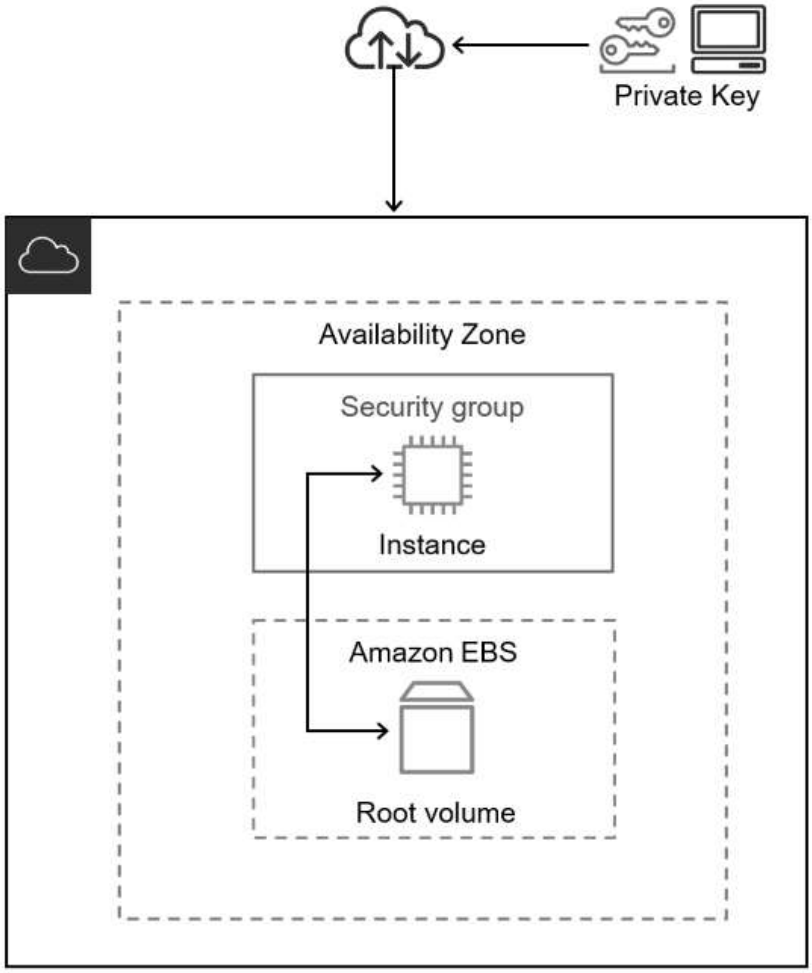
Experiment No. 2

Aim: To study and Implement Infrastructure as a Service using AWS EC2 by creating a Windows Virtual Machine through RDP protocol and change volume of attached storage.

Theory:
An *instance* is a virtual server in the AWS Cloud. With Amazon EC2, you can set up and configure the operating system and applications that run on your instance.
When you launch your instance, you secure it by specifying a key pair (to prove your identity) and a security group (which acts as a virtual firewall to control ingoing and outgoing traffic). When you connect to your instance, you must provide the private key of the key pair that you specified when you launched your instance.



Steps:

To launch an instance

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. From the EC2 console dashboard, in the **Launch instance** box, choose **Launch instance**.
3. Under **Name and tags**, for **Name**, enter a descriptive name for your instance.
4. Under **Application and OS Images (Amazon Machine Image)**, do the following:
    a. Choose **Quick Start**, and then choose Windows. This is the operating system (OS) for your instance.
    b. From **Amazon Machine Image (AMI)**, select the AMI for Windows Server 2016 Base or later.. Notice that these AMIs are marked **Free Tier eligible**. An *Amazon Machine Image (AMI)* is a basic configuration that serves as a template for your instance.

    Note

    AL2023 is the successor to Amazon Linux 2. For more information, see Launching AL2023 using the Amazon EC2 console.
5. Under **Instance type**, from the **Instance type** list, you can select the hardware configuration for your instance. Choose the t2.micro instance type, which is selected by default. The t2.micro instance type is eligible for the Free Tier. In Regions where t2.micro is unavailable, you can use a t3.micro instance under the Free Tier. For more information, see AWS Free Tier.
6. Under **Key pair (login)**, for **Key pair name**, choose the key pair that you created when getting set up. Note that you must select an **RSA** key. **ED25519** keys are not supported for Windows instances.

    Warning

    Do not choose **Proceed without a key pair (Not recommended)**. If you launch your instance without a key pair, then you can't connect to it.
7. Next to **Network settings**, choose **Edit**. For **Security group name**, you'll see that the wizard created and selected a security group for you. You can use this security group, or alternatively you can select the security group that you created when getting set up using the following steps:
    a. Choose **Select existing security group**.
    b. From **Common security groups**, choose your security group from the list of existing security groups.
8. Keep the default selections for the other configuration settings for your instance.

9. Review a summary of your instance configuration in the **Summary** panel, and when you're ready, choose **Launch instance**.
10. A confirmation page lets you know that your instance is launching. Choose **View all instances** to close the confirmation page and return to the console.
11. On the **Instances** screen, you can view the status of the launch. It takes a short time for an instance to launch. When you launch an instance, its initial state is pending. After the instance starts, its state changes to running and it receives a public DNS name. If the **Public IPv4 DNS** column is hidden, choose the settings icon (⚙) in the top-right corner, toggle on **Public IPv4 DNS**, and choose **Confirm**.
12. It can take a few minutes for the instance to be ready for you to connect to it. Check that your instance has passed its status checks; you can view this information in the **Status check** column.

To connect to your Windows instance using an RDP client

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. In the navigation pane, choose **Instances**.
3. Select the instance and then choose **Connect**.
4. On the **Connect to instance** page, choose the **RDP client** tab.
5. For **Username**, choose the default username for the Administrator account. The username you choose must match the language of the operating system (OS) contained in the AMI that you used to launch your instance. If there is no username in the same language as your OS, choose **Administrator (Other)**.
6. Choose **Get password**.
7. On the **Get Windows password** page, do the following:

- Choose **Upload private key file** and navigate to the private key (.pem) file that you specified when you launched the instance. Select the file and choose **Open** to copy the entire contents of the file to this window.
- Choose **Decrypt password**. The **Get Windows password** page closes, and the default administrator password for the instance appears under **Password**, replacing the **Get password** link shown previously.
- Copy the password and save it in a safe place. This password is required to connect to the instance.

8. Choose **Download remote desktop file**. Your browser prompts you to either open or save the RDP shortcut file. When you have finished downloading the file, choose **Cancel** to return to the **Instances** page.

1. If you opened the RDP file, you'll see the **Remote Desktop Connection** dialog box.
2. If you saved the RDP file, navigate to your downloads directory, and open the RDP file to display the dialog box.

9. You might get a warning that the publisher of the remote connection is unknown. Choose **Connect** to continue to connect to your instance.
10. The administrator account is chosen by default. Paste the password that you copied previously, and then choose **Continue**.
11. Due to the nature of self-signed certificates, you might get a warning that the security certificate could not be authenticated. Use the following steps to verify the identity of the remote computer. Alternatively, if you trust the certificate, choose **Yes** (Windows) or **Continue** (Mac OS X) to skip the following steps.

- [Windows] Choose **View certificate**.
    1. [Mac OS X] Choose **Show Certificate**.
- [Windows] Choose the **Details** tab, and scroll down to **Thumbprint**.
    1. [Mac OS X] Expand **Details**, and scroll down to **SHA1 Fingerprints**.
    2. This is the unique identifier for the remote computer's security certificate.
- In the Amazon EC2 console, select the instance, and then choose **Actions**, **Monitor and troubleshoot**, **Get system log**.
- In the system log output, look for RDPCERTIFICATE-THUMBPRINT. If this value matches the thumbprint (Windows) or fingerprint (Mac OS X) of the certificate, you have verified the identity of the remote computer.
- [Windows] Return to the **Certificate** dialog box and choose **OK**.
    1. [Mac OS X computer] Return to the **Verify Certificate** dialog box and choose **Continue**.
- [Windows] Choose **Yes** in the **Remote Desktop Connection** window to connect to your instance.

Output /Observation:
Snapshots of implementation to be included

Conclusion:
Comment on the use of RDP protocol for Windows Virtual machine