dashboard**

1. In the AWS Management Console, search for **EC2** in the search bar and select **EC2** under "Services."

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1. Click on **Launch Instance** to start creating a new instance.

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**Summary:** Signed into AWS console and accessed EC2 dashboard.

### **Step 3: Configure Instance Details**

#### **Step 3.1: Choose an Amazon Machine Image (AMI)**

1. Select an AMI:
   * Choose **Amazon Linux 2023 (Free Tier Eligible)** or **Ubuntu Server 22.04 LTS** (Free Tier Eligible) from the list.

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* + Ensure the AMI you select is free-tier eligible if applicable.

#### **Step 3.2: Choose an Instance Type**

1. Select **t2.micro** (Free Tier Eligible) for this lab.

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#### **Step 3.3: Configure Instance Details**

1. Leave the **Number of Instances** as 1.

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1. Network: Use the default VPC.
2. Subnet: Select the default subnet (or a preferred one).
3. Auto-assign Public IP: Ensure it is **enabled**.
4. Advanced Options: Leave the default settings.

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**Summary:** Launched a new EC2 instance. As per instructions, an Amazon Linux 2023 has been selected. The instance type is specified as t2.micro. Configured networking with the default VPC and auto-assigned a public IP.

### **Step 4: Add Storage**

1. For the root volume, use the default size of **8 GiB** (Free Tier Eligible) or increase it if needed.
2. Ensure the storage type is **General Purpose SSD (gp2)**.

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1. Leave other settings as default and click **Next: Add Tags**.

**Summary:** An 8 GiB general purpose SSD gp2 is assigned as the root volume.

### **Step 5: Add Tags (Optional)**

1. Add a tag to identify your instance:
   * **Key**: Name
   * **Value**: MyLinuxInstance

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1. Click **Next: Configure Security Group**.

**Summary:** MyLinuxInstance is added as an additional tag.

### **Step 6: Configure Security Group**

1. Create a new security group:
   * **Security Group Name**: LinuxInstanceSecurityGroup
   * Add the following rules:
     + **SSH (Port 22)**: Source: My IP (recommended for security).
     + **HTTP (Port 80)**: Source: Anywhere (optional, if you plan to set up a web server).

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1. Click **Review and Launch**.

**Summary:** A security group is created with the following rules.

SSH Port 22 – It is restricted to My IP.

HTTP Port 80 – It is open to all, and it is optional.

### **Step 7: Launch Instance**

1. Click **Launch** to proceed.
2. When prompted to select a key pair:
   * Choose **Create a new key pair**:
     + Key Pair Name: MyKeyPair

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* + - Download the .pem file and save it securely on your computer.
  + If you already have a key pair, select it and ensure you have access to the private key file.

1. Acknowledge the key pair selection and click **Launch Instances**.

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**Summary:** As per instructions, a new key pair named as MyKeyPair.pem is created and downloaded.

The instance is successfully launched.

### **Step 8: Verify Your Instance**

1. Click **View Instances** to navigate to the EC2 dashboard.
2. Check the status of your instance:
   * Ensure the instance state is **Running**.
   * Note the **Public IPv4 Address** of your instance.

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**Summary:** Once the instance is created, the running status needs to be verified. It is confirmed that the instance state is running.

### **Step 9: Connect to the Instance**

#### **Step 9.1: Connect Using an SSH Client**

1. Open a terminal (macOS/Linux) or an SSH client (e.g., PuTTY for Windows).

Modify permissions for your .pem file (Linux/macOS only):  
bash  
CopyEdit  
chmod 400 MyKeyPair.pem

Use the following command to connect:  
bash  
  
 ssh -i MyKeyPair.pem ec2-user@<PublicIPv4Address>

1. Replace <PublicIPv4Address> with the public IP address of your instance.

#### **Step 9.2: Connect Using PuTTY (Windows)**

1. Open PuTTY and enter the **Public IPv4 Address** in the "Host Name" field. Note” you may need to download Putty if you don;t have it installed.

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1. Navigate to **SSH > Auth** in the left menu and browse for the .ppk file:
   * Convert your .pem file to .ppk using PuTTYgen if needed.

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1. Click **Open** to connect.

**Summary:** This is windows.

Here, PuTTY is downloaded and converted MyKeyPair.pem to .ppk using PuTTYgen. PuTTY is then configured with the Public IPv4 address of the instance and private key.

### **Step 10: Verify Connection**

After connecting, you will see a terminal prompt. Run the following command to check the system details:  
bash  
  
 uname -a

1. Optionally, update the system packages:  
   bash  
     
   sudo yum update -y # For Amazon Linux

sudo apt update -y # For Ubuntu

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**Summary:**  Checked system details with uname- a

System packages are uploaded using sudo yum update -y which is Amazon Linux.

### **Step 11: Clean Up (Optional)**

1. Stop the instance:
   * In the EC2 dashboard, select your instance, click **Actions**, and choose **Instance State > Stop**.
2. Terminate the instance when no longer needed to avoid incurring charges:
   * Select your instance, click **Actions**, and choose **Instance State > Terminate**.

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**Summary:**  Instance is then stopped/terminated to avoid charges.

### **Deliverables**

1. Screenshots of:
   * Instance creation steps.
   * Instance running in the EC2 dashboard.
   * Successful SSH connection to the instance.
2. A brief report summarizing the setup and connection process.

**End of Lab**