

Project Title: Cloud Infrastructure and Security Domain

Counsellor: Nita Jadav

DAILY REPORT OF WEEK-3 – (DAY-1 TO DAY-7)

Task Done:

Aim: Create a Virtual Machine in a Virtual Network.

What Is Virtual machine (VMs)?

provide a scalable and flexible solution for running applications and services in the cloud. They mimic the functionality of physical computers, enabling us to install and run operating systems and software just as we would on a physical machine. However, VMs offer the added advantage of rapid provisioning, scalability, and the ability to consolidate multiple VMs on a single physical host.

What Is Virtual Network (VNETs)?

Virtual Networks (VNETs) play a vital role in establishing secure and isolated network environments within Azure. A VNet acts as a virtual representation of a traditional network, allowing us to define subnets, IP address ranges, and network security rules. By creating a VNet, we can segment our resources into different network segments, control traffic flow, and establish connectivity between our virtual machines and other Azure services.

What Is Resource Group?

Resource Groups act as logical containers that help us organize and manage resources within Azure. They provide a way to group related resources together, such as virtual machines, storage accounts, and virtual networks, for easier management, billing, and governance. By organizing resources into resource groups, we can apply consistent policies, set access controls, and manage the lifecycle of resources collectively.

By combining these three components, we can create a robust and scalable infrastructure in Azure. Virtual Machines enable us to run our applications, Virtual Networks provide network isolation and connectivity, and Resource Groups offer a streamlined way to manage and organize our resources effectively.

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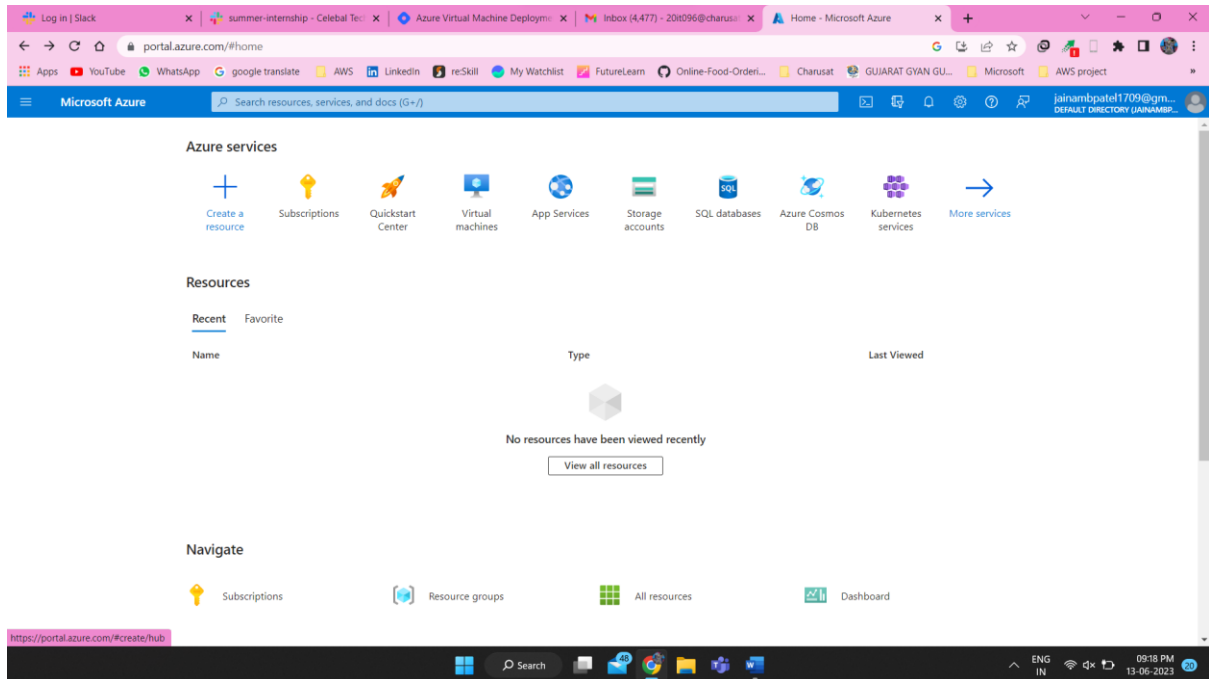
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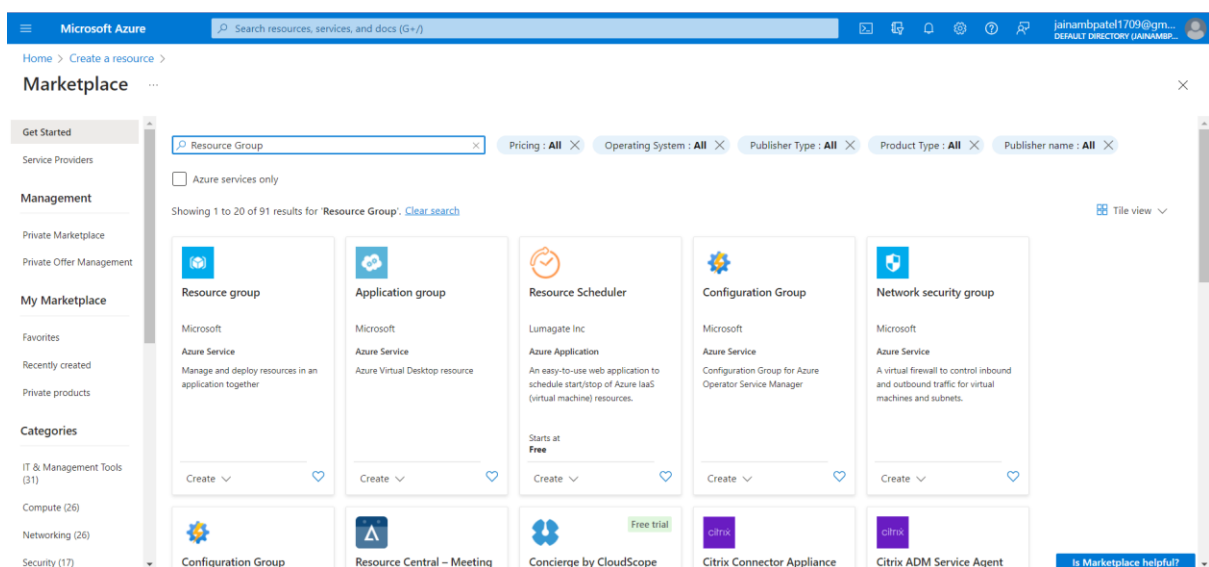
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Create Resource Group:

Step-1 Click on the "Create a resource" button (+) in the Azure portal.



Step-2 In the search bar, type "Resource Group" and select "Resource Group" from the search results and click on "Create" button to create resource group.



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Step-3 Now, select the subscription we selected here as Azure for student, entered the resource group name as TestResourceGroup and choose the region. after entering details click on next button.

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > Create a resource > Marketplace >

Create a resource group

Basics Tags Review + create

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Project details

Subscription *

Resource group *

Resource details

Region *

Review + create < Previous Next: Tags >

Step-4 We entered the name-value keypair here also we can keep it blank. click on Next: Review + create.

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > Create a resource > Marketplace >

Create a resource group

Basics Tags Review + create

Apply tags to your Azure resources to logically organize them by categories. A tag consists of a key (name) and a value. Tag names are case-insensitive and tag values are case-sensitive. [Learn more](#)

Name	Value	Resource
Jainam	Task1	Resource group
		Resource group

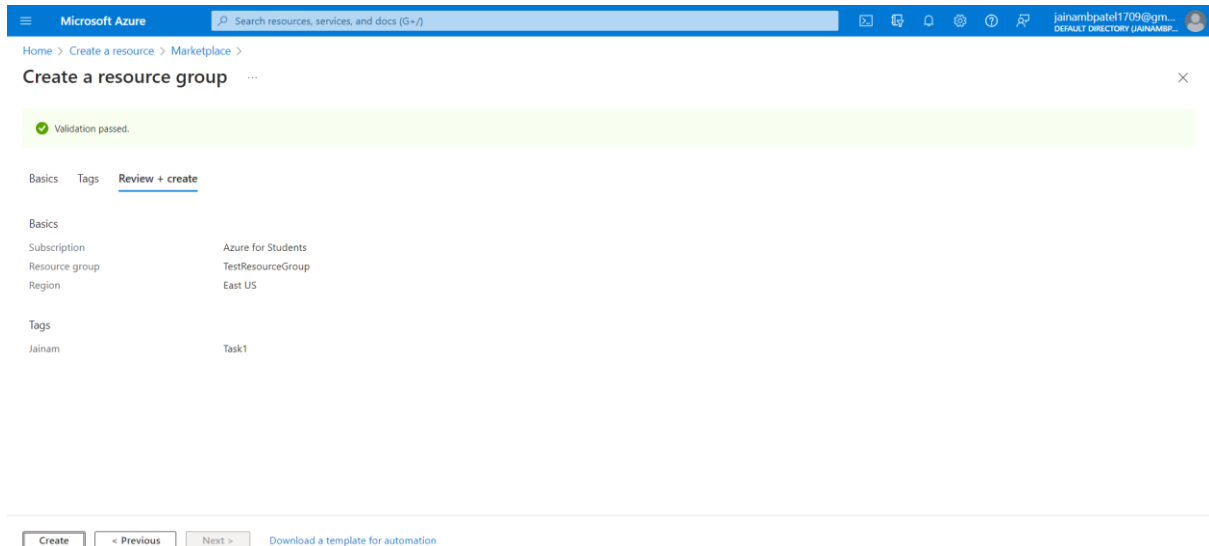
Review + create < Previous Next: Review + create >

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Step-5 Check all the details and click on create button.



Microsoft Azure Search resources, services, and docs (G+J)

Home > Create a resource > Marketplace >

Create a resource group

Validation passed.

Basics Tags Review + create

Basics

Subscription Azure for Students

Resource group TestResourceGroup

Region East US

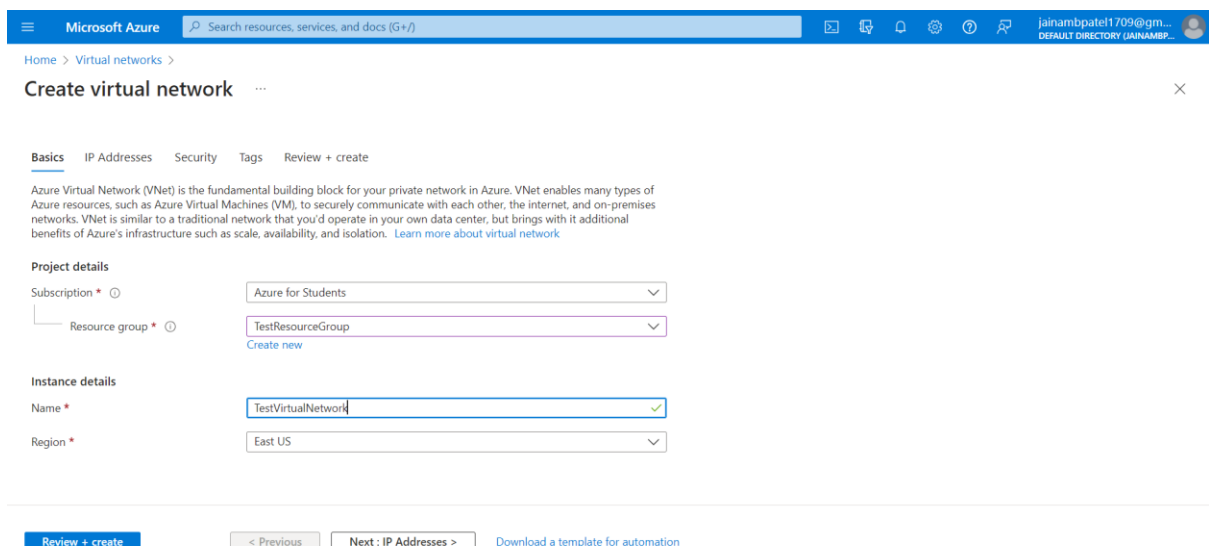
Tags

Jainam Task1

Create < Previous Next > Download a template for automation

Create Virtual Network:

Step-6 Enter the basic details of virtual network. (Subscription, name, region) and select the resource group as TestResourceGroup.



Microsoft Azure Search resources, services, and docs (G+J)

Home > Virtual networks >

Create virtual network

Basics IP Addresses Security Tags Review + create

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation. [Learn more about virtual network](#)

Project details

Subscription * Azure for Students

Resource group * TestResourceGroup

Instance details

Name * TestVirtualNetwork

Region * East US

Review + create < Previous Next: IP Addresses > Download a template for automation

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Step-7 On IP Addresses tab we can select default subnet but here we created a subnet named TestSubnet.

The screenshot shows the Microsoft Azure portal interface for creating a virtual network. The main page is titled 'Create virtual network' and includes a search bar, navigation links, and a description of the virtual network's address space. The 'IPv4 address space' section shows a range of 10.1.0.0/16. The 'Add subnet' sidebar is open on the right, showing the 'Subnet name' as 'TestSubnet' and the 'Subnet address range' as '10.1.0.0/16'. The sidebar also includes sections for 'NAT GATEWAY' and 'SERVICE ENDPOINTS'. At the bottom of the main page, there are buttons for 'Review + create', '< Previous', 'Next: Security >', and 'Download a template for automation'.

Step-8 On the Tags tab we have to create Name-value pair for virtual machine and click on review and create.

The screenshot shows the Microsoft Azure portal interface for creating a virtual network, specifically the 'Tags' tab. The page is titled 'Create virtual network' and includes a search bar, navigation links, and a description of tags. The 'Tags' tab is selected, and the 'Name' and 'Value' fields are visible. The 'Name' field contains 'jainam2' and the 'Value' field contains 'task1'. At the bottom of the page, there are buttons for 'Review + create', '< Previous', 'Next: Security >', and 'Download a template for automation'.

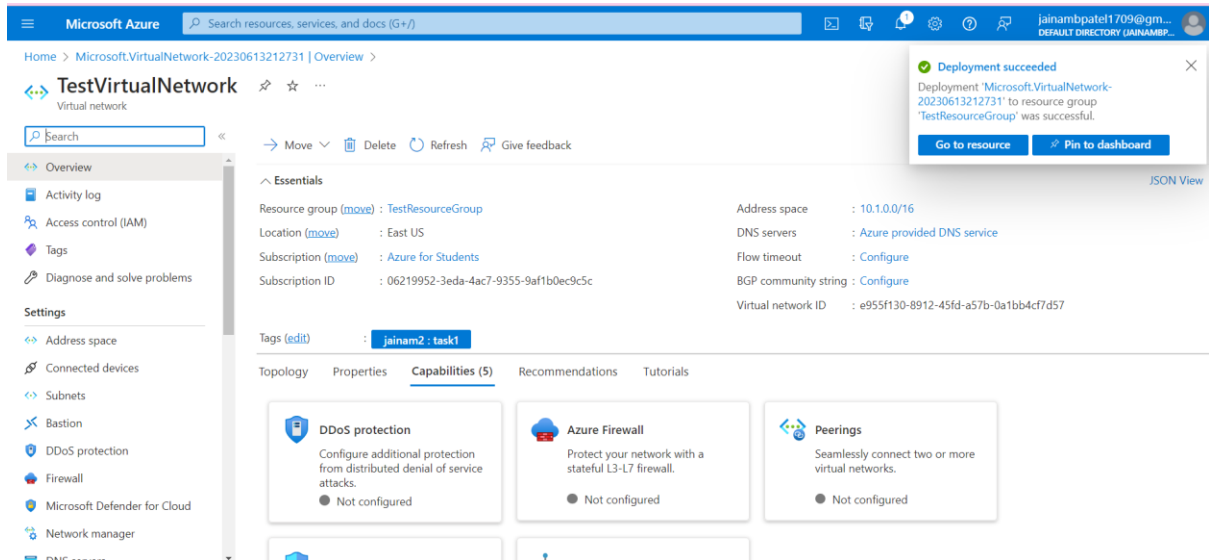
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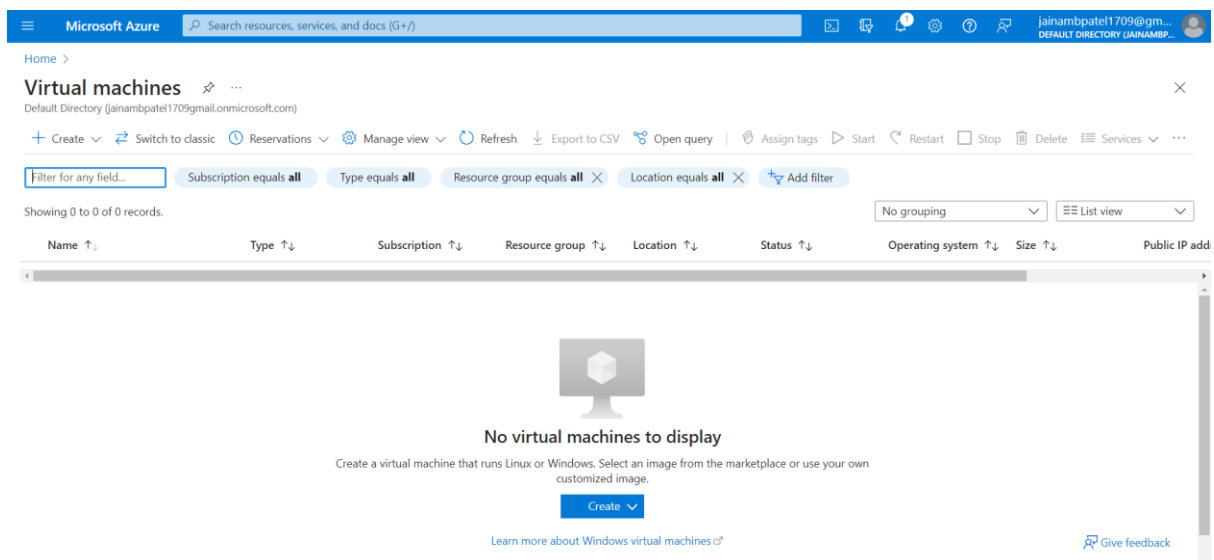
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Step-9 Virtual Network is created. you can click on go to resource and can see all the details of Virtual Network.



Create Virtual Machine:

Step-10 On dashboard of virtual machine, click on Create button.



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1. Select your Subscription.
2. Create or select a Resource Group as TestResourceGroup.
3. Choose a virtual machine Name as TestVirtualMachine.
4. Select the Region where you want to deploy the virtual machine.
5. Choose a suitable Availability Options based on your requirements.
6. Select an Image that corresponds to the operating system you want to use.
7. Choose a Size for your virtual machine based on the desired compute power and memory.
8. Specify the Administrator account username and password for the virtual machine.

Microsoft Azure Search resources, services, and docs (G+/I)

Home > Virtual machines >

Create a virtual machine

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Azure for Students

Resource group * TestResourceGroup [Create new](#)

Instance details

Virtual machine name * TestVirtualMachine

[Review + create](#) < Previous Next: Disks > [Give feedback](#)

Microsoft Azure Search resources, services, and docs (G+/I)

Home > Virtual machines >

Create a virtual machine

Instance details

Virtual machine name * TestVirtualMachine

Region * (US) East US

Availability options Availability zone

Availability zone * Zones 1

☒ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type Trusted launch virtual machines [Configure security features](#)

Image * Windows Server 2022 Datacenter: Azure Edition - x64 Gen2 [See all images](#) [Configure VM generation](#)

VM architecture ☐ Arm64 ☒ x64

Review + create < Previous Next: Disks > [Give feedback](#)

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Microsoft Azure Search resources, services, and docs (G+)

Home > Virtual machines >

Create a virtual machine

Run with Azure Spot discount ☐

Size * [See all sizes](#)

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

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 *

[Review + create](#) [< Previous](#) [Next: Disks >](#) [Give feedback](#)

Step-12 Keep all other details as default. go to review + create tab. review all the details and click on create button.

Microsoft Azure Search resources, services, and docs (G+)

Home > Virtual machines >

Create a virtual machine

✓ Validation passed

Basics

Subscription	Azure for Students
Resource group	TestResourceGroup
Virtual machine name	TestVirtualMachine
Region	East US
Availability options	Availability zone
Availability zone	1
Security type	Trusted launch virtual machines
Enable secure boot	Yes
Enable vTPM	Yes
Integrity monitoring	No
Image	Windows Server 2022 Datacenter; Azure Edition - Gen2
VM architecture	x64
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Username	Jainam123
Public inbound ports	RDP
Already have a Windows license?	No
Azure Spot	No

[Create](#) [< Previous](#) [Next >](#) [Download a template for automation](#) [Give feedback](#)

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Step-13 Click on Go to resource to see all the details of virtual machine.

The screenshot displays the Microsoft Azure portal interface. The top navigation bar includes the 'Microsoft Azure' logo, a search bar, and user information for 'jainambpatel1709@gm...'. The main content area shows the details of a virtual machine named 'TestVirtualMachine'. The left sidebar contains a navigation menu with options like 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Settings', 'Networking', 'Connect', 'Windows Admin Center', 'Disks', 'Size', 'Microsoft Defender for Cloud', 'Advisor recommendations', 'Extensions + applications', 'Availability + scaling', and 'Configuration'. The 'Overview' tab is selected, showing a list of actions (Connect, Start, Restart, Stop, Capture, Delete, Refresh, Open in mobile, Feedback, CLI / PS) and a search bar. The 'Essentials' section provides key information: Resource group (TestResourceGroup), Status (Running), Location (East US (Zone 1)), Subscription (Azure for Students), Subscription ID (06219952-3eda-4ac7-9355-9af1b0ec9c5c), Availability zone (1), and Tags (Click here to add tags). The 'Properties' section lists details for the 'Virtual machine': Computer name (TestVirtualMach), Operating system (Windows (Windows Server 2022 Datacenter Azure Edition)), Image publisher (MicrosoftWindowsServer), Image offer (WindowsServer), Image plan (2022-datacenter-azure-edition), VM generation (V2), and VM architecture (x64). The 'Networking' section shows the Public IP address (20.127.168.39), Private IP address (10.1.0.4), and Virtual network/subnet (TestVirtualNetwork/TestSubnet).

Learning Outcome:

I have explored the key concepts of Virtual Machines, Virtual Networks, and Resource Groups in Azure and learned how they form the foundation of a robust cloud infrastructure. Embracing cloud computing and leveraging these powerful tools can unlock new possibilities for scalability, flexibility, and cost optimization.