REPORT

On

Cisco Packet Tracer Lab Work
&
AWS Cloud Services Hands-On

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2023

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1. Cisco Packet Tracer Introduction

Cisco Packet Tracer is a powerful network simulation and visualization tool developed by Cisco Systems that allows users to create, design, configure, and troubleshoot networks in a virtual environment. It provides a comprehensive suite of features that enable users to:

Design and Build Networks: Packet Tracer offers a wide range of networking devices, including routers, switches, servers, and end-user devices, allowing users to create simple to complex network topologies.

Visualize Network Operation: Packet Tracer allows users to visualize the flow of data packets through the network, providing real-time insights into network performance and troubleshooting issues.

Configure Network Devices: Packet Tracer provides a realistic simulation of Cisco IOS commands, enabling users to practice configuring and managing network devices.

Troubleshoot Network Issues: Packet Tracer allows users to introduce faults and errors into the simulated network, providing a safe environment to practice troubleshooting techniques.

Explore IoT and Cybersecurity Concepts: Packet Tracer integrates with IoT devices and enables users to explore cybersecurity concepts and practices.

Learn and Practice Networking Skills: Packet Tracer is widely used in educational settings to help students learn networking concepts and develop hands-on experience.

Cisco Packet Tracer is a valuable tool for anyone interested in learning networking concepts, developing hands-on experience, and practicing network design, configuration, and troubleshooting. It is widely used by network professionals, students, and educators.

2. Cisco Lab Practicals

2.1 Network Devices

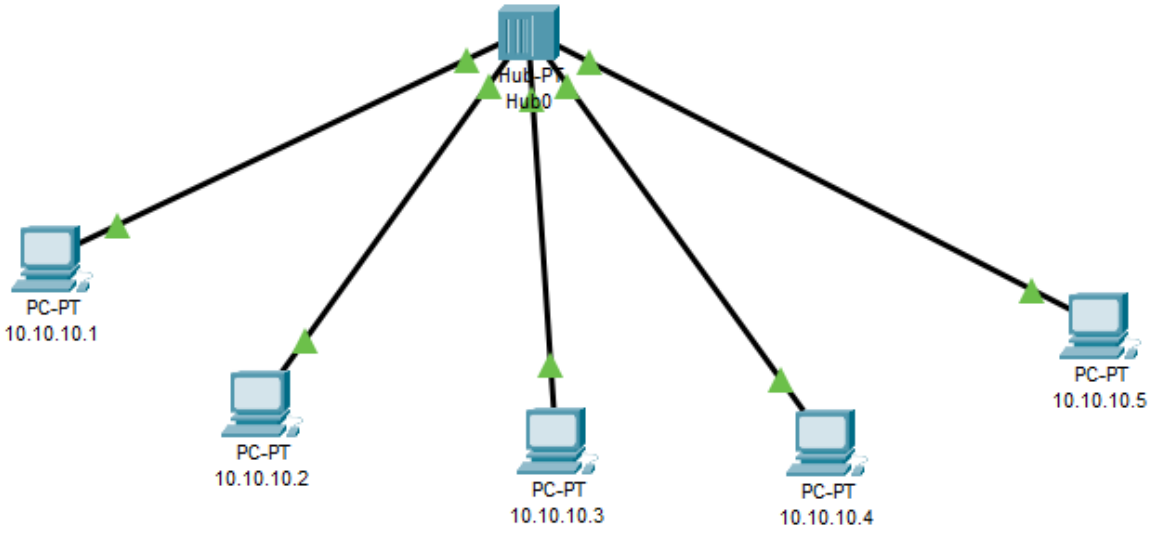


Figure 1 : Hub

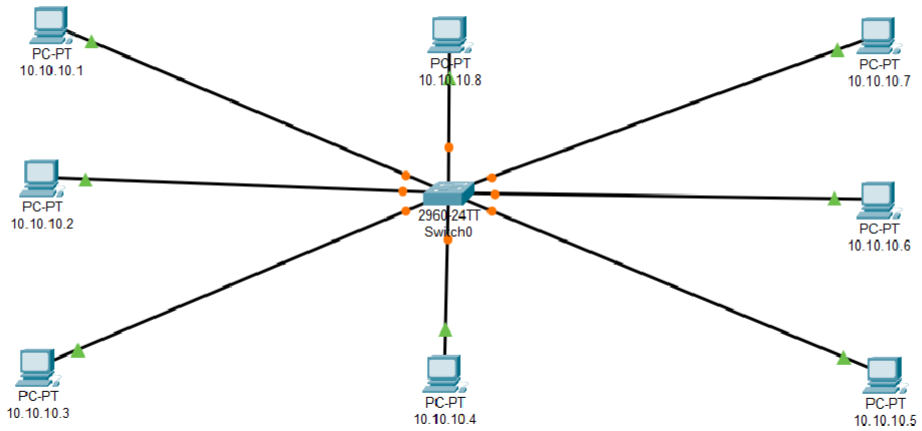


Figure 2 : Switch

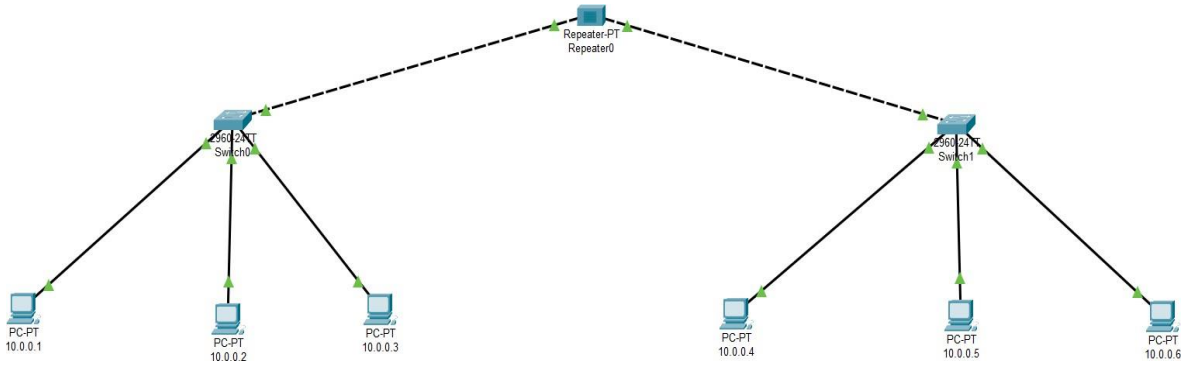


Figure 3 : Repeater

2.2 Topologies

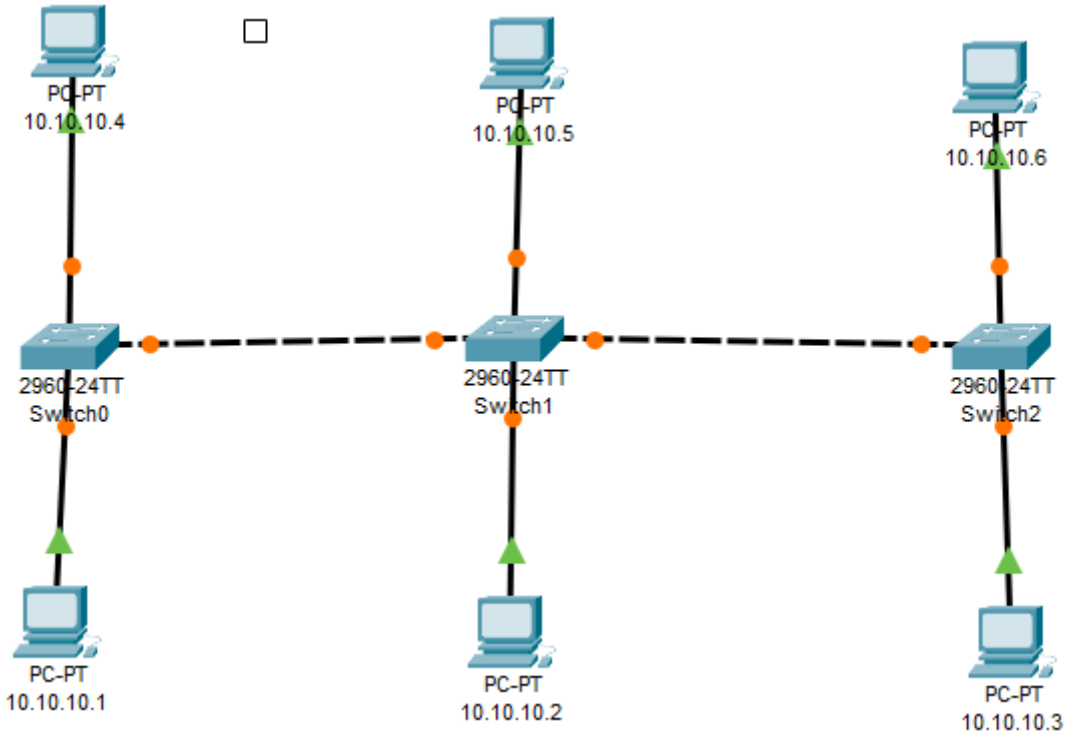


Figure 4 : Bus Topology

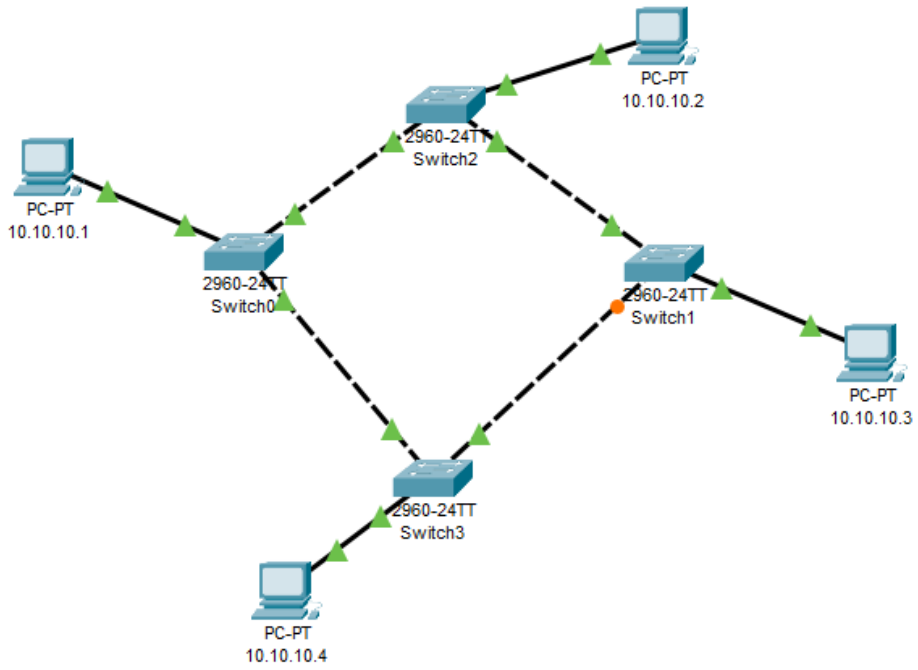


Figure 5 : Ring Topology

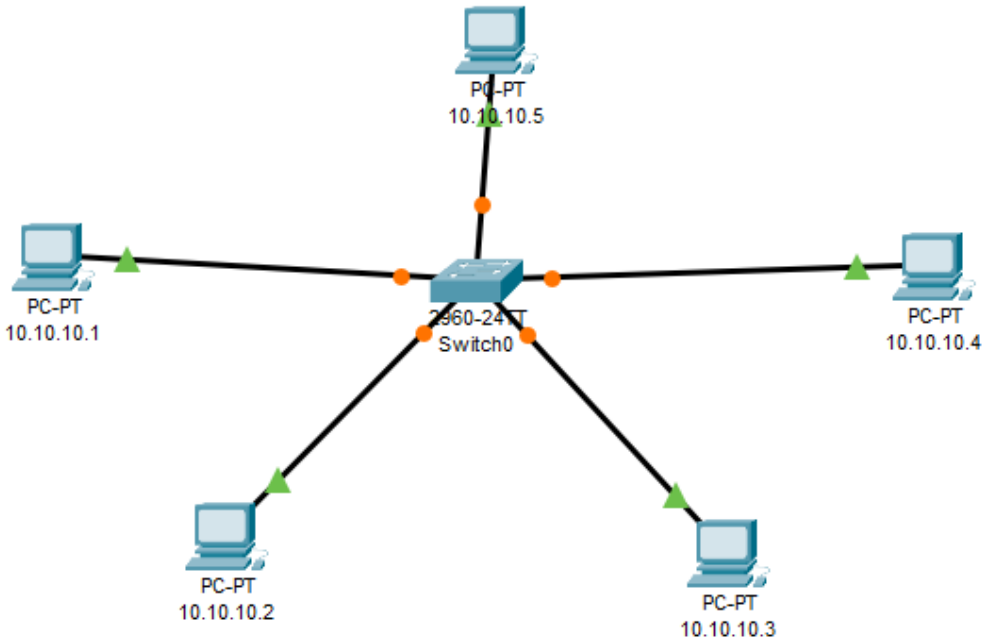


Figure 6 : Star Topology

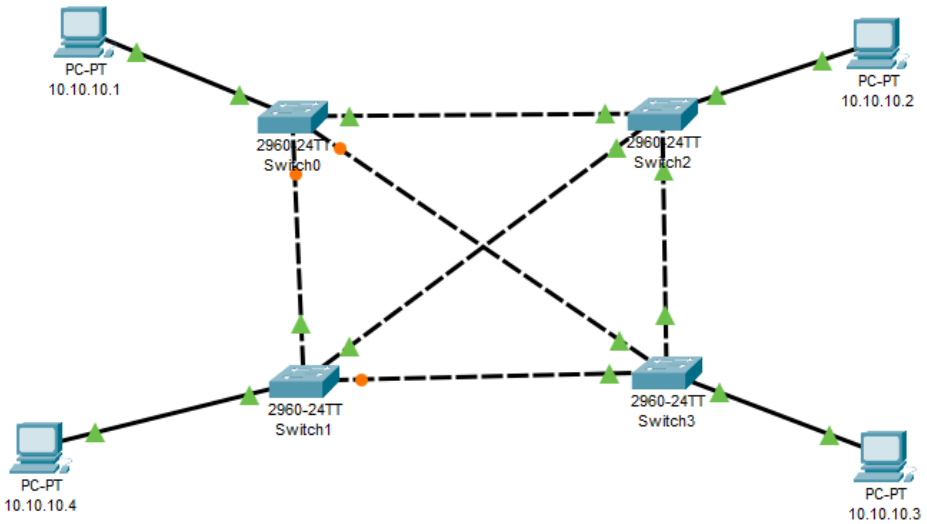


Figure 7 : Mesh Topology

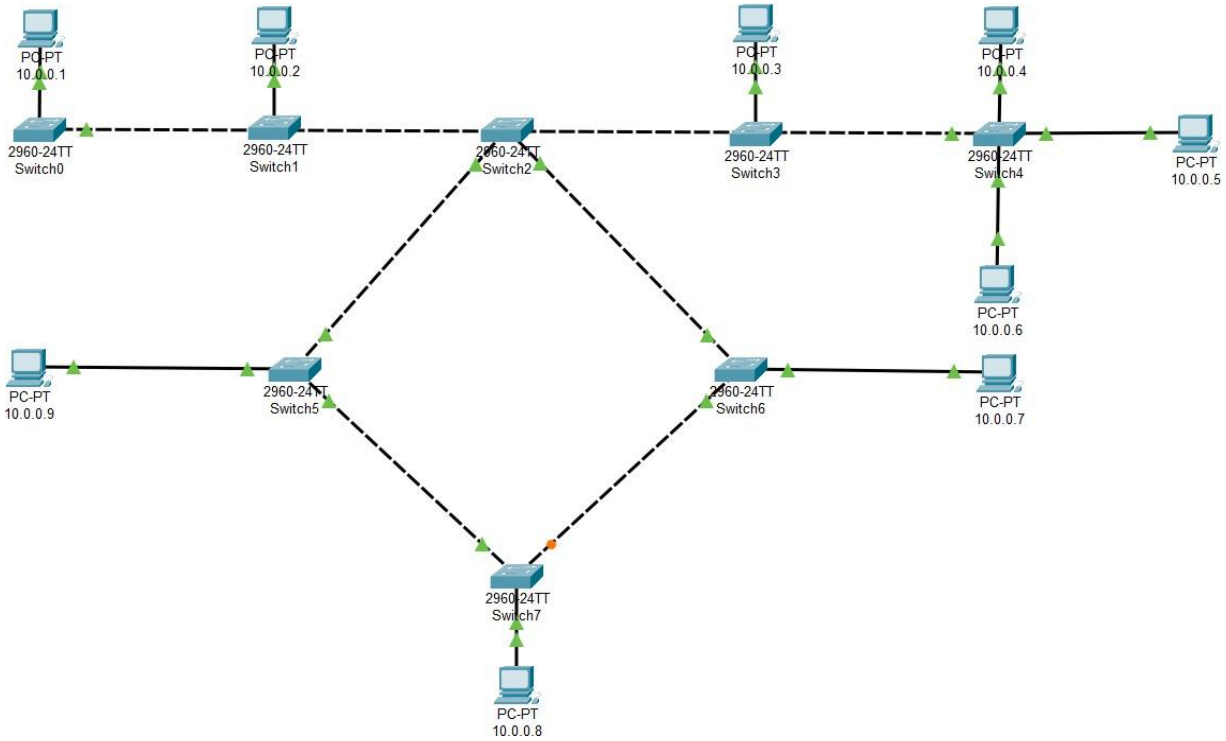


Figure 8 : Hybrid Topology

2.3 Making Same Networks

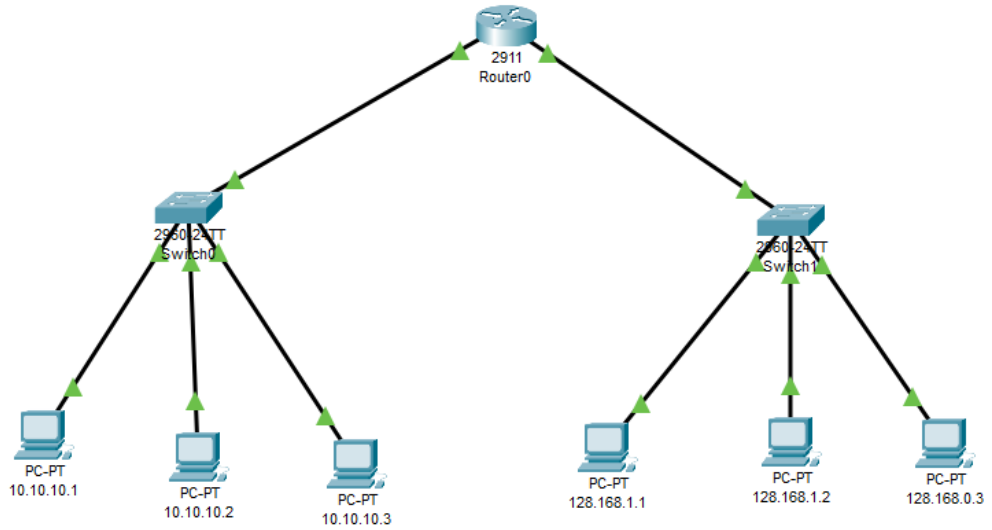


Figure 9 : Inter-LAN

2.4 Wireless Network picture in the simulation mode.

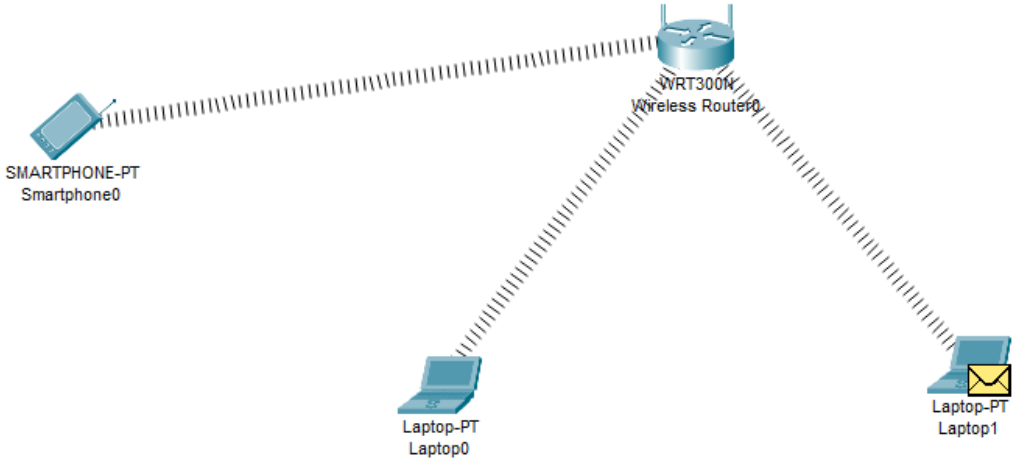


Figure 10 : Wireless Network

2.5 Router To Router Connection

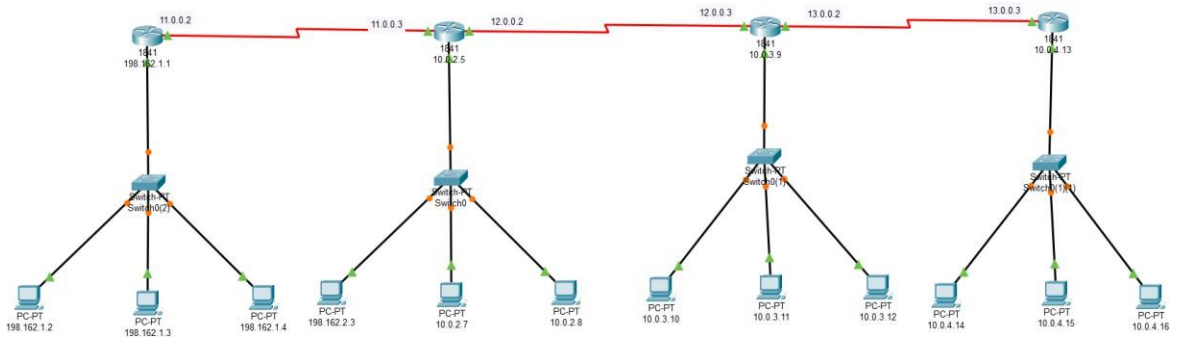


Figure 11 : Router to Router connection

2.6 Static Router Connection

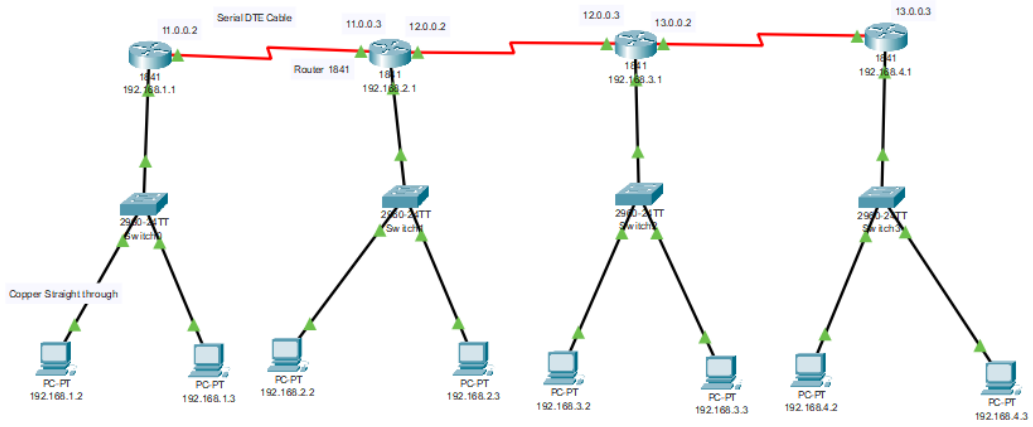


Figure 12 : Static Router Connection

2.7 Protocols

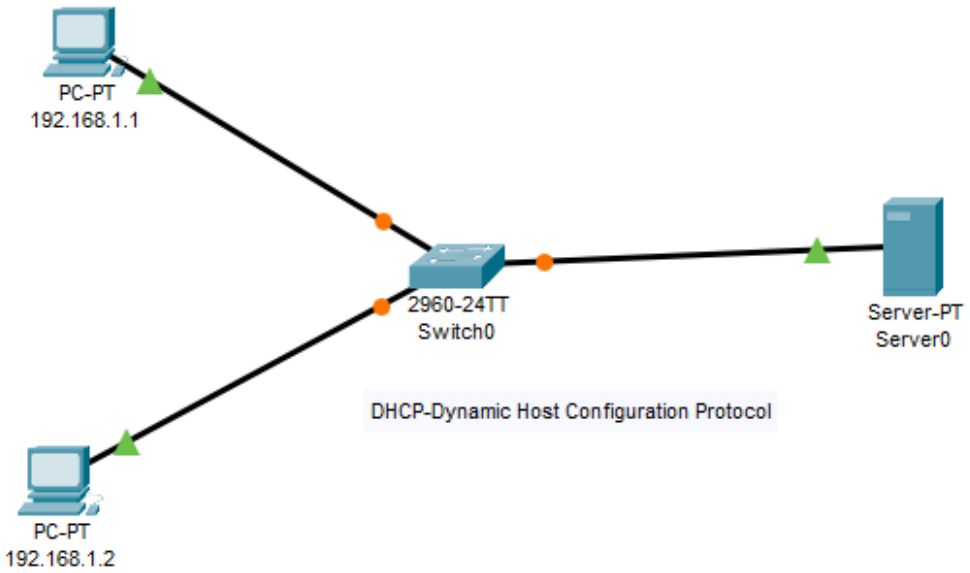


Figure 13 : File Transfer Protocol (FTP)

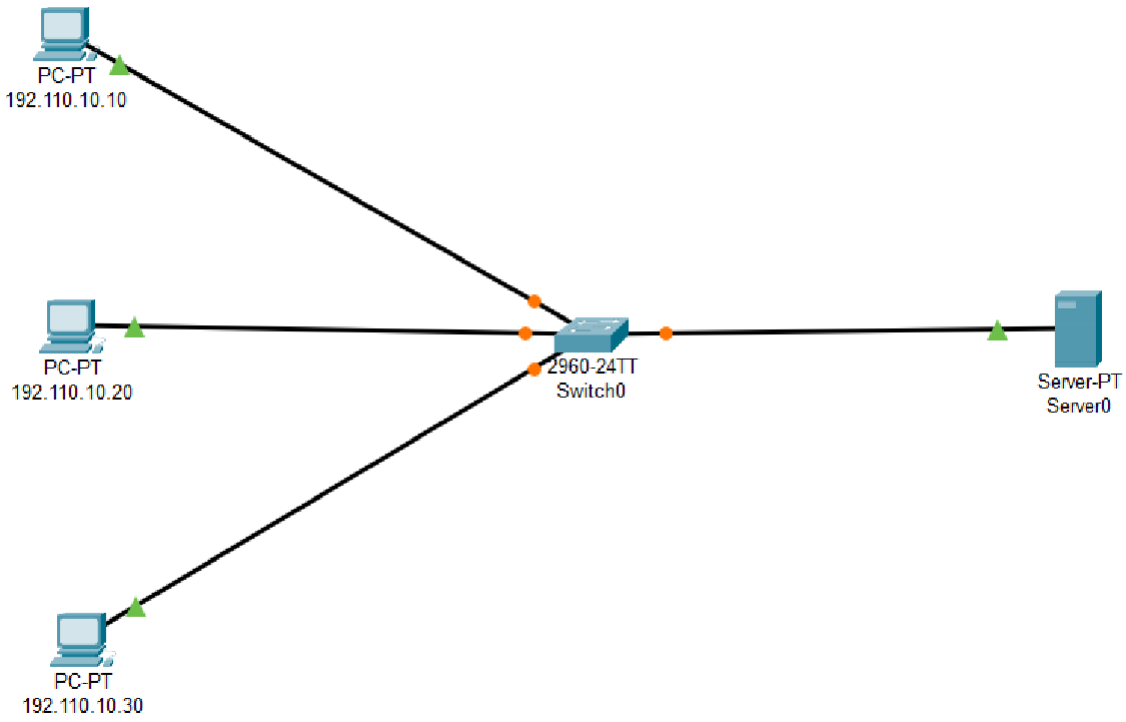


Figure 14 : Simple Mail Transfer Protocol (SMTP)

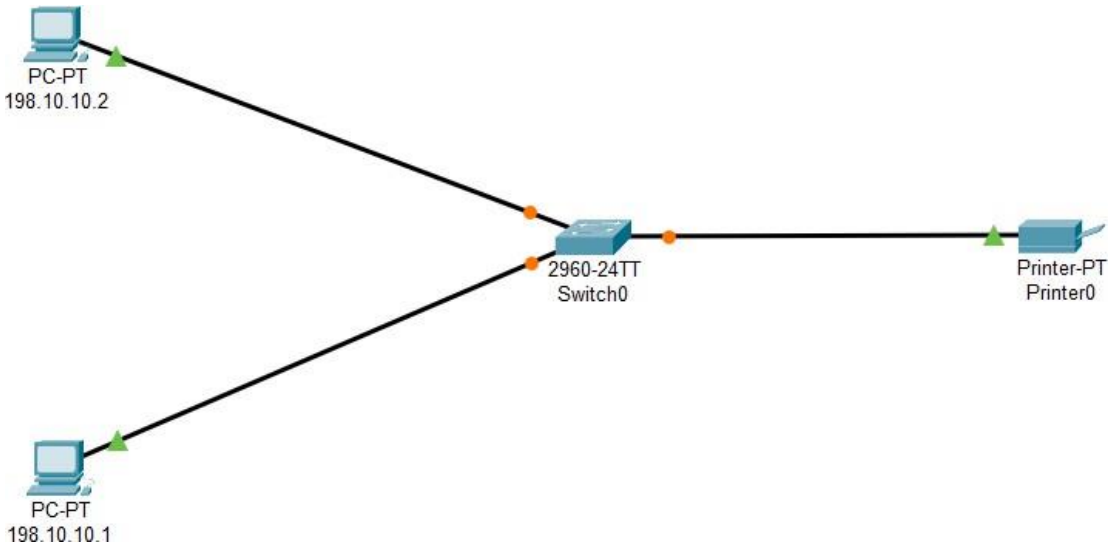


Figure 15 : Internet Control Message Protocol (ICMP)

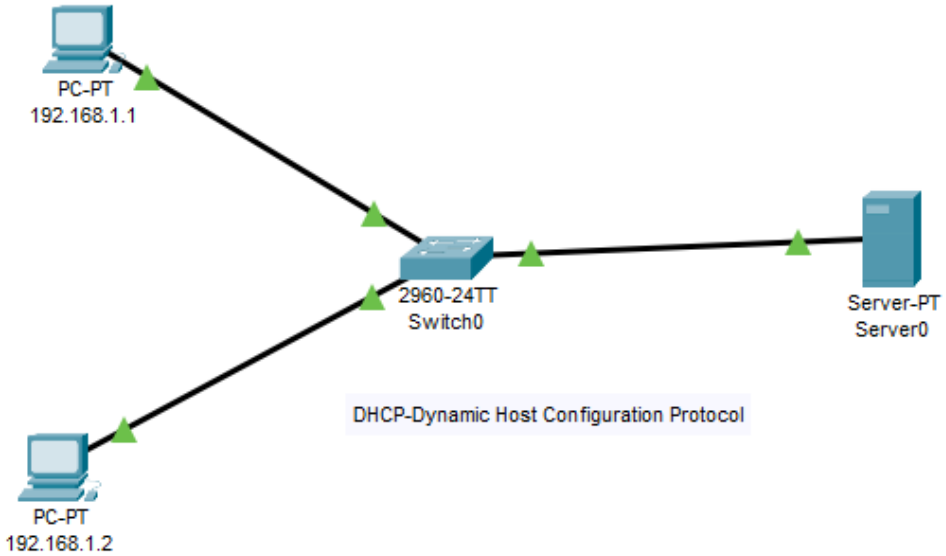


Figure 16 : Dynamic Host Configuration Protocol (DHCP)

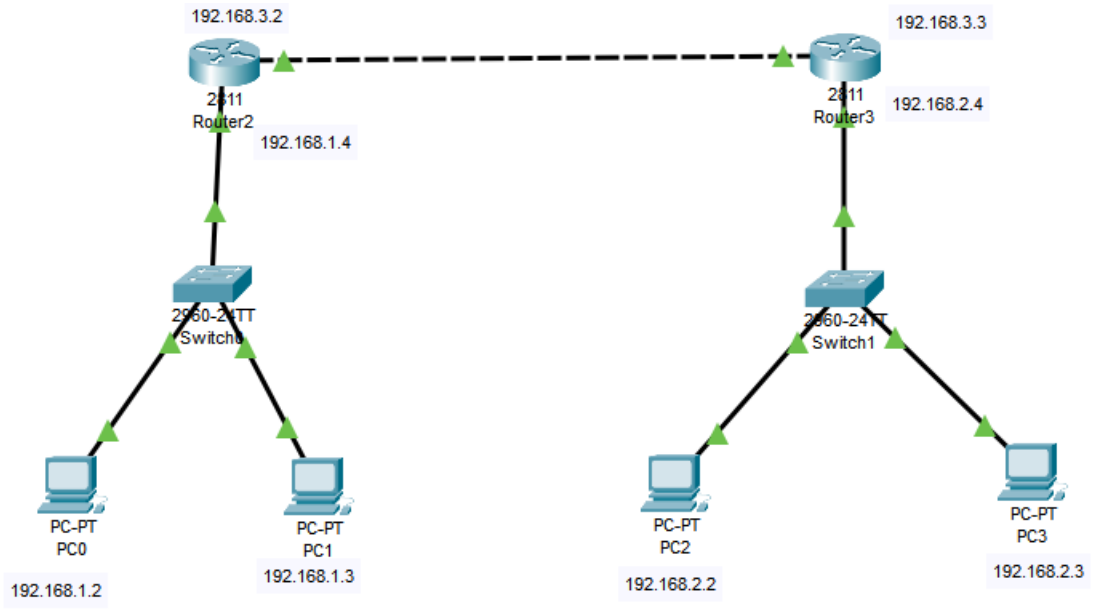


Figure 17 : Routing Information Protocol (RIP)

2.8 Bluetooth Speaker

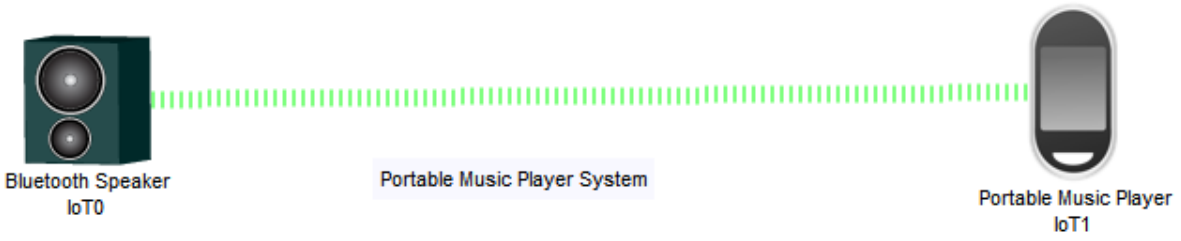


Figure 18 : Bluetooth Speaker

3. Virtual Machine

A virtual machine (VM) is a software program that emulates a physical computer system. It can run its own operating system and applications, just like a physical computer. VMs are created on top of a physical host computer, which provides them with the resources they need to run, such as CPU, memory, storage, and network access.

3.1 Create Virtual Machine

We can create a virtual machine (VM) in the VMware Cloud Console either by using an existing template or by specifying all the required configuration for your VM. By default, the virtual disks on the VM are configured with thick provisioning. If you want to use thin provisioning, use the vSphere Client to create VMs.

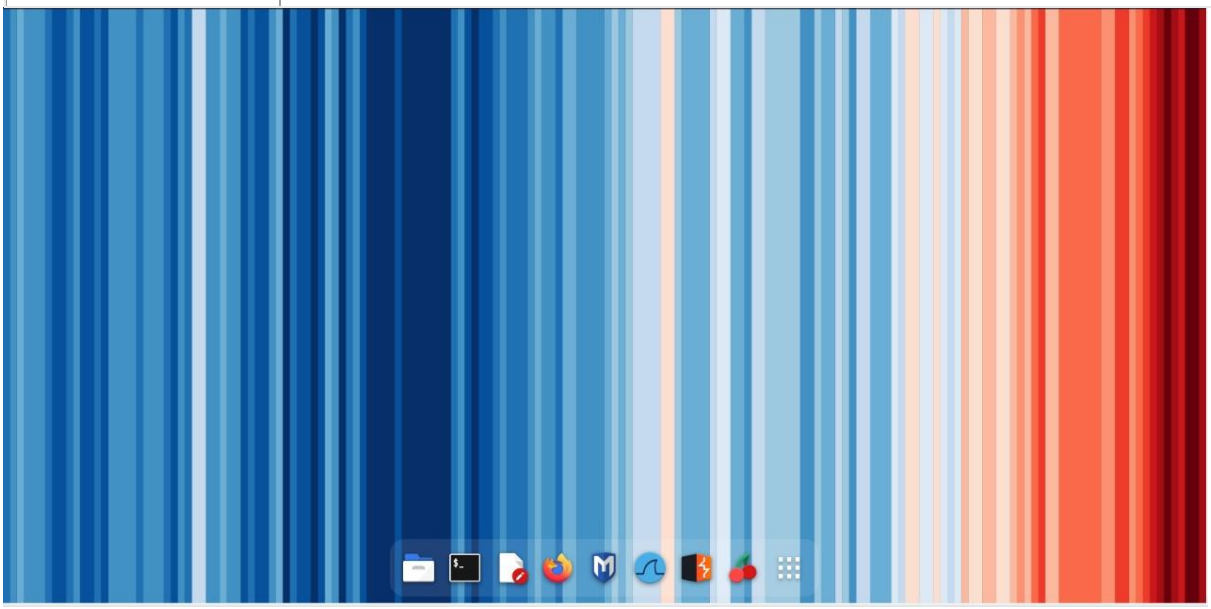
3.2 Prerequisites

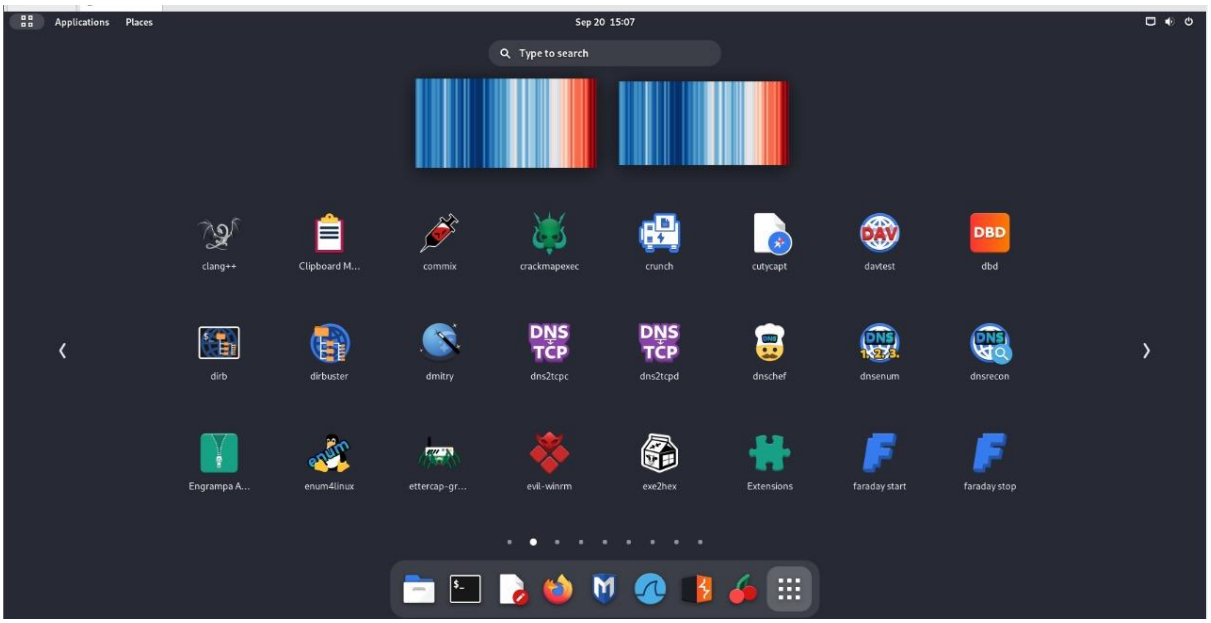
- Ensure that you have set up the necessary authentication mechanism between the vCenter and VMware Cloud..
- Ensure that you have the necessary permissions on the vCenter to create and manage VMs..
- Ensure that you have permissions on the vCenter to view all the VMs, including the VMs for which you may have the **No Access** role

3.3 Procedure

1.Log in to the VMware Cloud Console at https://vmc.vmware.com.
2.Click **Workloads** > **Create VM**.
3.Enter the VM configuration details.
4.Click **Review and Create**.

Option	Action
VM Location	Enter all the required information such as the name, vCenter, data center, and cluster where you want to create the VM.
Operating System and Hardware	For the **Template Source** you select, enter the required information for the VM. ▪ **No Template**. Enter the required operating system and the necessary hardware configuration for the VM. ▪ **Local**. Select an existing template. The hardware, operating system, and other configurations on the new VM are taken from the template you select.
Storage	Select the datastore or cluster on which you want the VM to be created. **Note:**The vSAN default policy is applied when you select a vSAN datastore. To create a vSAN datastore with a custom policy, use the vSphere Client.
Networking	You can either select a network or proceed with the default selection.




Applications
Places
Sep 20 15:07
Type to search
clang++
Clipboard M...
commix
crackmapexec
crunch
cutycapt
davtest
dbd
dirb
dirbuster
dmitry
dns2tcpc
dns2tcpd
dnschef
dnsenum
dnsrecon
Engrampa A...
enum4linux
ettercap-gr...
evil-winrm
exe2hex
Extensions
faraday start
faraday stop

1. Introduction to AWS

1.1 Origin of AWS

AWS (Amazon Web Services) was launched by Amazon in 2006. Initially, it began as a collection of services that provided computing power, storage, and various other functionalities over the internet. Over time, it has expanded to include a vast array of cloud computing services, offering solutions for computing power, storage, content delivery, machine learning, analytics, and more.

1.2 Why we use AWS ?

There are several reasons why AWS is widely used:

Scalability: AWS allows businesses to scale their resources up or down based on demand, providing flexibility and cost-effectiveness.

Reliability: Its infrastructure is designed to be highly reliable and available, minimizing downtime and ensuring consistent performance.

Cost-Effectiveness: With pay-as-you-go pricing models, users only pay for the resources they consume without upfront costs, making it financially feasible for businesses of all sizes.

Global Reach: AWS has data centers strategically located worldwide, enabling businesses to deploy applications and services closer to their customers, reducing latency and improving user experience.

Security: AWS provides a secure platform with a range of security tools and features, ensuring data protection and compliance with various industry standards.

Flexibility and Innovation: It offers a wide range of services and tools, allowing businesses to innovate and experiment with new technologies without significant upfront investments

1.3 Mostly used and famous services offered by AWS

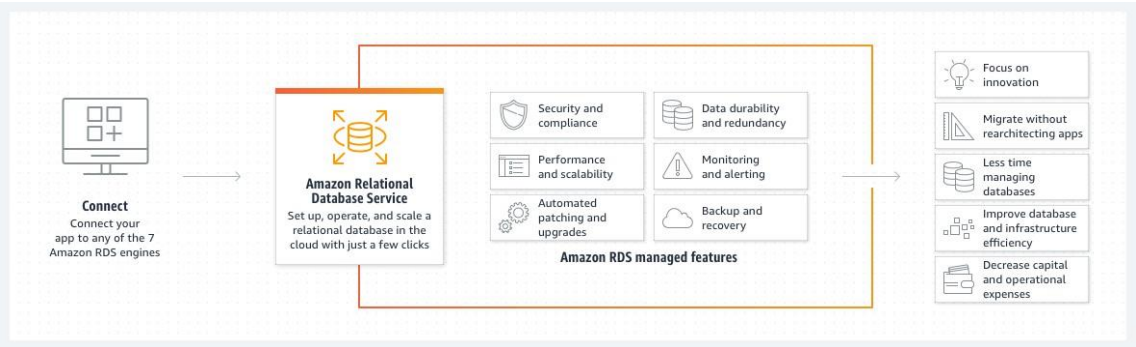
Here are some of the most used and famous services offered by Amazon Web Services (AWS):

Compute: Amazon Elastic Compute Cloud (EC2) is a service that provides virtual machines in the cloud. Businesses can use EC2 to run a variety of applications, including web servers, databases, and customer relationship management (CRM) systems.

Storage: Amazon Simple Storage Service (S3) is a service that provides object storage. Businesses can use S3 to store a variety of data, including files, images, and videos.

Networking: Amazon Virtual Private Cloud (VPC) is a service that allows businesses to create a private network in the cloud. Businesses can use VPC to connect their on-premises network to the AWS cloud.

Databases: Amazon Relational Database Service (RDS) is a service that provides managed relational databases. Businesses can use RDS to run a variety of relational databases, including MySQL, PostgreSQL, and Oracle Database.



2. AWS Billing Area

The AWS Billing console allows you to easily understand your AWS spending, view and pay invoices, manage billing preferences and tax settings, and access additional Cloud Financial Management services. Quickly evaluate whether your monthly spend is in line with prior periods, forecast, or budget, and investigate and take corrective actions in a timely manner.

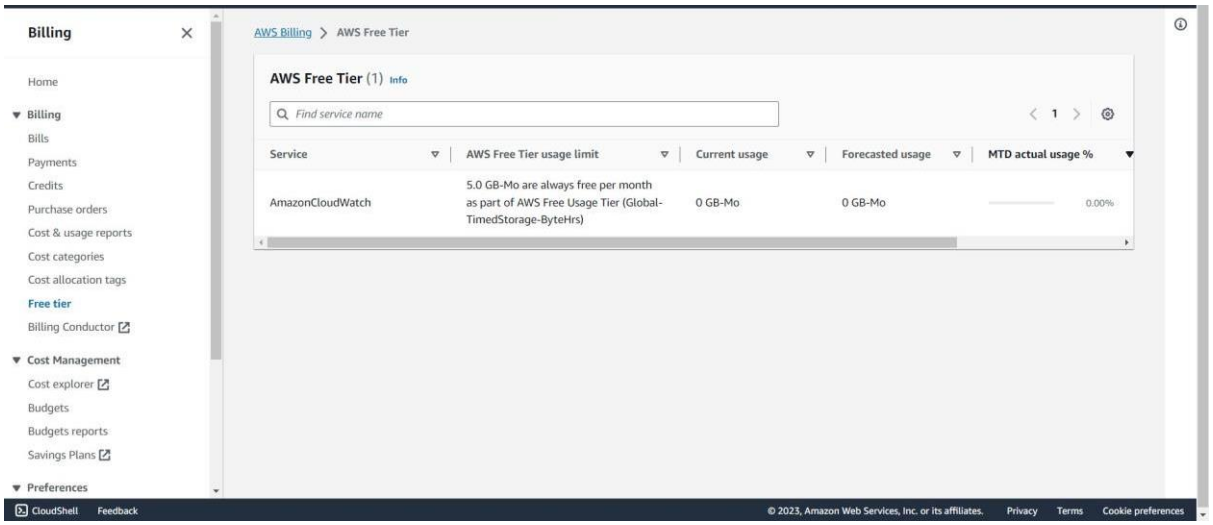
Benefits of using AWS Billing Areas:

- Consolidated billing: You can view and pay for all of your AWS resources in a single invoice, which can simplify your billing process and make it easier to manage your costs.

- Cost allocation: You can allocate costs across your organization based on your business needs, such as by department, project, or team. This can help you to track the costs of each of your business units and identify areas where you can save money.

- Budgeting: You can set budgets for your AWS accounts and receive alerts when you are approaching or exceeding your budget. This can help you to control your AWS spending and avoid unexpected costs.

- Cost and usage reporting: You can access detailed reports on your AWS usage and costs, which can help you to understand how your AWS resources are being used and identify opportunities to optimize your spending.



3. AWS EC2 Instance Creation

Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 700 instances and choice of the latest processor, storage, networking, operating system, and purchase model to help you best match the needs of your workload. We are the first major cloud provider that supports Intel, AMD, and Arm processors, the only cloud with on-demand EC2 Mac instances, and the only cloud with 400 Gbps Ethernet networking. We offer the best price performance for machine learning training, as well as the lowest cost per inference instances in the cloud. More SAP, high performance computing (HPC), ML, and Windows workloads run on AWS than any other cloud.

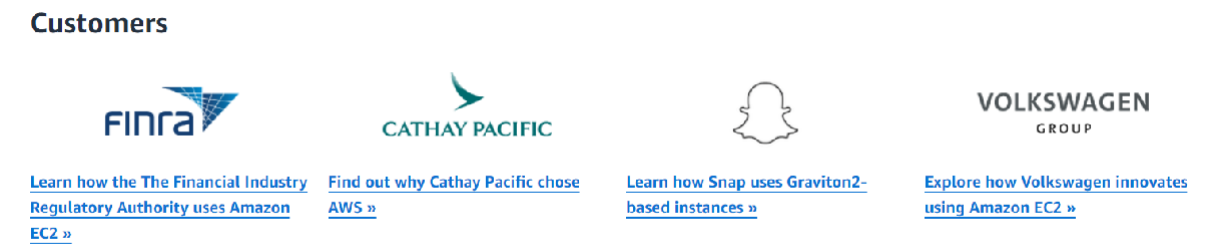
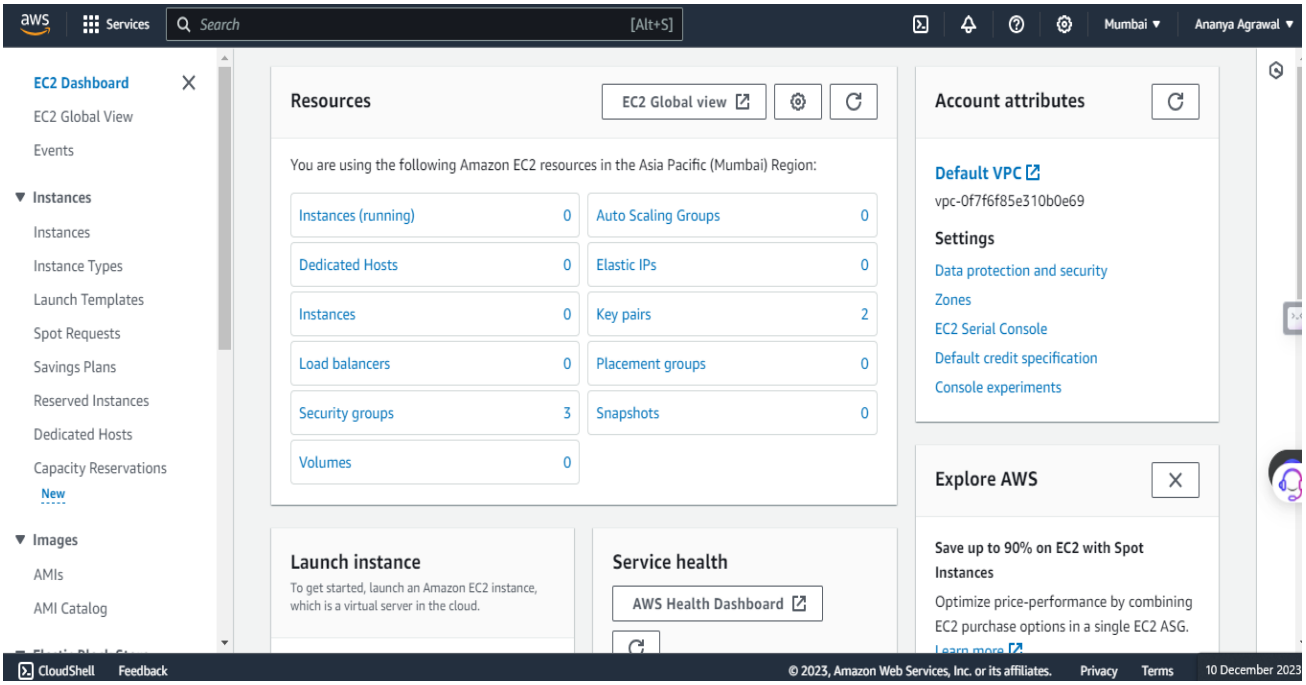
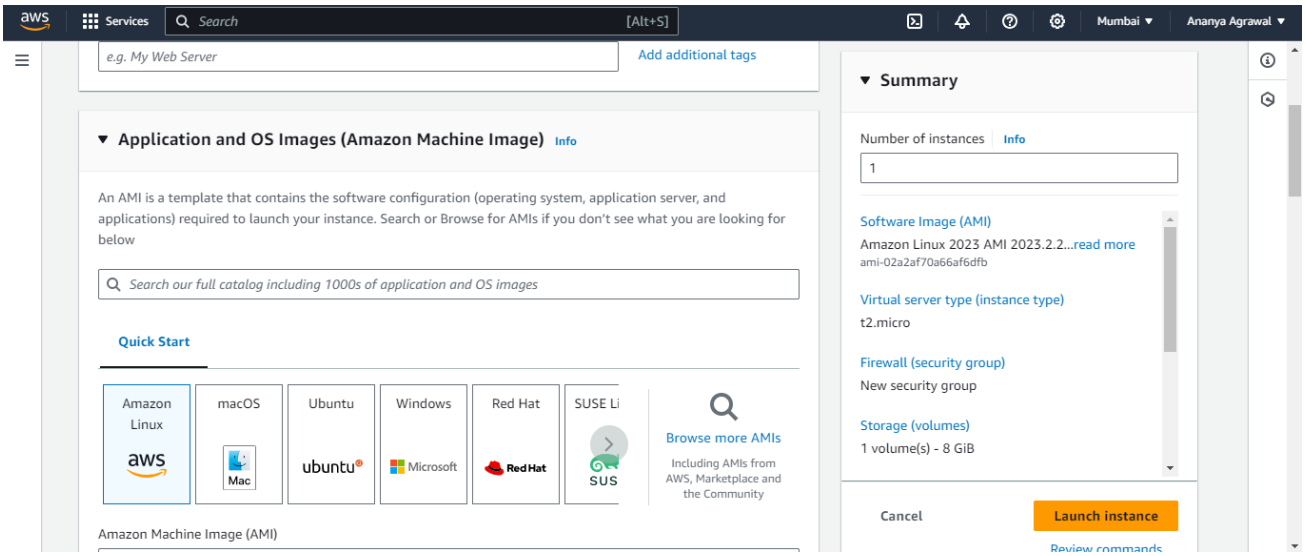


Image src : https://aws.amazon.com/ec2/

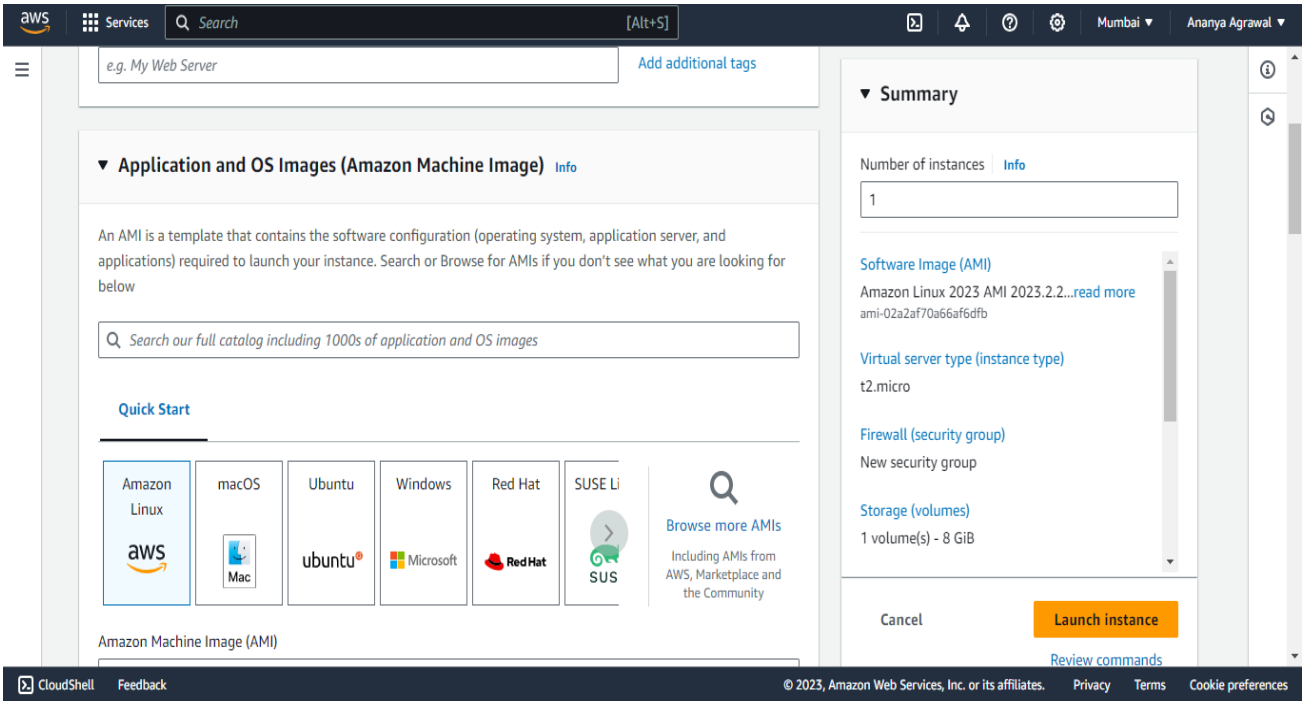
Step-1 : Go to the EC2 Dashboard

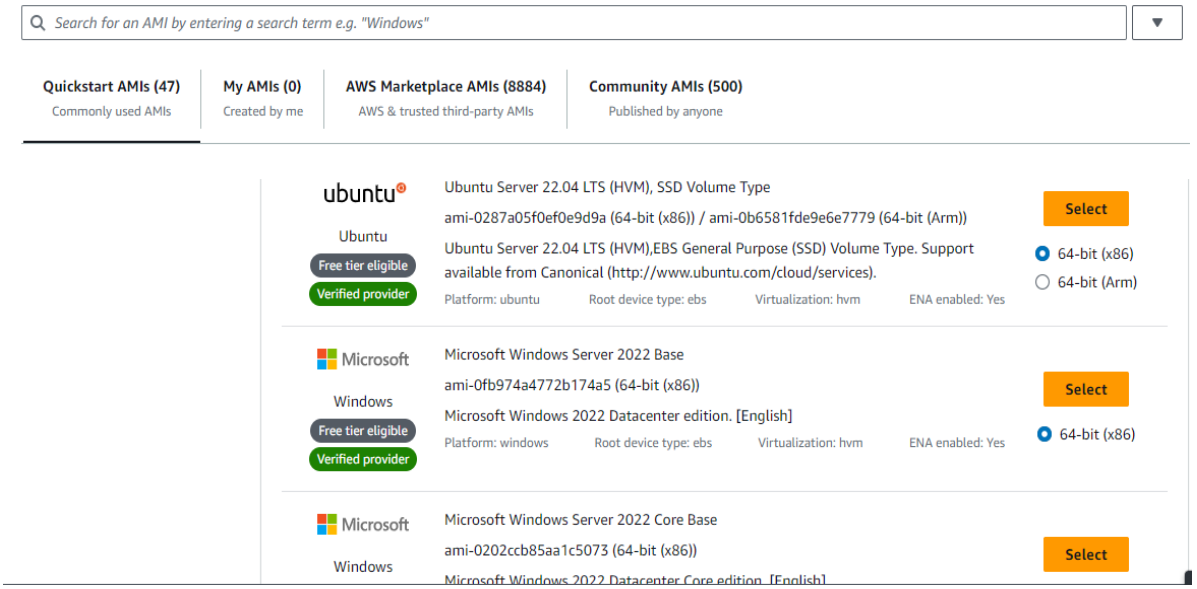


Step-2 : Click on the yellow colored “Launch instance” button.

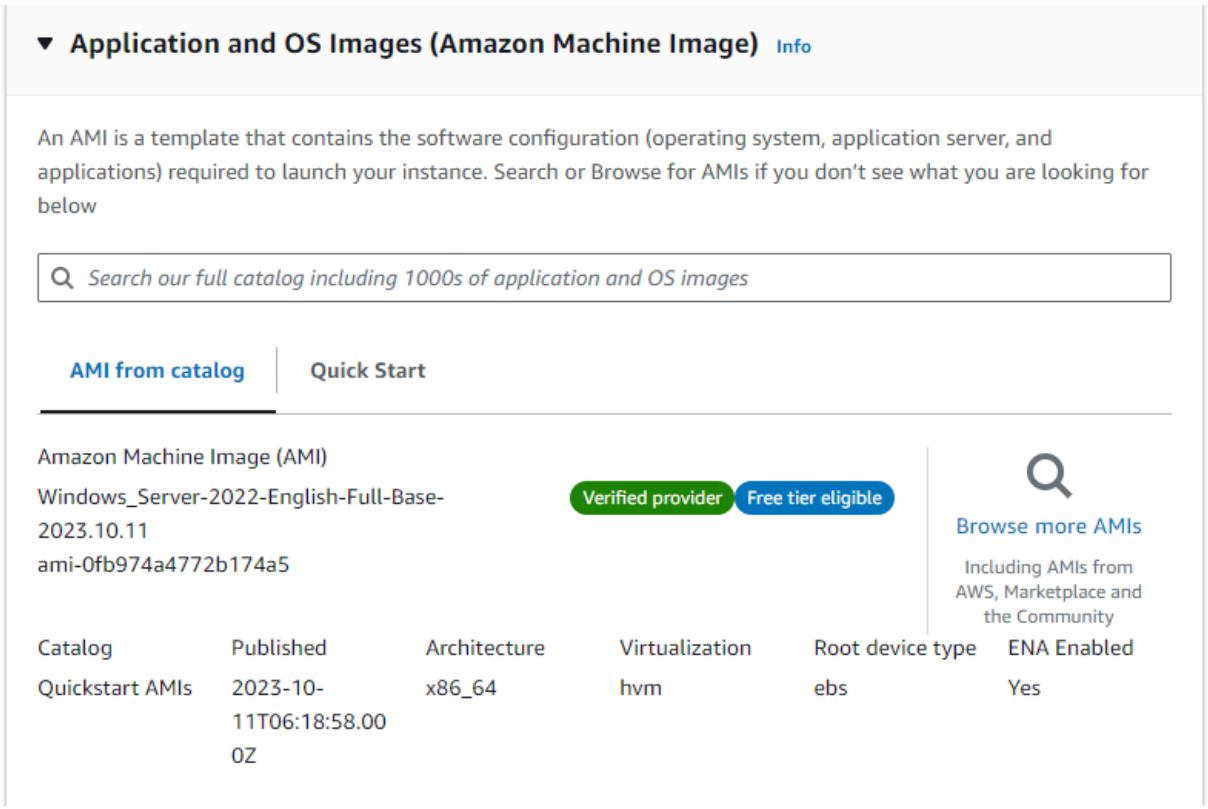


Step-3 : After typing the name of the instance select the OS images





Step-4 : Configure Hardware of AMI



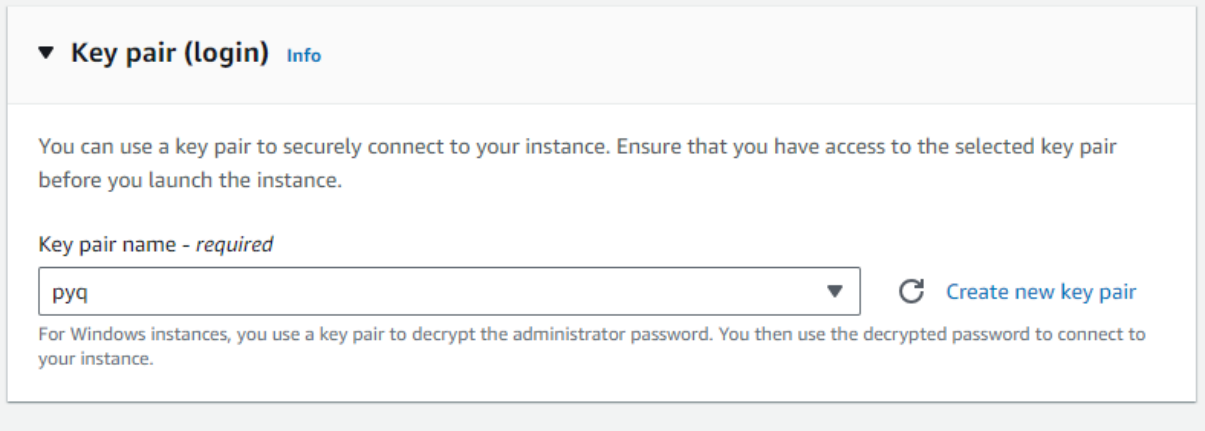
Step-5 : Create a Key-pair

The key is used to enable Secure Shell (SSH) access into the EC2 instance.

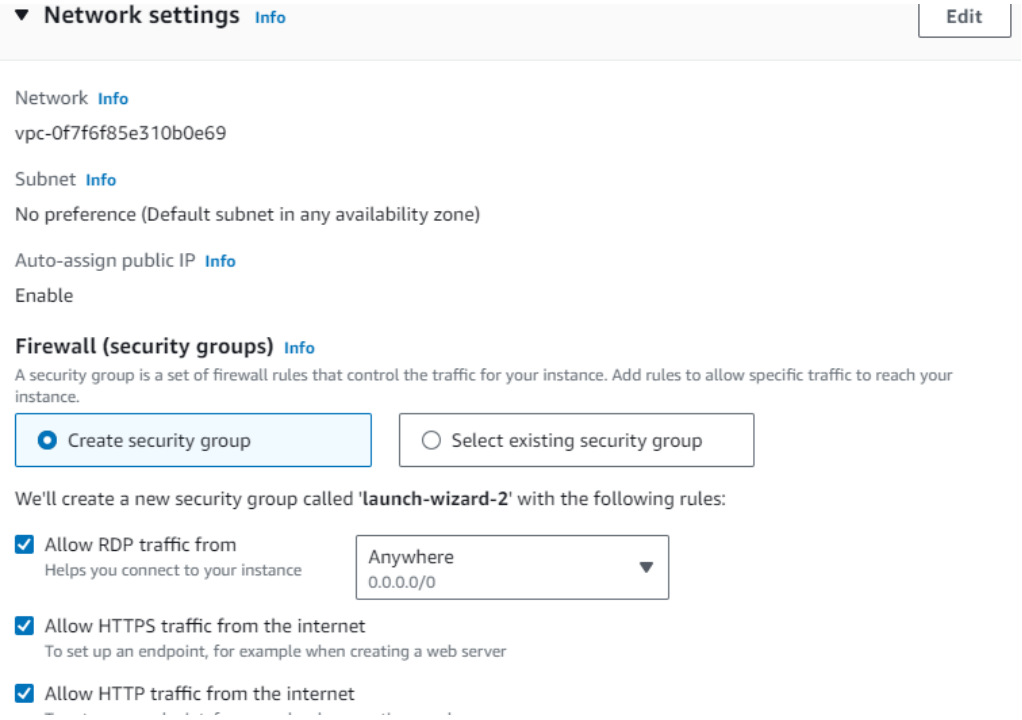
With Windows instances, the private EC2 key helps generate an admin password to access the instance. AWS stores a copy of the public key inside the EC2 instance. Users keep the private key.

It's the developer's responsibility to store the generated key file in a secure location, given that this file enables someone to access the EC2 instance and run commands in it.

Once this step is completed, the EC2 instance goes into a pending state, which typically lasts less than one minute. The instance then transitions into a running state, and it's ready to be used.

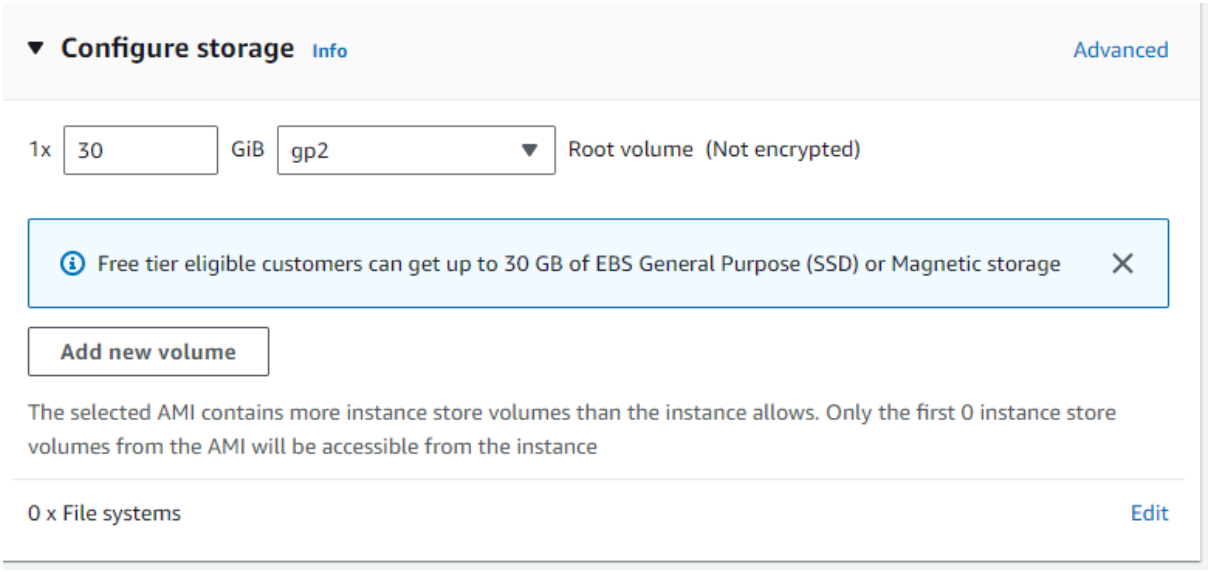


Step-6 : After Creating the key-pair select all the options in the Network Settings.

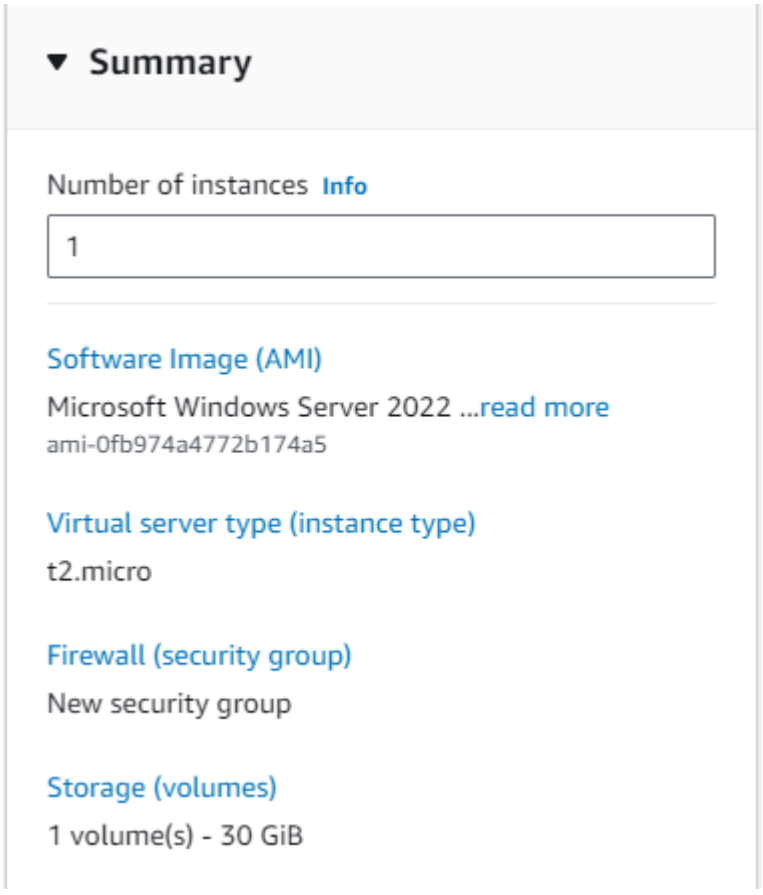


Step-7 Now configure the storage

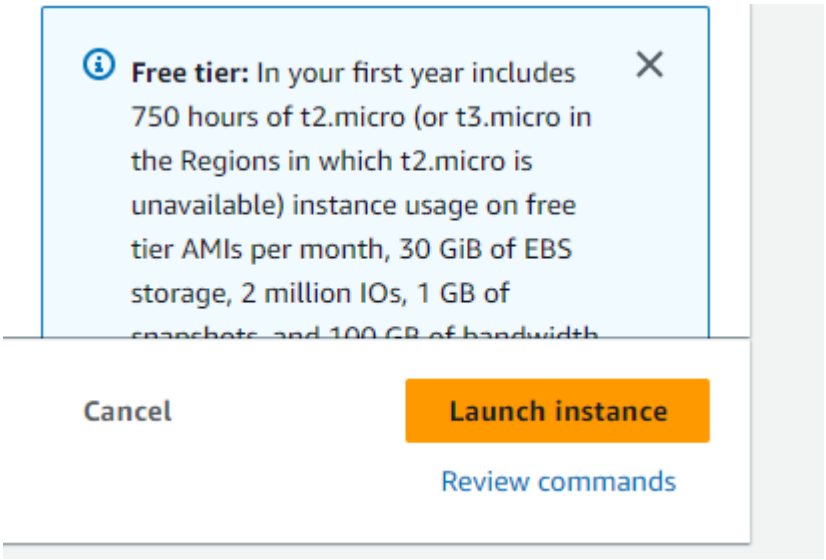
Now we will give configurations 1x '30' and GiB 'gp2' Root volumes’



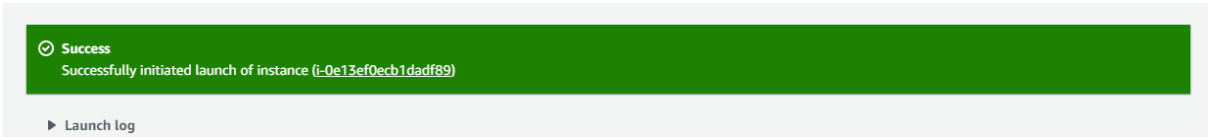
By selecting the no of instances we have to click on the create instance



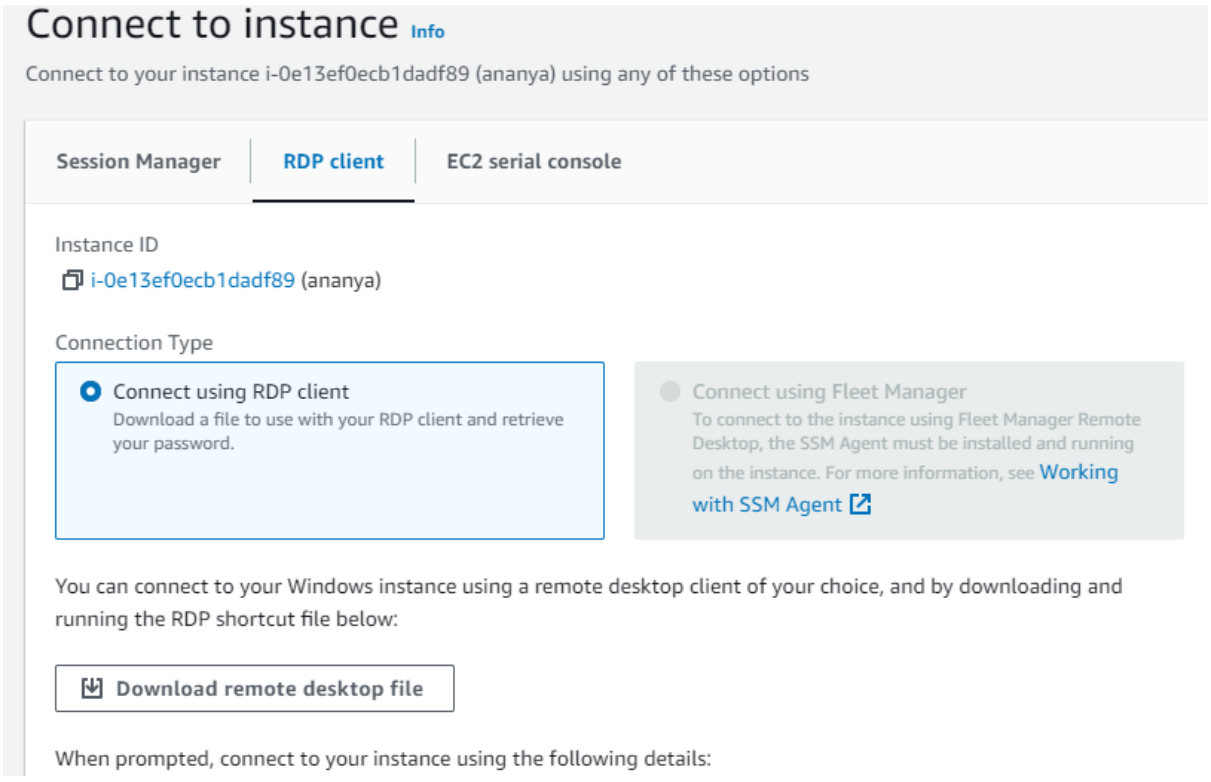
Now , click on the yellow button of Launch Instance on the bottom right of the screen.



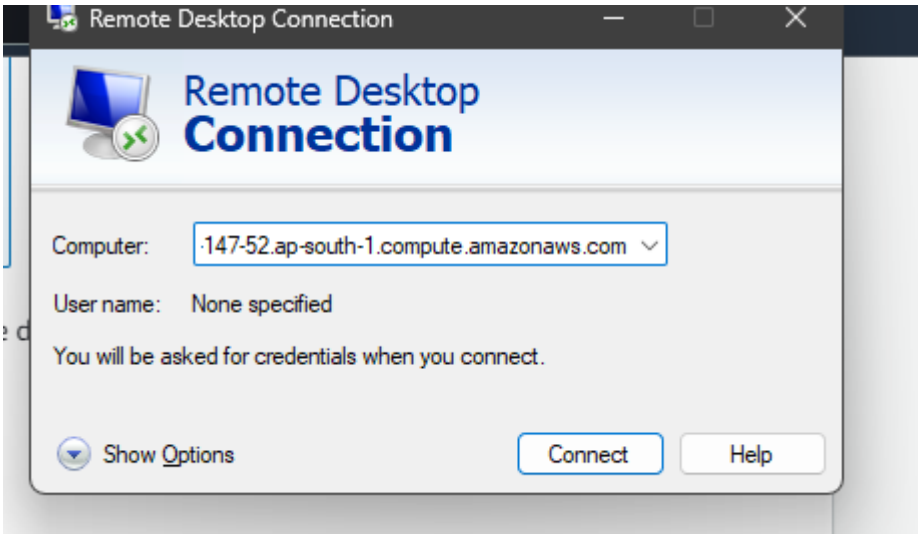
Instance creates Successfully



Step-8 : Connecting to the Instance

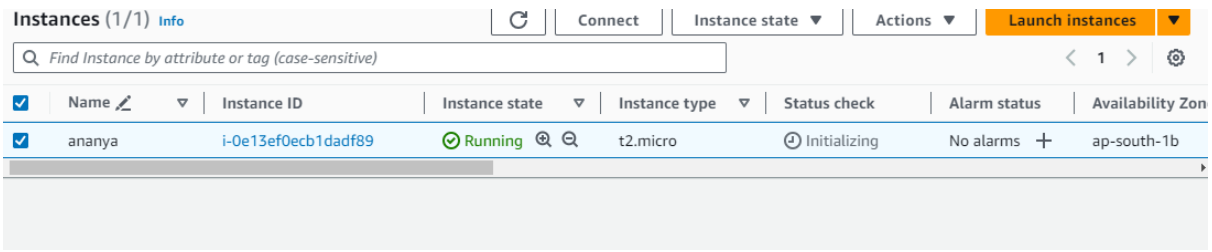


Step-9 : Open the Remote Desktop Connection and fill the required details.



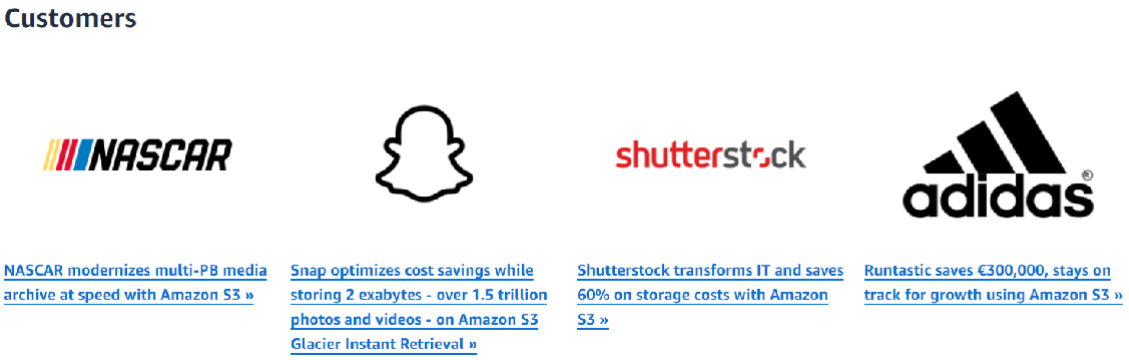
To terminate the Instance

For closing or terminating the instance go to 'instance state' a pop up menu will appear which will have options for stopping instance , terminating instance and many more
Then select on terminate instance and a green line will appear which says " Instance successfully terminated .



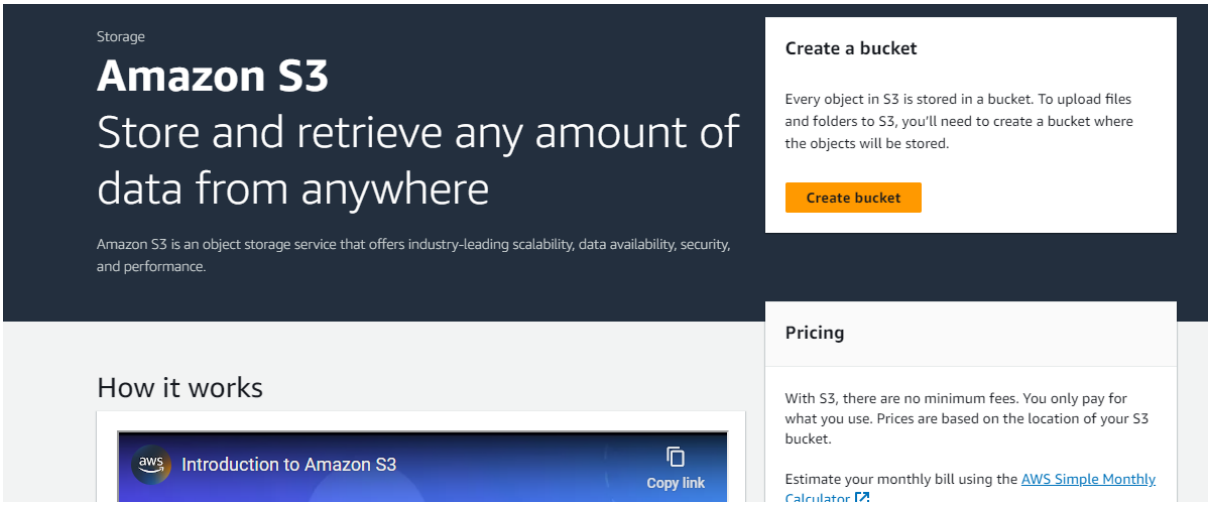
4. AWS S3 Bucket Creation

Amazon Simple Storage Service (Amazon S3) is an object storage service offering industry-leading scalability, data availability, security, and performance. Customers of all sizes and industries can store and protect any amount of data for virtually any use case, such as data lakes, cloud-native applications, and mobile apps. With cost-effective storage classes and easy-to-use management features, you can optimize costs, organize data, and configure fine-tuned access controls to meet specific business, organizational, and compliance requirements.

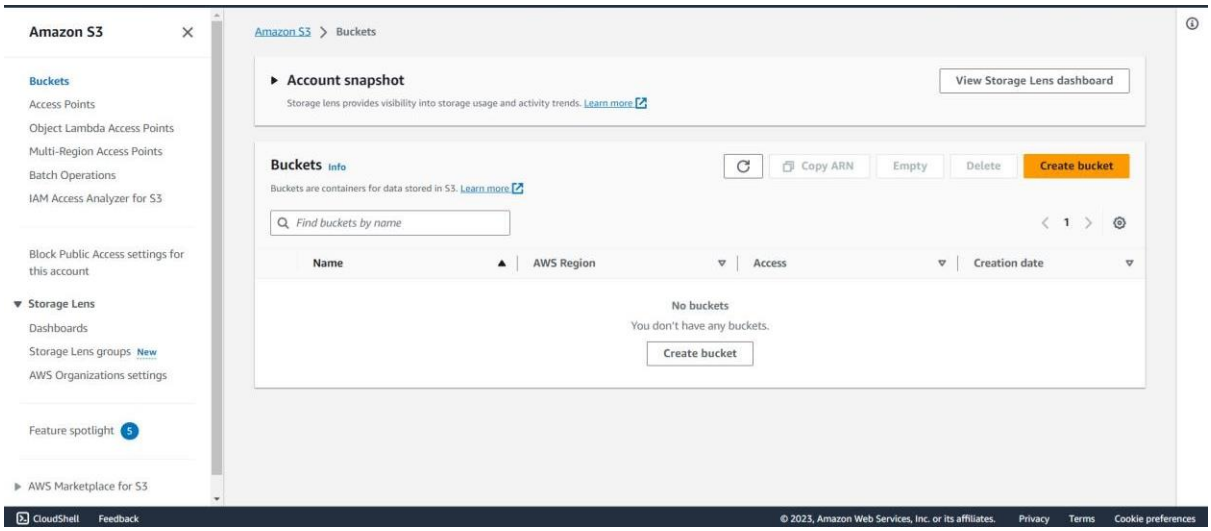


Above Images src : https://aws.amazon.com/s3/

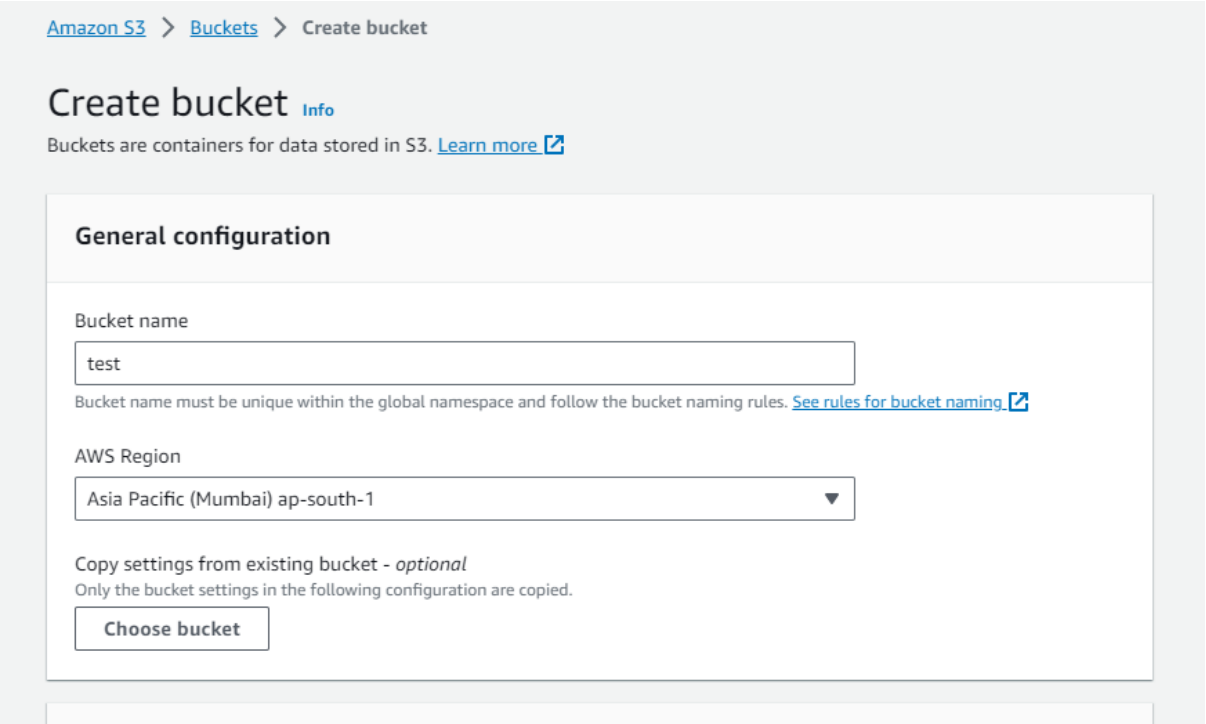
Step-1 : Click on the create bucket



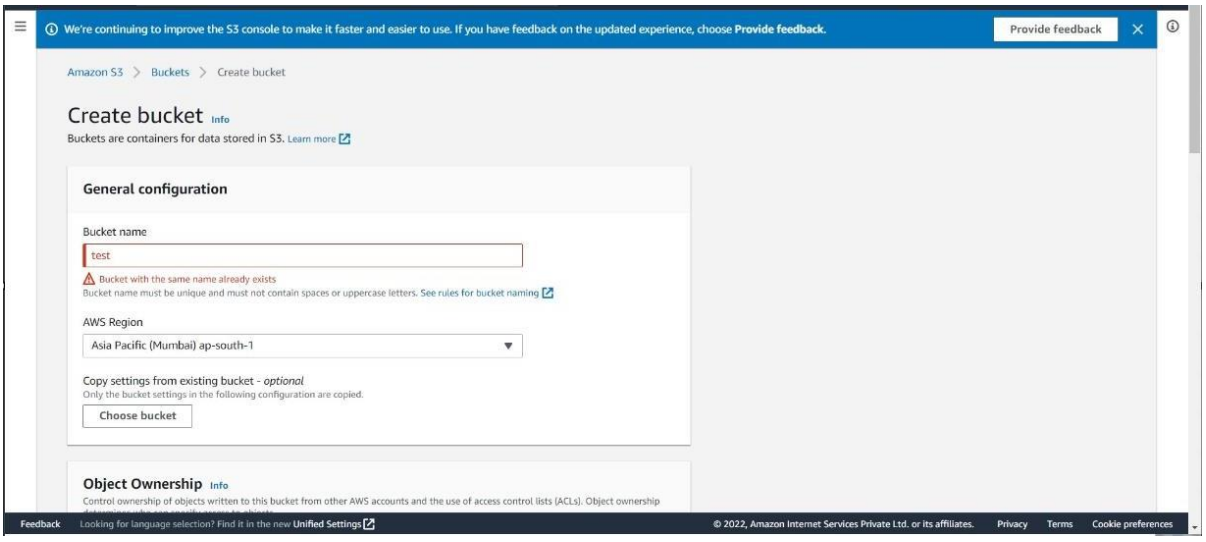
Or , you can also create the bucket by clicking on the hamburger icon and then click on the Buckets.



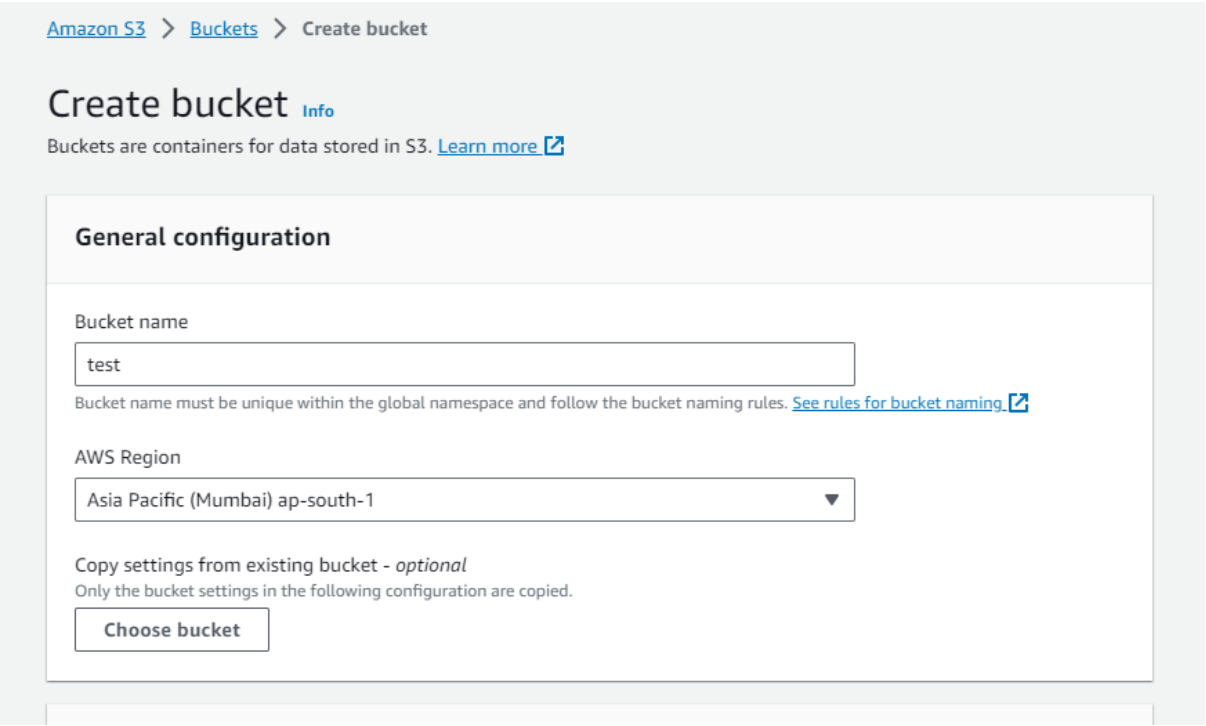
Step-2 : Type the Bucket name



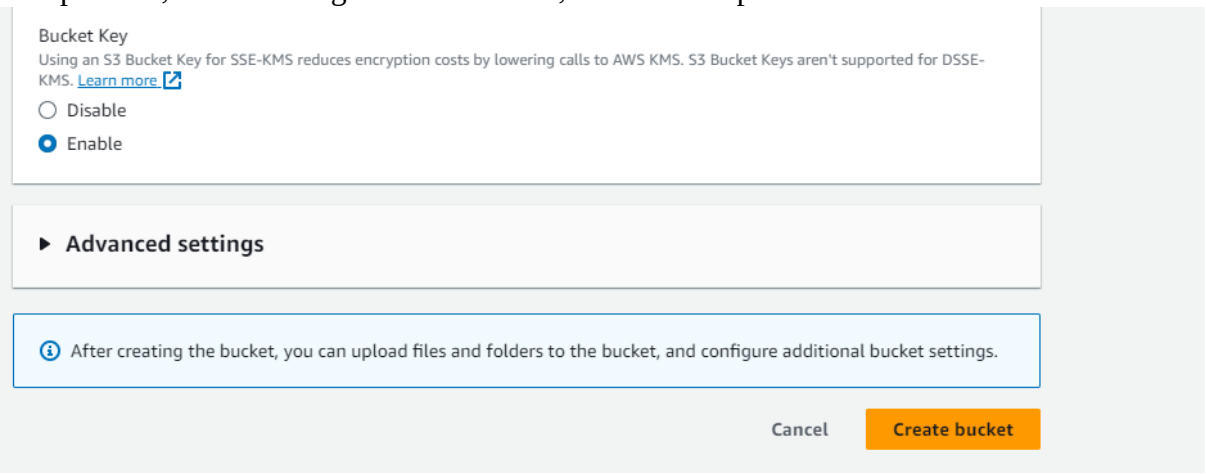
Step-3 : Since bucket name should be globally unique and as test has been created by someone else i.e. write some another name.



Correct Bucket name :-

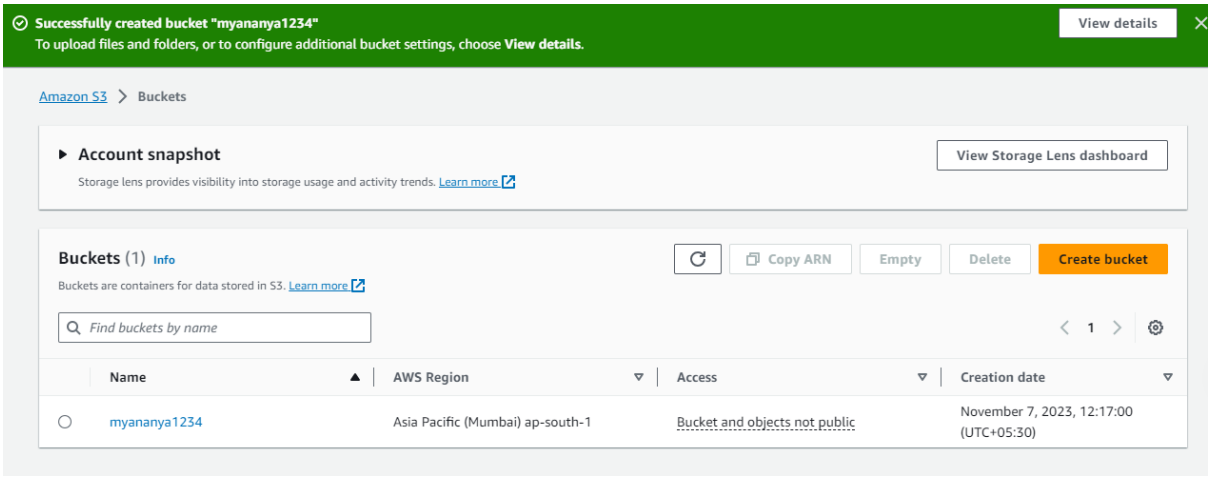


Step-4 : So, after creating the bucket now , we need to upload some files or data into it.

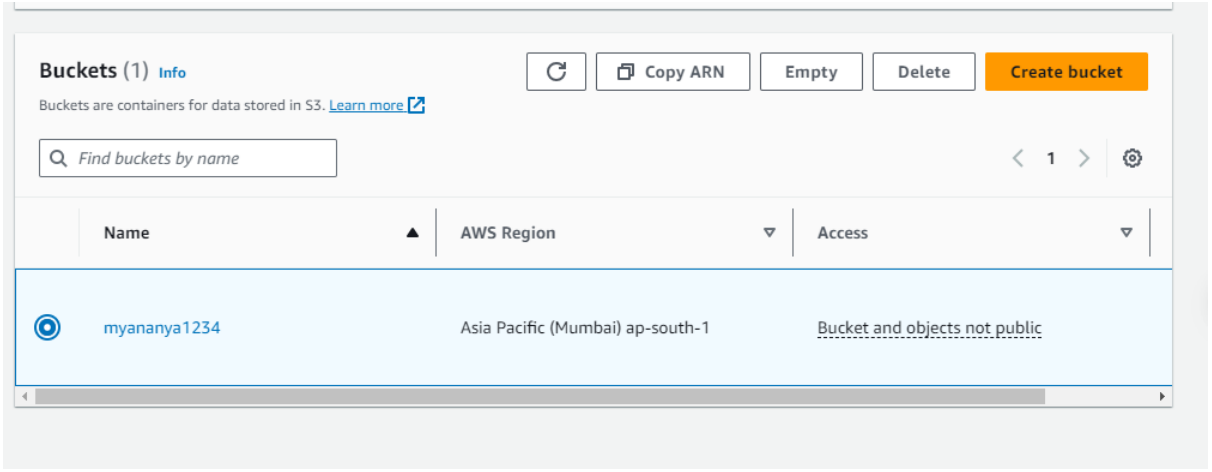


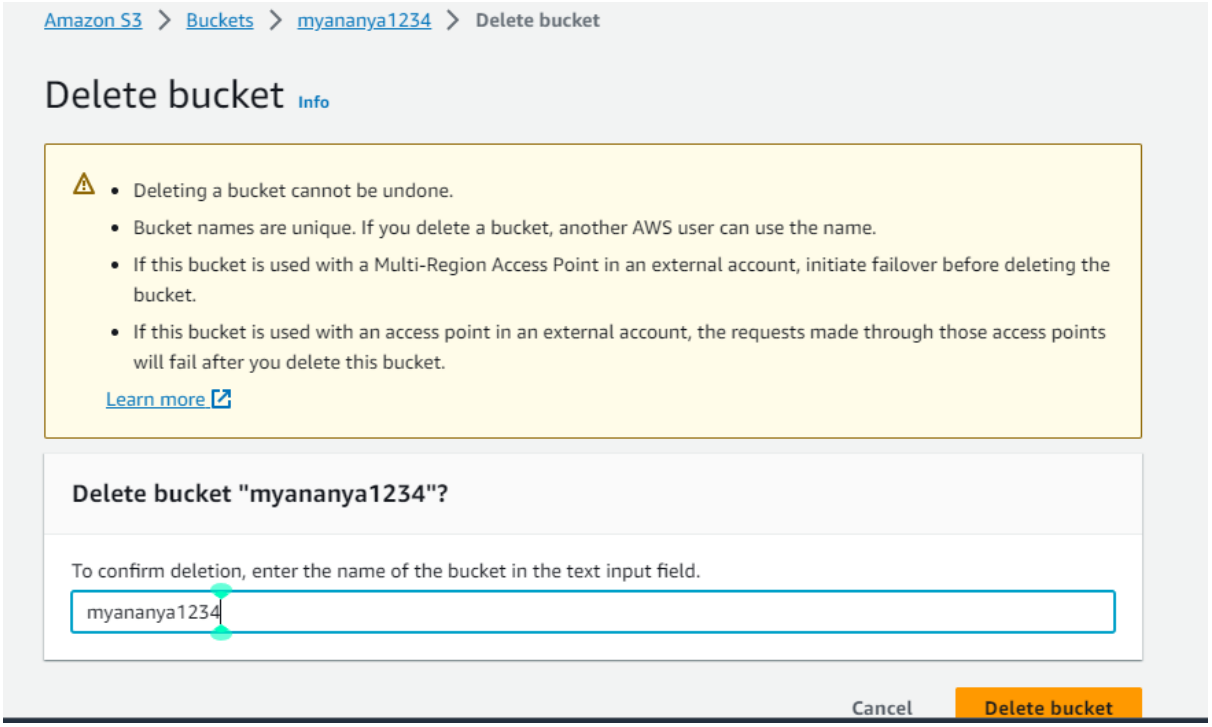
After this we have to click on the create Bucket

After bucket creation



For deleting the bucket





5. References

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2. https://aws.amazon.com/ec2/
3. https://aws.amazon.com/s3/
4. https://aws.amazon.com/vpc/