BadCats🐱 - Week 8

THEORETICAL

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What is AWS (Amazon Web Services)?

In simple terms, AWS is considered a cloud provider which means that AWS provides various cloud-based IT resources to its cloud consumers. AWS is an easy to use platform which is provided by Amazon. At present, AWS is one of the leading cloud service providers all around the world.

Being a cloud provider, AWS is able to provide 175 fully-featured services from different data centers all around the world. It offers low pricing with optimum innovation in the field of cloud computing. Additionally, it provides pay-as-you-go pricing which means, you will be paying only for the resources that you use with AWS.

How does AWS work?

There are a variety of services provided by AWS AWS which can be configured as per the requirement of the users. Based on the demand and requirements, the users can have a look at the geographical locations for the

individual server with the configuration options provided in that particular location. Here in this blog, I will be discussing some of the services of the AWS.

Some of the services of AWS

AWS offers its user a variety of services. These services can be used for developing various global cloud-based products. With that being said, now, let's have a look at some of the services of AWS.

Amazon EC2

Amazon Elastic Compute Cloud (Amazon EC2) is a service that allows individuals to run various application programs in the computing environment. It is an AWS service that provides scalable computing capacity, allowing us to scale up or down as per the change in requirement and minimizes the need to forecast the traffic.
Amazon Simple Storage Service (Amazon S3) is one of the services of AWS which allows individuals to store and protect various data and information. Here, using Amazon S3, individuals can easily organize their data and also configure the access as per their requirements. Amazon S3 storing of data and information of any volume to be stored and accessible at any time and from any parts of the world.

AWS CodePipeline

AWS CodePipeline is a fully managed continuous delivery service that allows individuals to automate the release pipelines for fast and reliable applications and infrastructure updates. CodePipeline automates the build, test, and deploy phases of your release process whenever a code change occurs, based on the type of release which individuals define. This allows individuals to deliver features and updates quickly and reliably.

AWS Lambda

AWS Lambda is an AWS service that allows individuals to run functions in the cloud without provisioning or managing servers. Additionally, while using AWS Lambda, the individuals have to pay the amount only as the defined function executes. Hence, using Lambda, the code can be executed without an application or backend service.

AWS Elastic Beanstalk

AWS Elastic Beanstalk is used for deploying the application which is developed using Java, .net, Python, PHP, Node.js, Docker having servers such as Nginx, Apache, etc. Using AWS Elastic Beanstalk, individuals can deploy their applications without worrying about the infrastructure. Hence, this service can be fruitful for developers who are willing to deploy their applications without configuring the infrastructure. Furthermore, the individuals will be paying for the AWS resources which are required to store and run the applications.

AWS IAM

AWS Identity Access Management(IAM) is an AWS service that allows individuals to manage access to various AWS services and resources securely. Hence, with the implementation of AWS IAM, individuals can create and manage various users and groups. Additionally, the users and groups which are created are provided various permissions to allow and deny access to AWS resources. IAM is a service that does not require any type of additional charge.

Amazon RDS

Amazon Relational Database Service (Amazon RDS) allows the individual to efficiently set up and operate relational databases in the cloud. Additionally, these relational databases are scalable as per the requirements of its user. Some of the database engines which are provided by Amazon RDS are Oracle Database, Amazon Aurora, PostgreSQL, MySQL, MariaDB, and SQL server. Furthermore, individuals can also use AWS Database Migration Service in order to migrate the database to Amazon RDS.

Amazon CloudWatch

Amazon CloudWatch is a service that can be used to monitor the AWS resources that are required for the applications at the run time. It can be used to display the metrics which is being used from each AWS service. Furthermore, alarms can also be generated when a threshold is breached with the help of Amazon CloudWatch.

Amazon Rekognition

Amazon Rekognition can be used to analyze the image and video in the application of an individual. One of the advantages of Amazon Rekognition is that it does not require machine learning expertise for its implementation. Using Amazon Rekognition various objects, people, text, scenes, from the image and video, can be identified.

AWS Database Migration Service

AWS Database Migration Service allows its users to migrate their database to the cloud securely and efficiently. Furthermore, AWS Database Migration Service also allows users to migrate from one database to another database. For example, MySQL database to Oracle database.

AWS Server Migration Service

AWS Server Migration Service (SMS) facilitates its user to efficiently and securely migrate thousands of on-premise servers to AWS. Using, AWS Server Migration Service (SMS) individuals can automate, schedule, and track incremental replications of live server volumes which makes coordinate large-scale server migrations much easier.

Amazon Route 53

Amazon Route 53 is an AWS service that provides DNS service for individuals due to which a separate DNS account is not required. Amazon Route 53 can be used to perform three functions mainly. They are domain registration, DNS routing, and health checking. This service provides developers and businesses a reliable and cost-effective way for routing end users to Internet applications.

Advantages of AWS

The advantages of using AWS are as follows:

- **AWS enables organizations to use programming models, operating systems, databases, and architectures which are already known to its user.**

- **Amazon Web Services can be very cost-efficient as the individual who is using the cloud services will have to pay only for what you use.**
- **Expenses for creating, implementing, and maintaining data centers is not required while using AWS.**
- **Users are facilitated with scale-up and down the allocated resources as per the demand for the resources.**
- **AWS offers fast deployment which allows individuals to obtain optimum user satisfaction.**
- **AWS allows us to deploy the application in different regions with just a few clicks.**

Disadvantages of AWS

The disadvantages of using AWS are as follows:

- **While using the services of AWS, an individual is required to pay for obtaining immediate assistance.**
- **The resources of AWS can differ from region to region as all the services of AWS are not provided to all the regions.**
- **Some issues such as files vanishing and the problem of server not syncing may arise while working with AWS.**
- **Without internet access, the data present in the cloud cannot be accessed.**

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Amazon DynamoDB:

- **Amazon DynamoDB is a fully managed, serverless, key-value NoSQL database designed to run high-performance applications at any scale. DynamoDB offers built-in security, continuous backups, automated multi-Region replication, in-memory caching, and data export tools.**

Develop software applications	Build internet-scale applications supporting user-content metadata and caches that require high concurrency and connections for millions of users and millions of requests per second.
Create media metadata stores	Scale throughput and concurrency for media and entertainment workloads such as real-time video streaming and interactive content, and deliver lower latency with multi-Region replication across AWS Regions.
Deliver seamless retail experiences	Use design patterns for deploying shopping carts, workflow engines, inventory tracking, and customer profiles. DynamoDB supports high-traffic, extreme-scaled events and can handle millions of queries per second.
Scale gaming platforms	Focus on driving innovation with no operational overhead. Build out your game platform with player data, session history, and leaderboards for millions of concurrent users.

Amazon Connect:

- **Remote online contact center in minutes that can scale to support millions of customers.**

Deliver omnichannel customer service	Build high-quality omnichannel voice and interactive chat experiences to support your customers from anywhere. Use a single intuitive user interface (UI) for contact routing, queuing, and analytics.
Use built-in AI and ML to personalize interactions	With embedded artificial intelligence (AI) and machine learning (ML), Amazon Connect makes it easy to automate interactions, understand customer sentiment, authenticate callers, and enable capabilities like interactive voice response (IVR) and chatbots.
Improve agent productivity	Empower your agents to be more proactive and productive. Surface unified customer profiles and recommended answers in real time, and track follow-up tasks to quickly resolve customer issues.

Amazon LightSail:

- **Amazon Lightsail offers easy-to-use virtual private server (VPS) instances, containers, storage, databases, and more at a cost-effective monthly price.**

Launch simple web applications	Use pre-configured development stacks like LAMP, Nginx, MEAN, and Node.js. to get online

	quickly and easily.
Create custom websites	Build and personalize your blog, ecommerce, or personal website in just a few clicks, with pre-configured applications like WordPress, Magento, Prestashop, and Joomla.
Build small business applications	Launch line-of-business software such as file storage and sharing, backups, financial and accounting software, and more.
Spin up test environments	Easily create and delete development sandboxes and test environments where you can try out new ideas, risk free.

Amazon CloudFront:

- **Amazon CloudFront is a content delivery network (CDN) service built for high performance, security, and developer convenience.**

Deliver fast, secure websites	Reach viewers across the globe in milliseconds with built-in data compression, edge compute capabilities, and field-level encryption.
Accelerate dynamic content delivery and APIs	Optimize dynamic web content delivery with the purpose-built and feature-rich AWS global network infrastructure supporting edge termination and WebSockets.
Stream live and on-demand video	Start streams quickly, play them with consistency, and deliver high-quality video to any device with AWS Media Service and AWS Elemental integration.

Distribute patches and updates	Scale automatically to deliver software, game patches, and IoT over-the-air (OTA) updates at scale with high transfer rates.

Amazon Amplify Hosting:

- **AWS Amplify Hosting is a fully managed CI/CD and hosting service for fast, secure, and reliable static and server-side rendered apps that scale with your business. Supports modern web frameworks such as React, Angular, Vue, Next.js, Gatsby, Hugo, Jekyll, and more.**

Deploy web content, fast	Continuously deploy a static web or server-side rendered app, a mobile app landing page, or a progressive app on every code commit.
Reliable hosting, close to your users	Deploy to Amazon CloudFront's content delivery network (CDN) with hundreds of points of presence globally.
Accelerate with your team	Increase the velocity of your application release cycle with built-in CI/CD workflows, pull request previews, and testing.
Build dynamic capabilities	Use with Amplify Studio or other AWS tools and services to build high-quality, full-stack apps.

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AWS Services

First we just want to clarify some abbreviations:

What is Cloud Computing?

Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).

What is AWS?

The full form of AWS is Amazon Web Services. It is a platform that offers flexible, reliable, scalable, easy-to-use and, cost-effective cloud computing solutions.

History of AWS!

2002- AWS services launched

2006- Launched its cloud products

2012- Holds first customer event

2015- Reveals revenues achieved of $4.6 billion

2016- Surpassed $10 billon revenue target

2016- Release snowball and snowmobile

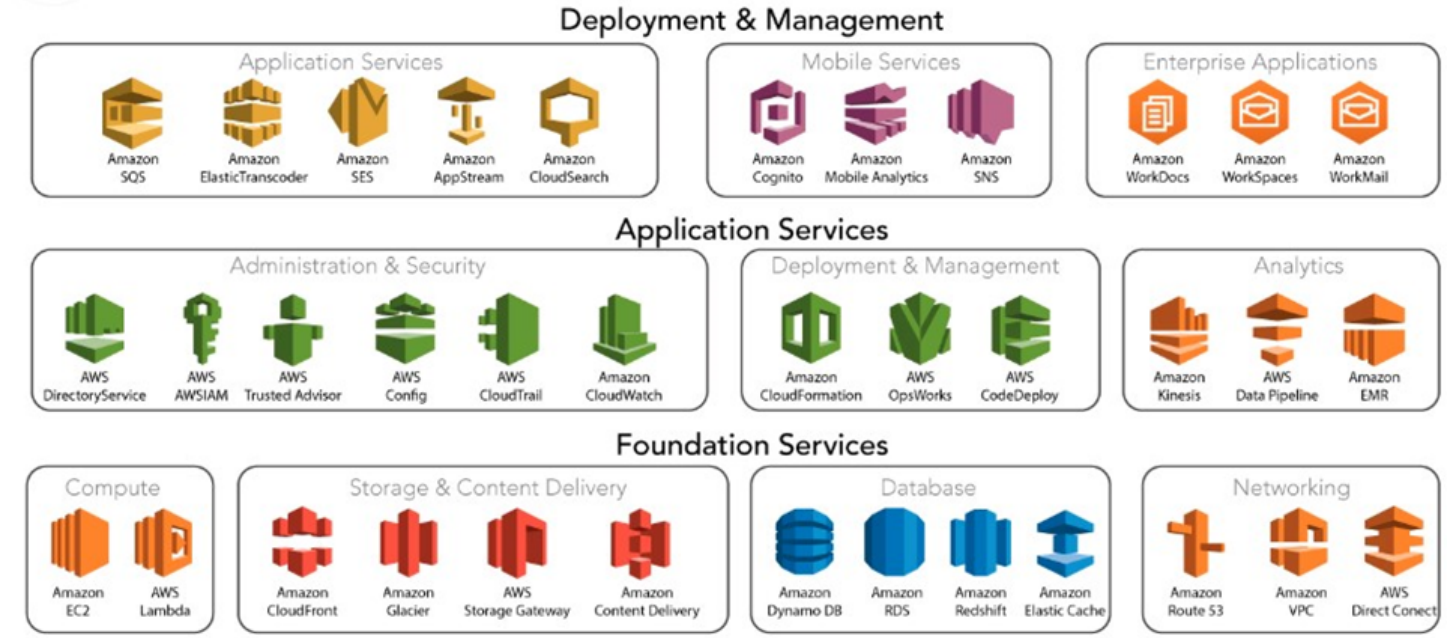
2019- Offers nearly 100 cloud services

2021- AWS comprises over 200 products and services

This is just to clarify how the cloud services is growing...

If we would like to talk about all the AWS services will took us years...

Why? Because this are some of AWS services..... Not all !!



So let us specify the top 10 AWS Services (Most Popular):

Service No. 1: Amazon EC2

Forget the expensive physical servers with this AWS service that allows us to create virtual machines and manage other features of servers, such as storage, security, ports, etc. With Amazon EC2 you can create servers in minutes with your preferred operating system. This way you will have more time to take care of your projects and spend less time maintaining your servers.

Service No. 2: Amazon RDS

Amazon helps us to make our infrastructure less complicated, which is why it provides us with the RDS service. But what is it? With this service we will have dedicated instances for databases in a matter of minutes, fully managed by the AWS support team and capable of supporting multiple database engines such as SQL, PostgreSQL, SQL Server, Finally, we will forget all those hours of maintenance and support to our database servers!

Service No. 3: Amazon Simple Storage Service (S3)

What happens to my data in the cloud? Well, Amazon S3 gives us relief when we talk about data, because they have an incredibly secure infrastructure. In addition to intelligently distributing data in different physical regions, they also have integrations such as PCI-DSS, HIPAA / HITECH, Fed RAMP, our data will never be compromised. Is that all? Of course not, AWS S3 also has high availability, so accessing your information is just a click away, with almost zero latency of 99%. Surely now you wonder how expensive this service is? Well, we are pleased to inform you that it is impressively cheap. First, it has a free layer that includes 5 GB of storage and then starts at the cost of $ 0.023 / month for the first 50TB.

Service No. 4: Amazon Cloudfront

Have you asked yourself how fast your website is? When your users connect, do they have to wait for seconds to open the page? With the Global Content Delivery Service, commonly known as CDN, Amazon is responsible for managing all your content, delivering it and presenting it efficiently. With a minimum latency and with its high integration with other AWS services. Reaching your target users has never been so easy.

Service No. 5: Amazon VPC

Is my information at risk in the AWS cloud? The answer is NO, with the private network in the cloud your information will only be available to the people or systems that you authorize. With AWS VPC you can create a private virtual network in which your entire IT environment (infrastructure or services) will live totally isolated from the outside world. This way your information is free of

exposure.

Service No. 6: Amazon SNS

Going back to the developers' issue, AWS services list offers us a very particular notification system that provides integration with any type of application, be it PHP, Python, Node, etc. With Amazon SNS we can send notifications to all our users on any platform, whether it is web or mobile on Android or iOS.

Service No. 7: AWS Beanstalk

This is the most attractive service for developers. I know that as a developer you do not want to manage the infrastructure of your site, right? It is normal since its maintenance becomes tedious and difficult to solve any problem. AWS Elastic Beanstalk relieves all this; developers no longer need to manage the infrastructure and focus on developing their software or applications.

Service No. 8: AWS Lambda

Is your server saturated with many requests? You do not know what to do? Stop worrying too much about infrastructure and less about development. If you, like many other developers, have the problem that your current infrastructure does not support the demands of your developments, then AWS Lambda is for you. This instance allows you to work in an environment highly capable of supporting any development you do. You just take care of the coding and AWS will be responsible for providing the necessary resources, climbing at the same time so that everything works correctly.

Service No. 9: AWS Autoscaling

The magic of AWS – How to expand our application and take it to thousands and millions of users? Well, Amazon again gives us the solution. With AutoScaling we can manage a fleet of servers which are capable of supporting all the traffic that our application demands. The service is totally free, the only thing charged is the number of instances for the time they run.

Service No. 10: AWS Elastic Cache

Amazon ElastiCache is a fully managed, in-memory caching service supporting flexible, real-time use cases. You can use ElastiCache for caching, which accelerates application and database performance, or as a primary data store for use cases that don't require durability like session stores, gaming leaderboards, streaming, and analytics. ElastiCache is compatible with Redis and Memcached.

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PRACTICAL

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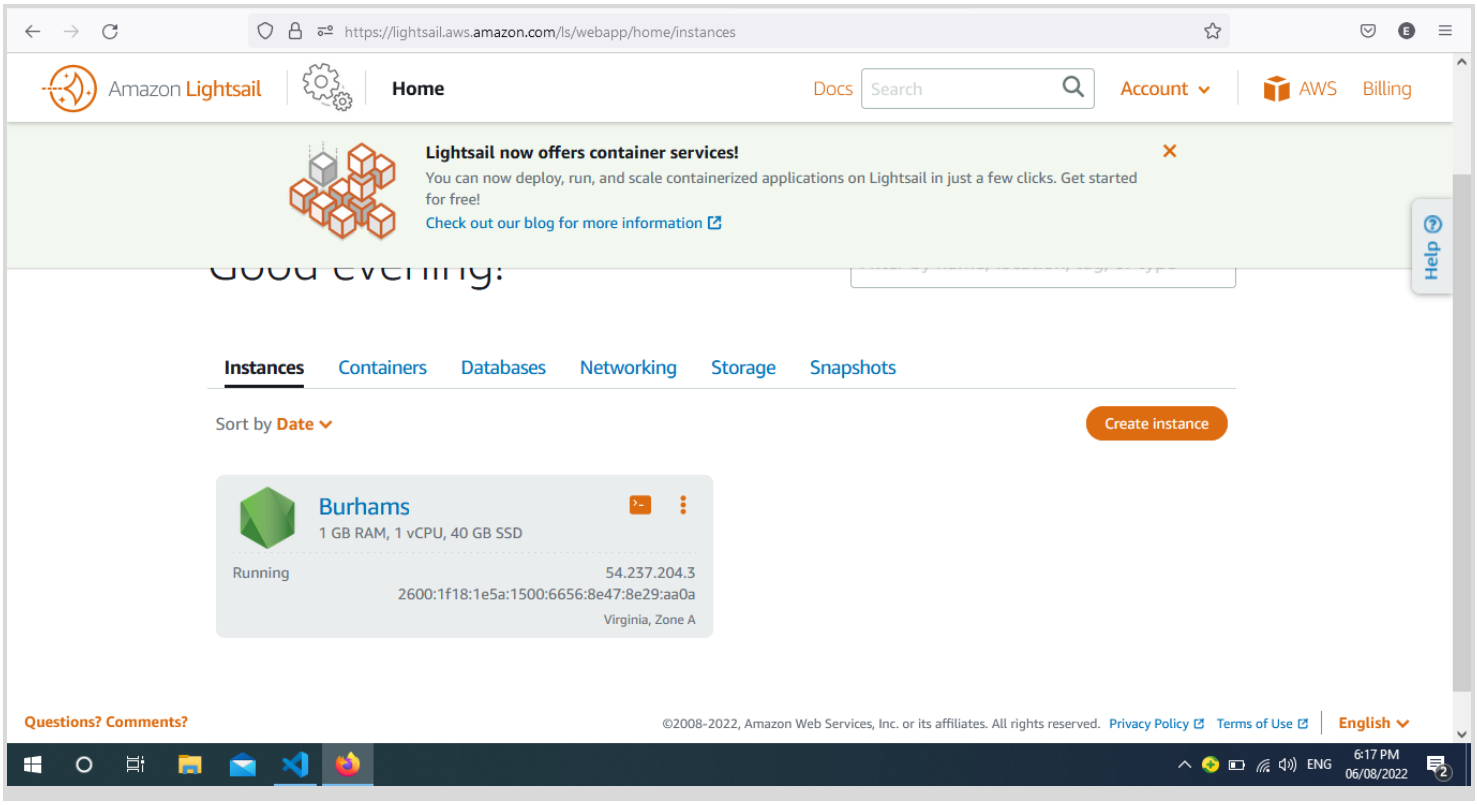

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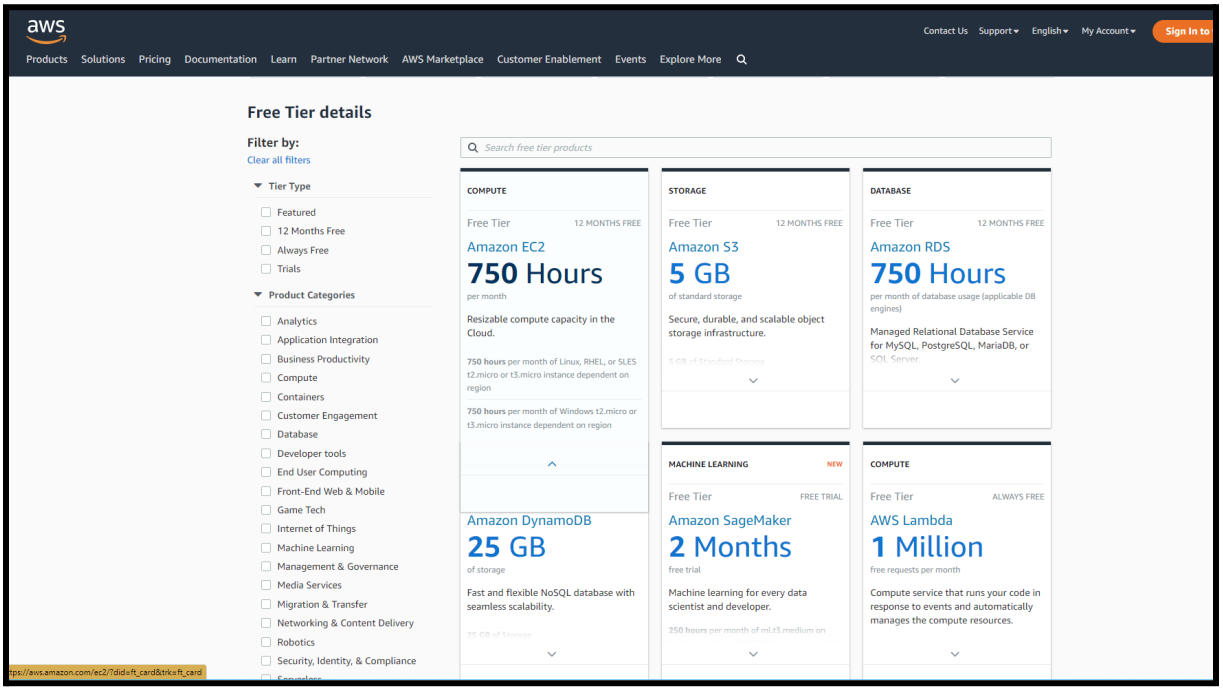
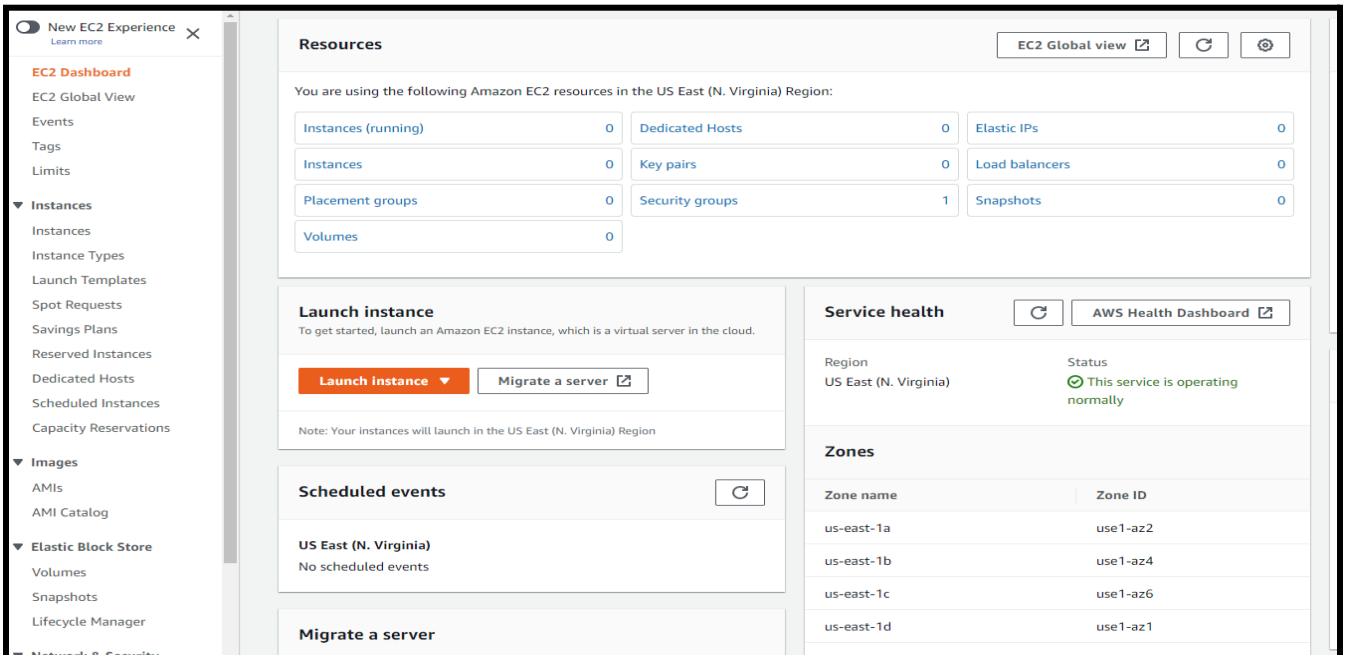
Mohamed Hassan | LinkedIn

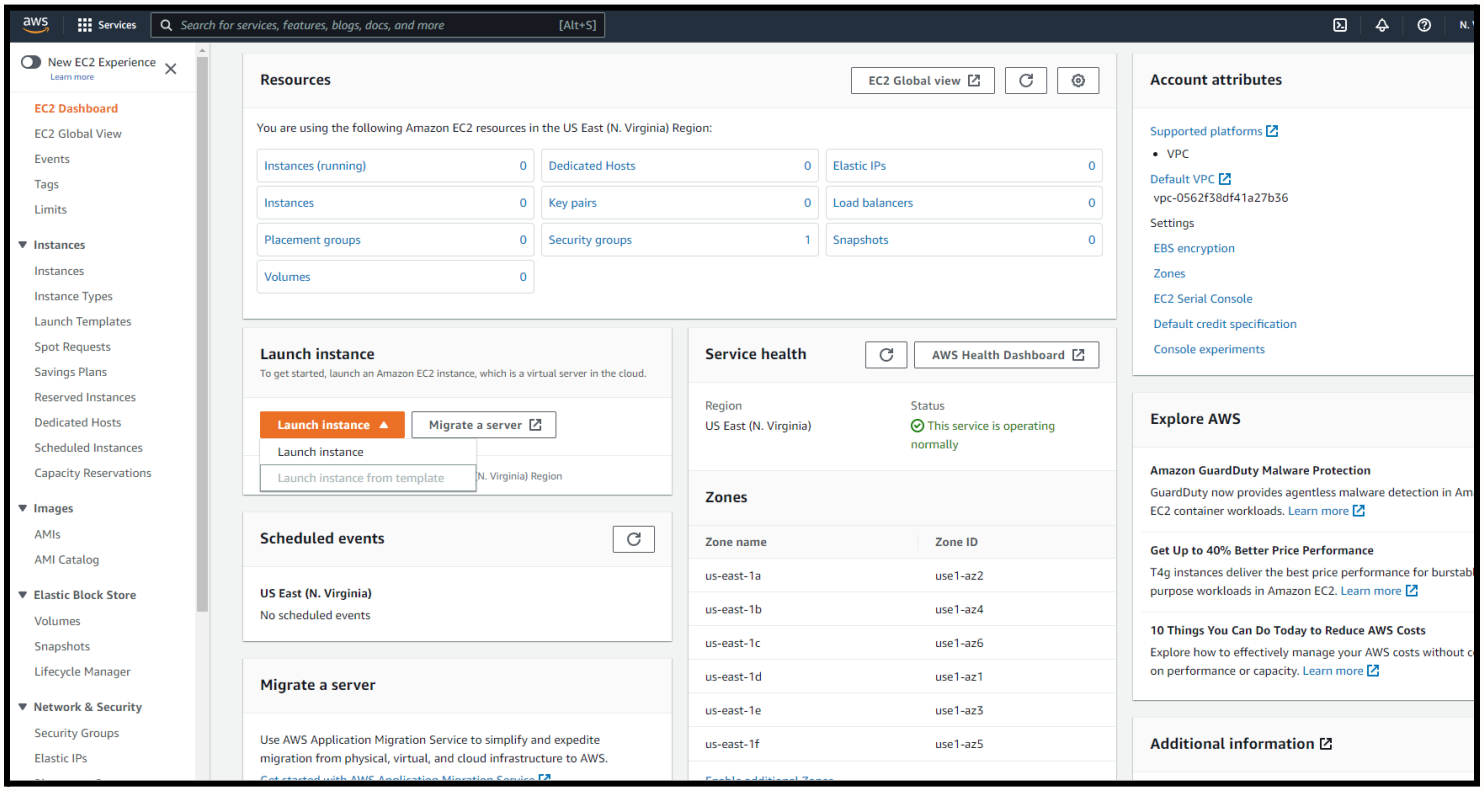
Creating and connect an Instance of Windows On EC2 With the Following Steps:

Step: 0
Choosing the free tier service that I will perform



Step: 1
Go to EC2 and then on dashboard click Launch instance





Step: 2

Choose the setting based on your need :

1-The name of the instance on AWS EC2.

2-The O.S that you will need to run the EC2 on.

3-The instance Type based on the specs which you will need.

4-Create a keypair that will be your password decrypted on it.

Important note:

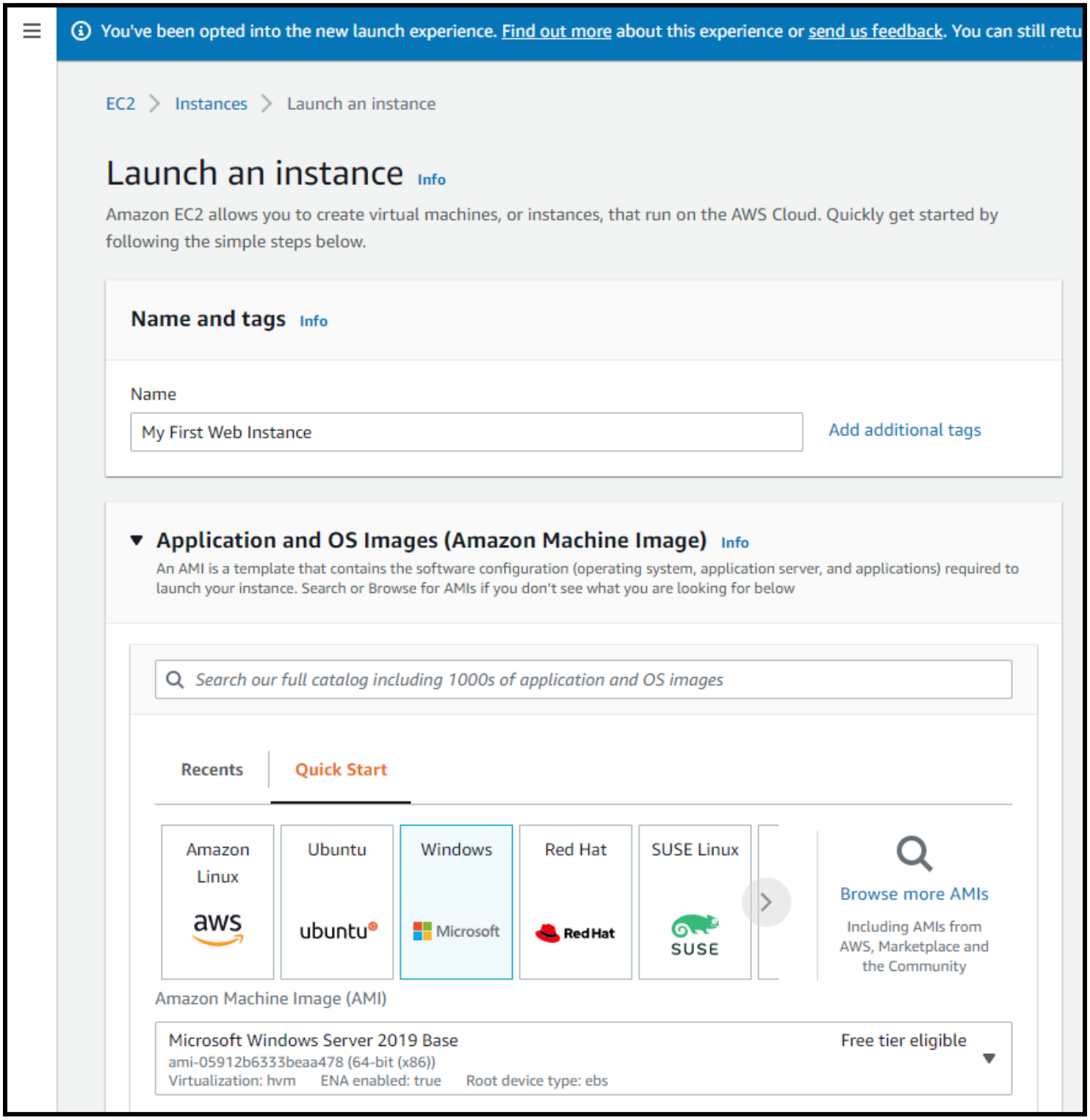
When you create keypair you will download the decrpted password so keep it in a safe place and don't forget it.....

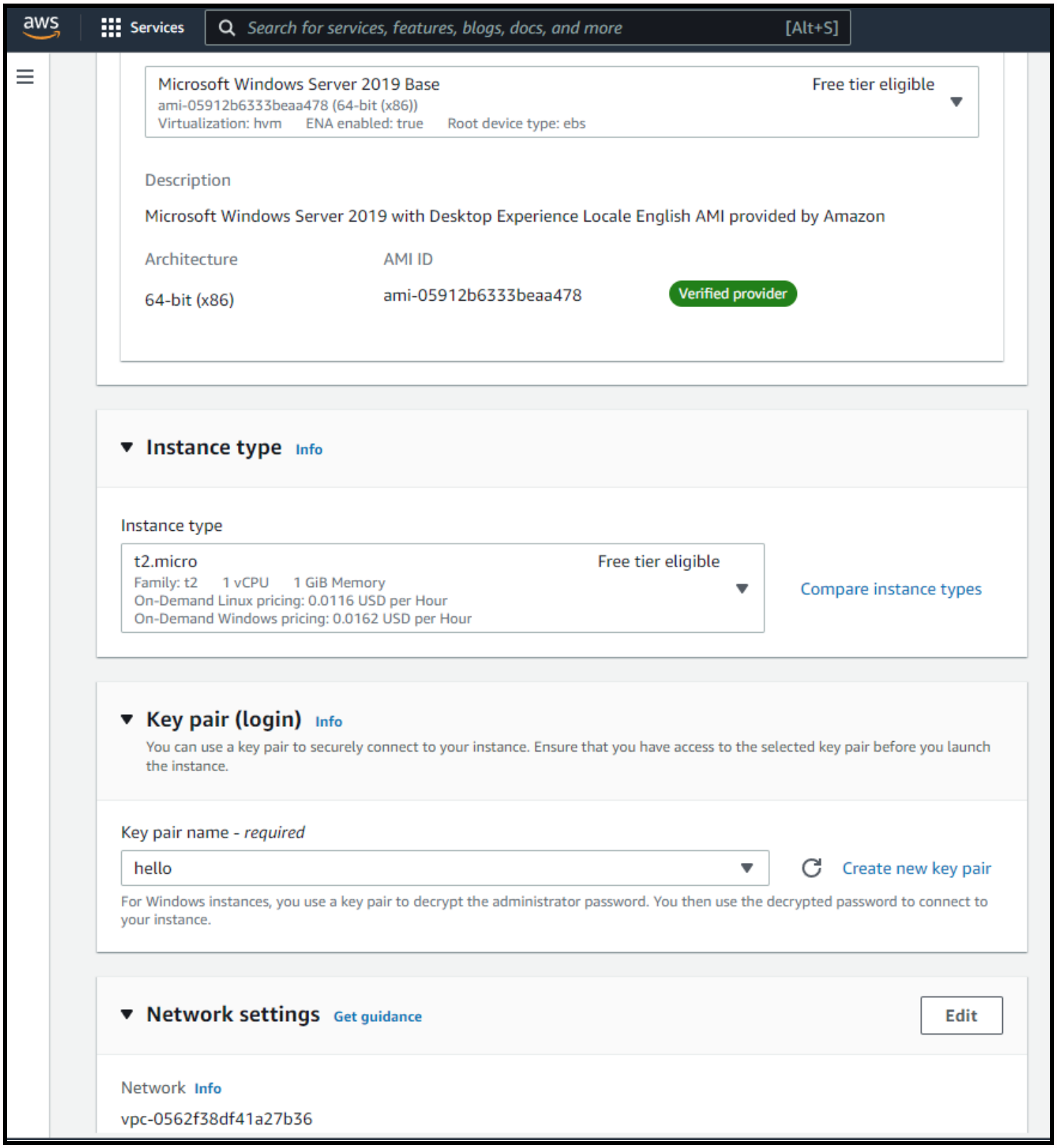
5-Choose the created keypain.

6-On the network you can let the only responsible persons to connect via the secret key pai and also with specific ip.

7-Configure the storage how much space do you need in this instance.

All this setting will be shown with the next screenshoots .....




aws
Services
Search for services, features, blogs, docs, and more
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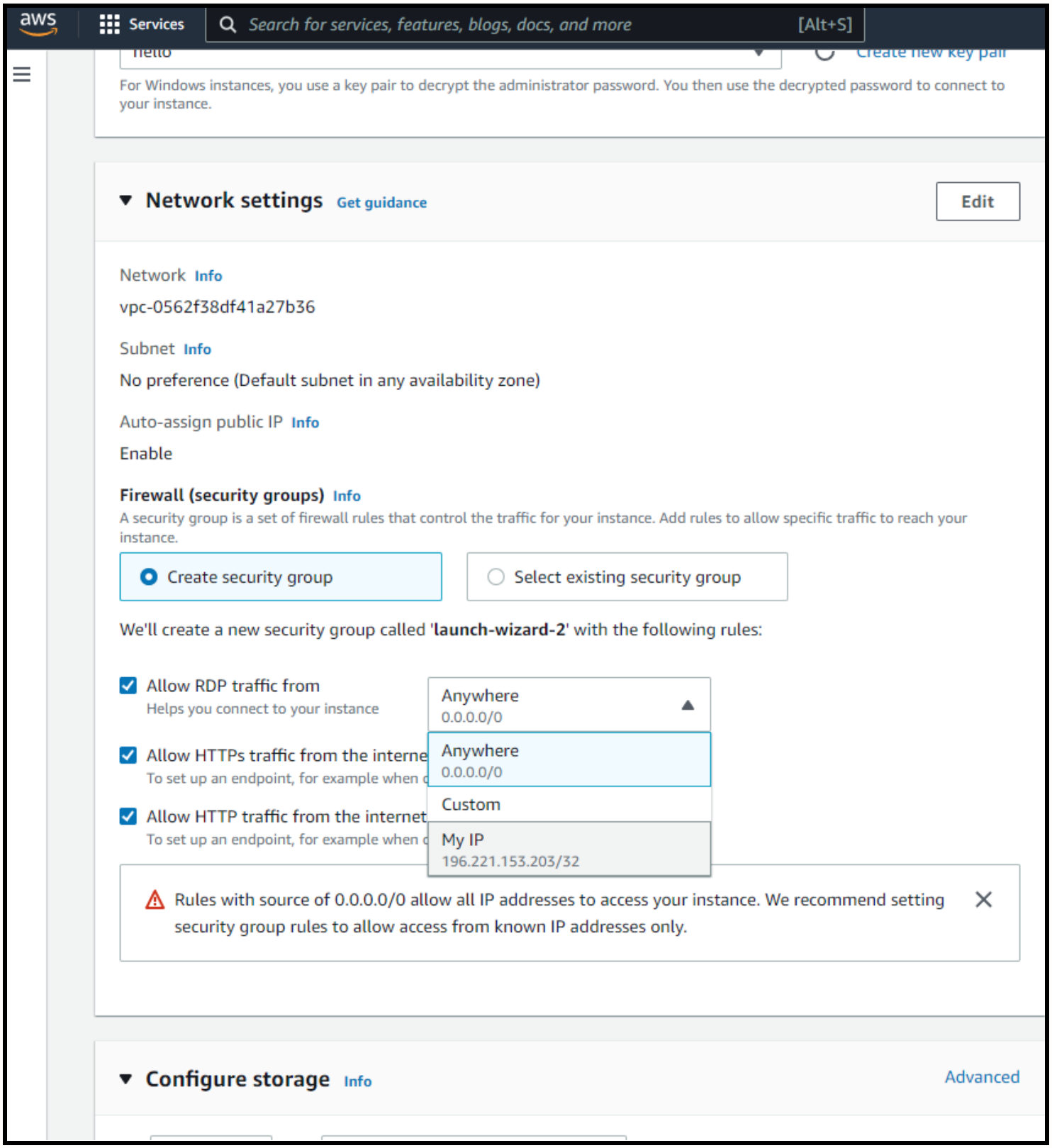
Microsoft Windows Server 2019 Base
ami-05912b6333beaa478 (64-bit (x86))
Virtualization: hvm ENA enabled: true Root device type: ebs
Free tier eligible
Description
Microsoft Windows Server 2019 with Desktop Experience Locale English AMI provided by Amazon
Architecture
64-bit (x86)
AMI ID
ami-05912b6333beaa478
Verified provider
Instance type Info
Instance type
t2.micro
Free tier eligible
Family: t2 1 vCPU 1 GiB Memory
On-Demand Linux pricing: 0.0116 USD per Hour
On-Demand Windows pricing: 0.0162 USD per Hour
Compare instance types
Key pair (login) Info
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.
Key pair name - required
hello
Create new key pair
For Windows instances, you use a key pair to decrypt the administrator password. You then use the decrypted password to connect to your instance.
Network settings Get guidance
Edit
Network Info
vpc-0562f38df41a27b36


aws
Services
Search for services, features, blogs, docs, and more
[Alt+S]
hello
Create new key pair
For Windows instances, you use a key pair to decrypt the administrator password. You then use the decrypted password to connect to your instance.
Network settings
Get guidance
Edit
Network Info
vpc-0562f38df41a27b36
Subnet Info
No preference (Default subnet in any availability zone)
Auto-assign public IP Info
Enable
Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
Create security group
Select existing security group
We'll create a new security group called 'launch-wizard-2' with the following rules:
Allow RDP traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0
Allow HTTPs traffic from the interne
To set up an endpoint, for example when c
Allow HTTP traffic from the internet
To set up an endpoint, for example when c
Anywhere
0.0.0.0/0
Custom
My IP
196.221.153.203/32
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Configure storage Info
Advanced

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group | Select existing security group

We'll create a new security group called '**launch-wizard-2**' with the following rules:

Allow RDP traffic from
Helps you connect to your instance
Anywhere 0.0.0.0/0

Allow HTTPs traffic from the interne
To set up an endpoint, for example when c

Allow HTTP traffic from the internet
To set up an endpoint, for example when c

Anywhere 0.0.0.0/0
Custom
My IP 196.221.153.203/32

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Configure storage Info

Advanced

1x 30 GiB gp2 Root volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

0 x File systems Edit

Advanced details Info

Summary

Number of instances Info
1

Software Image (AMI)
Microsoft Windows Server 2019 ...read more
ami-05912b6333beaa478

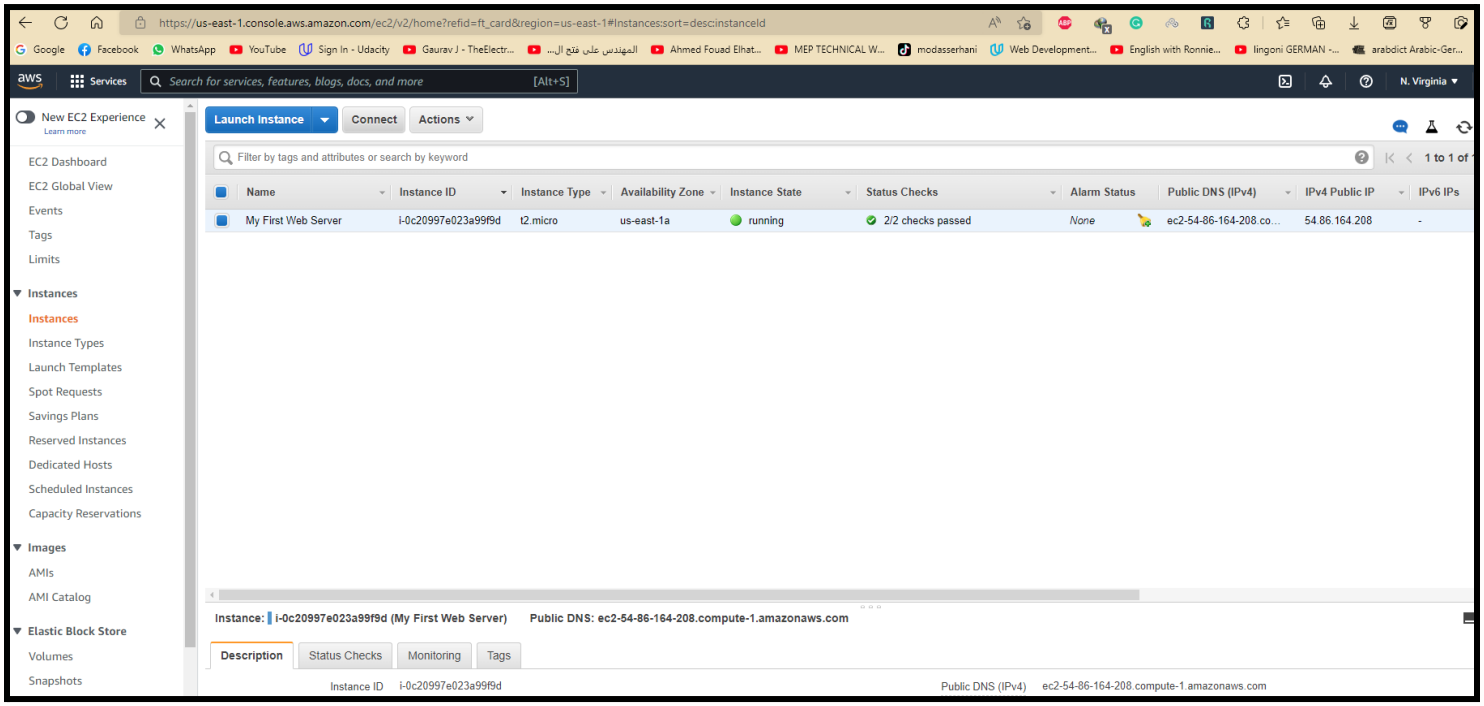
Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 30 GiB

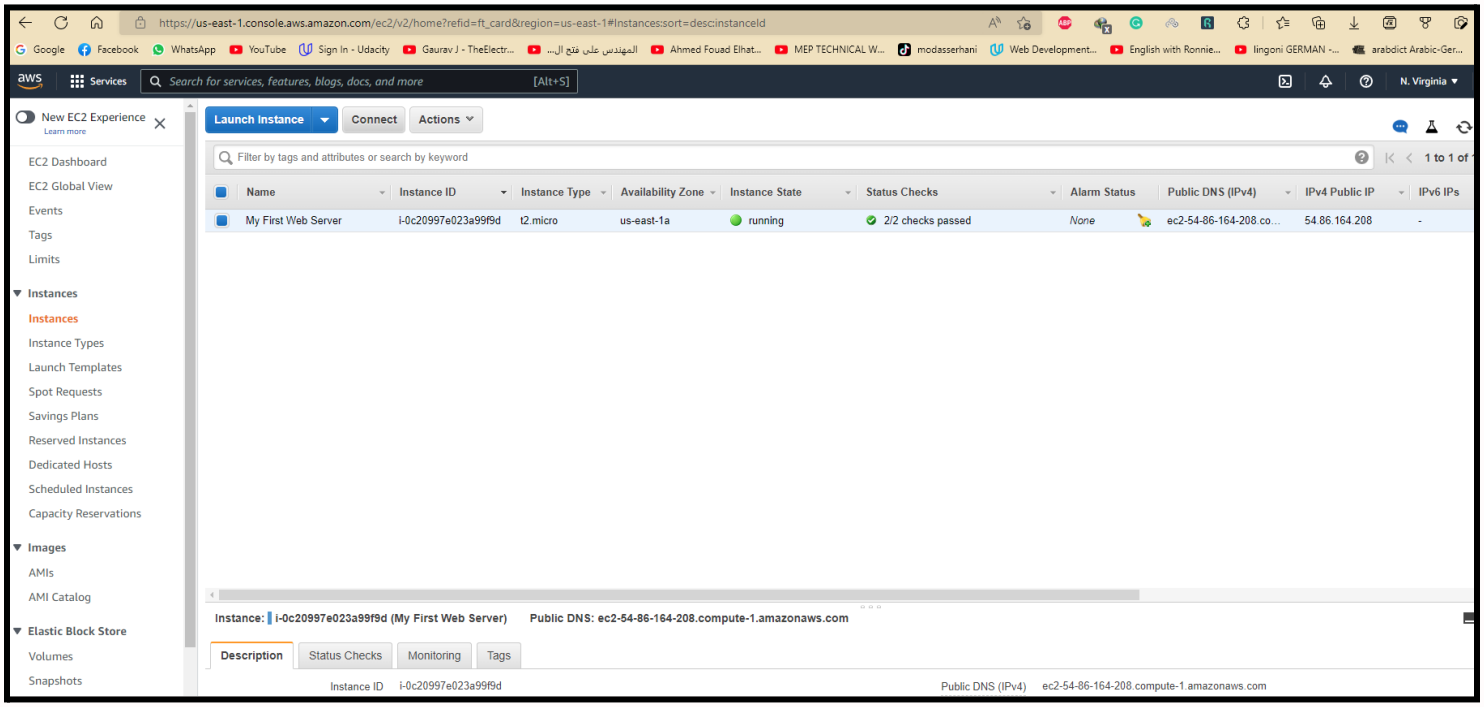
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel | Launch instance

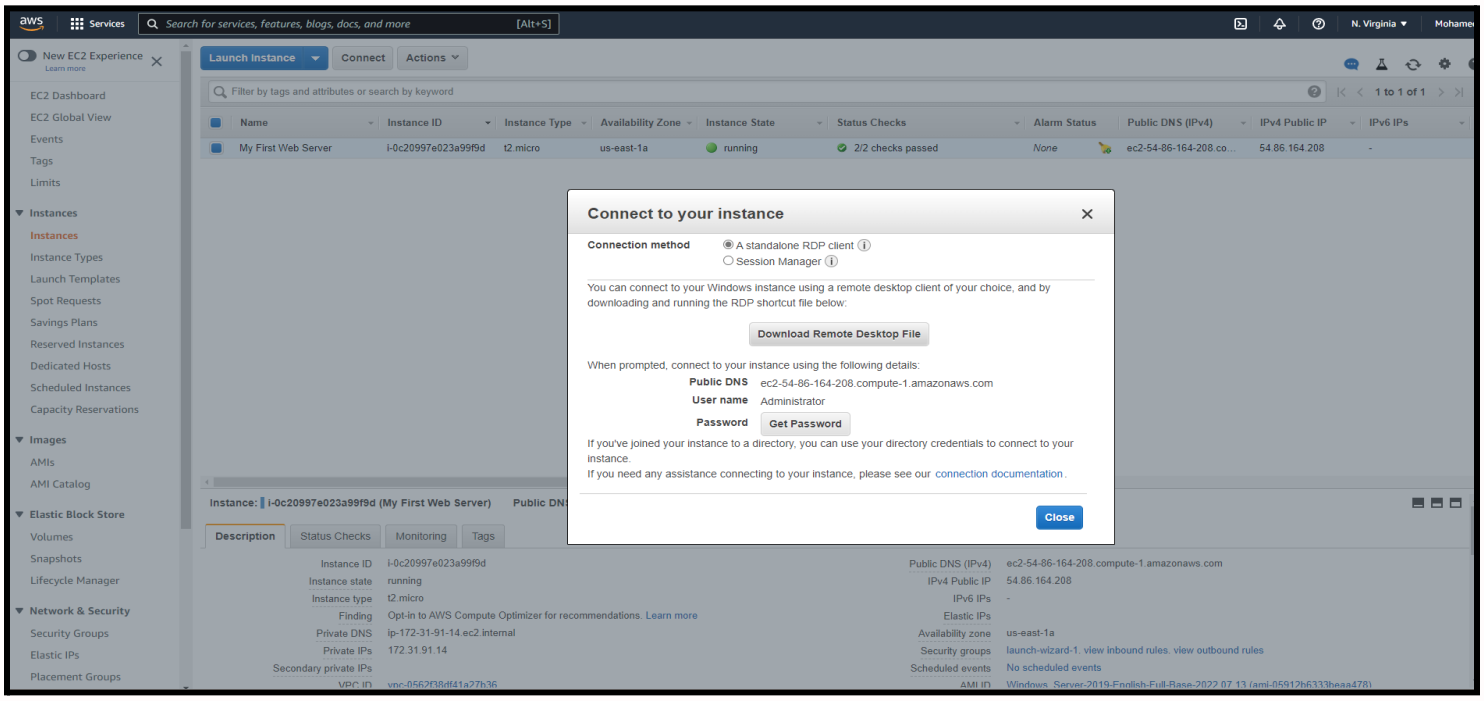


Now we have our EC2 Instance on Windows OS is done let's connect and open it .....

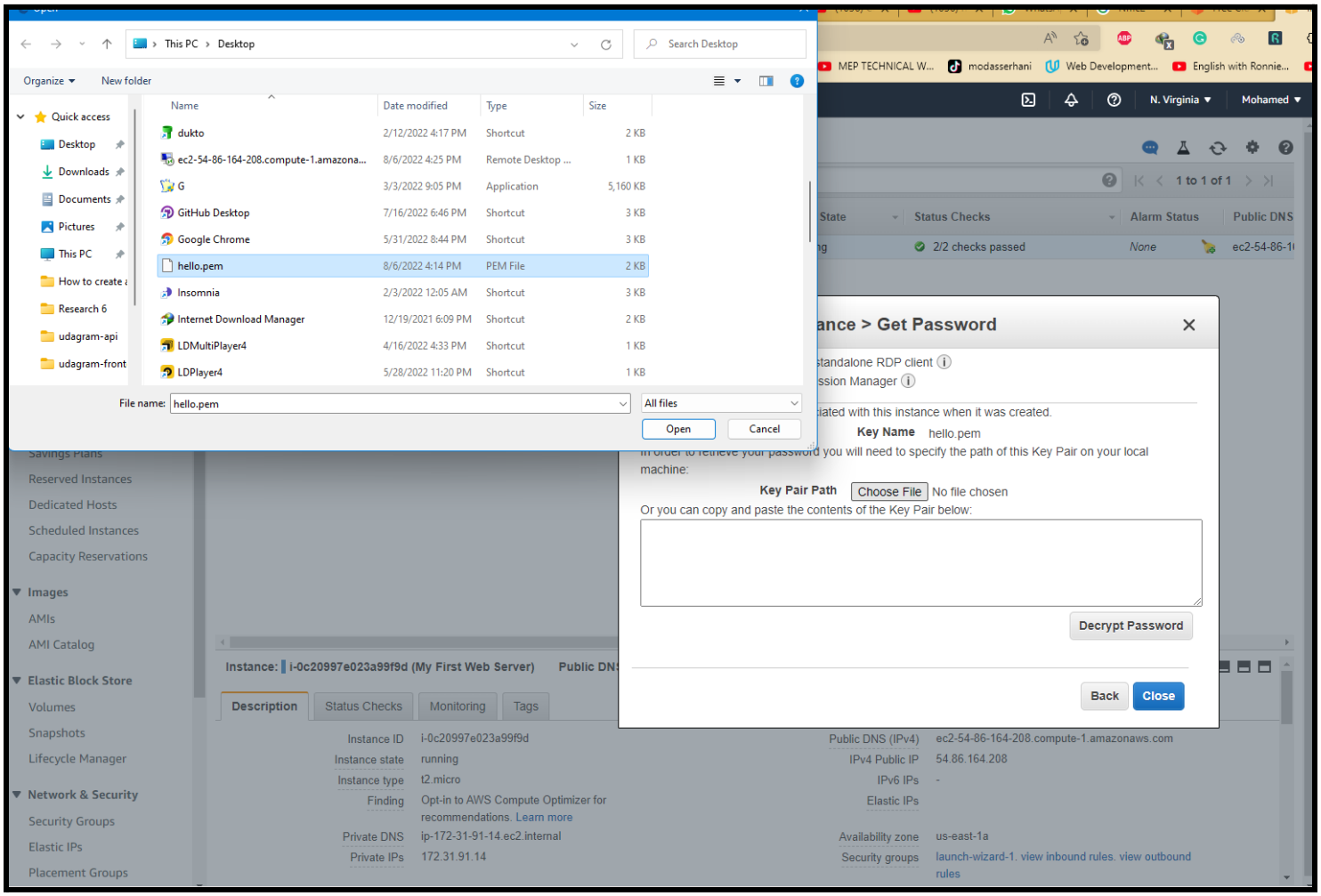
Step: 3
Select your instance and then click on connect



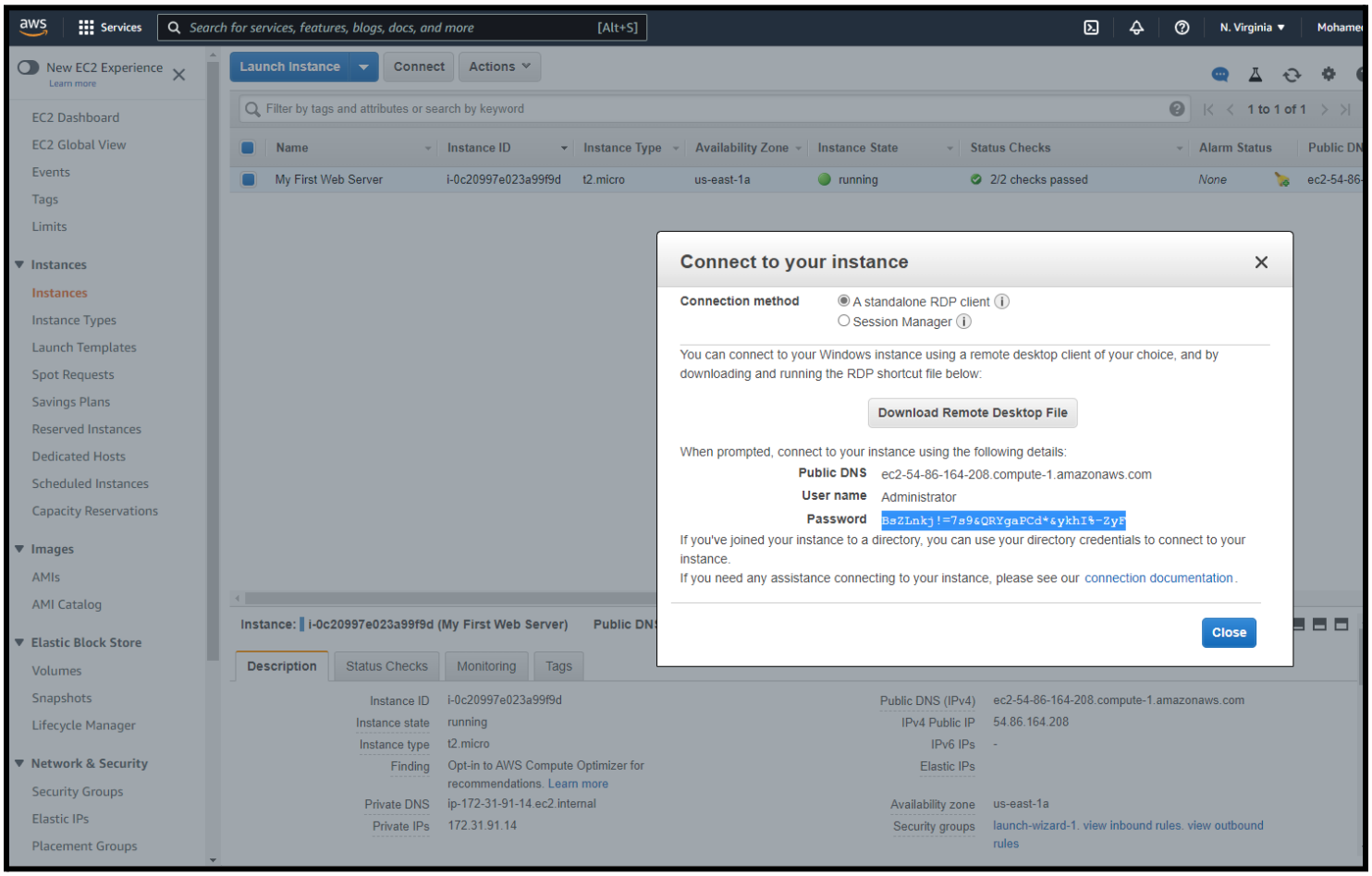
Step: 4
Download Remote Desktop File and Get your password



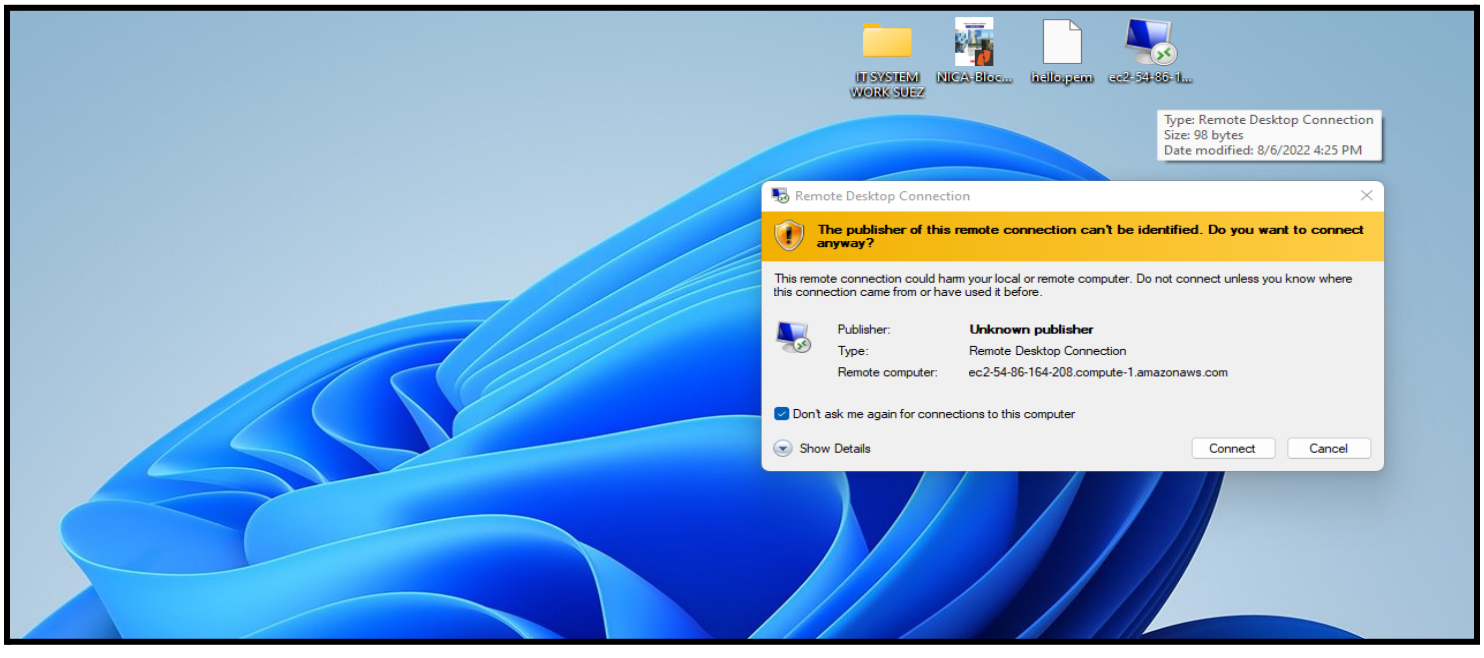
When you click on get Password will open this page and then choose the saved before keypair.....
Then click on Decrypt password and you will get the real password



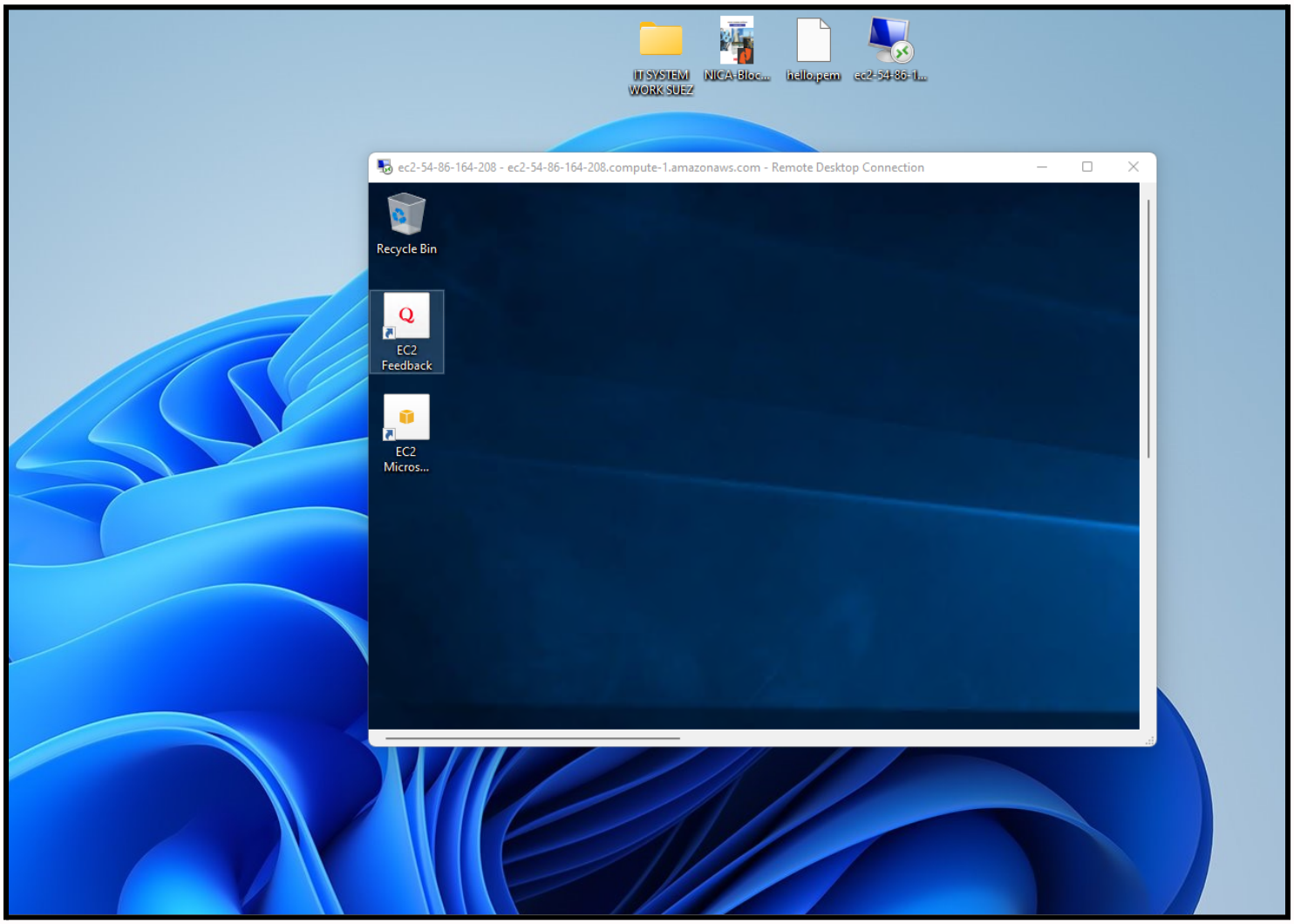
Here is the password after decryption



After that you have the password and remote connect desktop file Click on this file it will open and then click allow and enter the password.....



And now we are IN..... Congrats ....



IMPORTANT don't forget to terminate all the instance after finish if you are in testing mode (for your BUDGET)