A Step by Step on Configure an Apache web server on the Linux EC2 instance and access it using the public IP address

By
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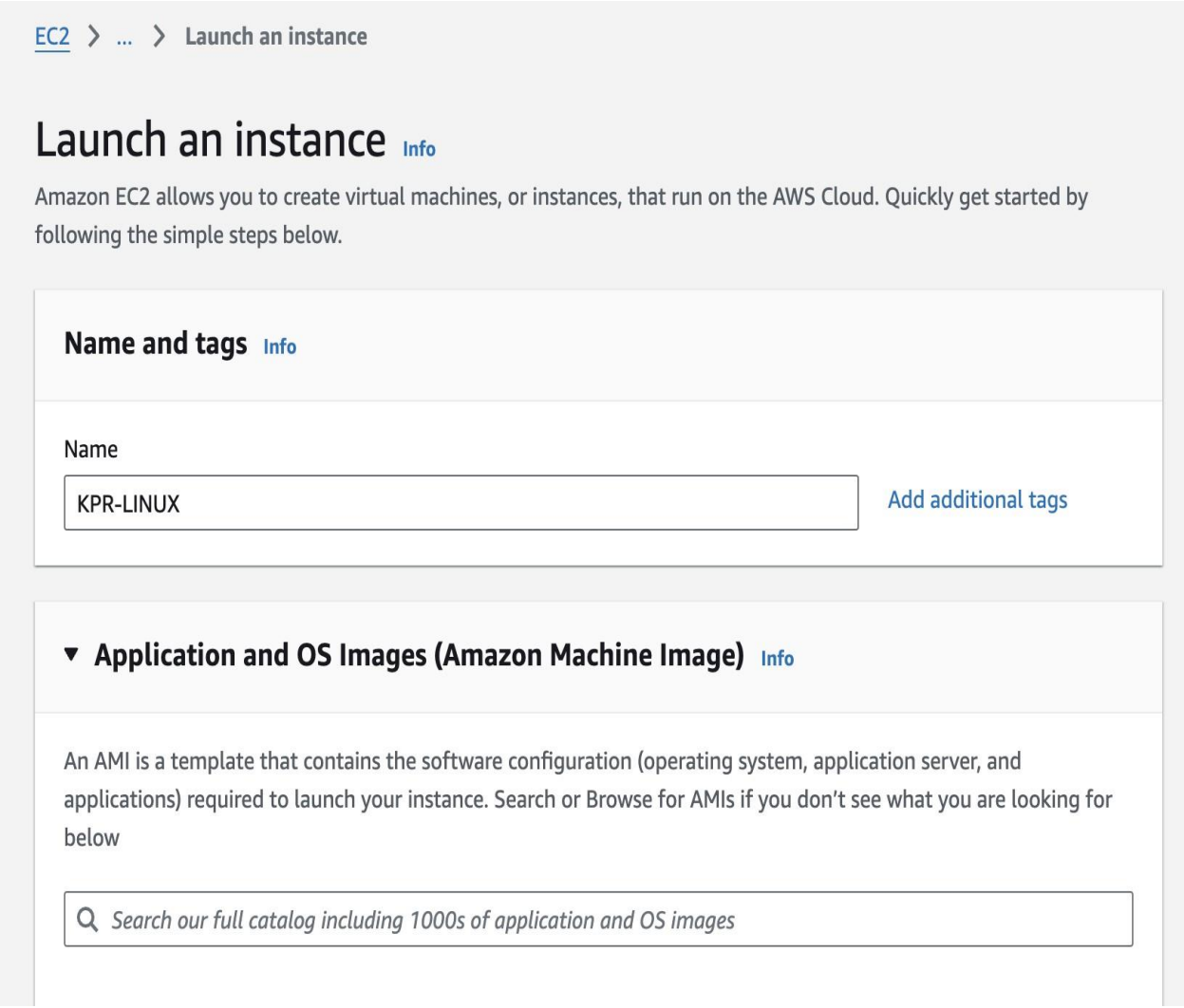
Amazon EC2 allows you to create virtual machines, that run on the AWS Cloud. Quickly get started by following the simple steps below :

Step 1 : Naming your instance.

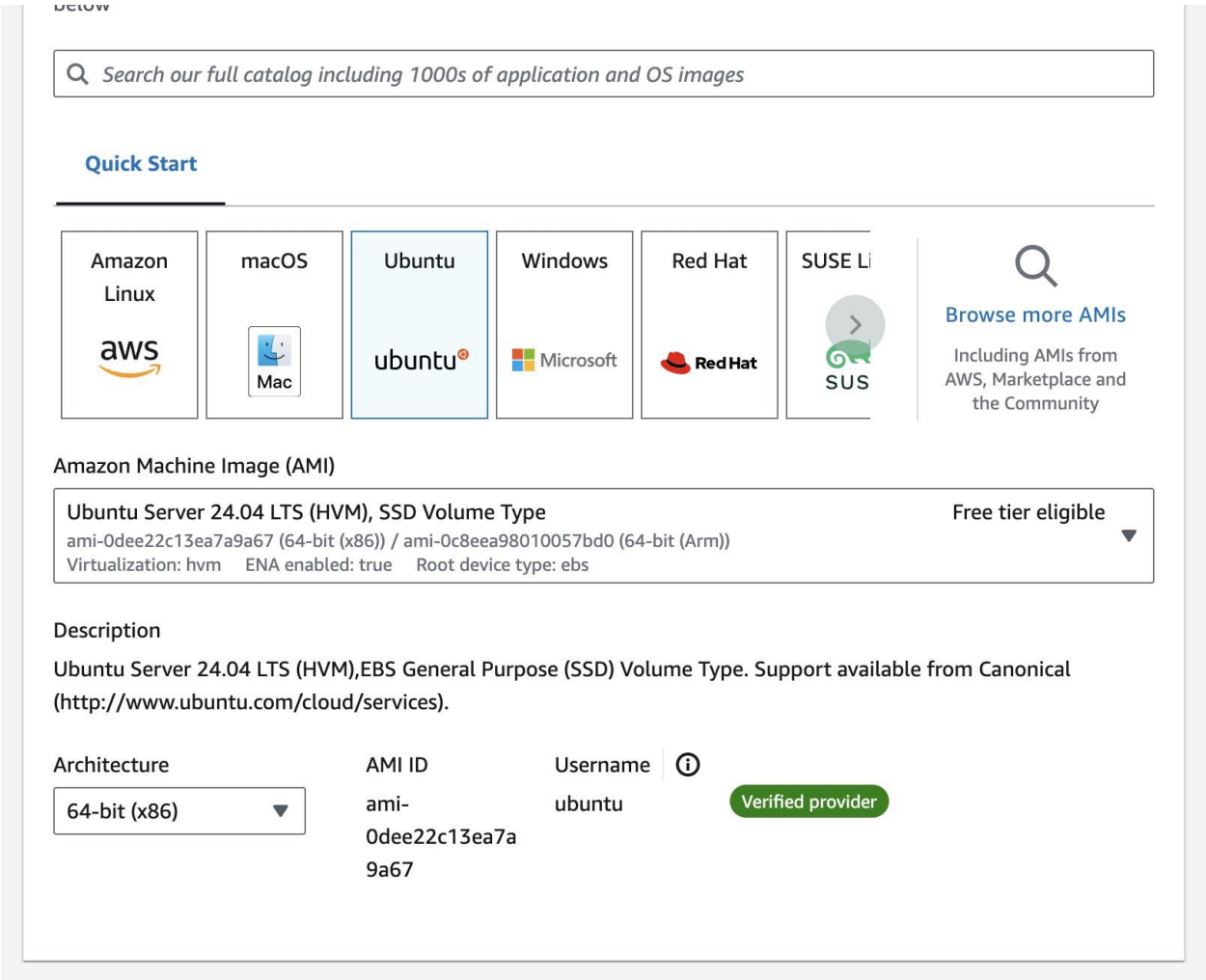
Enter a name for your instance (e.g., “KPR-LINUX”).

Select an AMI, which is a template that contains a software configuration required to launch your instance.



Step 2 : Selecting an AMI.

Choose an AMI (e.g., Ubuntu Server 24.04 LTS).
This provides the base operating system for your instance.

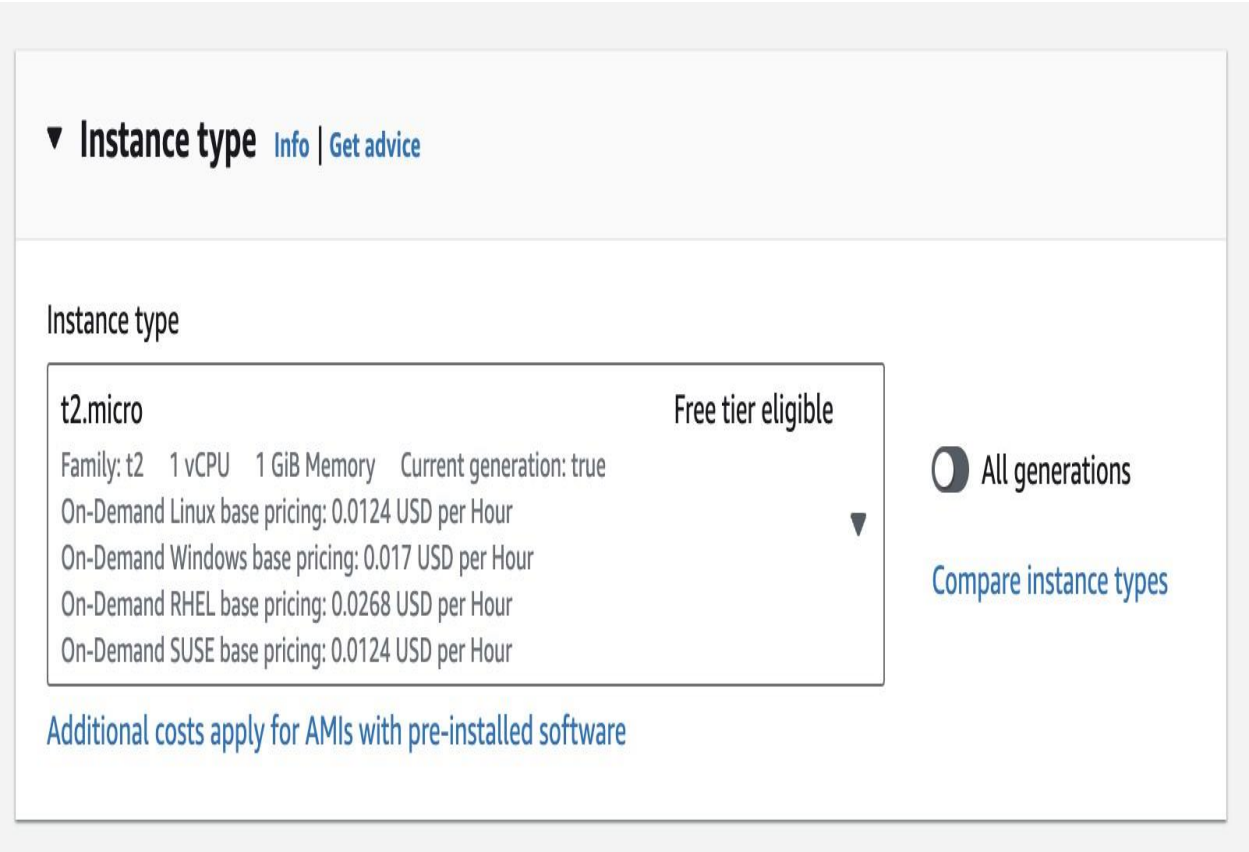


In this case, the AMI selected the “Ubuntu Server 24.04 LTS(HVM)” and “SSD Volume Type”. This is the interface for launching an EC2 instance with an Ubuntu Server 24.04 LTS, with the architecture and storage type being customizable. The AMI is verified and eligible for free-tier usage, making it ideal for small-scale testing or development.

Step 3 : Selecting an instance type. You need to:

Choose an instance type (e.g.,”t2.micro”).

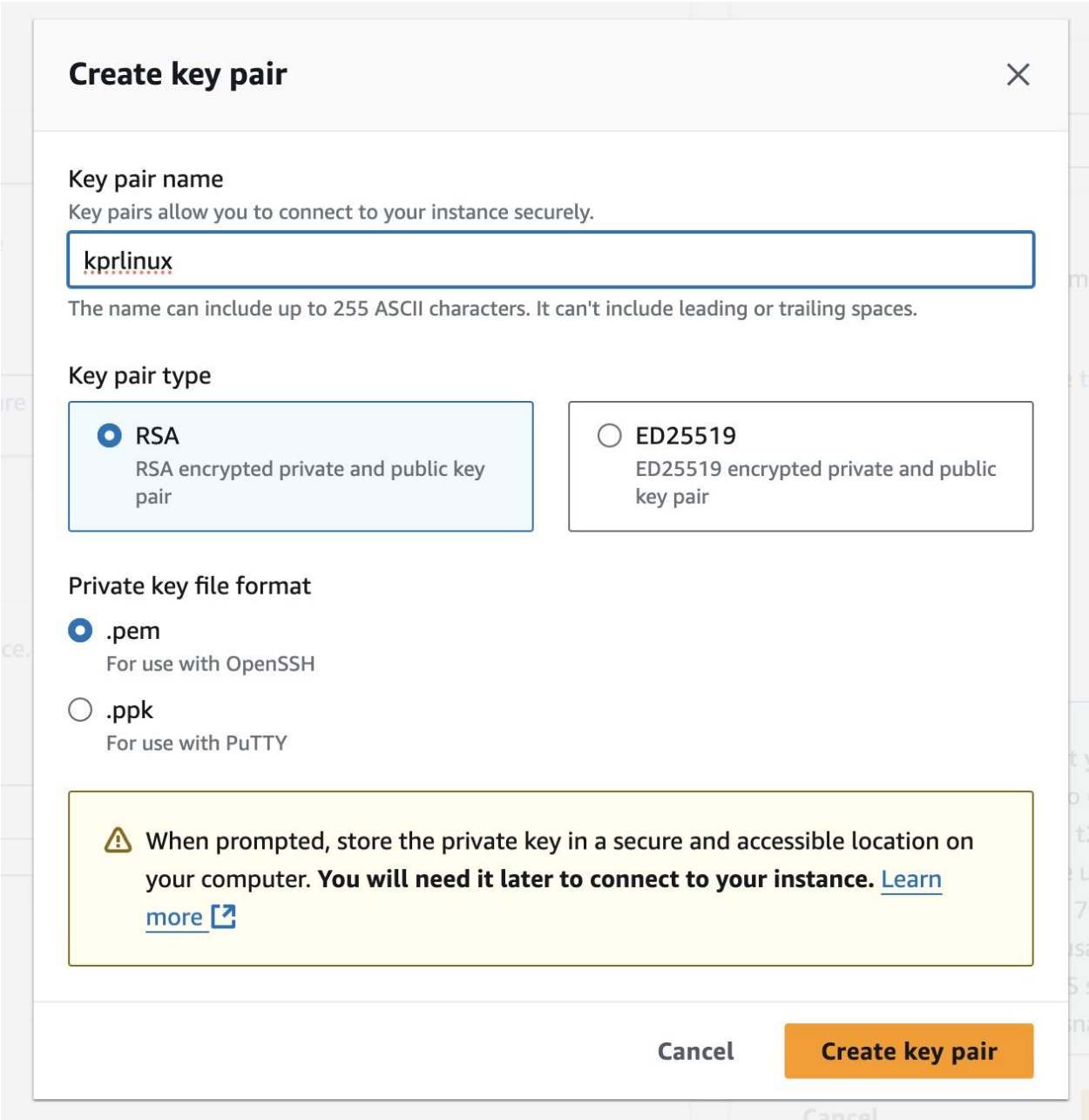
This determines the hardware configuration and pricing for your instance.



You’ve selected **t2.micro**, which is highlighted as “Free tier eligible”. This means it can be used without incurring charges if you are within the free tier limits.

This step is crucial as it determines the performance and cost of your virtual server.

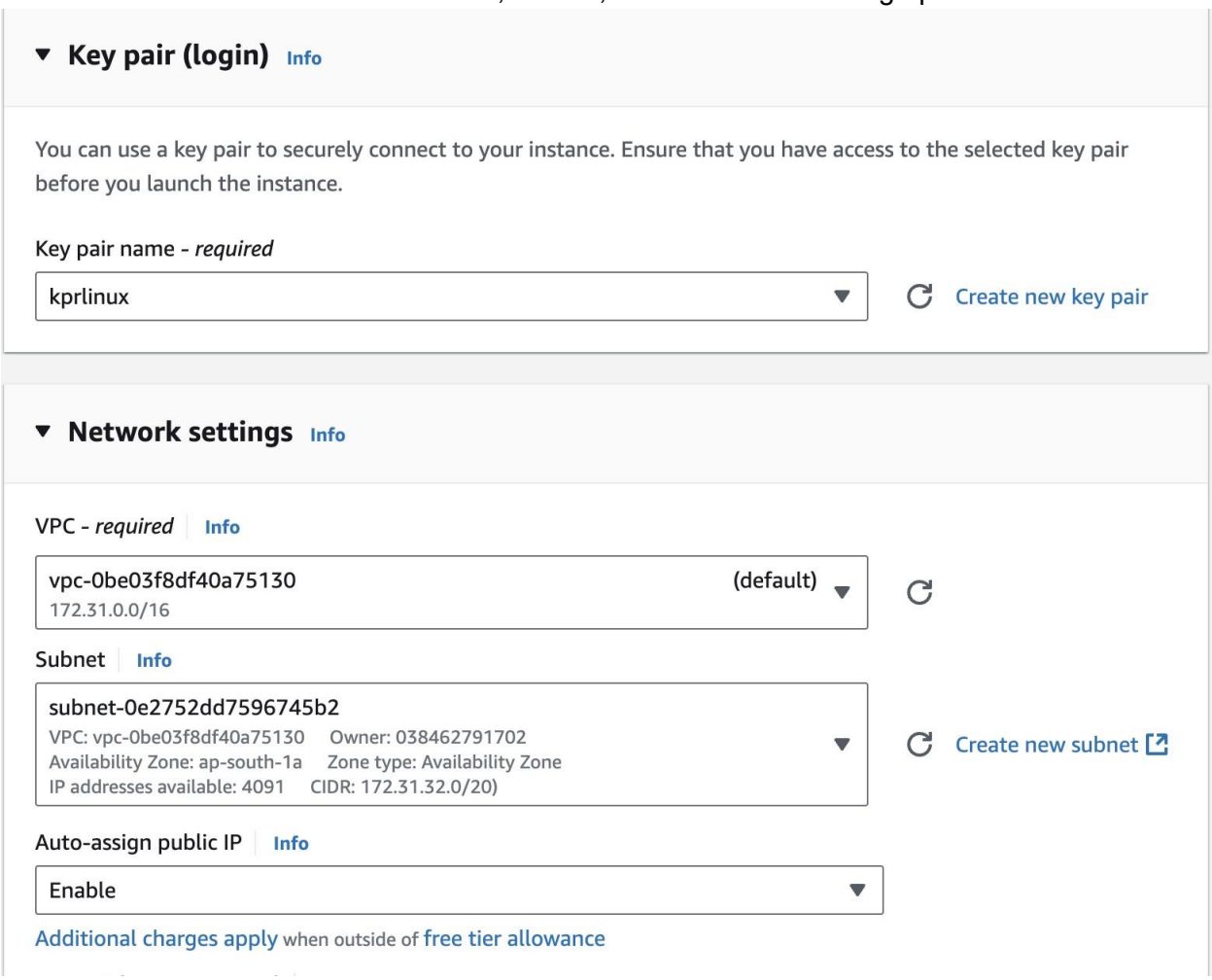
Step 4 : Creating a key pair for secure connection to your instance.
Enter a key pair name(For example : kprlinux)
Select key pair type
- Choose between RSA or ED25519.
Choose private key file format
- Either pern (for OpenSSH) or .ppk(for PuTTY).



Remember to store the private key securely on your computer, as you'll need it to connect to your instance.

Step 5 : Selecting a key pair and configuring network settings for your AWS instances.

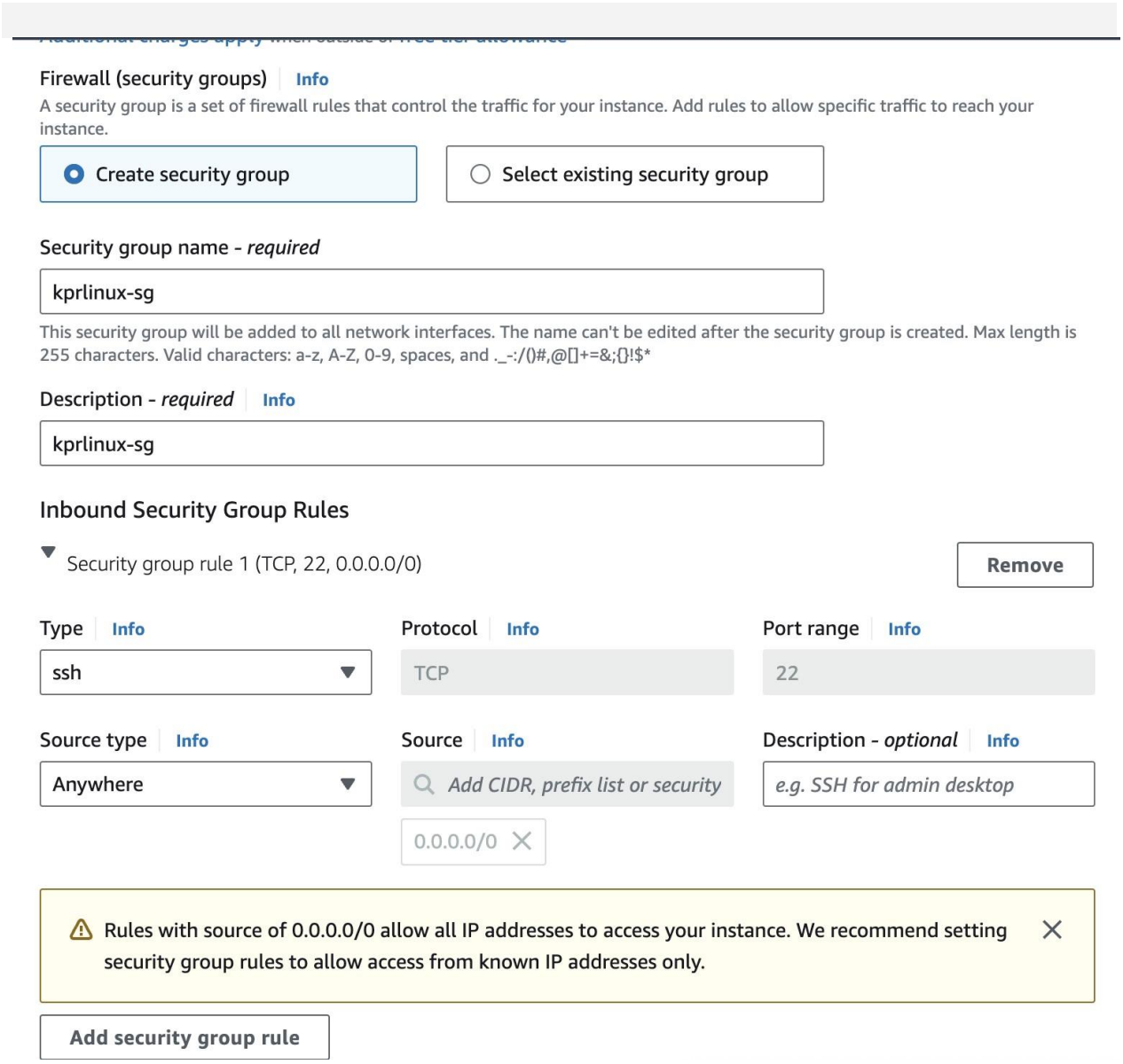
1. **Choose a key pair :**
   – Select an existing key pair or create new one.
2. **Configure Network settings :**
   --Select the VPC, subnet, and enable auto-assign public IP if needed.



These settings ensure secure access and proper network configuration for your instance.

Step 6 : Adding an inbound security rule to your instance's firewall.

1. **Set rule Type :** For example, SSH.
2. **Specify Protocol I** : Typically TCP.
3. **Define Port Range :** For SSH, it's 22**.**
4. **Set Source :** For public access, use 0.0.0.0/0. This configuration allows secure access to your instance.

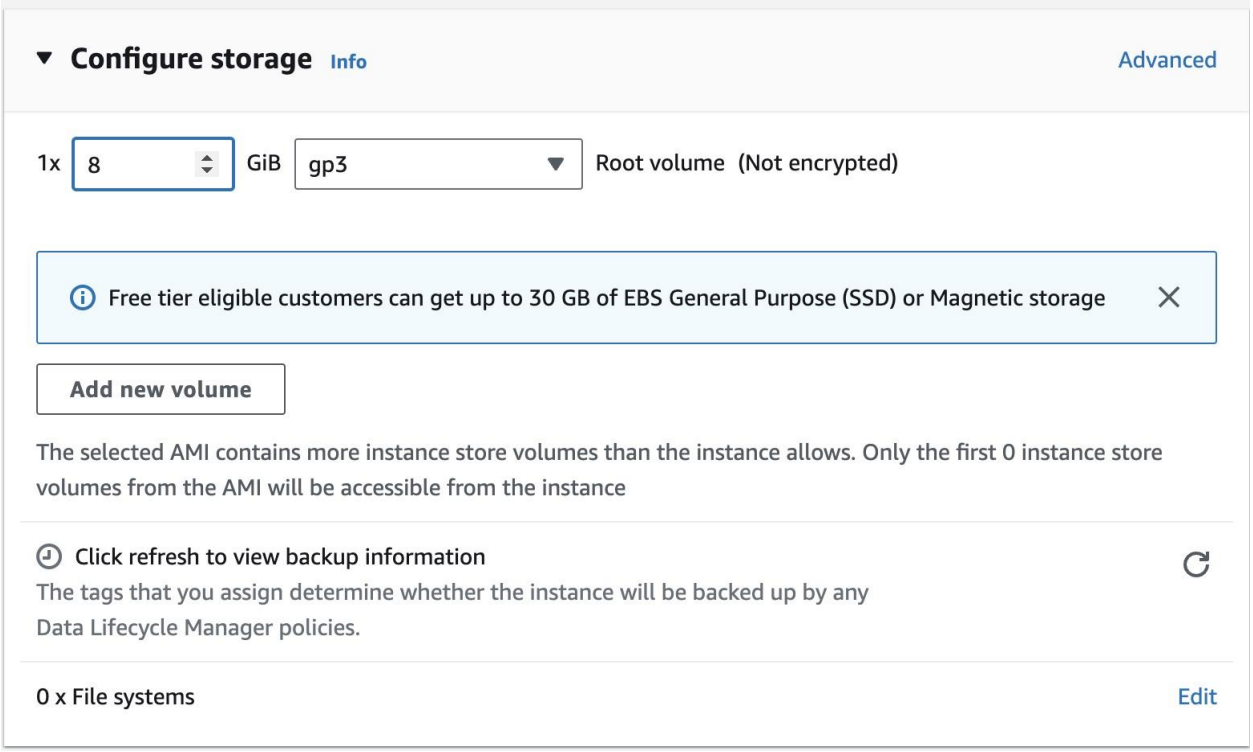


Step 7 :

Configuring storage for your instance.

1. **Select Volume Size:** For example, 8 GiB.
2. **Choose Volume Type:** For example, gp3.
3. **Decide on Encryption :** Choose whether to encrypt the volume.

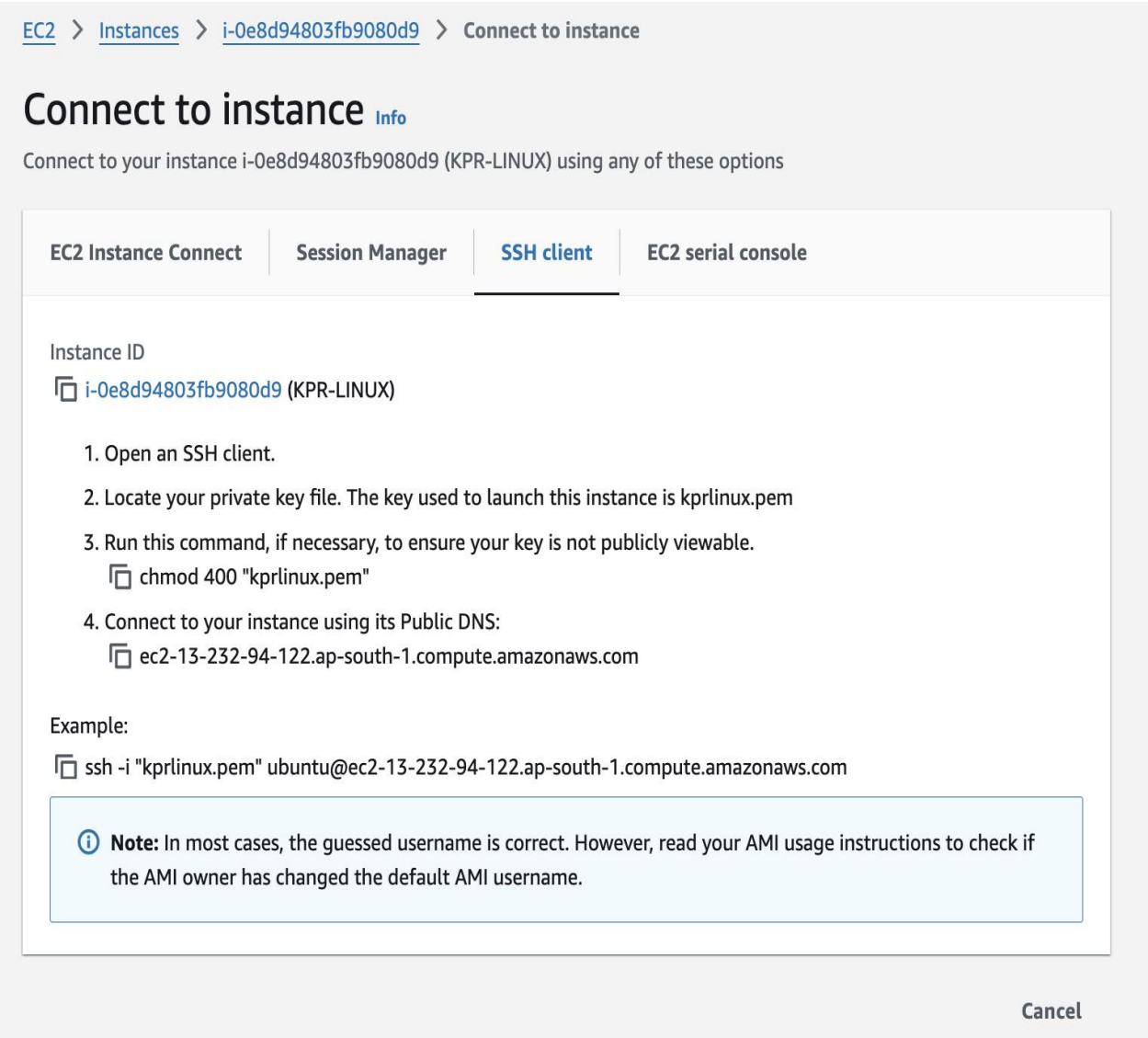
This configuration determines the storage capacity and performance of your instance.



Step 8 :

Connecting to your instance via SSH.

1. **Open an SSH client.**
2. **Locate your private key file** (e.g., kprlinux.pem).
3. **Run the SSH command** provided to connect to your instance. This allows you to securely manage your instance remotely.



Step 9 :

Fixing SSH key permissions.

Change the permissions of your private key file to be more restrictive.
This ensures the key is not accessible by others, allowing you to connect securely.

```
-rw-r--r--@   1 mahendranselvakumar  staff       165  7 Oct 09:36 ~$AWS Presentation by Mahe.pptx
mahendranselvakumar@Mahendrans-MBP Downloads % ssh -i "kprlinux.pem" ubuntu@ec2-13-232-94-122.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-13-232-94-122.ap-south-1.compute.amazonaws.com (13.232.94.122)' can't be established.
ED25519 key fingerprint is SHA256:6Gg/aLoR7WKZGKszaNRnrpDztRn2LZV6Tua+yDAiXso.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-13-232-94-122.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts.
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@         WARNING: UNPROTECTED PRIVATE KEY FILE!          @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
Permissions 0644 for 'kprlinux.pem' are too open.
It is required that your private key files are NOT accessible by others.
This private key will be ignored.
Load key "kprlinux.pem": bad permissions
ubuntu@ec2-13-232-94-122.ap-south-1.compute.amazonaws.com: Permission denied (publickey).
```

Step 10 : Changing file permissions to secure your private key.

You need to Run the command : “chmod 400 kp*blic.pem”
This ensurs your private key is only readable by you, allowing secure SSH connections

```
zsh: command not found: -rw-r--r--@
mahendranselvakumar@Mahendrans-MBP Downloads % chmod 400 "kprlinux.pem"
```

Step 10 :

Step 11 : Changing directory permissions.
You need to Run the command : “chmod 400 kprlinux.pem”.
This ensures your private key file is secure and only readable by you, allowing you to connect to your instances.

```
mahendranselvakumar@Mahendrans-MBP Downloads % ssh -i "kprlinux.pem" ubuntu@ec2-13-232-94-122.ap-south-1.compute.amazonaws.com
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1016-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Mon Oct  7 10:28:30 UTC 2024

  System load:  0.0               Processes:             104
  Usage of /:   22.8% of 6.71GB   Users logged in:       0
  Memory usage: 19%               IPv4 address for enX0: 172.31.42.222
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-42-222:~$ ls
ubuntu@ip-172-31-42-222:~$ ls -la
total 28
drwxr-x--- 4 ubuntu ubuntu 4096 Oct  7 10:28 .
drwxr-xr-x 3 root   root   4096 Oct  7 10:16 ..
-rw-r--r-- 1 ubuntu ubuntu  220 Mar 31  2024 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Mar 31  2024 .bashrc
drwx------ 2 ubuntu ubuntu 4096 Oct  7 10:28 .cache
-rw-r--r-- 1 ubuntu ubuntu  807 Mar 31  2024 .profile
drwx------ 2 ubuntu ubuntu 4096 Oct  7 10:16 .ssh
ubuntu@ip-172-31-42-222:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-42-222:~$
```

Step 12 : Updating package lists.
Run the command : “sudo apt update”.
This synchronizes the package index files from their sources, ensuring you have the latest information on available software packages.

```
Last login: Mon Oct  7 10:28:31 2024 from 176.248.232.84
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-42-222:~$ sudo su -
root@ip-172-31-42-222:~# apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
```

Step 13 : installing Apache2.

You need to Run the command :"sudo apt install apache2". This installs the Apache2 web server on your system.

```
root@ip-172-31-42-222:~# apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 6 not upgraded.
Need to get 2084 kB of archives.
After this operation, 8094 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libapr1t64 amd64 1.7.2-3.1ubuntu0.1 [108 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9116 B]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblua5.4-0 amd64 5.4.6-3build2 [166 kB]
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-1ubuntu8.4 [1329 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-data all 2.4.58-1ubuntu8.4 [163 kB]
Get:8 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-utils amd64 2.4.58-1ubuntu8.4 [97.1 kB]
Get:9 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2 amd64 2.4.58-1ubuntu8.4 [90.2 kB]
Get:10 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 ssl-cert all 1.1.2ubuntu1 [17.8 kB]
Fetched 2084 kB in 0s (38.6 MB/s)
Preconfiguring packages
```

Step 14 : verifying Apache2 installation.

You need to Open a web browser and navigate to your server's IP address.
Seeing the default Apache2 page confirms that the server is installed and running correctly.