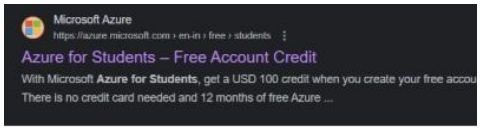
NAME : SACHIN MANOJ SHARMA
BSC.IT
SEAT NO: 31010921047
SUBJECT: CLOUD COMPUTING

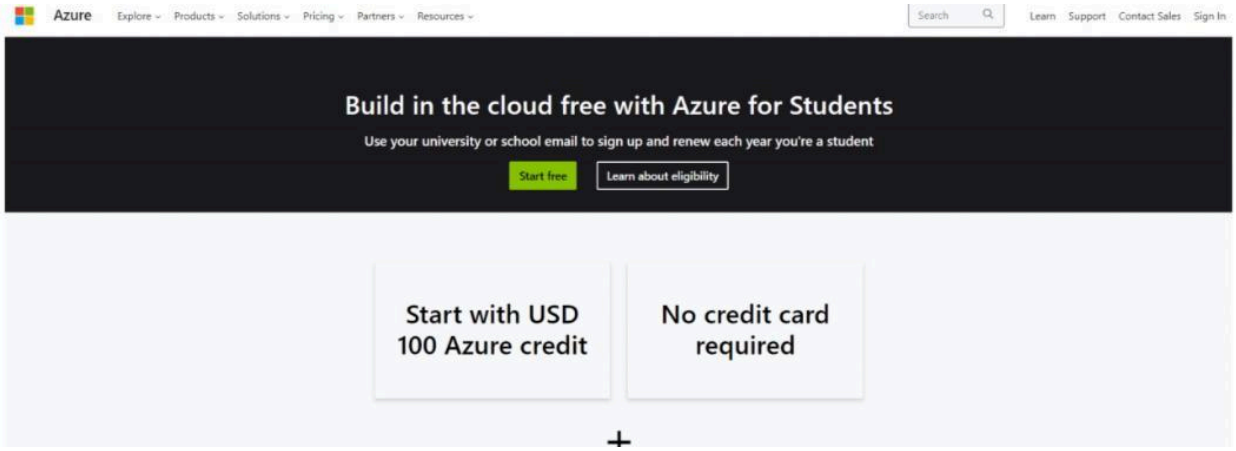
Practical 1

Setting up of Azure Account.

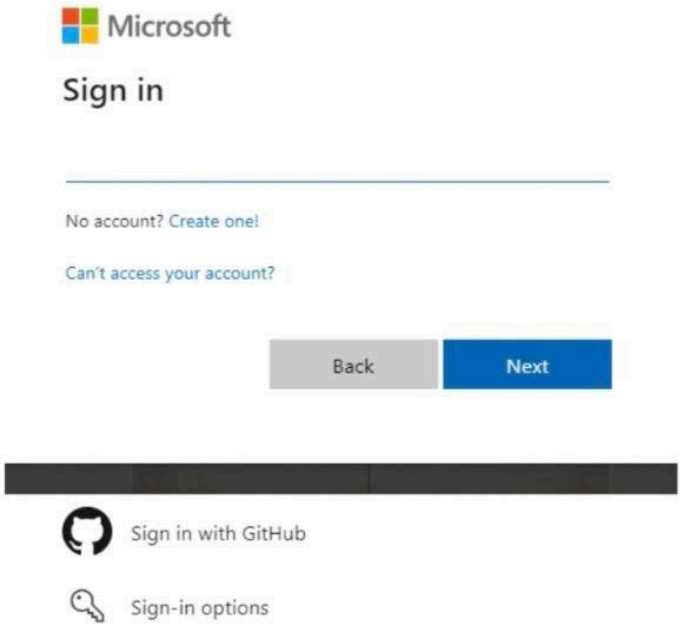
1. Search for "Microsoft Azure for Students" on Google and click on the link.



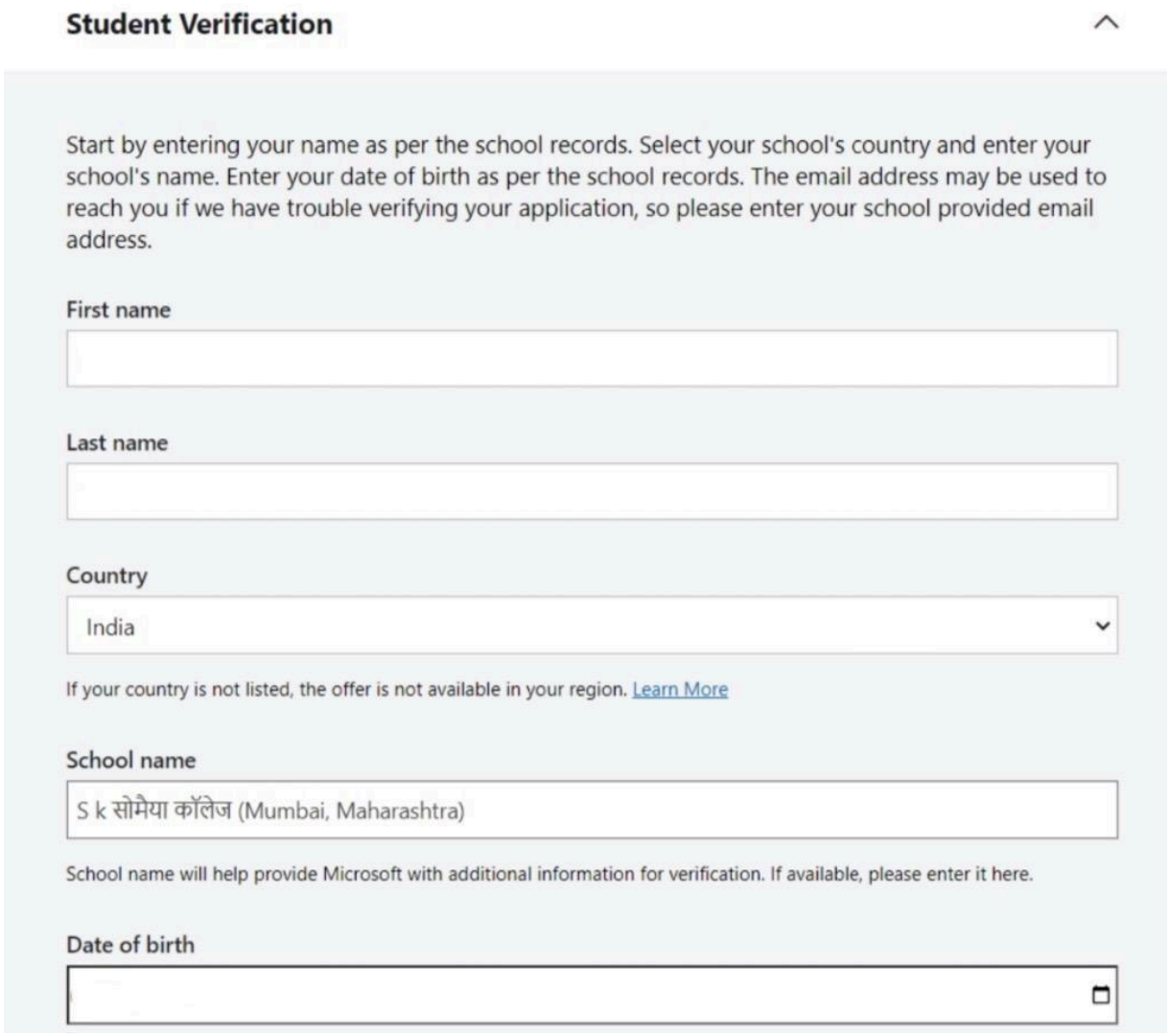
2. 2. Click on "Start Free"



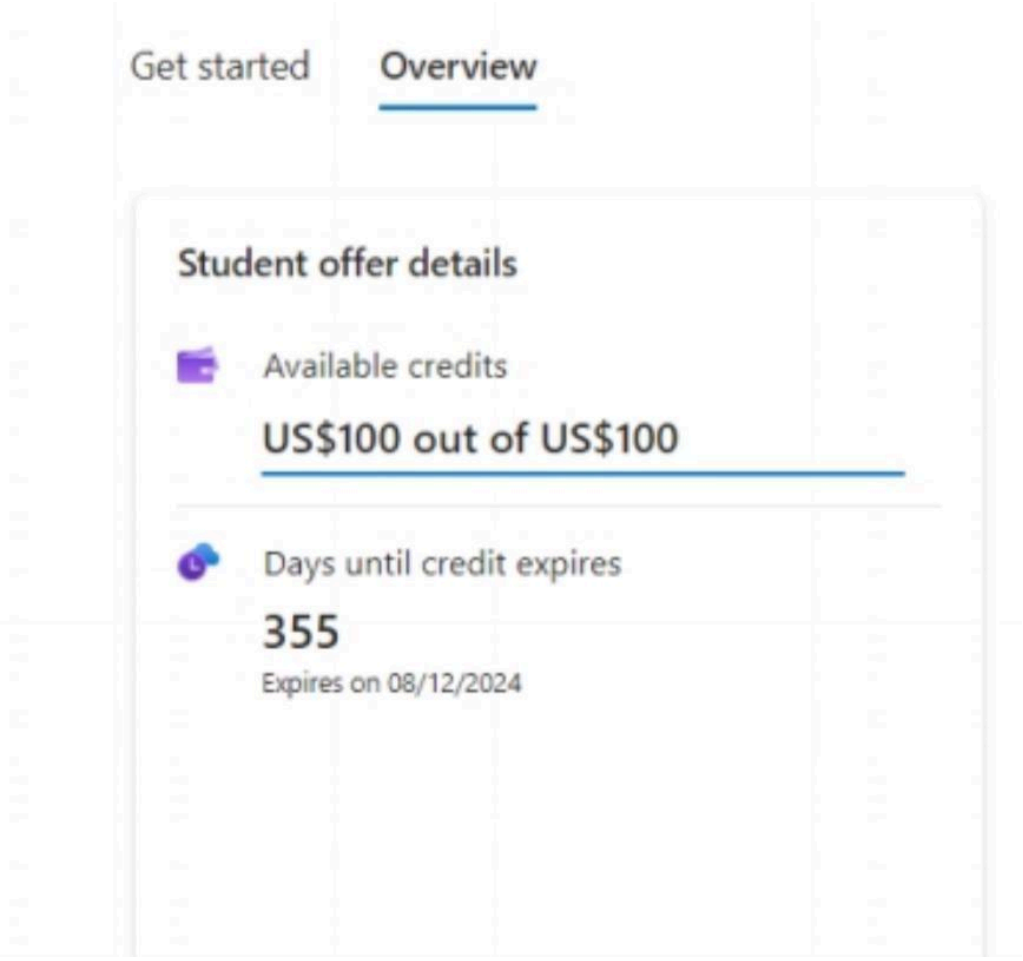
3. Sign in to Microsoft using the email address and password.



4. Fill in the details mentioned and verify the academic status.

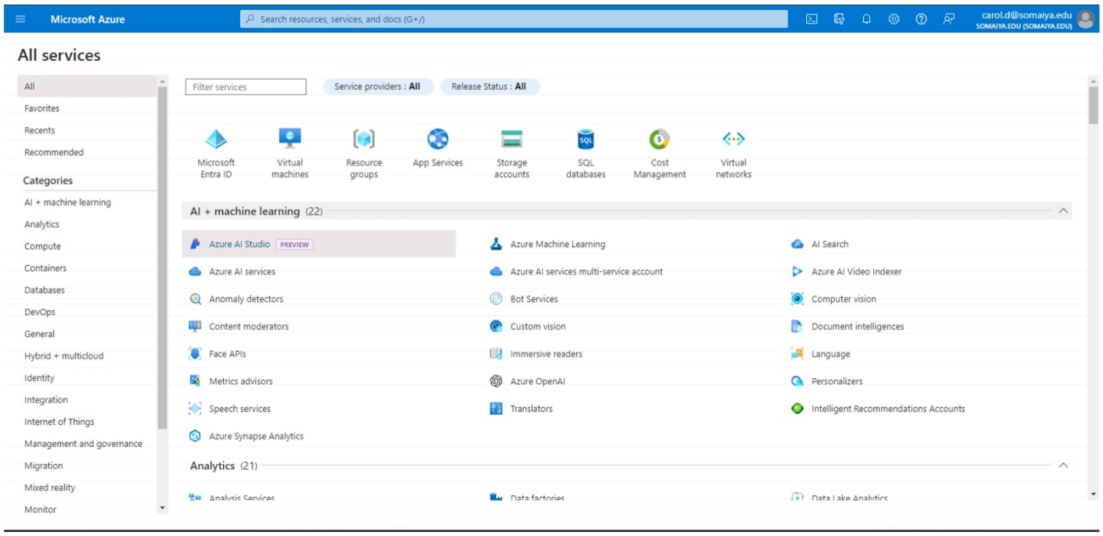


5. The student version of Azure has $100 credits free for students

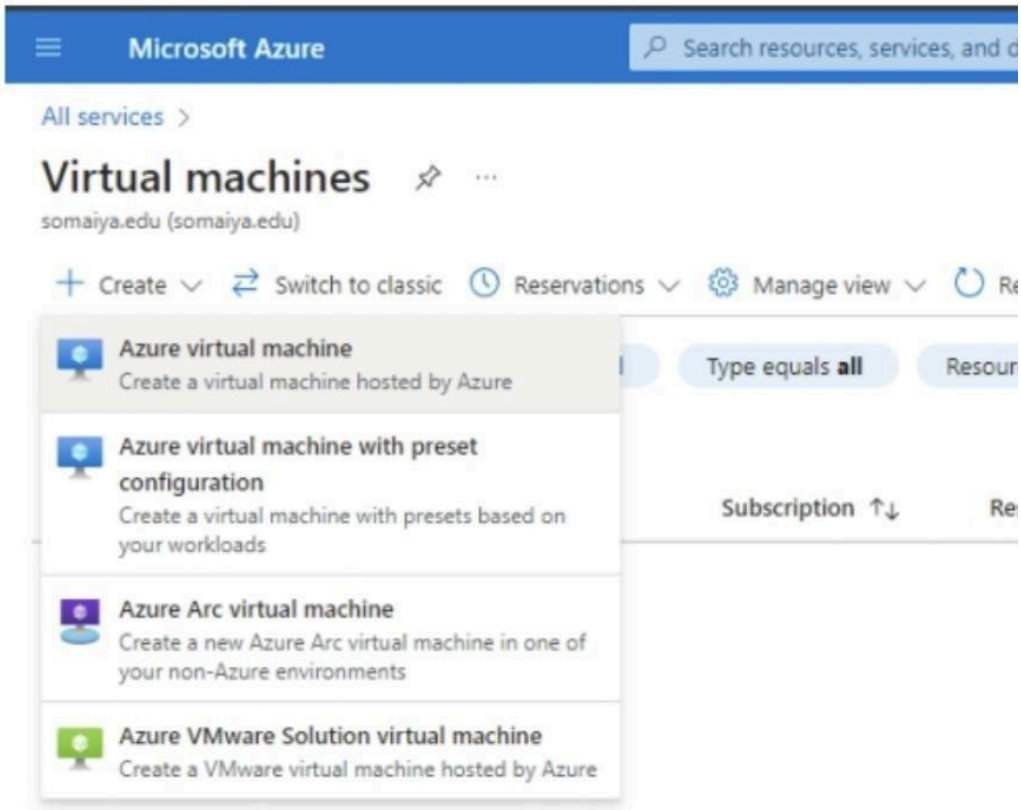


Creating a Virtual machine in Azure with Linux OS

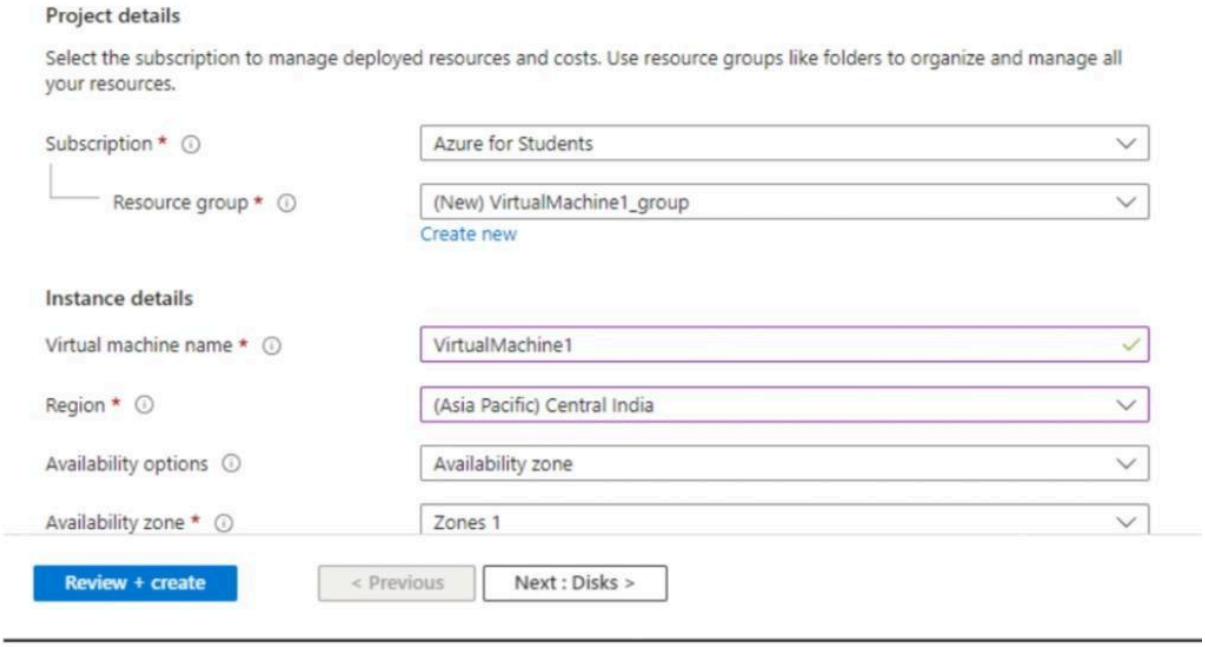
1. Go to Home section on Azure and select “Virtual Machines”

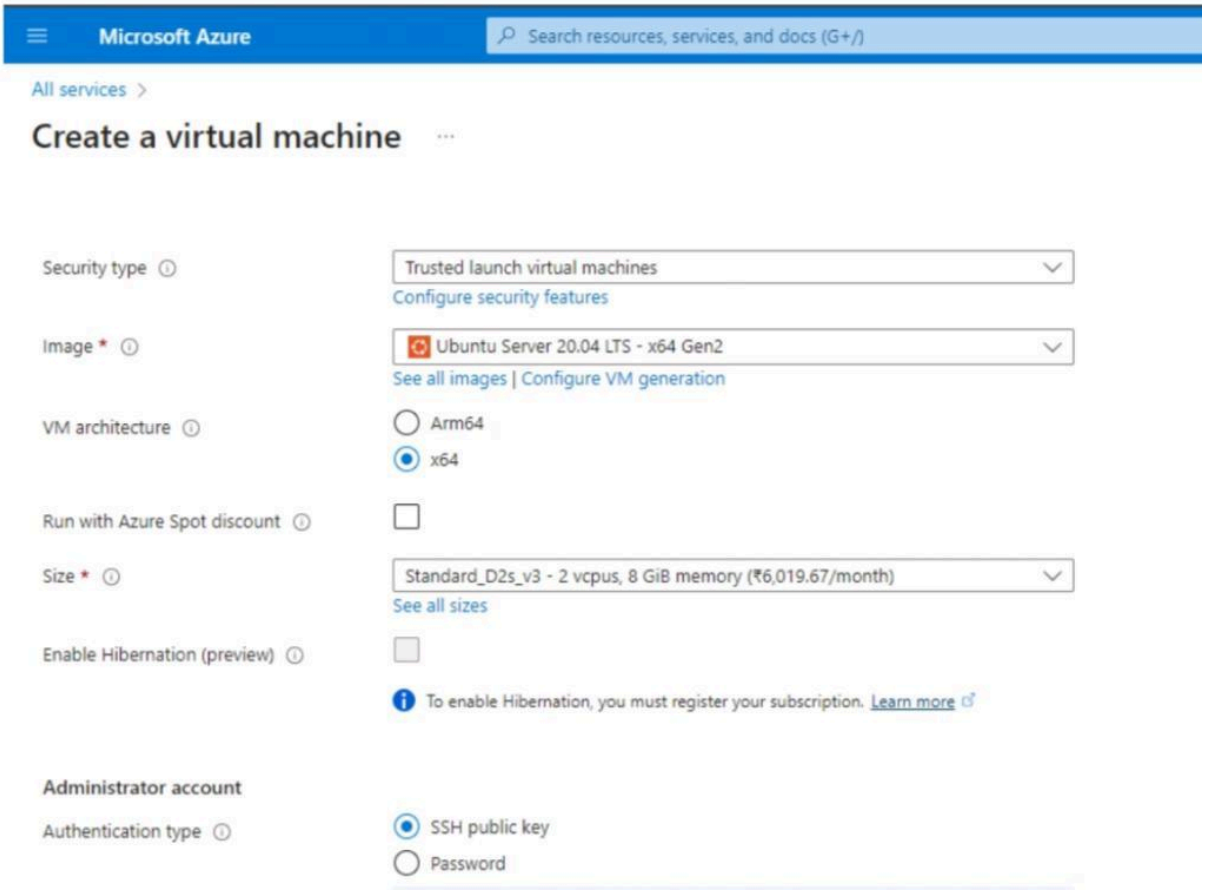


2. Click on "Create" and select "Azure virtual machine - Create a virtual machine hosted by Azure"



3. Enter name and change region to india





All services >

Create a virtual machine ...

Password

Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username * azureuser

SSH public key source Generate new key pair

Key pair name * VirtualMachine1_key

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

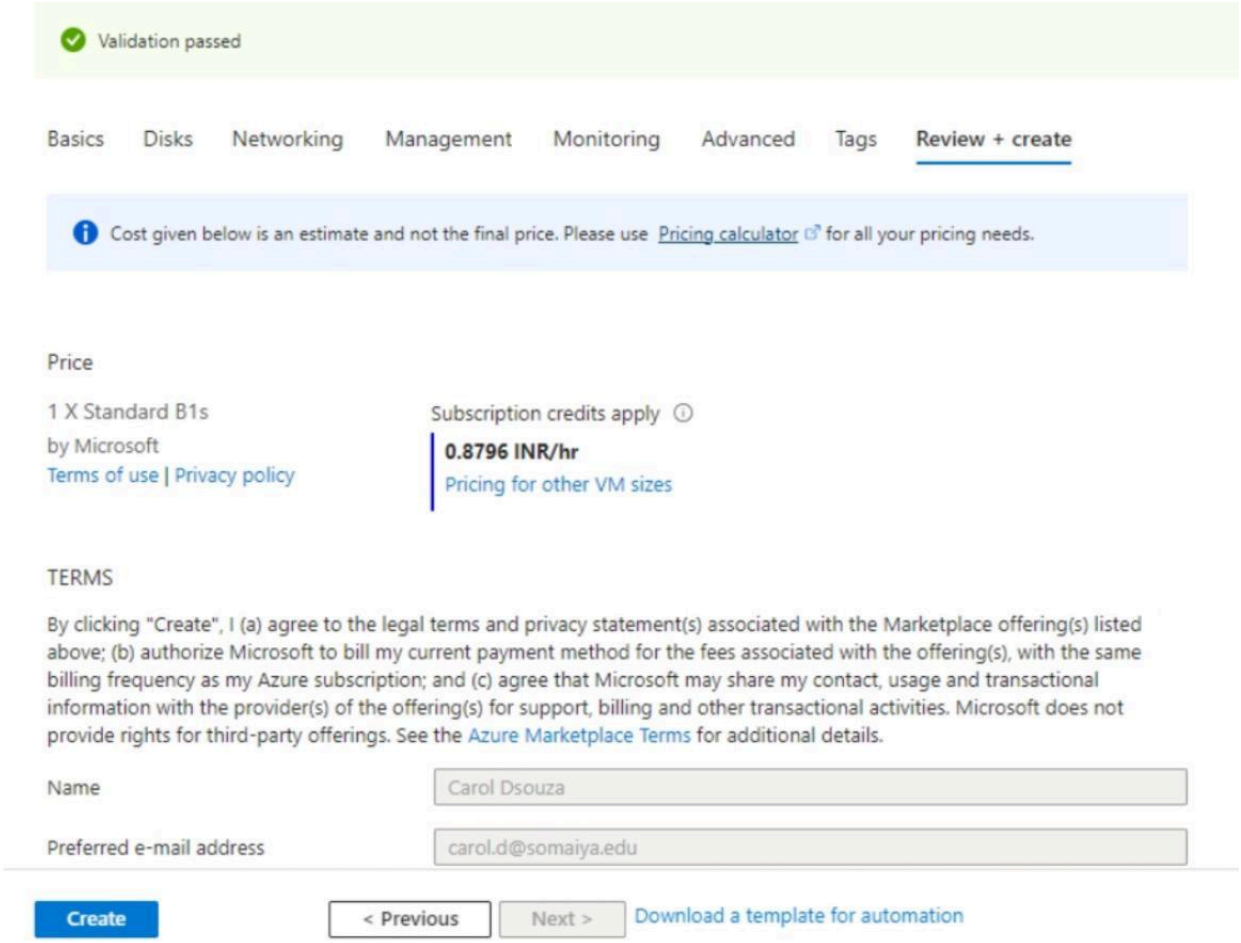
Public inbound ports * None / Allow selected ports

Select inbound ports * SSH (22)

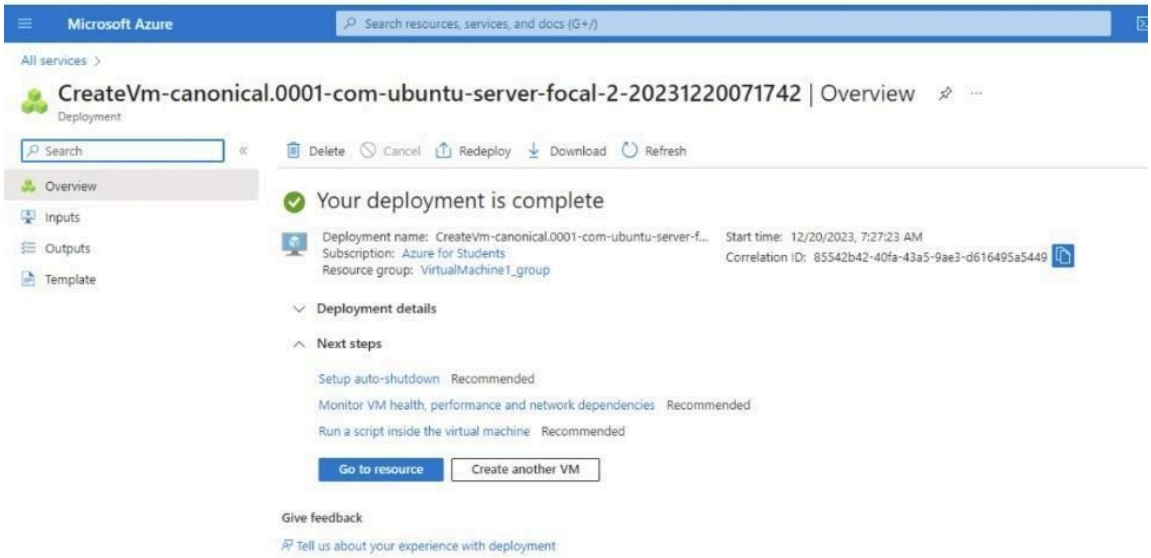
All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Review + create < Previous Next : Disks >

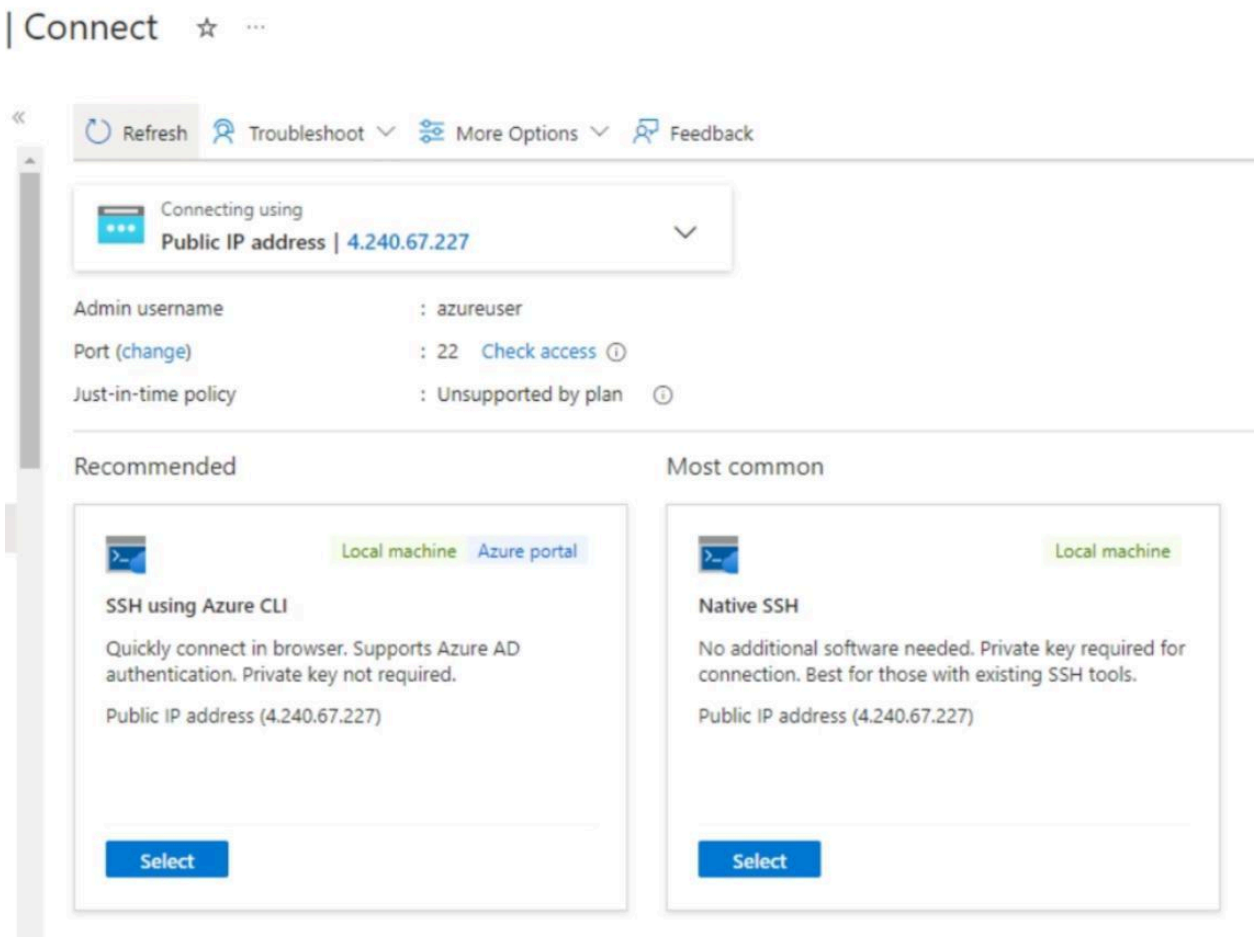
4. Click on “Review + create”. After validation, click on “Create”.



5. The machine will be created along with the SSH keys. Download the private key pair present as a "PEM file" and save it. Click on "Go to resource"

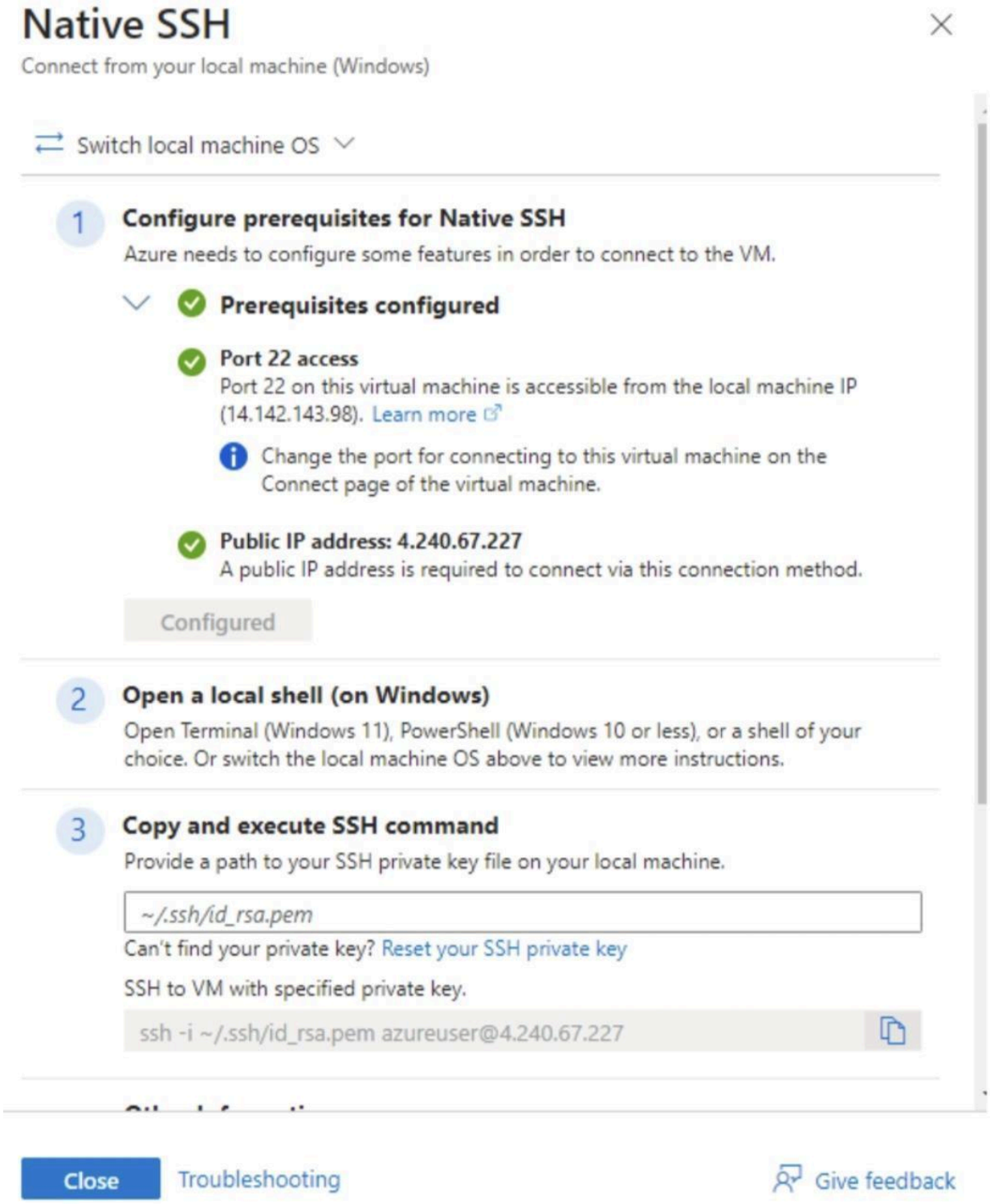


6. Under “Connect” , select “Native SSH”

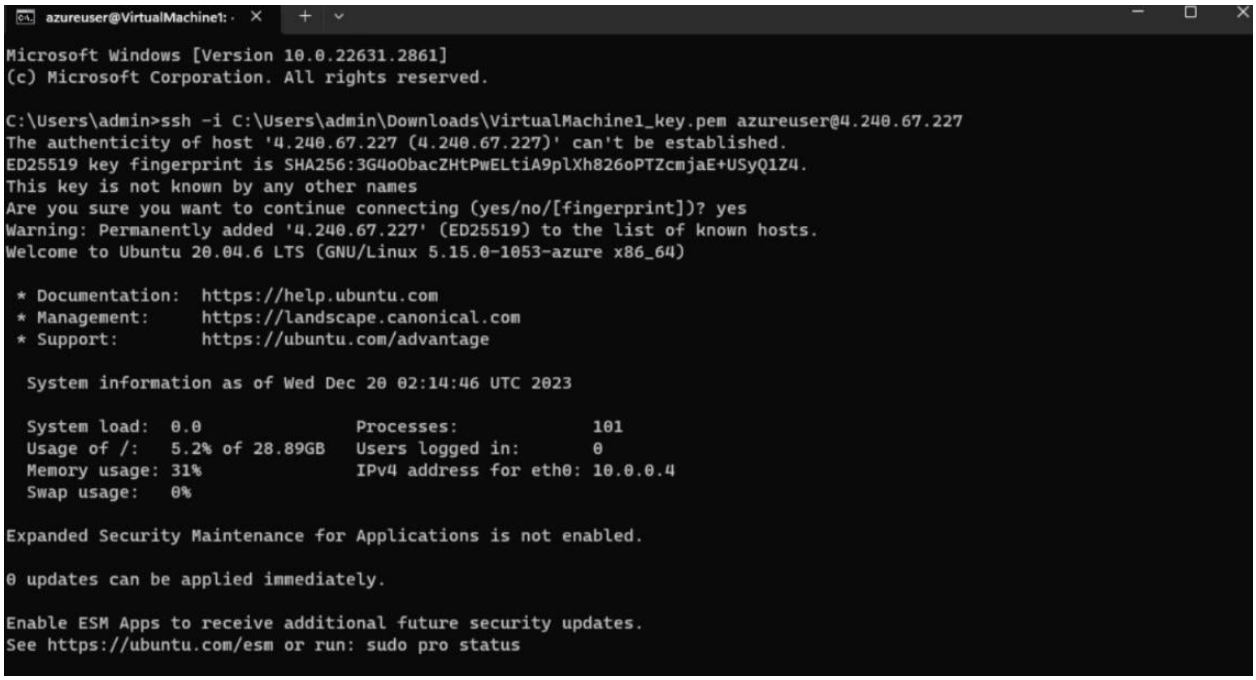


7. Follow the instructions given to connect the local machine i.e. copy the path of the private key (PEM File) and paste it. Then, open the local shell (Command Prompt) on

the PC and execute the command.

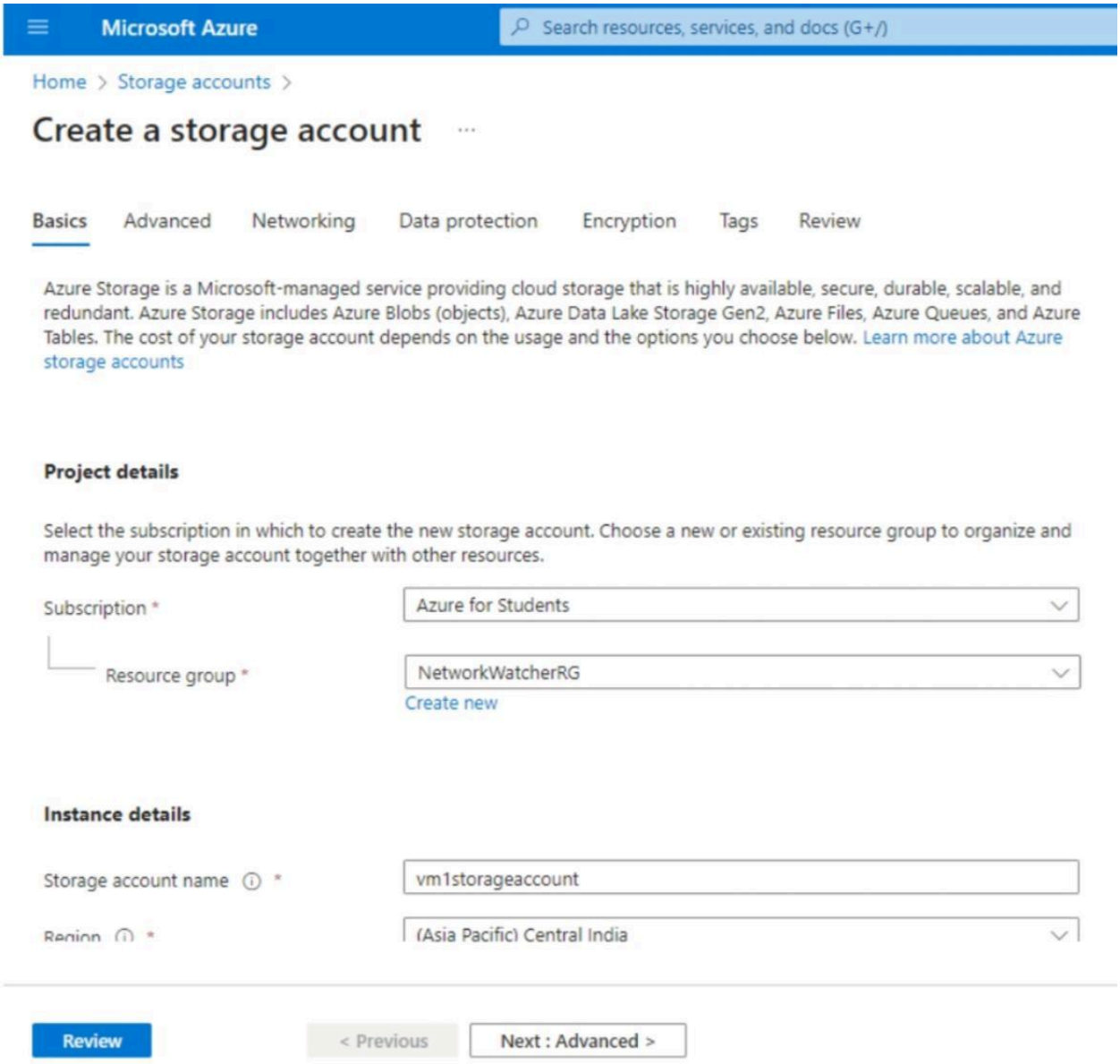


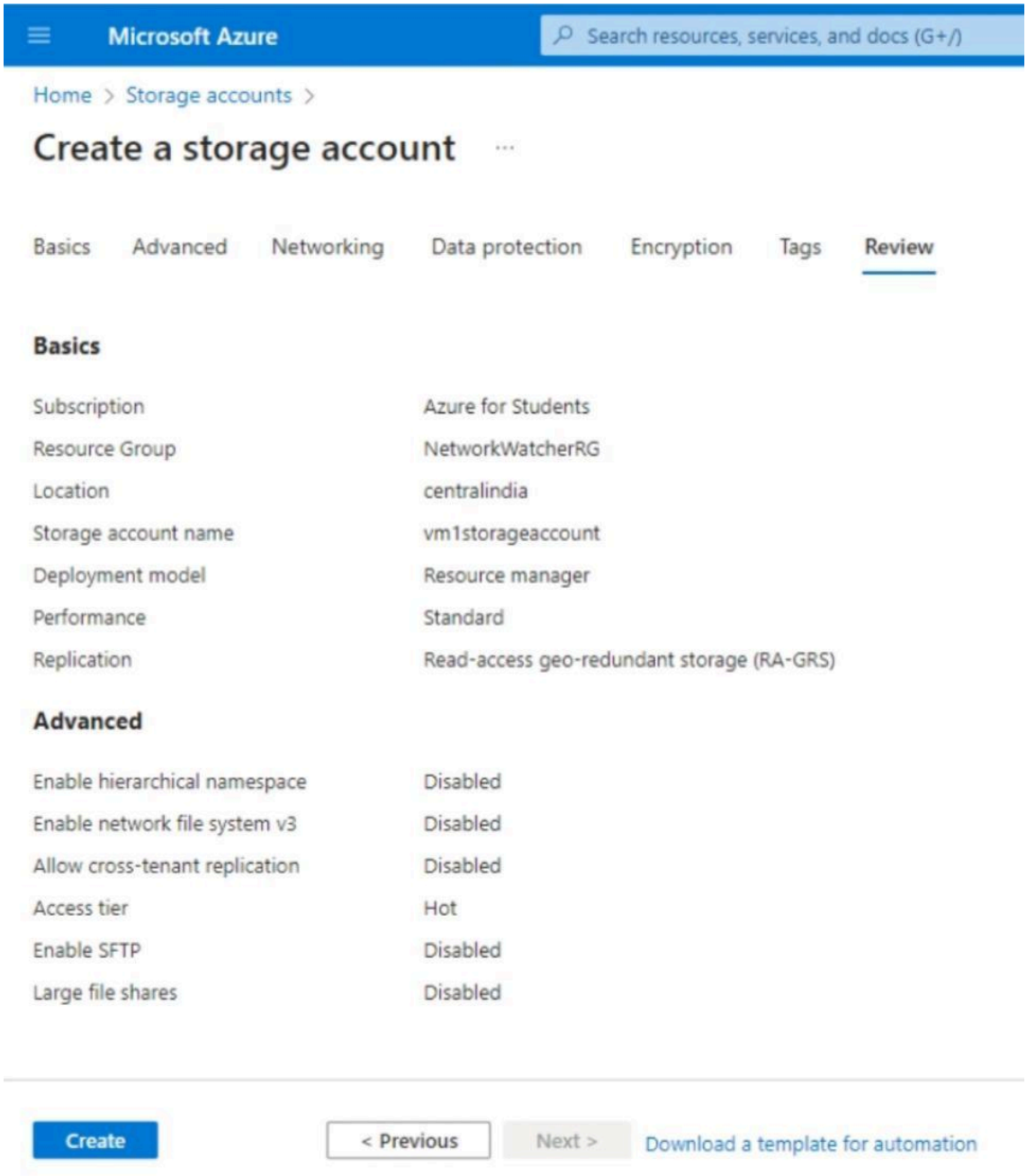
8. The command is executed as shown below in the Command Prompt and the local machine is now connected to the virtual machine.



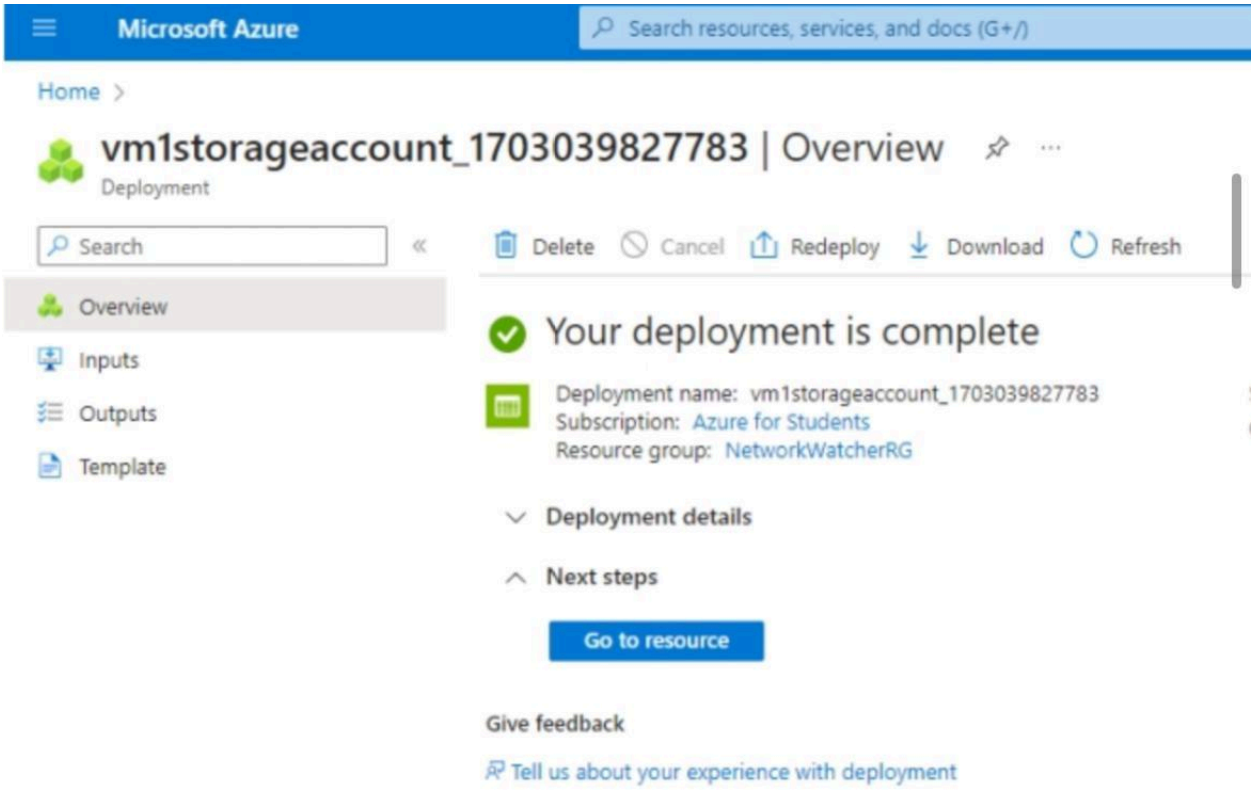
Practical 2 - Creating Excel Blob using storage account in Azure.

1. Go to “Home” and click on “Storage Accounts”
2. Click on Create
3. Enter name for Storage account and fill in required information, then click on “review” and “Create”

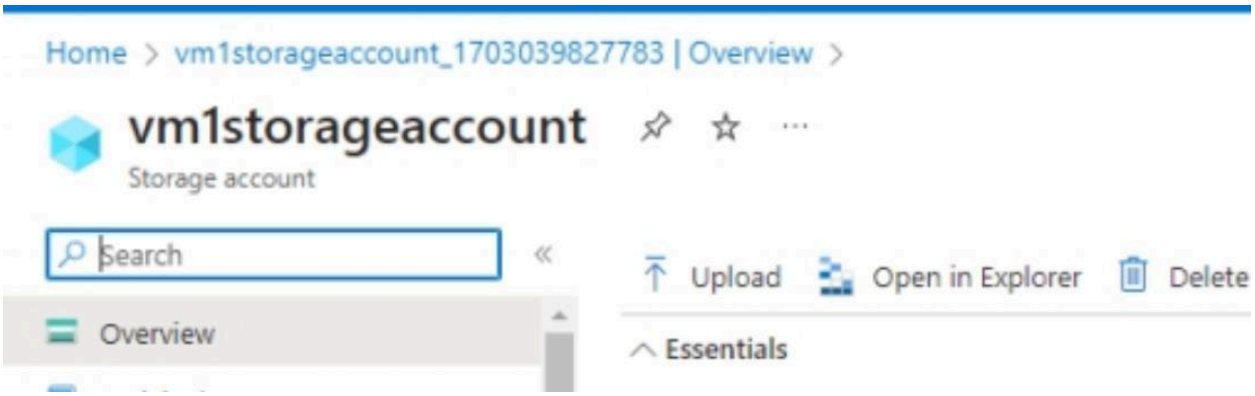

Microsoft Azure
Search resources, services, and docs (G+/)
Home > Storage accounts >
Create a storage account
Basics
Advanced
Networking
Data protection
Encryption
Tags
Review
Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. Learn more about Azure storage accounts
Project details
Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.
Subscription *
Azure for Students
Resource group *
NetworkWatcherRG
Create new
Instance details
Storage account name *
vm1storageaccount
Region *
(Asia Pacific) Central India
Review
< Previous
Next : Advanced >


Microsoft Azure
Search resources, services, and docs (G+/)
Home > Storage accounts >
Create a storage account
Basics
Advanced
Networking
Data protection
Encryption
Tags
Review
Basics
Subscription
Azure for Students
Resource Group
NetworkWatcherRG
Location
centralindia
Storage account name
vm1storageaccount
Deployment model
Resource manager
Performance
Standard
Replication
Read-access geo-redundant storage (RA-GRS)
Advanced
Enable hierarchical namespace
Disabled
Enable network file system v3
Disabled
Allow cross-tenant replication
Disabled
Access tier
Hot
Enable SFTP
Disabled
Large file shares
Disabled
Create
< Previous
Next >
Download a template for automation

4. Storage account is created and deployed successfully. Click on “Go to resource”



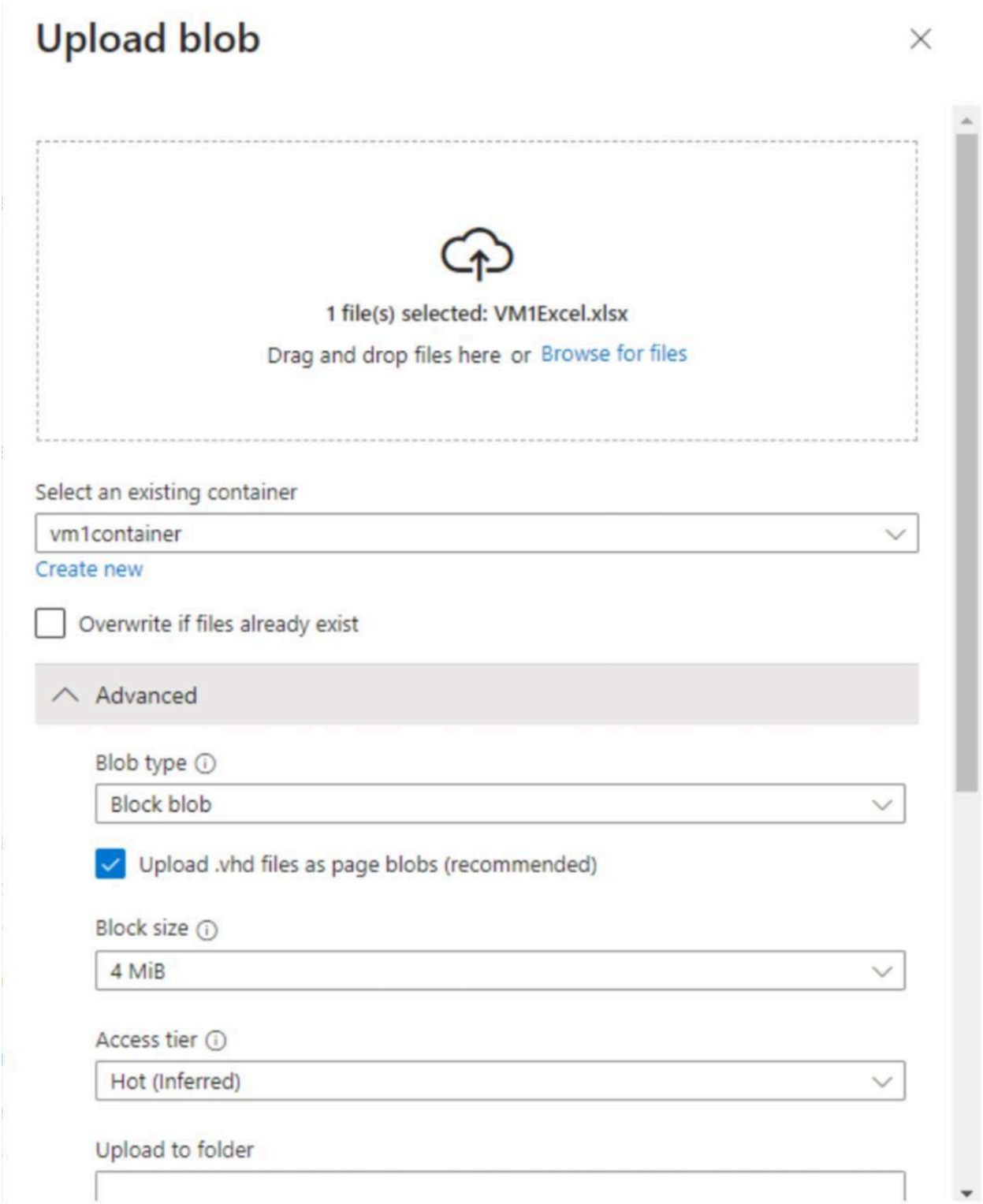
5. Click on “Upload”



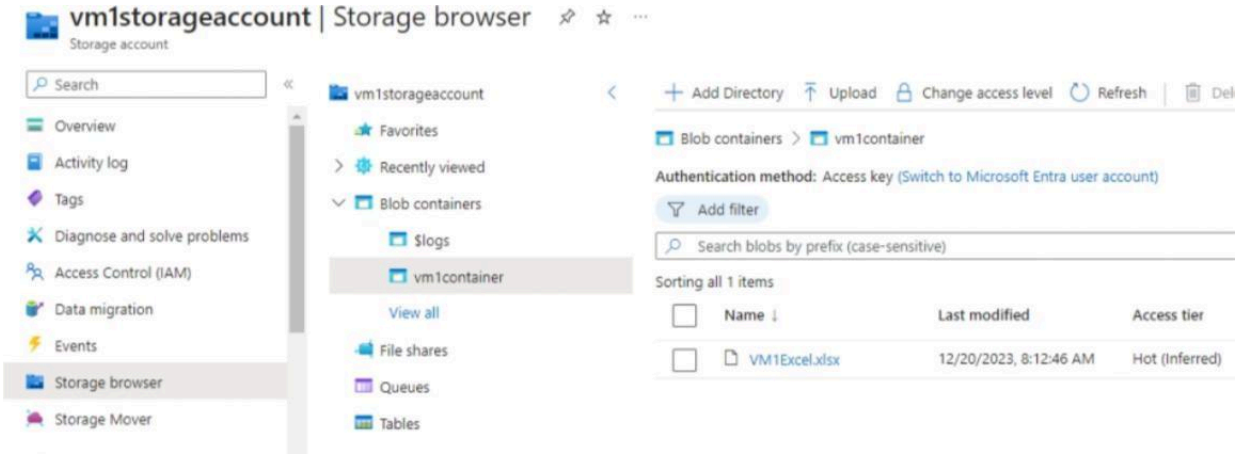
6. Create and excel file as below and save it.

	A	B
1	Name	Country
2	ABC	India
3	DEF	Thailand
4	GHI	Korea

7. Upload the file. Create a new container and name it.

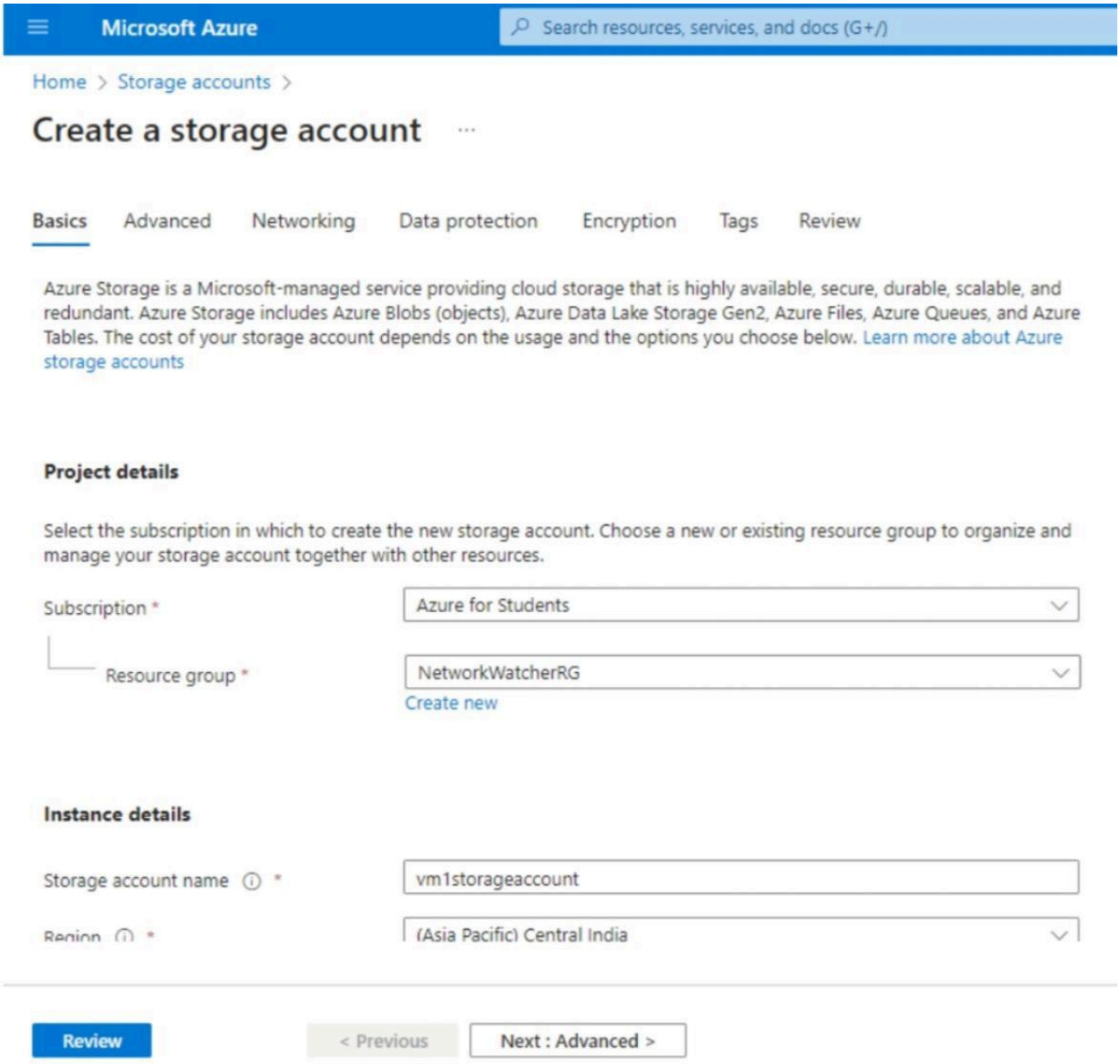


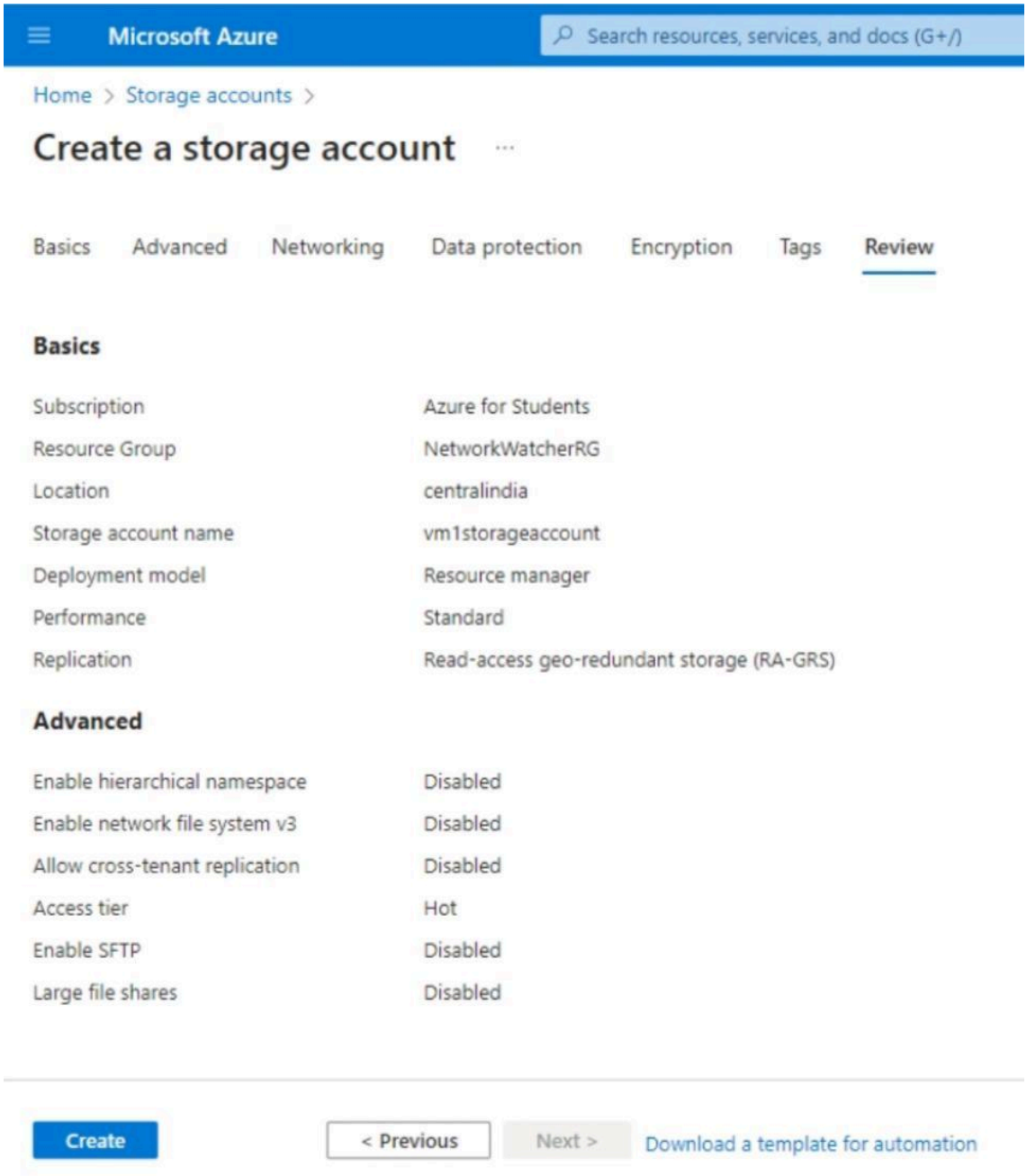
8. Navigate to “Storage Browser” and enter the blob container to check if Excel file has been uploaded.



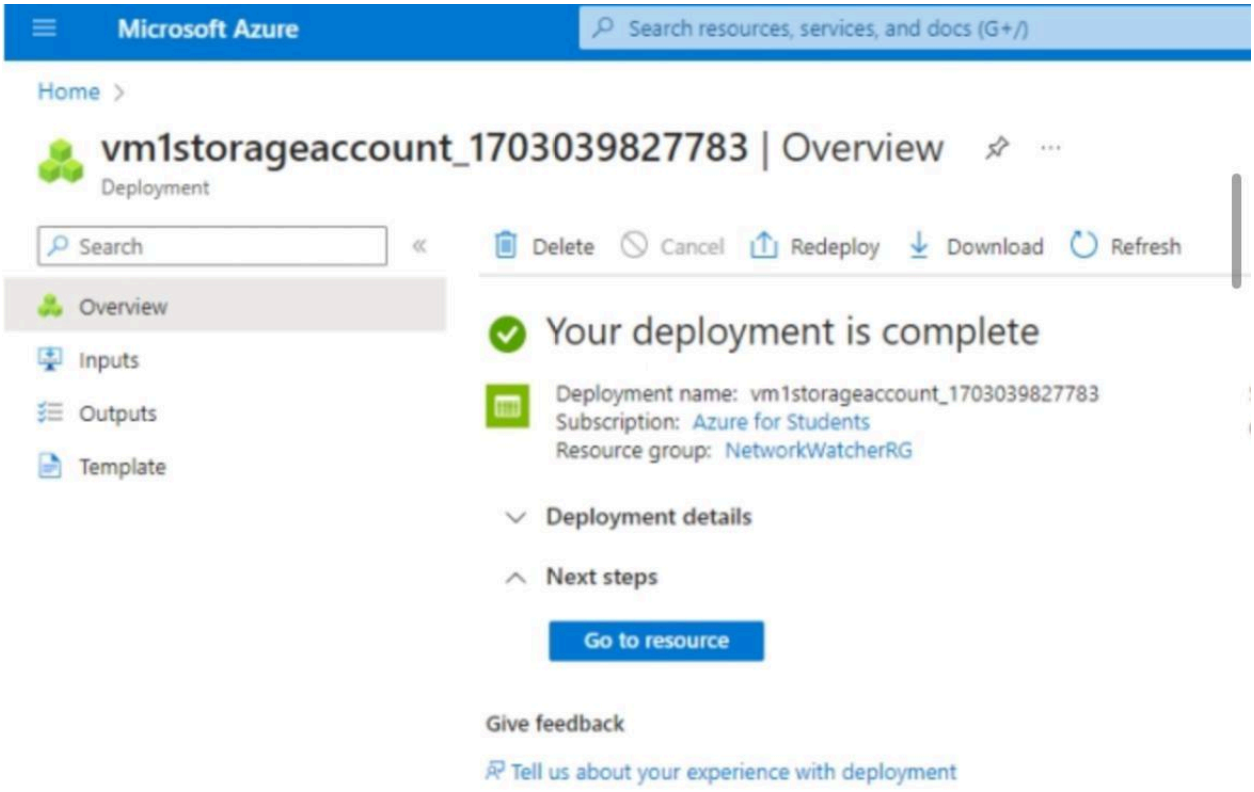
Practical 3 - Creating Image blob using storage account in Azure.

1. Go to “Home” and click on “Storage Accounts”
2. Click on Create
3. Enter name for Storage account and fill in required information, then click on “review” and “Create”

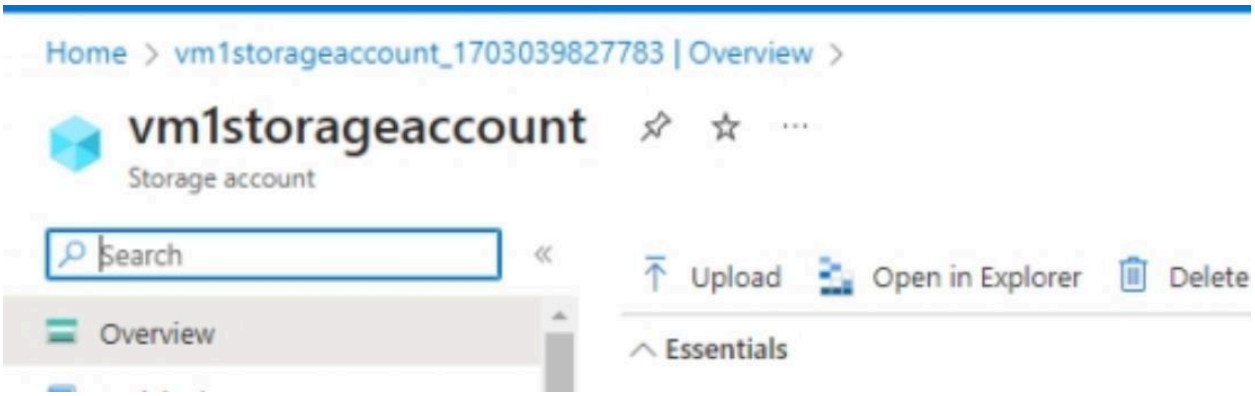

Microsoft Azure
Search resources, services, and docs (G+/)
Home > Storage accounts >
Create a storage account
Basics
Advanced
Networking
Data protection
Encryption
Tags
Review
Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. Learn more about Azure storage accounts
Project details
Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.
Subscription *
Azure for Students
Resource group *
NetworkWatcherRG
Create new
Instance details
Storage account name *
vm1storageaccount
Region *
(Asia Pacific) Central India
Review
< Previous
Next : Advanced >


Microsoft Azure
Search resources, services, and docs (G+/)
Home > Storage accounts >
Create a storage account
Basics
Advanced
Networking
Data protection
Encryption
Tags
Review
Basics
Subscription
Azure for Students
Resource Group
NetworkWatcherRG
Location
centralindia
Storage account name
vm1storageaccount
Deployment model
Resource manager
Performance
Standard
Replication
Read-access geo-redundant storage (RA-GRS)
Advanced
Enable hierarchical namespace
Disabled
Enable network file system v3
Disabled
Allow cross-tenant replication
Disabled
Access tier
Hot
Enable SFTP
Disabled
Large file shares
Disabled
Create
< Previous
Next >
Download a template for automation

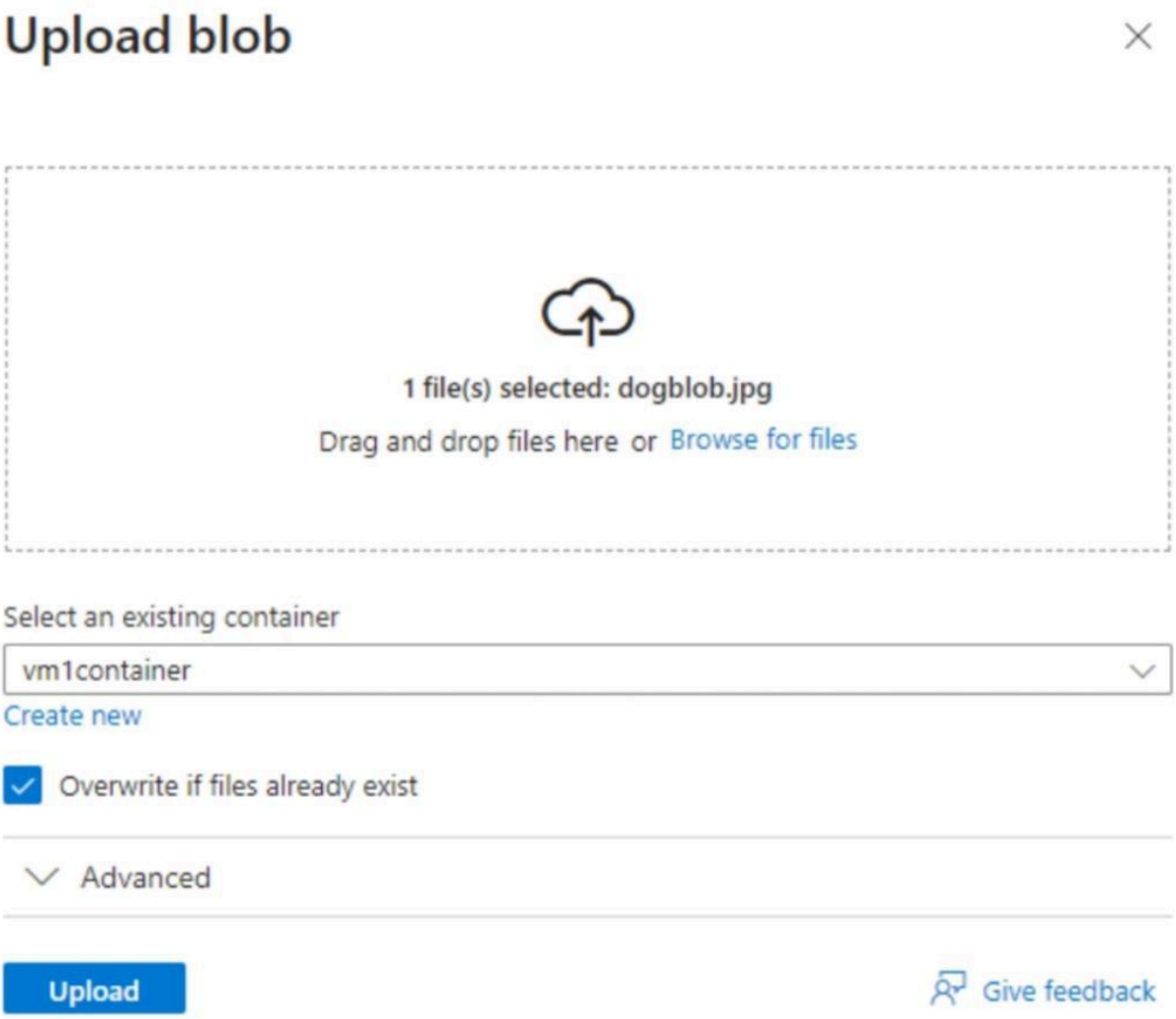
4. Storage account is created and deployed successfully. Click on “Go to resource”



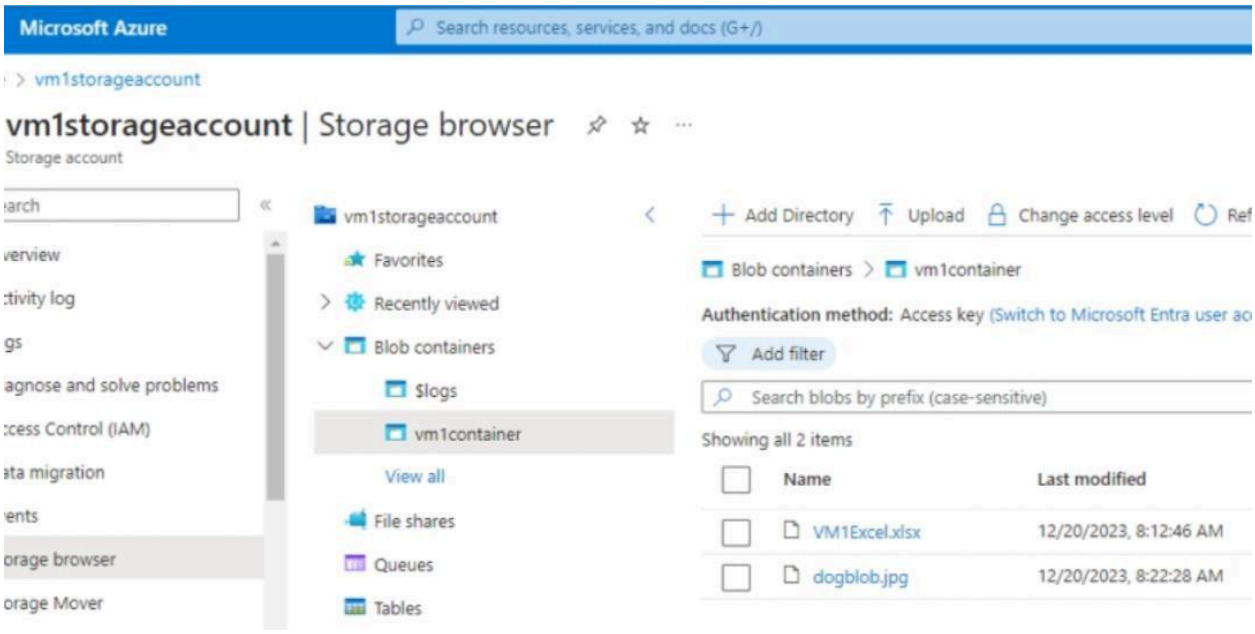
5. Click on “Upload”



6. Download an image and upload using “Browse files” . Create a new container and name it.



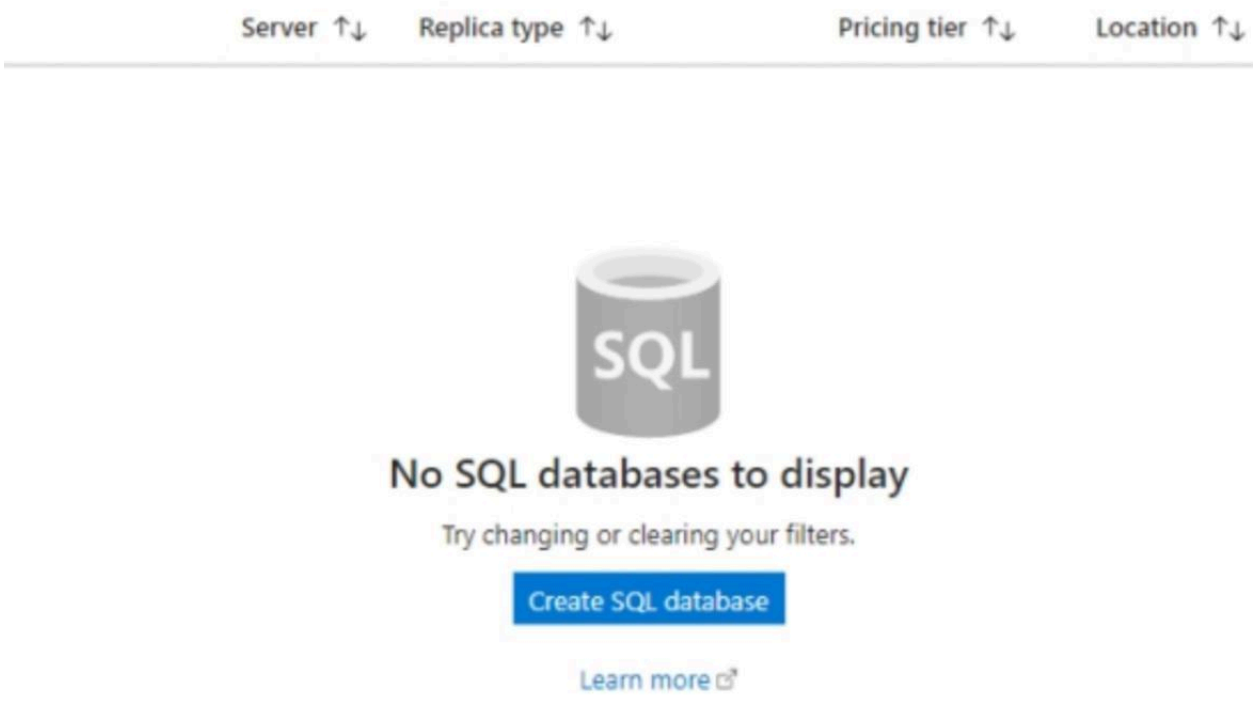
7. Navigate to “Storage Browser” and enter the blob container to check if image file has been uploaded.



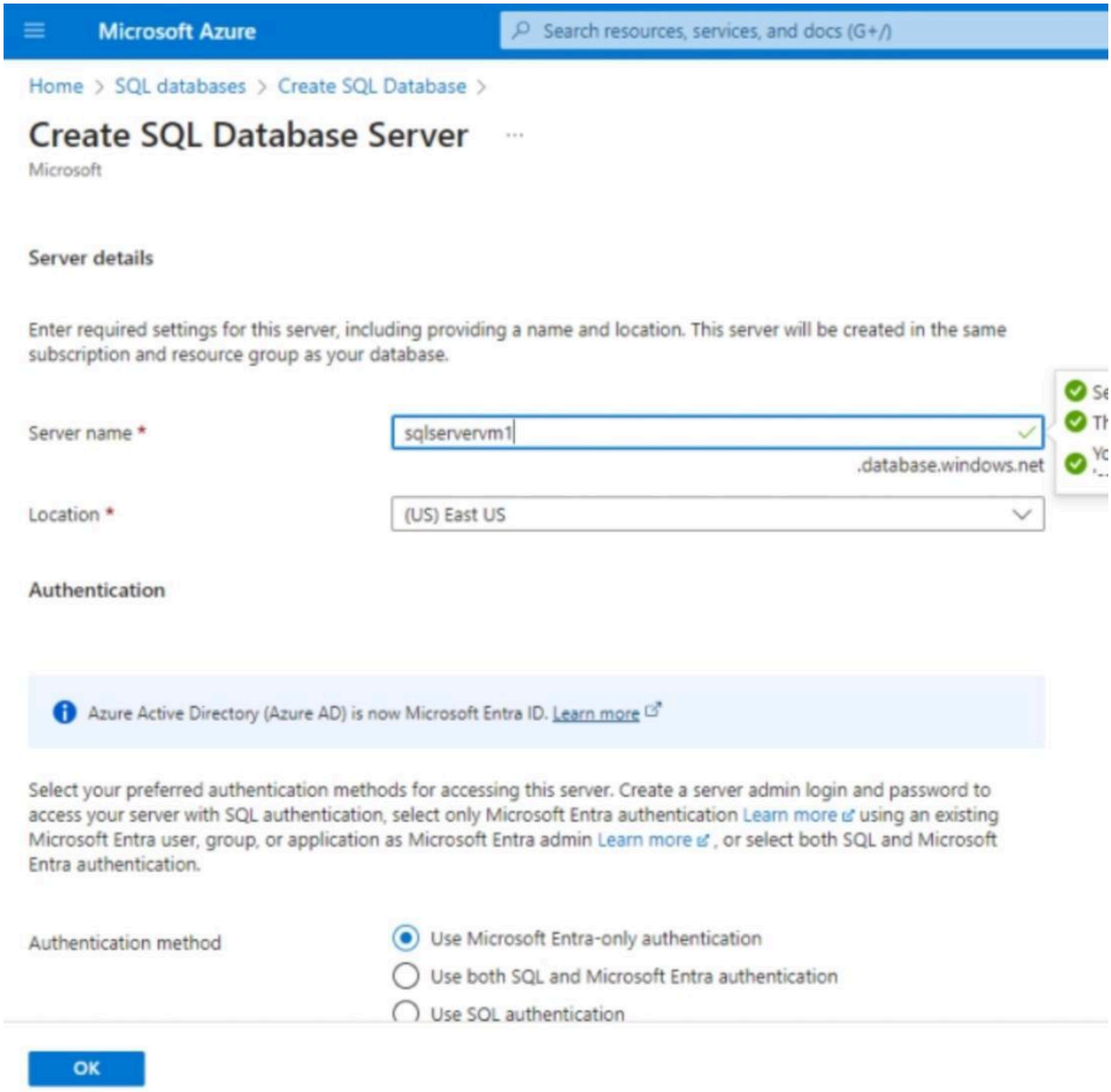
Practical 4 - Creating SQL database in azure.

1. Go to “Home” and click on “SQL databases”

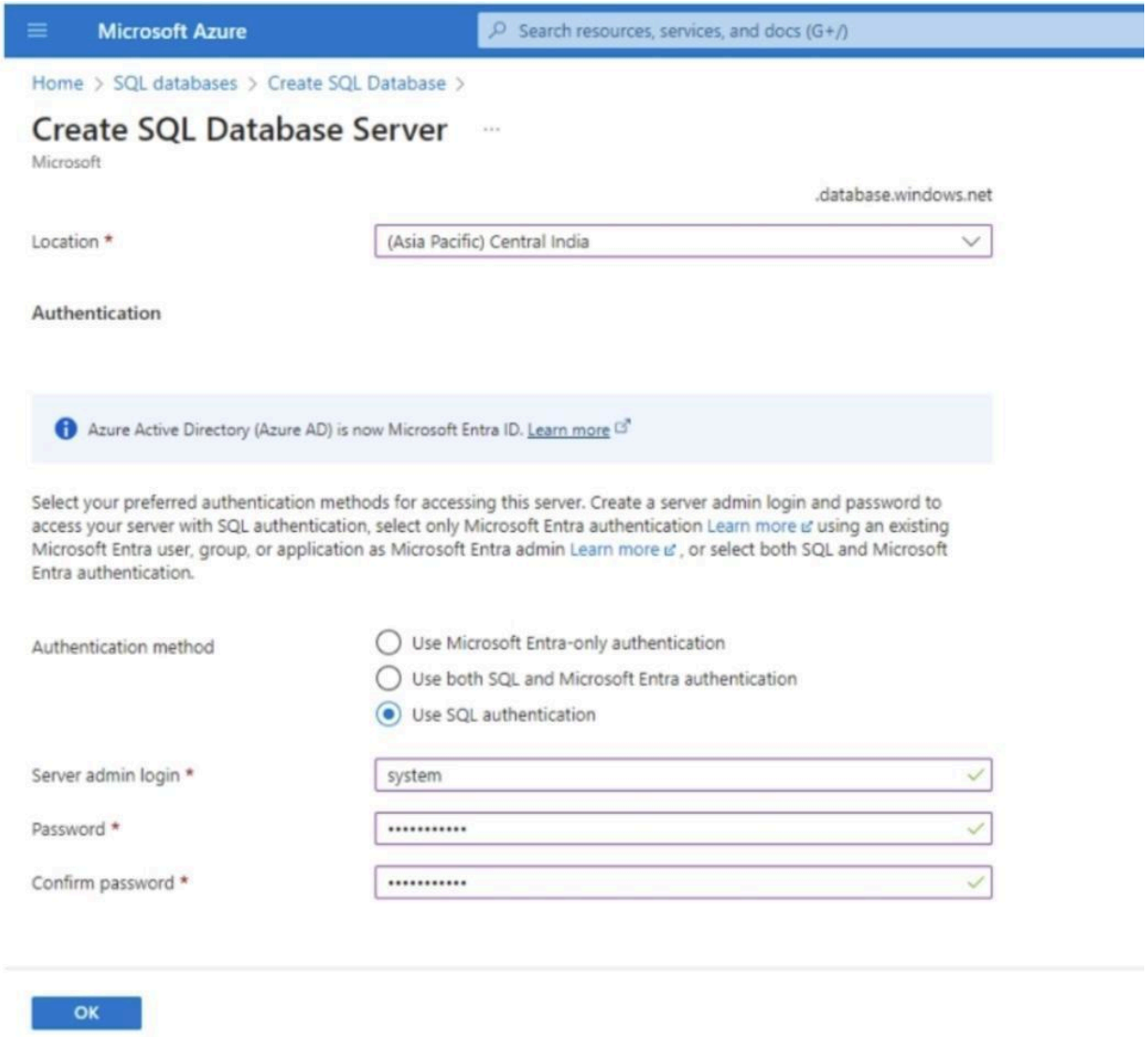
2. Click on “Create SQL Database”



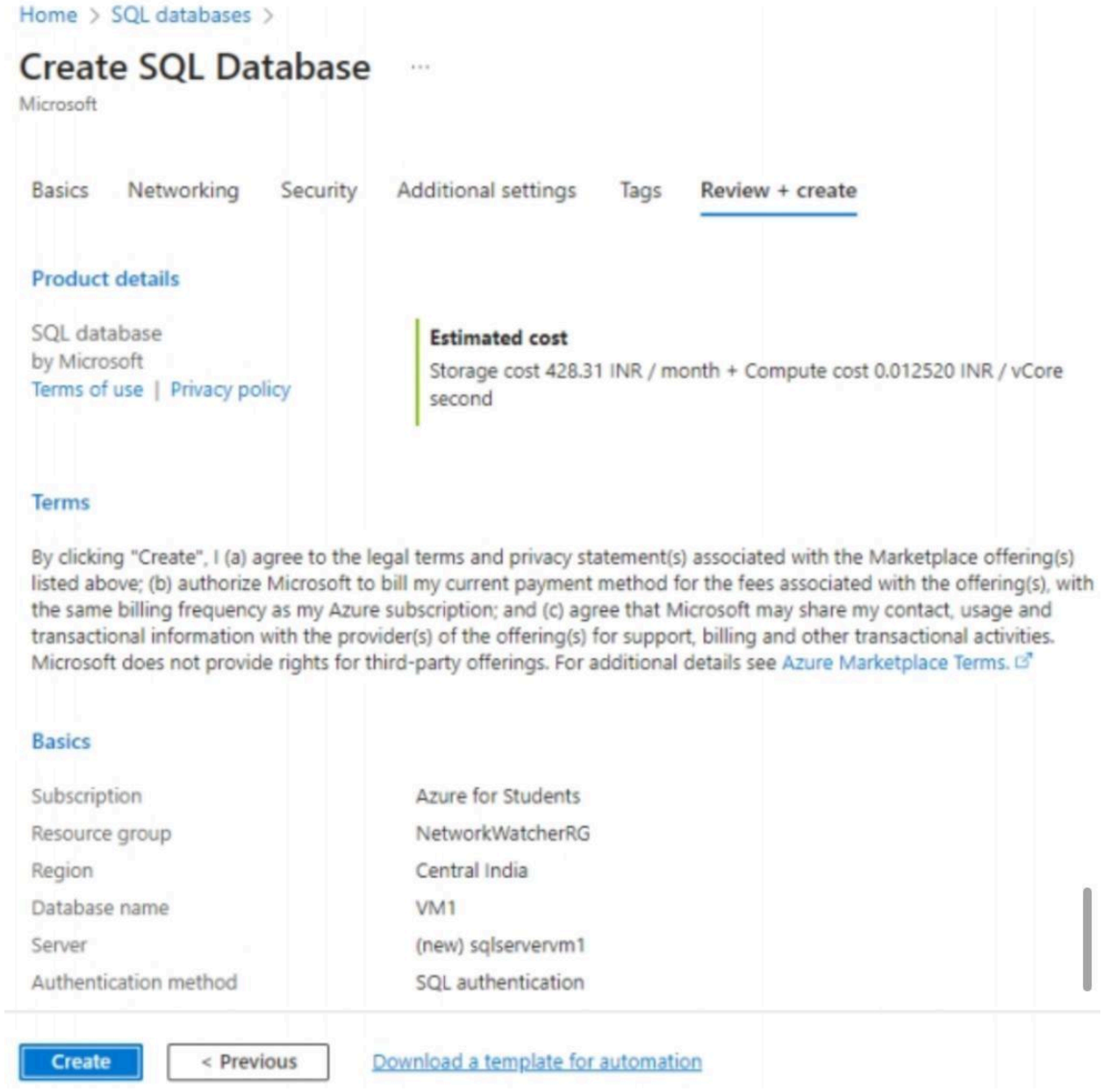
3. Enter name and location for SQL database Server.



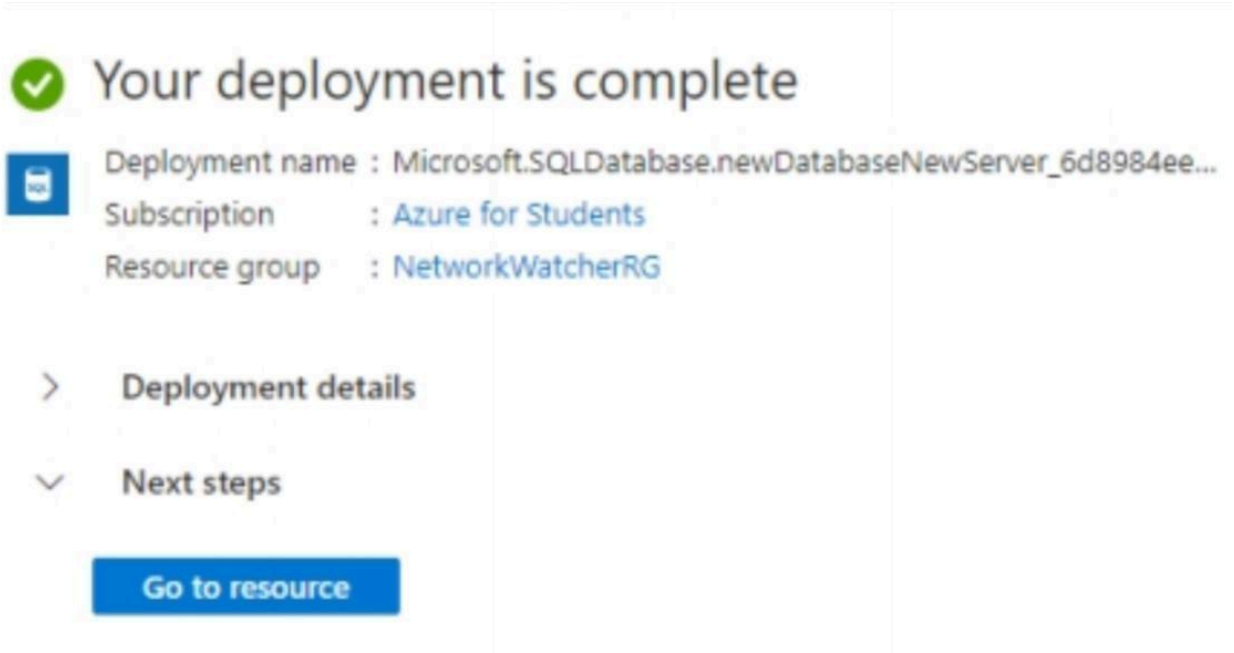
4. Select the "Authentication method" as "Use SQL authentication". Enter the admin login and password (Remember the login and password). Then click "Ok"



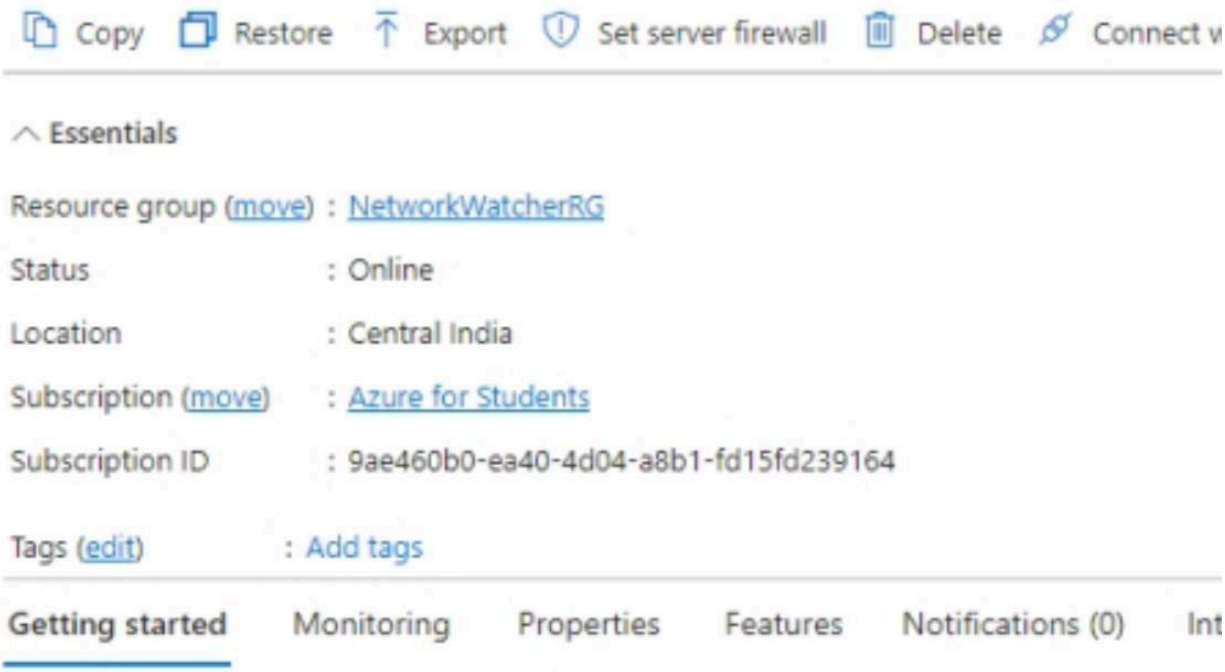
5. Under “Review + Create” click on “Create”



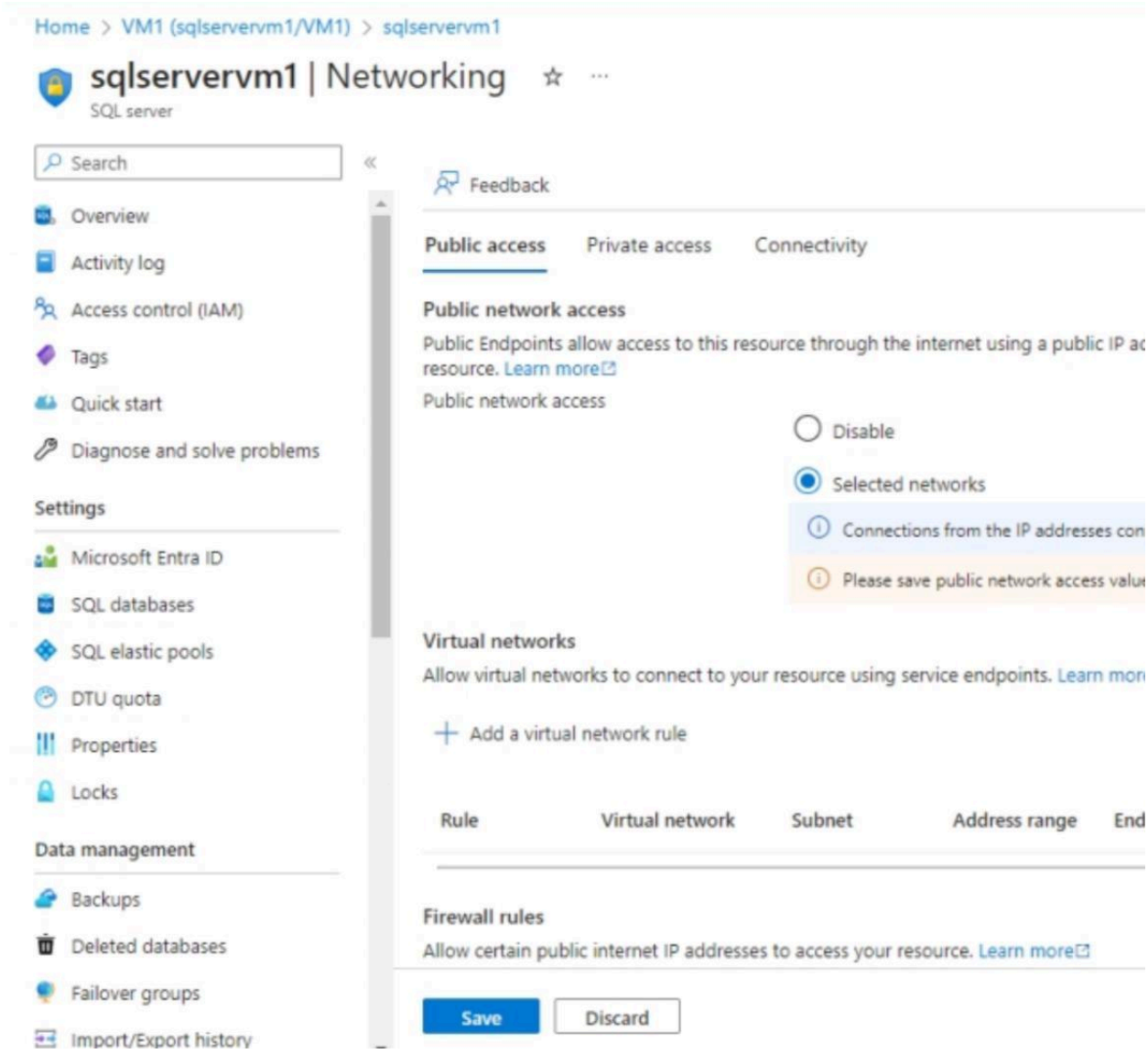
6. After deployment, click on “Go to Resource”



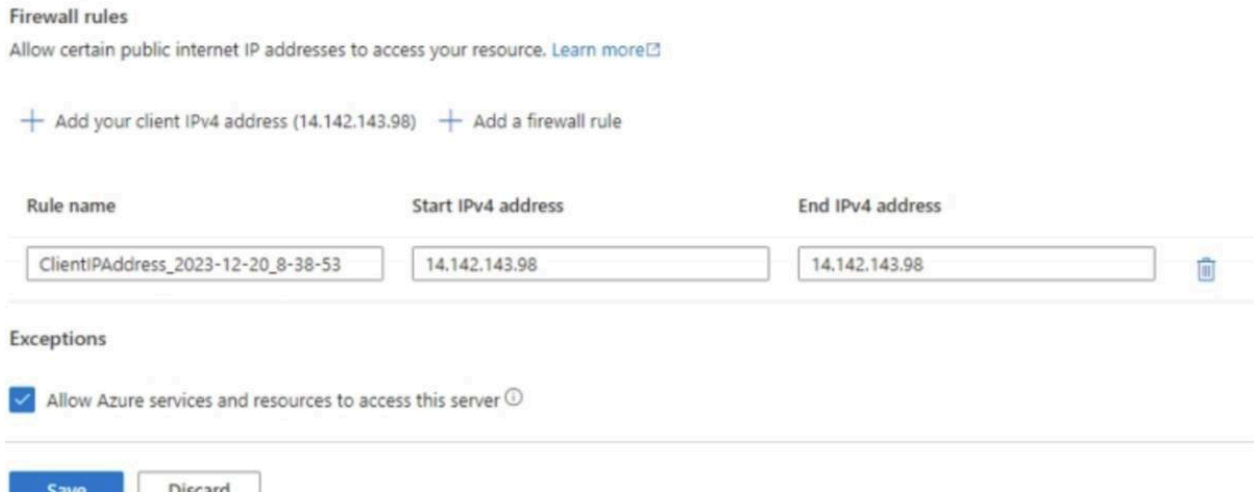
7. Click on “Properties”



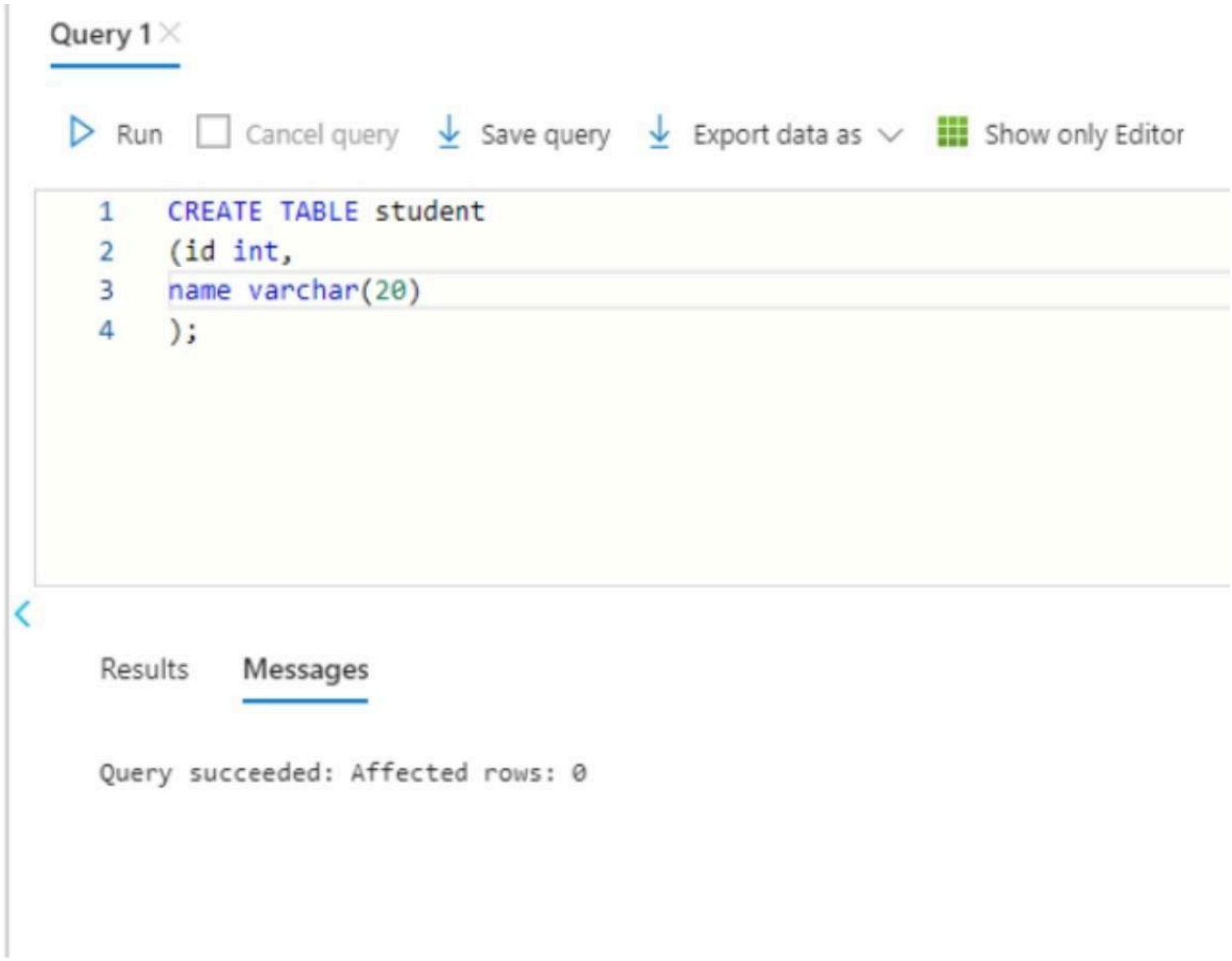
8. Click on “Networking”, then click on “selected networks” under public access

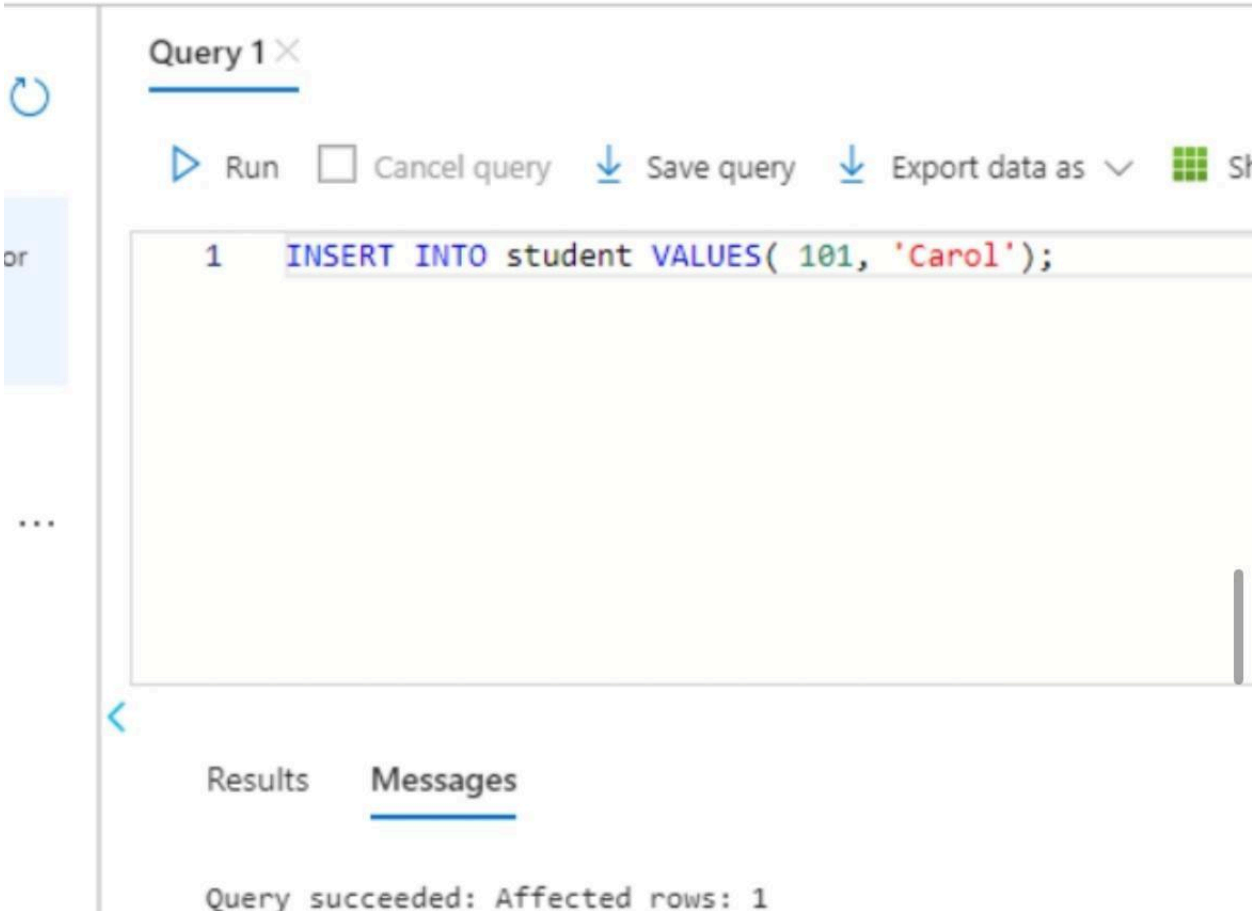


9. Click on "Add your client IPv4 address" and select the "Allow Azure services and resources to access this server" checkbox". Then click "Save"

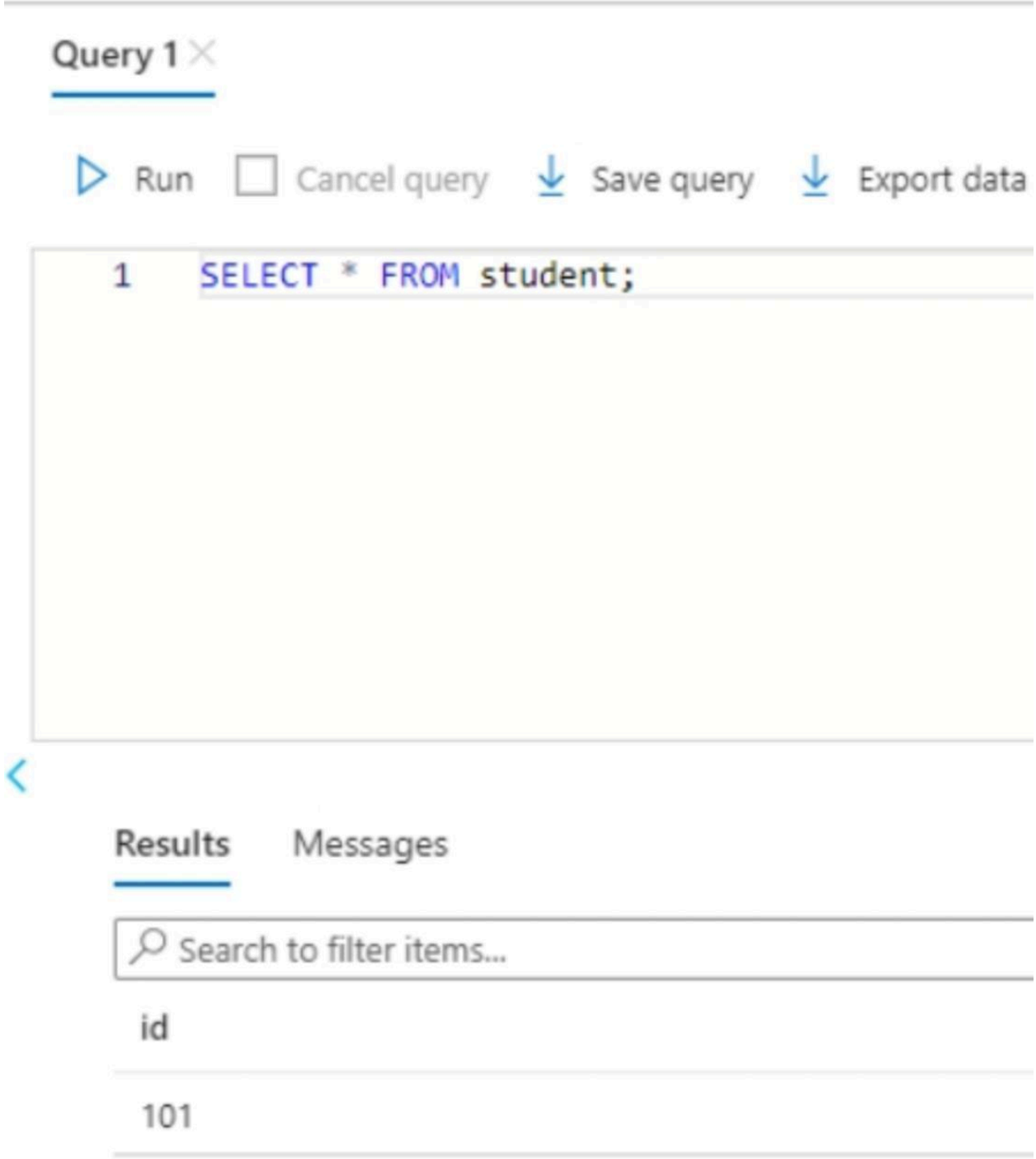


10. Navigate to “Query Editor”. Create a table using SQL queries and insert values into the table.


Query 1
Run
Cancel query
Save query
Export data as
Show only Editor
1 CREATE TABLE student
2 (id int,
3 name varchar(20)
4);
Results
Messages
Query succeeded: Affected rows: 0


Query 1
Run
Cancel query
Save query
Export data as
1 INSERT INTO student VALUES(101, 'Carol');
Results
Messages
Query succeeded: Affected rows: 1

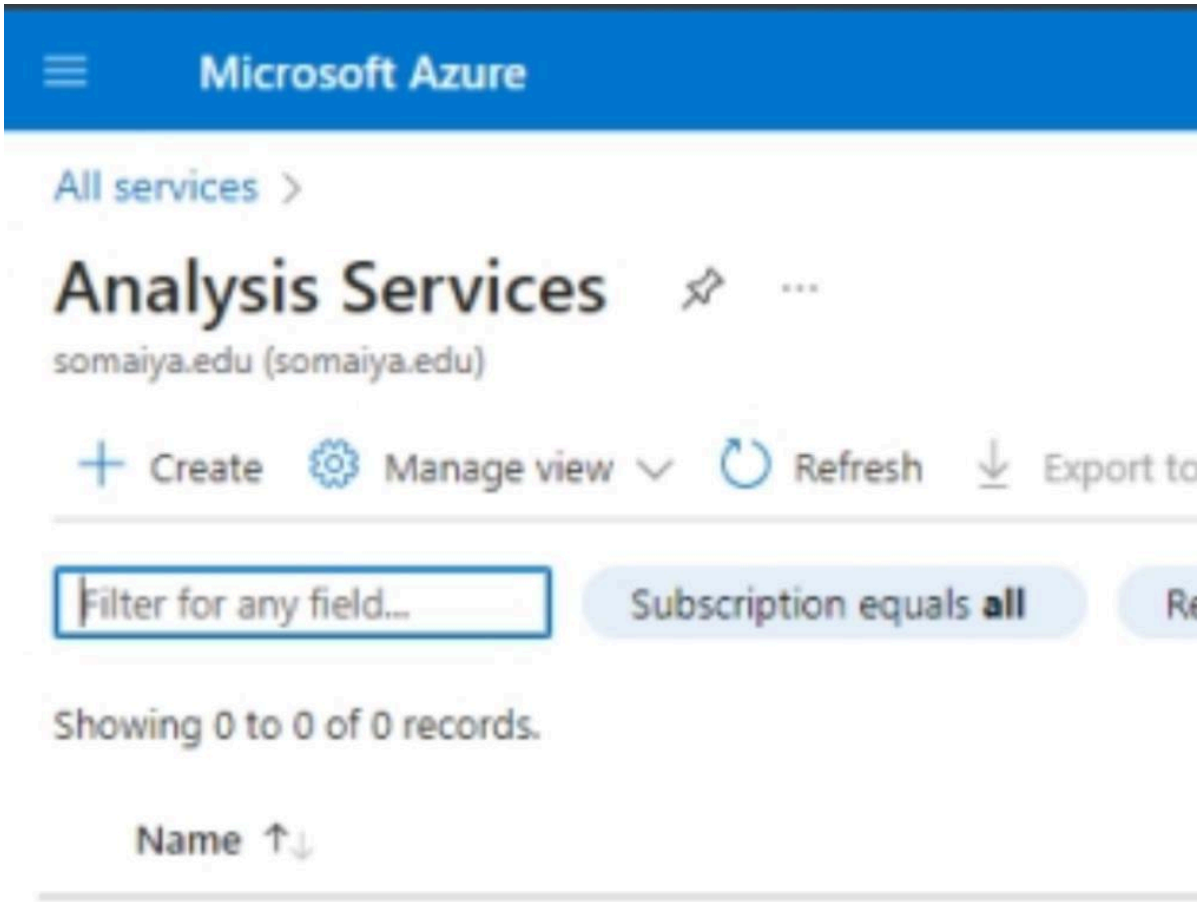
11. Display the columns present in table using “Select” statement



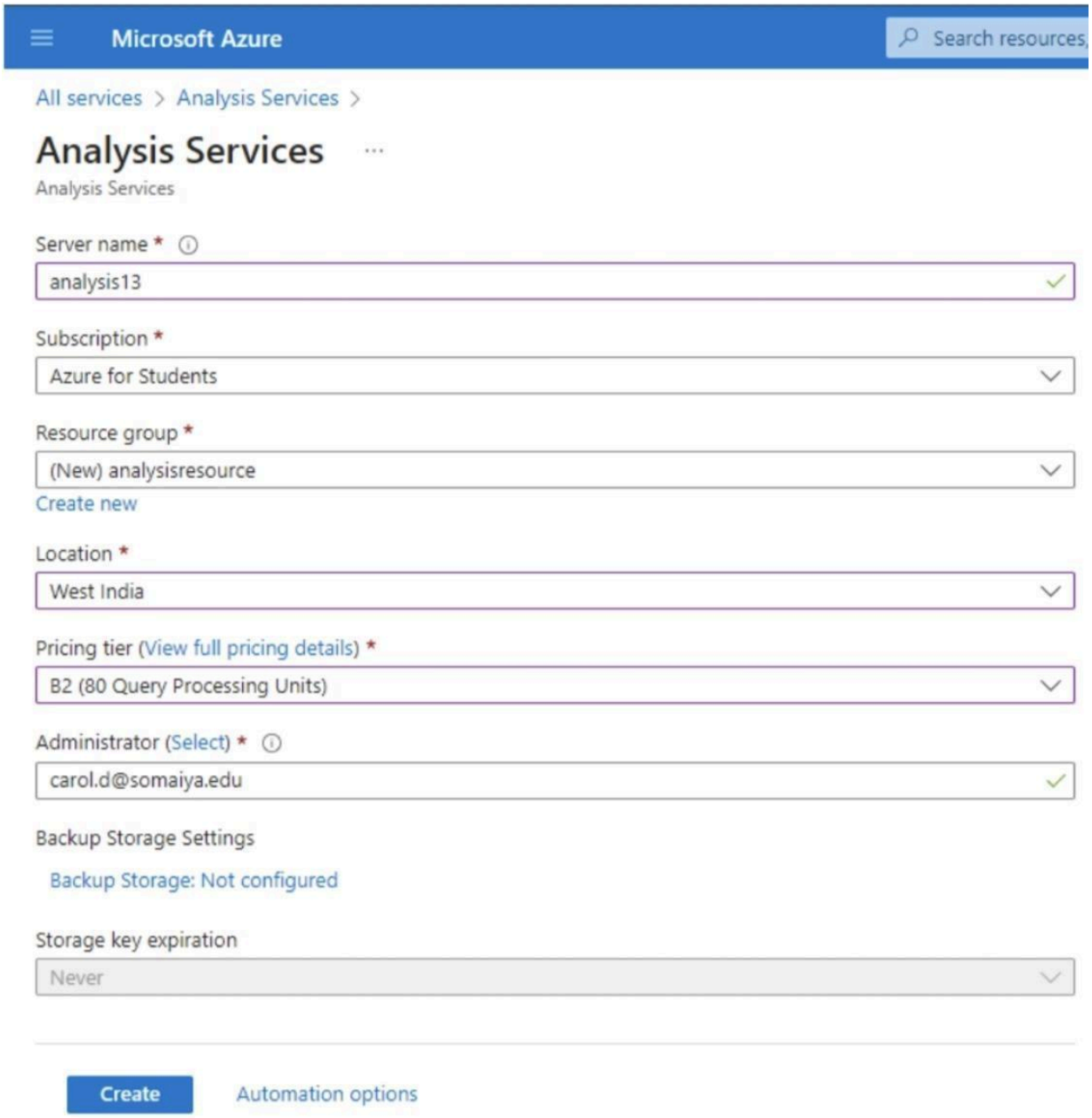
Practical 6 - Performing PowerBI in Azure

1. Login to azure and click on “more services”
2. under “All services”, select “Analytics”
3. Click on “Analysis services”

4. Click on Create in “Analysis Service”

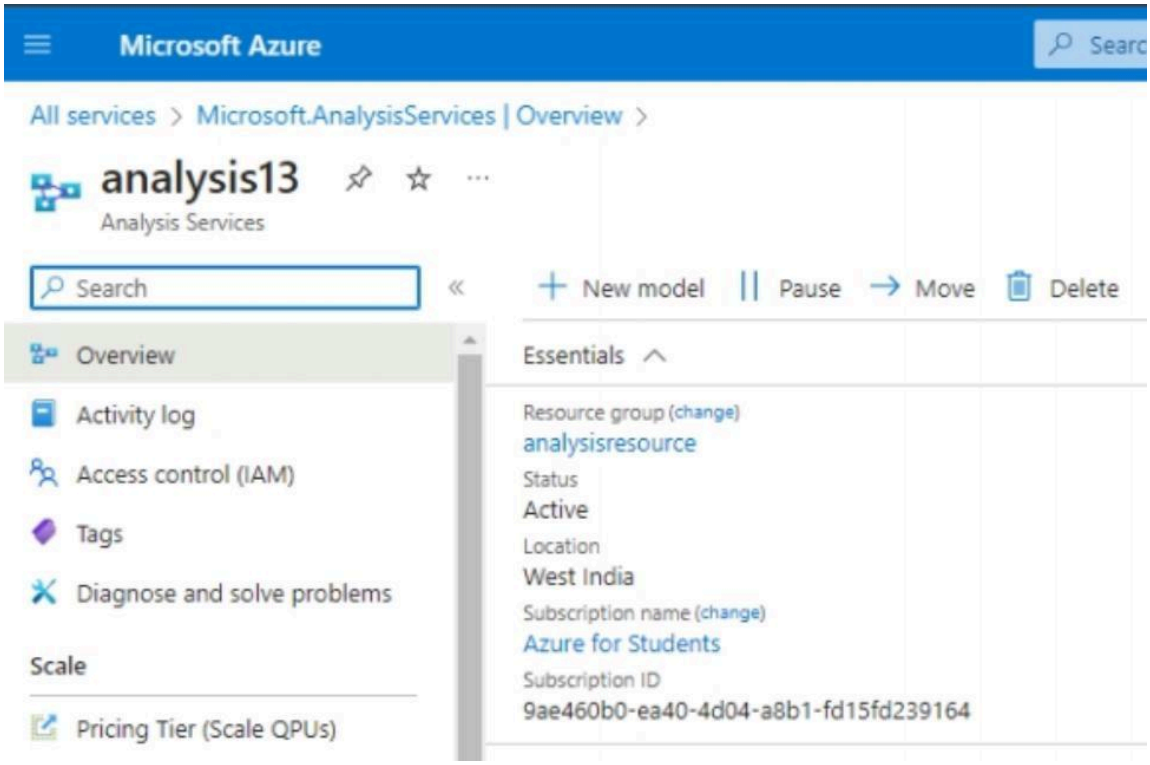


5. Enter the details and create a new resource group. Select "B2 (80 Query Processing Units)" as the Pricing tier

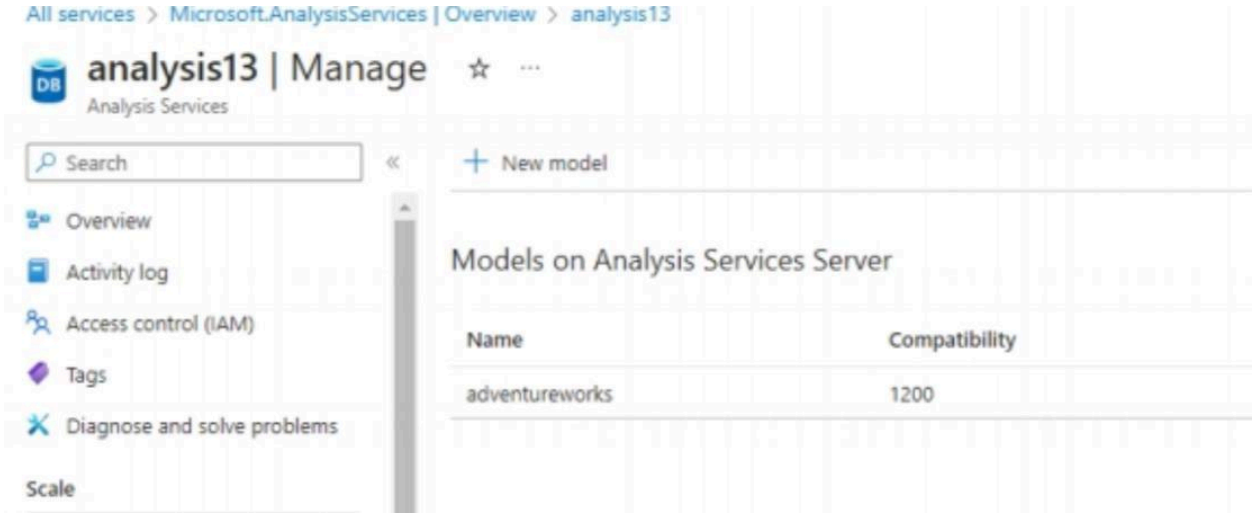


6. After deployment, click on “Go to resource”

7. Select “ New Model”

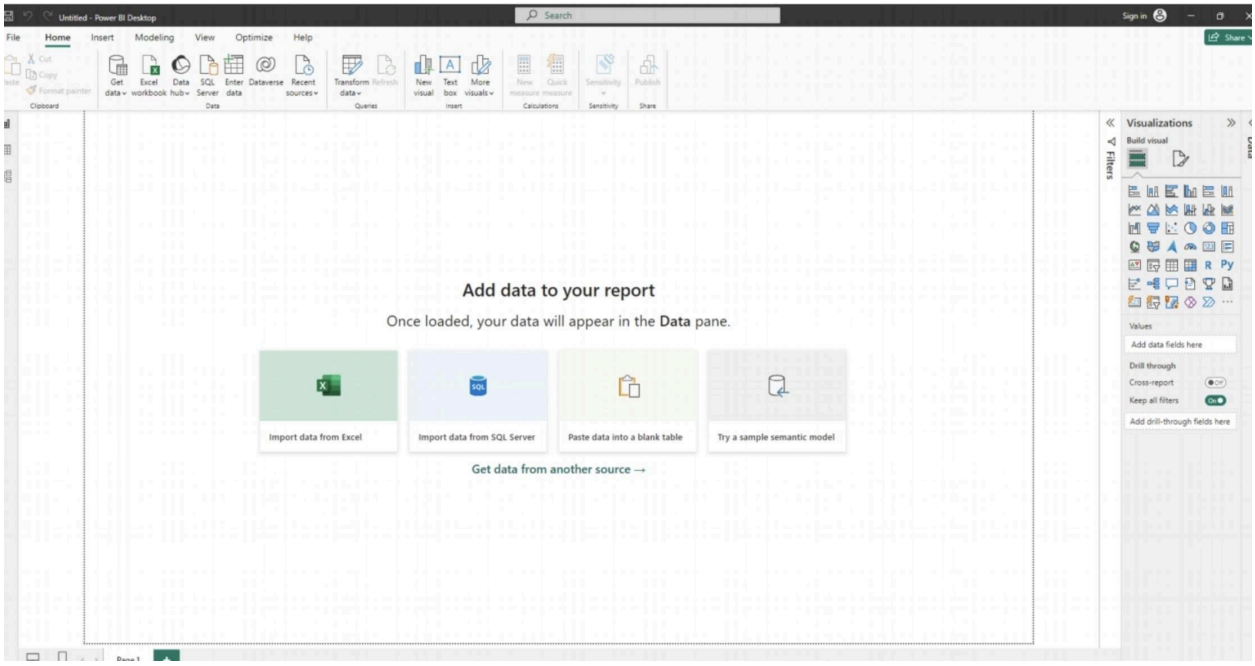


8. Choose the data source as “Sample data” and then click on “Add”
9. Navigate to “Manage tab” and the sample data will be visible there

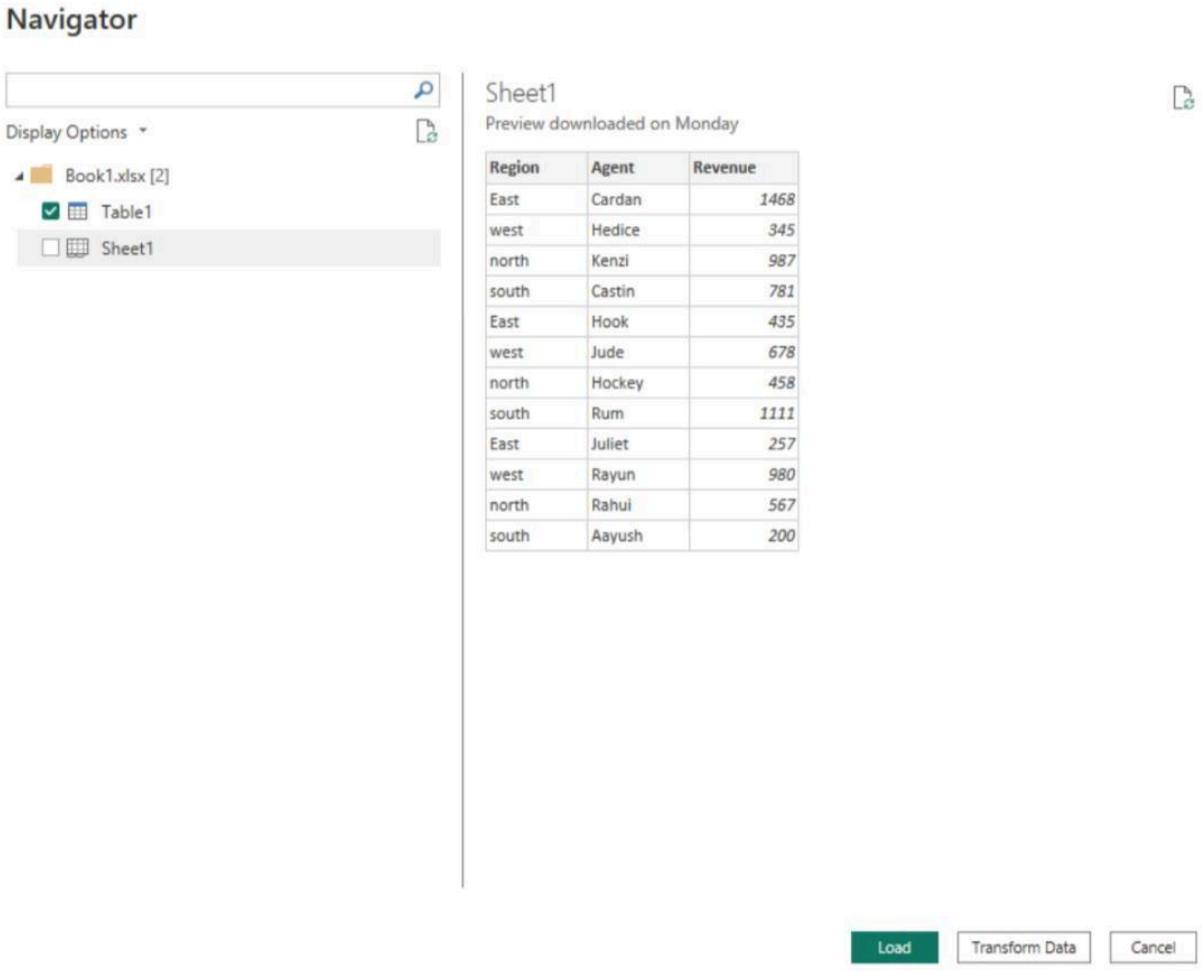


10. Right click on Sample data and click on “Open in PowerBI desktop”

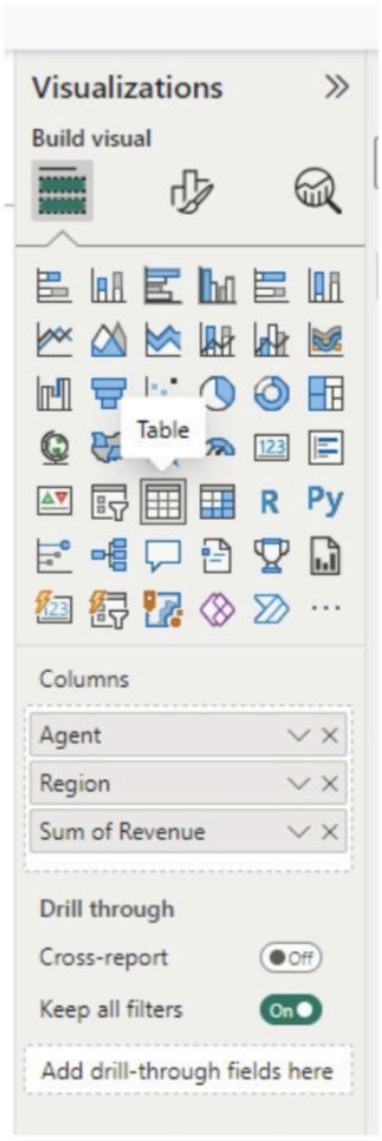
11. Once PowerBI is opened, click on “Import data from Excel”

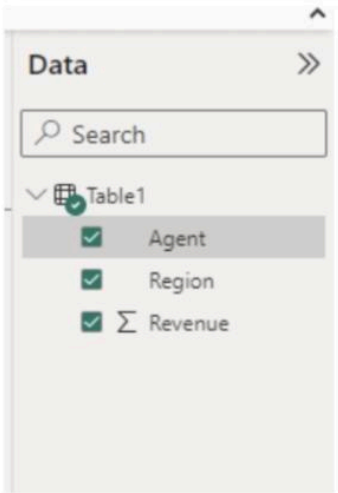


12. Add an excel sheet into PowerBI and click on “Load”



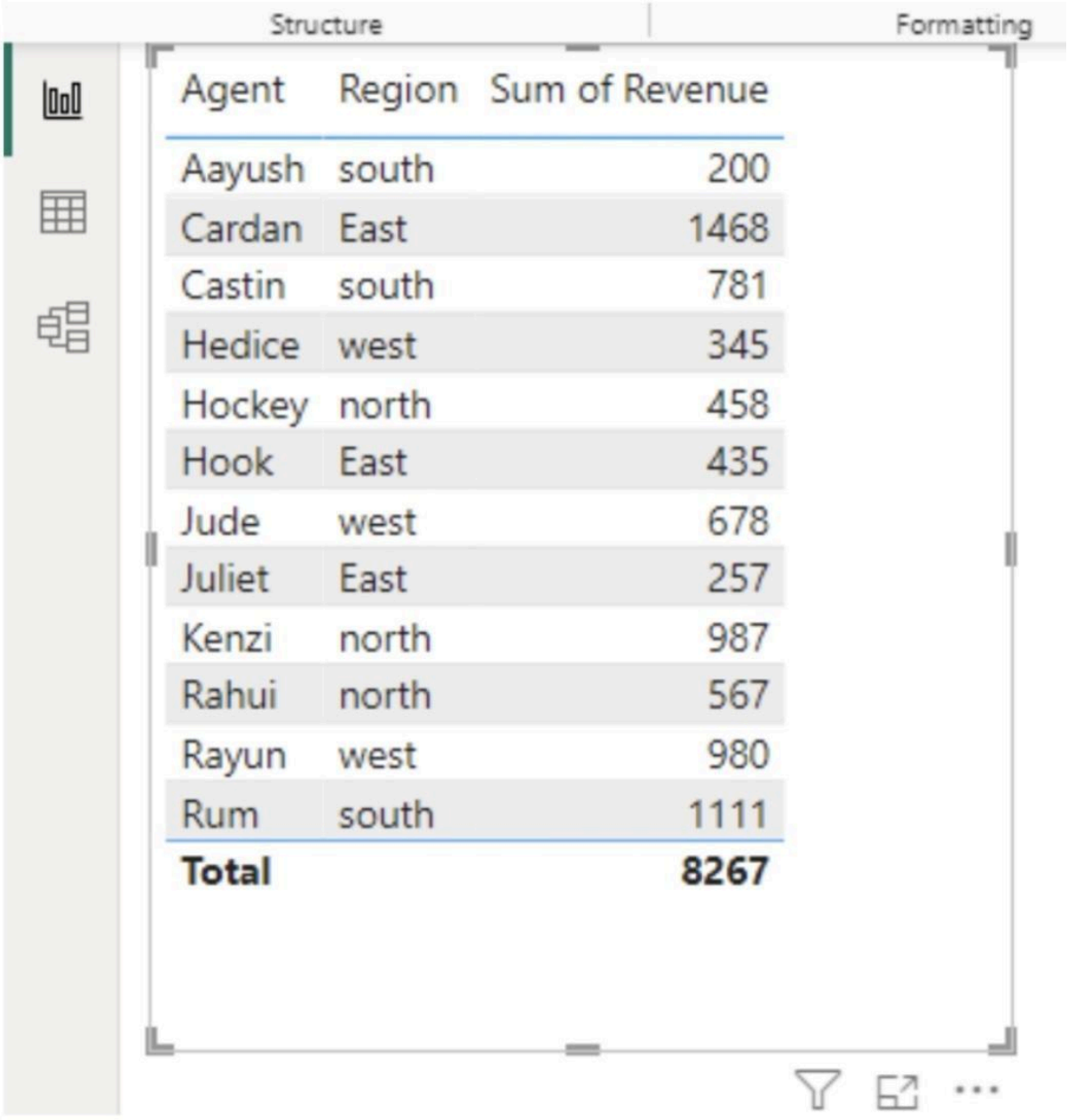
13. We use Power Bi in order to visualize the data stored. On the right hand side of the screen, select the visualizations you want (In this case, it is table) and select the various





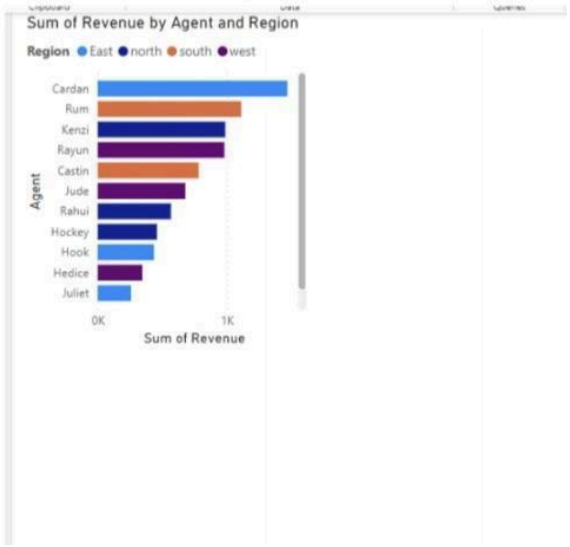
columns you want to visualize.

14. The output of the visualization is as shown below



Agent	Region	Sum of Revenue
Aayush	south	200
Cardan	East	1468
Castin	south	781
Hedice	west	345
Hockey	north	458
Hook	East	435
Jude	west	678
Juliet	East	257
Kenzi	north	987
Rahui	north	567
Rayun	west	980
Rum	south	1111
Total		**8267**

15. Similarly, we can use other visualizations in order to visualize the the data



practical 6 - case study on microsoft azure

Azure is a cloud computing platform trusted by a large number of enterprises all over the world. It allows users to access and manage cloud services and resources securely and efficiently. You can store data and transform it depending on your needs and goals. You can even get started for free to understand this platform better.

FEATURES

.1 Easiest Way to Deploy Apps to the Cloud

If you are using Visual Studio, deploying your application to Azure is just a couple of clicks. You can also deploy your app automatically via git, Powershell, and other options. Azure automatically handles deploying your code to multiple servers and high availability. Deployments are very fast.

2.Combine Multiple Apps to Save Money

One of the best features is being able to combine multiple applications together. If you used Azure Worker Roles before, they required that each app had its own servers. You can save a lot of money by switching to App Services and combining your application together. If you want to separate them, you can just put them on different App Service Plans, which is more like different groups of servers.

3.Automatic High Availability & Auto-Scaling

You can automatically or manually autoscale your app out to use additional servers. Based on your App Service Plan, you can define the server size and the rules about autoscaling. Azure also automatically takes care of high availability and provides a 99.95% SLA.

4.Security

Along with the security, given by the developer, Azure App Service also provides Infrastructure and platform security where the application is run securely on the cloud. App service provides layered security like multi-factor authentication to access the application. Azure App Service is also ISO and PCI compliant.

APPLICATIONS

1.University Of Toronto

This is the largest Canadian university and leads the global front when it comes to research at an institutional fare. It made use of Microsoft Azure to avoid heavy hardware renewal costs. It migrated some of its activities to Microsoft Azure Cloud. With it, the university managed to transform IT processes, saving a lot of time

AkzoNobel

2 AkzoNobel is a popular Dutch Company that leads way in paint and coating business. It serves in more than 100 countries and always needs better connectivity across the globe. It harnessed the power of Microsoft Azure IoT services to improve its performance and connectivity at a global level.

3.IHG (Intercontinental Hotel Group)

This is one of the largest and leading hotel groups in the world. It owns around 5200 properties across the globe and serves more than a hundred countries. The fact that you own 5200 properties tells you the group holds its values of service very truly and also must have experimented a lot to stay up to date with market needs as well. This fact is also supported by the fact that this group invests a lot of money in innovations to meet the experience quality the customers deserve.

ADVANTAGES

1 .On-Demand Scalability Options

One of the biggest advantages of Microsoft Azure is its on-demand scalability. The platform allows organizations to scale their resources up or down based on their needs. This is because all the applications and data of a company are clustered out, thus mitigating the chances of server space shortage.

2.Vast Product Integration Capabilities

Another significant advantage of Microsoft Azure is its integration with a wide variety of products. They include applications related to Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS), Active Directory, Visual Studio, and more. Thus, clients can integrate their Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems with Azure and take their business operations to the next level.

3.Hybrid Environments (Cloud and On-Premise)
Now, not all organizations are in a state to migrate their entire operations to a cloud computing platform. But does that mean that they cannot reap the immense benefits that cloud solutions have to offer?

. 4.Big Data Applications
Today, most organizations use Apache Hadoop to handle large volumes of data. Thus, Microsoft Azure enables companies to use this application on their platform as a cloud solution via Azure HDinsight.

.5.Scheduling and Automation
The Microsoft Azure platform also comes with the power of automation. Thus, businesses can easily schedule recurring tasks, thus saving both time and resources. They may include fetching data, scaling resources, setting triggers, and more.

Practical 7
Case study on google cloud

ADVANTAGES

1. Comprehensive Suite of Services: Shaping Tools to Your Needs:-Google Cloud Platform provides an extensive array of services, ensuring that businesses can find the perfect tools for their unique requirements. From software development to app development, GCP's "cloud native" approach guarantees applications that seamlessly leverage the cloud's scalability and flexibility. The platform is backed by Google's world-class infrastructure, ensuring optimal availability and performance
2. .Cost Efficiency: Hardware and Software OverheadGCP empowers businesses to slash hardware and software costs significantly. Organizations can sidestep hefty investments in infrastructure and maintenance through managed environments for development and cloud-native applications. The pay-as-you-go pricing model further allows businesses to manage costs effectively, with additional training and support resources ensuring maximum returns on investment.
3. Robust Security: Trust Google's Expertise in Cloud Computing:- Leverage Google Cloud Platform's robust security features to safeguard your data effectively. With tools like Identity and Access Management, Data Loss Prevention, and Security Health Analytics, businesses can confidently ensure the safety and integrity of their data within the GCP ecoecosyste
4. Scalability: Unlimited Business Growt:- Google Cloud Platform offers unparalleled scalability, allowing businesses to develop and deploy applications without concerns about underlying infrastructure. Ideal for those embracing a cloud-native approach, GCP harnesses Google's top-tier data centers and global network, enabling businesses to scale usage up or down as needed without incurring additional costs

FEATURES

VMware Engine provides you with a number of benefits to your overall productivity:

1.Infrastructure agility. Get on-demand self-service provisioning of VMware cloud environments, with the ability to add and remove capacity on demand or reserve capacity to lower costs.

2Infrastructure monitoring, troubleshooting, and support. Google operates your underlying infrastructure as a service. Failed hardware is automatically replaced. Focus on consumption while Google manages VMware platform deployments and upgrades, management plane backups, health and capacity monitoring, alerting, troubleshooting, and remediation.

3Security. Edge-type networking services, including VPN, public IP, and internet gateways run on Google Cloud and carry the security and distributed denial-of-service attack (DDoS) protection of Google Cloud. Infrastructure is fully dedicated to you and physically isolated from infrastructure of other customers.

4.Hybrid platform. VMware Engine enables high-speed, low-latency connectivity to the rest of Google Cloud, as well as your on-premises environment. VMware Engine also provides the underlay networking services required to enable VMware, including L2/L3 services and firewall rule management.

5.Convenient monitoring. Monitoring and management tools help you keep track of platform activity, resource usage, user account management, billing, and metering.

APPLICATIONS

1.Retire or migrate data centers

Scale data center capacity in the cloud and stop managing hardware refreshes. Cloud migrations reduce risk and cost by using familiar VMware tools and skills. In the cloud, use Google Cloud services to modernize your applications at your pace.

2.Expand on demand

Scale capacity to meet unanticipated needs, such as new development environments or seasonal capacity bursts, and keep it only as long as you need it. Reduce your up-front investment, accelerate speed of provisioning, and reduce complexity by using the same architecture and policies across both on-premises and the cloud.

3.Disaster recovery and virtual desktops in Google Cloud

Establish remote access to data, apps, and desktops in Google Cloud. High-bandwidth connections let you quickly upload and download data to recover from incidents. Low-latency networks give you fast response times similar to those of a desktop app. Use the VMware Engine portal and familiar VMware tools to replicate all your policies and networking in the cloud. Recovery and replication with VMware Engine greatly reduces the effort and risk of creating and managing DR and VDI implementations.

4.Power high-performance applications and databases

Google provides a hyper-converged architecture designed to run your most demanding VMware workloads. Run Oracle, Microsoft SQL Server, middleware systems, and high-performance noSQL databases. Experience the cloud as your own data center with high speed network connections that let you run hybrid apps that span your on-premises environment, VMware on Google Cloud, and Google Cloud private workloads without compromising performance.
5.Unify DevOps across VMware and Google Cloud
Optimize VMware administration by using Google Cloud services and solutions that can be applied across all your workloads. Access public cloud services without having to expand your data center or re-architect your applications. Centralize identities, access control policies, logging, and monitoring for VMware applications on Google Cloud.

Practical 8
Case study oracle cloud
FEATURES
1.Fully Managed with Zero Administration: Developers do not need to administer data servers or the underlying infrastructure and security. Oracle maintains the hardware and software which allows developers to focus on building applications.
2 Faster Development Life Cycle: After purchasing access to the service, developers write their applications, and then connect to the service using their credentials. Reading and writing data can begin immediately. Oracle performs Database Management, Storage Management, High Availability, and Scalability which helps developers concentrate on delivering high-performance applications.
3.High Performance and Predictability: Oracle NoSQL Database Cloud Service takes advantage of the latest component technologies in the Oracle Cloud Infrastructure by providing high performance at scale. Developers know that their applications return data with predictable latencies, even as their throughput and storage requirements increase.
On-Demand Throughput and Storage Provisioning: Oracle NoSQL Database Cloud Service scales to meet application throughput performance requirements with low and predictable latency. As workloads increase with periodic business fluctuations, applications can increase their provisioned throughput to maintain a consistent user experience. As workloads decrease, the same applications can reduce their provisioned throughput, resulting in lower operating expenses