



Ali Salih

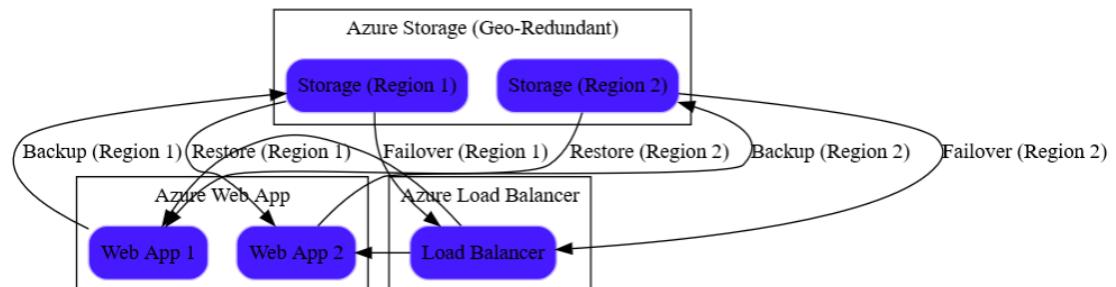
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I. Introduction: In today's fast-paced digital world, making sure that your website stays up and running smoothly is crucial. We all know that unexpected things can happen, like a server hiccup or even a whole region experiencing technical difficulties. These kinds of issues can seriously disrupt our online presence and affect how users interact with our website. That's why businesses go the extra mile to put in place advanced plans—Business Continuity measures—to keep their web servers humming along, no matter what surprises come their way. In the world of cloud computing, Azure by Microsoft offers a bunch of tools and services to help companies build a solid and dependable online infrastructure. This guide is here to walk you through the nitty-gritty of getting your web server set up on Azure, adding in some safety nets like backup solutions, and building a strong shield against disruptions, whether they're small hiccups or larger regional challenges. With Azure's toolkit, you're not just making sure your website runs smoothly; you're also giving users an experience they can rely on, even when the unexpected comes knocking.

II. Motivation: The motivation behind the deployment of the web server on Azure with enhanced backup and business continuity measures comes from my unwavering commitment to providing users with a seamless and uninterrupted digital experience. In today's dynamic digital landscape, where reliability and performance are a must, my decision reflects a strategic move towards making sure the resilience of our web applications. By taking advantage of Azure's robust infrastructure and advanced backup strategies, that proactively safeguards critical data and mitigates risks associated with unforeseen events. My focus on business continuity and disaster recovery underscores our dedication to maintaining operations under any circumstance. Furthermore, the implementation of load balancing mechanisms and scalability features aligns with my vision for not just meeting but exceeding user expectations. Ensuring that our web applications remain cutting-edge and ready for future growth. Ultimately, my motivation revolves around creating a digital environment that is reliable, secure, and poised for sustained success in the evolving digital landscape.

III. Architectural drawing.



Here we can see how the webserver is made and how it's going through a load balancer that is going two storages in separate region who are all geo-redundant for perfect protection against regional failures.

IV. Creating a webserver with a modified index page:

- I. Creating a resource group.
- II. Creating a virtual network.
- III. Creating a virtual machine with 2016 datacenter.
- III.I Make an Availability set.
- III.II Making a Load balancer.
- IV. Connecting to the Virtual Machine Via RDP.
- V. Installing and modifying the IIS.
- VI. Modifying index page.

I. Creating a resource group

We start with creating a **resource group** to source all our resources in one space so it can be easily accessible and so that it won't intervene with current or future projects.

We start by clicking on resource group then clicking on create and then for this project we will call it PearLTD then we will press on **review + create**. Then waiting for the **validation check** then we will click **create**.

The screenshot shows the Azure portal interface. At the top, there's a navigation bar with 'Azure services' and various icons for different services like Create a resource, Virtual machines, SQL servers, Virtual networks, Resource groups (which is highlighted with a black box), Subscriptions, Route tables, Firewalls, Bastions, and More services. Below this is a 'Resources' section with tabs for 'Recent' and 'Favorite'. It lists three items: 'Test1' (Resource group, last viewed a few seconds ago), 'Azure subscription 1' (Subscription, last viewed 8 hours ago), and 'Azure for Students' (Subscription, last viewed 3 weeks ago). There's also a 'See all' link. At the bottom, there are sections for 'Navigate' (with links to Subscriptions, Resource groups, All resources, and Dashboard) and 'Tools'.

Resource groups ...

Showing 1 to 3 of 3 records.

Name ↑	Subscription ↑↓	Location ↑↓
(#) defaultResourceGroup-US	Azure subscription 1	East US
(#) NetworkWatcherRG	Azure subscription 1	East US
(#) test	Azure subscription 1	East US

No grouping [...]

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](#) i

Project details

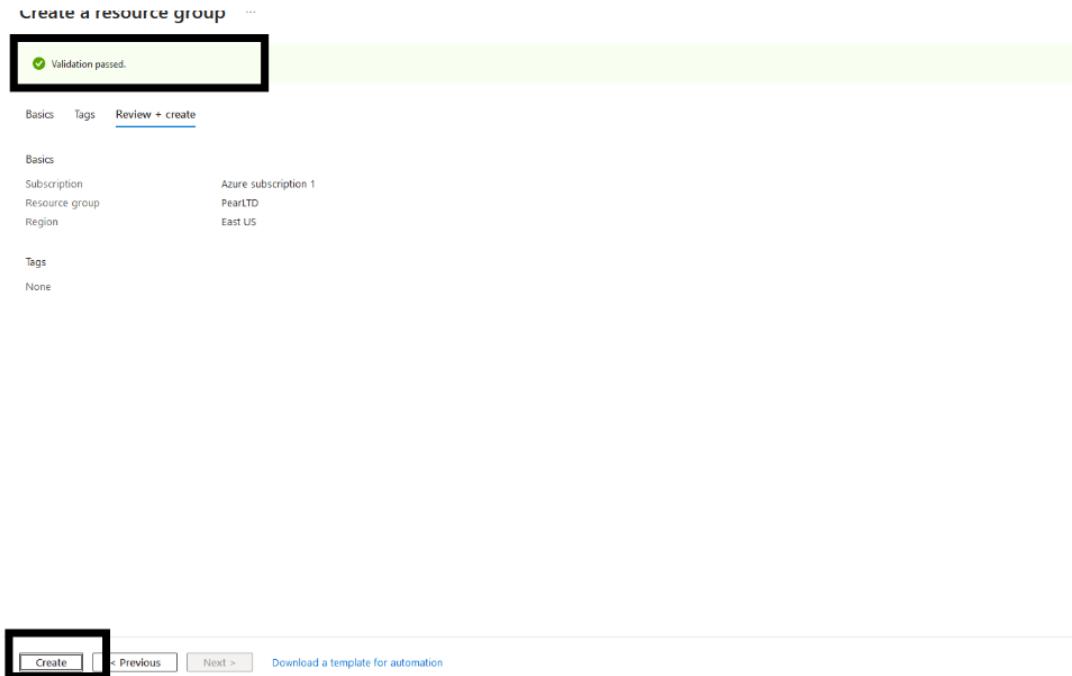
Subscription * (1) Azure subscription 1

Resource group * (1) PearLTD

Resource details

Region * (1) (US) East US

Review + create < Previous Next : Tags >



II. Creating a virtual network.

Now that we have insured the creating of our **resource group**, we will start with making a **virtual network** so that we can have a safe tunnel for our information to flow through that wont interfere with public networks and so that we can manage our traffic in a healthy and easy way.

First we start with searching for **Virtual networks** on azures search tab, then proceedings with create so that we can create a new one then on the resource group tab we will click on our **PearLTD resource group** that we created then we will proceed with naming our **virtual network** we went with **PearLTD-VNET**.

Second when we press next and head to security we will **enable azure bastion** for easier future access, in this project we won't use the **bastion** we will utilize the old technique of connecting via **RDP** to further enhance the project so that we can connect to it anywhere and with any machine. And once after we do that we click on **Review + Create** and wait for the validation and **create**.

Create virtual network

[Basics](#) [Security](#) [IP addresses](#) [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](#)

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 subscription 1
Resource group *	PearLTD Create new

Instance details

Virtual network name *	PearLTD-VNET
Region	(US) East US

[Deploy to an edge zone](#)

Create virtual network ...

Basics Security IP addresses Tags Review + Create

Enhance the security of your virtual network with these additional paid security services. [Learn more ↗](#)

Azure Bastion

Azure Bastion is a paid service that provides secure RDP/SSH connectivity to your virtual machines over TLS. When you connect via Azure Bastion, your virtual machine must have a public IP address. [Learn more ↗](#)

Enable Azure Bastion

Azure Bastion host name:

Azure Bastion public IP address*: [Create a public IP address](#)

Azure Firewall

Azure Firewall is a managed cloud-based network security service that protects your Azure Virtual Network resources. [Learn more ↗](#)

Enable Azure Firewall

Azure DDoS Network Protection

Azure DDoS Network Protection is a paid service that offers enhanced DDoS mitigation capabilities via adaptive tuning, attack notification, and telemetry to protect against the impacts of a DDoS attack for all protected resources within this virtual network. [Learn more ↗](#)

Enable Azure DDoS Network Protection

[Previous](#) [Next](#) [Review + create](#)

PearLTD-VNET | Overview

Deployment

Deployment name: PearLTD-VNET
Subscription: Azure subscription 1
Resource group: PearLTD

Deployment status: Deployment is in progress

Start time: 1/17/2024, 8:33:40 AM
Correlation ID: 76c7790c-a67c-4207-8b24-7a52bd9937f1

Deployment details:

Resource	Type	Status	Operation details
PearLTD-VNET-Bastion	Bastion	Created	Operation details
PearLTD-VNET	Virtual network	OK	Operation details
pearltd-vnet-bastion	Public IP address	OK	Operation details

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who can help manage your as
and be your first line of suppo
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The **deployment** might take a while, so we patiently wait for the **virtual network** to be **deployed**.

Once deployed we will move to our next step.

III. Creating a Windows 2016 Datacenter Virtual Machine.

Here we created a **datacenter** to host all of **PearLTDS** data in a very good and accessible way, through a **virtual machine**, we did that so it can easily accessible and so that it can be on the cloud in safe and secure environments so we can avoid all the problems that can come with hosting data locally from power outrages to babysitting we avoid all that by migrating to the cloud.

First we start with Searching or finding the virtual machine tab and clicking on it and proceeding with clicking on create so create a new Virtual machine, we pick our resource group **PearLTD** then we will pick our name and region same as our virtual network and resource group and make sure we select the **2016 data center** for our image.

No virtual machines to display
Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

Basics [Disk](#) [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 subscription 1](#) **Resource group** [PearLTD](#)

Instance details

Virtual machine name [Pearl-VM](#)

Region [\(UK\) East US](#)

Availability options

Availability zone [Zone 1](#)
You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type [Trusted launch virtual machines](#)

Image [Windows Server 2016 Datacenter - x64 Gen2](#)

VM architecture [x64](#)

III.I Make an Availability set.

We will make an **availability set** so that our machine can be **geo redundant** so that it can withstand all sorts of regional failures.

We start by selecting **availability set** in **availability zone** so that it is **Geo Redundant**. And so that we can be sure that our **virtual machine** is always up and running and then we create our availability we start with **create new** and then we will put **3 fault domains and 9 update domains** so that for each vault domain will have 3 update domains so we can achieve perfect redundancy, and we will call it **PearLTDbackups-vm**. And then click on **ok**.

The screenshot shows the Azure portal's 'Create a virtual machine' wizard. On the left, the 'Project details' section includes 'Subscription' (Azure subscription 1), 'Resource group' (PearLTD), and 'Virtual machine name' (PearLTD-vm). On the right, the 'Create availability set' dialog is open, showing 'Name' (PearLTDbackups-vm), 'Fault domains' (3), 'Update domains' (9), and 'Use managed disks' (HDD (classic) / NV (optimized)). Below the dialog, the main form has 'Availability options' set to 'Availability set'. At the bottom, there are 'Review + create' and 'Next: Disks >' buttons.

III. CONTINUES

And then we will setup a username and a password for extra protection and so that later we can access it via **RDP** or **Bastion**

Also we have to make sure to press on **allow public inbound ports** and make sure it is on **port 3389** or we wont be able to access it later via **RDP**.

Enable Hibernation (preview)
To enable Hibernation, you must register your subscription. [Learn more](#)

Administrator account

Username * ✓
Password * ✓
Confirm password * ✓

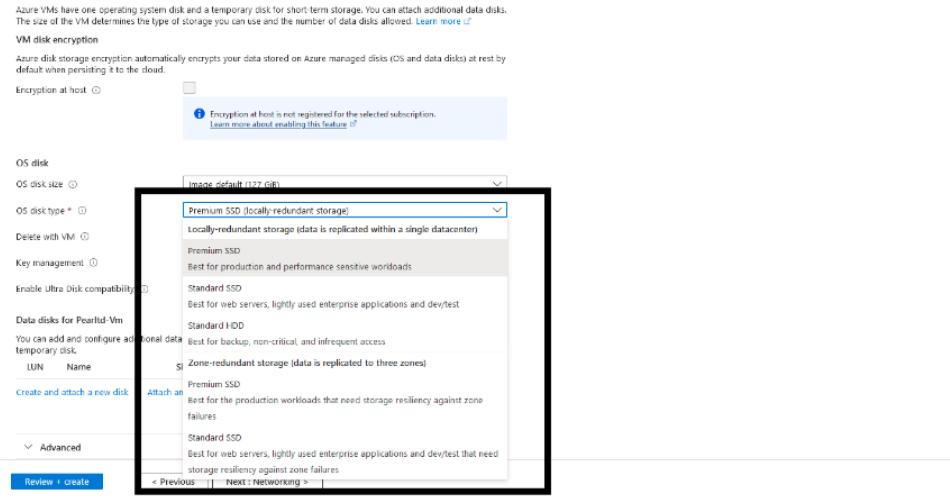
Inbound port rules
Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports
Select inbound ports *

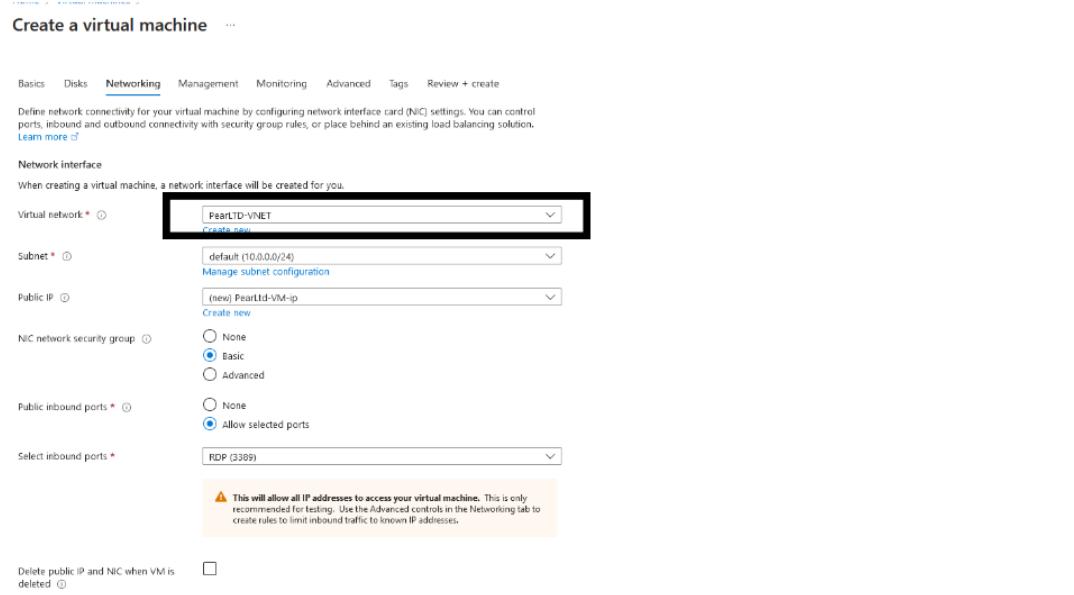
Licensing
Save up to 49% with a license you already own using Azure Hybrid Benefit. [Learn more](#)
Would you like to use an existing Windows Server license?
[Review Azure hybrid benefit compliance](#)

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

Then we will press next and go to **disks** we will select **zone redundant storage** so that we can have **zone redundancy** and then we will opt for **standard SSD** because we don't need it to be fast, just zone redundant.



Then press next go to **networking** and click our **vnet** and **subnet** of our **vnet** Also we have to make sure to press on **allow public inbound ports** and make sure it is on **port 3389** or we won't be able to access it later via **RDP**.



III.II Making a load balancer.

We are creating a load balancer so that we can assure that the traffic flow is equally processed so that there won't be any overloading of traffic so that the machines won't run a risk of shutting down due to bad traffic.

We scroll down and then go on **azure load balancer** and then **create a load balancer** and we will make a basic load balancer that is **public** so it's more resilient and then use **TCP protocol** and use the basic **port 80** and then we will name it **PearLTDvm-LB** so that we can later easily access it in the **resource group** then we will click create.

The screenshot shows two overlapping windows from the Azure portal:

- Create a virtual machine (Left Window):**
 - Public inbound ports:** Set to "Allow selected ports" with "RDP (3389)" selected.
 - Delete public IP and NIC when VM is deleted:** Unchecked.
 - Enable accelerated networking:** Checked.
 - Load balancing:** Shows options for "None", "Azure load balancer", and "Application gateway".
 - Select a load balancer:** Shows a dropdown menu with "No existing load balancers in current subscription and location" and a "Create a load balancer" button.
 - Buttons:** "Review + create" and "Next : Management >".
- Create a load balancer (Right Dialog Box):**
 - Load balancer name:** "PearLTDvm-LB".
 - Type:** "Public" (selected).
 - Protocol:** "TCP" (selected).
 - Load balancer rule:** A table with one row: "Port" set to "80" and "Backend port" set to "80".
 - Buttons:** "Create" and "Cancel".

And once we are done with the we will click on **Review + create** then wait for the **validation** and press **create** and with that we are done with creating our **virtual machine**.

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags **Review + create**

Price
1 X Standard DS1 v2 by Microsoft **2.280€ TRV/hr**
[Terms of use](#) | [Privacy policy](#)

TERMS
By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

⚠ You have set RDP port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

Basics
Subscription: Azure subscription 1
Resource group: PearlTD
Virtual machine name: PearlLtd-VM
Region: East US

Create < Previous Next > Download a template for automation

And once we see that the machine is up and running we will proceed to our next step.

PEARLTD-VM Virtual machine

Search Connect Start Restart Stop Hibernate (preview) Capture Delete Refresh Open in mobile Feedback CLI / PS

Overview
Activity log Tags Diagnose and solve problems

Essentials
Resource group: [PearlTD](#) Status: Creating Location: East US Subscription: [Azure subscription 1](#) Subscription ID: d4c70228-21d9-489d-97d9-b3a1cb04af29

Operating system: Windows Size: Standard DS1 v2 (1 vCPU, 3.5 GB memory)
Public IP address: [52.255.205.162](#) Virtual network/subnet: [PearlTD-VNET/default](#)
DNS name: [Not configured](#) Health status: [Not configured](#)

Networking
Public IP address: [52.255.205.162](#) (Network interface pearltd-vm001)
Public IP address (IPv6): [52.255.205.145](#) (Load balancer PearlTDVm-LB)
Private IP address (IPv4): 10.0.0.4
Private IP address (IPv6): -
Virtual network/subnet: [PearlTD-VNET/default](#)
DNS name: [Configure](#)

Size
Size: Standard DS1 v2
vCPUs: 1 RAM: 3.5 GB

Disk
OS disk: PearlLtd-VM_OsDisk_1 (b370887b837480280ca7fb9f700ca7e)

IV. Connecting to the Virtual Machine Via RDP.

Why are we connecting via **RDP** and not **Bastion**?

RDP has been the standard for years, and it emerges as a superior choice compared to **Bastion** for server access and management. **RDP** stands out by offering a direct connection to the server's desktop environment, ensuring a smooth and immersive user experience. In contrast to Bastion, which acts as an intermediary gateway, **RDP** eliminates an additional layer, minimizing latency and potential points of failure. This direct link enables users to interact with server applications and files seamlessly, closely resembling an on-premises setting. **RDP**'s versatility is evident in its support for various functionalities such as clipboard sharing and printer redirection, contributing to a more integrated and flexible remote working environment. While **Bastion** plays a crucial role in enhancing security as a secure gateway, **RDP** excels in providing an efficient, feature-rich interface for streamlined server administration.

So we start with going on our **windows computer** and opening run and running **mstsc**

Then we will copy the **public IP address** of our machine and paste it on our **RDP portal**

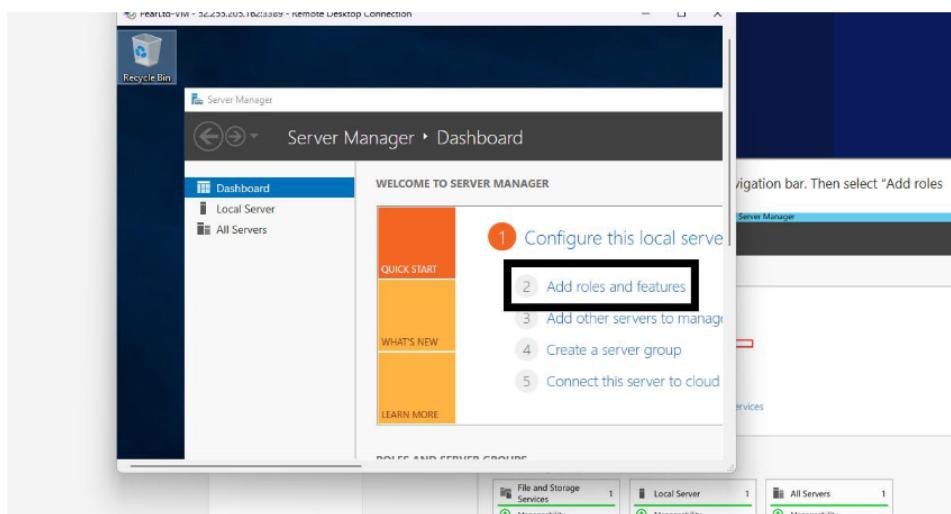
Then proceed with entering the **username and password** we bestowed to our machine and then click **yes** on the security permission and viola we connected to the machine.

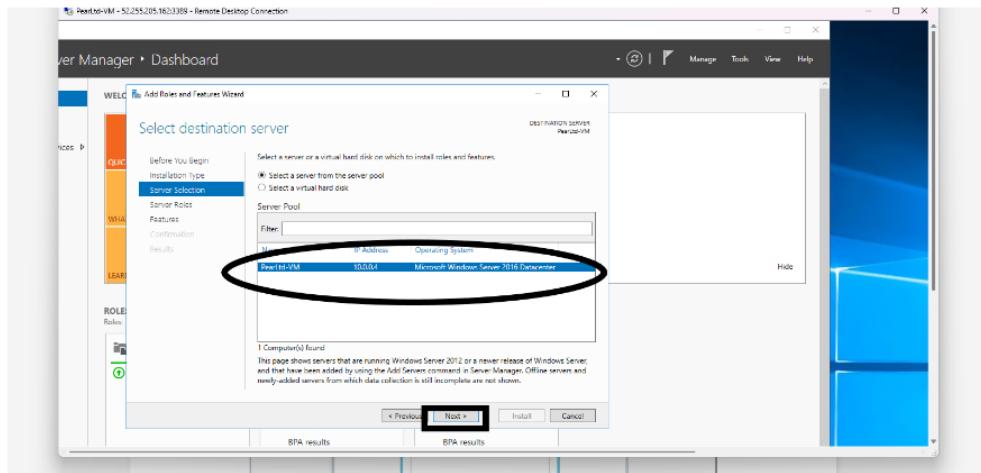
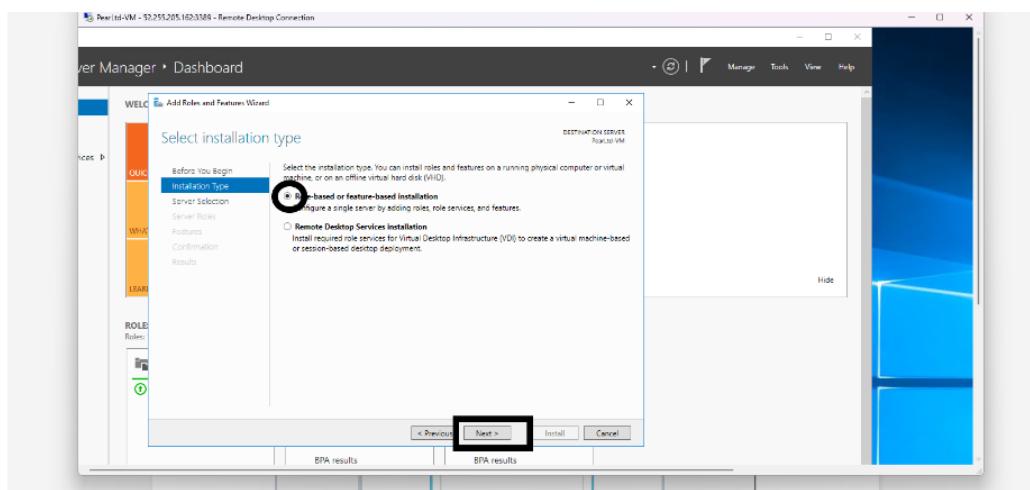
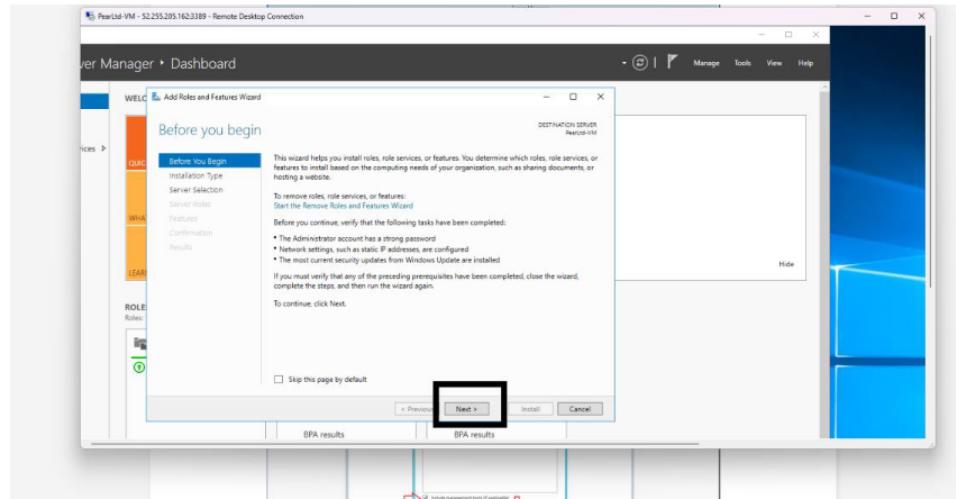
V. Installing and modifying the IIS.

What is IIS?

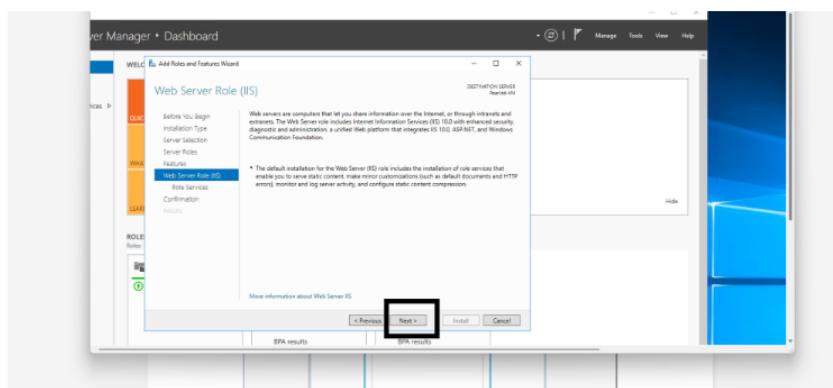
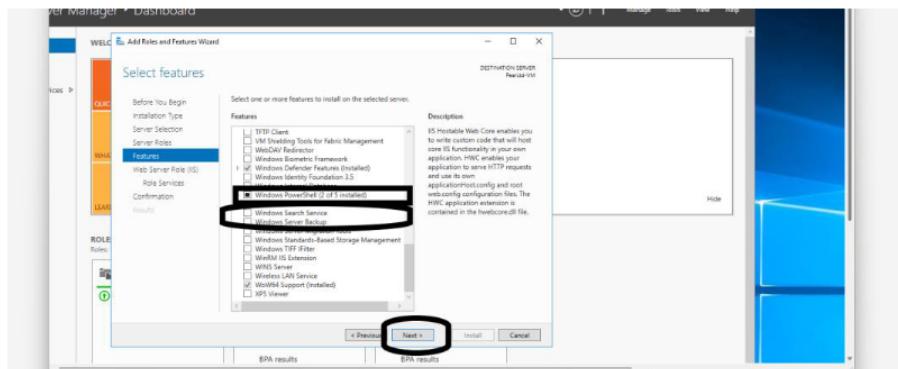
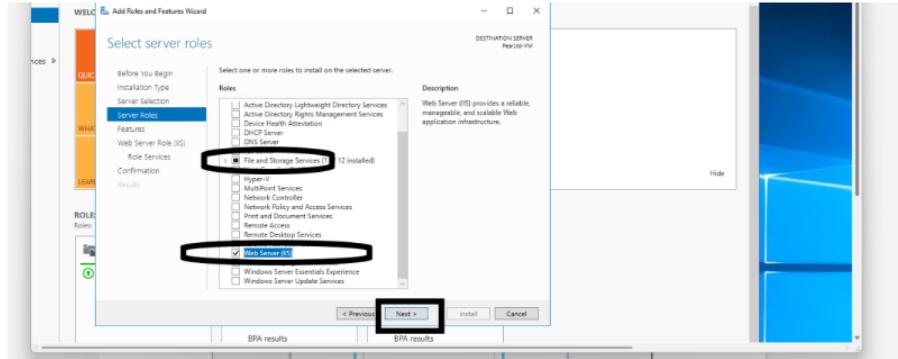
IIS, or Internet Information Services, is a web server developed by Microsoft. It acts as a platform for hosting websites and web applications on Windows servers. Offering support for a variety of web technologies. With management tools like the IIS Manager, administrators can easily configure and oversee server settings, making IIS a vital component for hosting and managing web content in a Windows environment.

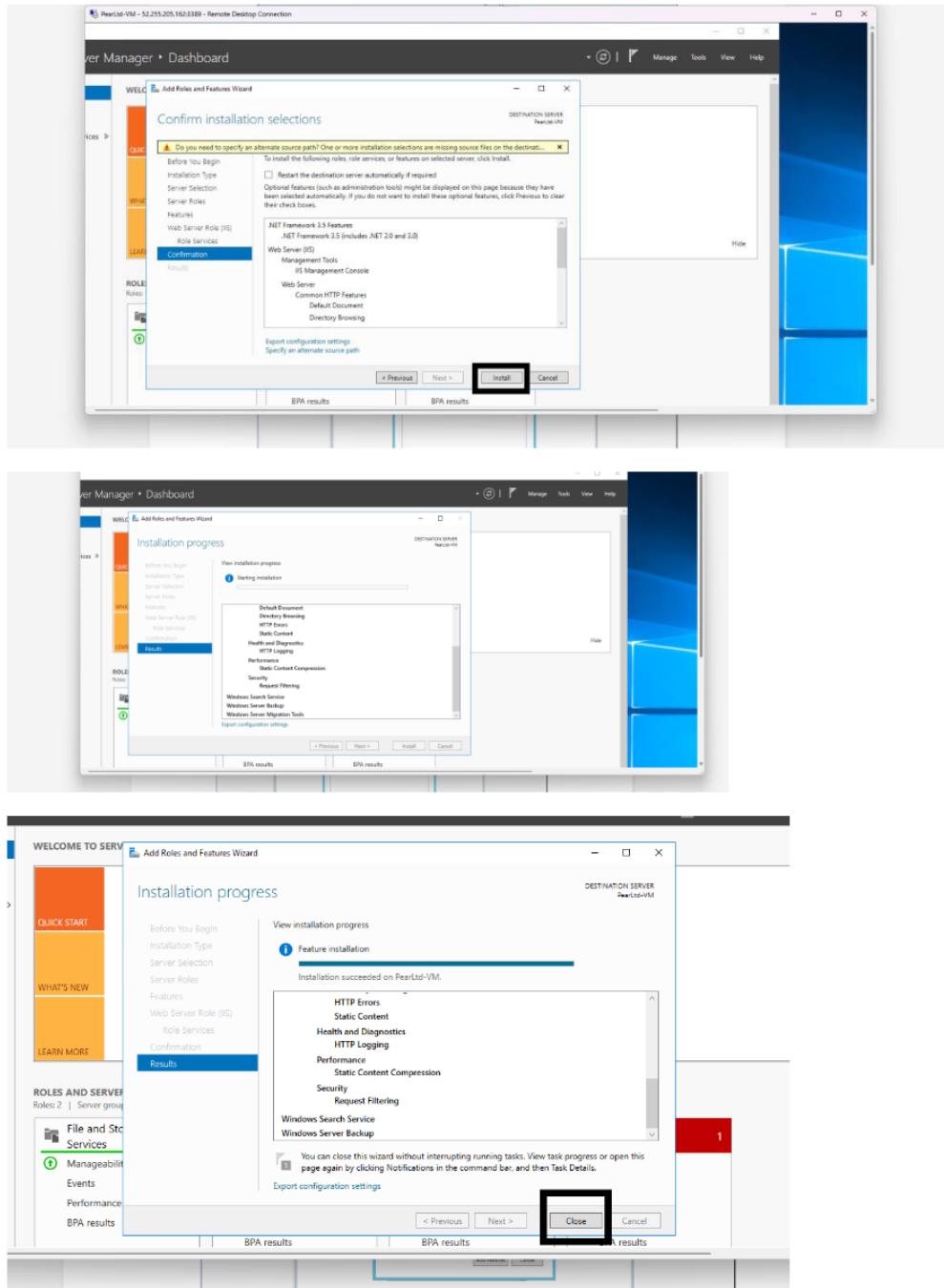
We start with going on the windows menu and searching for server manager and once we are in **server manager**, we want to click on **Add roles and features** then click **next** and make our **installation type role based**. and then click next and make sure our server is there in the server selection and click next.





Now we are at **server roles** and we want to make sure to tik **IIS** click **next** and on **features** make sure to **windows search service**, **windows server back up** and then on role services click all of the **.NET options** and other options Microsoft offers, the reason we need to install these modules is so that we can have full scalability in the future in case we want to expand our server then click on **install** and wait for the **installation**.

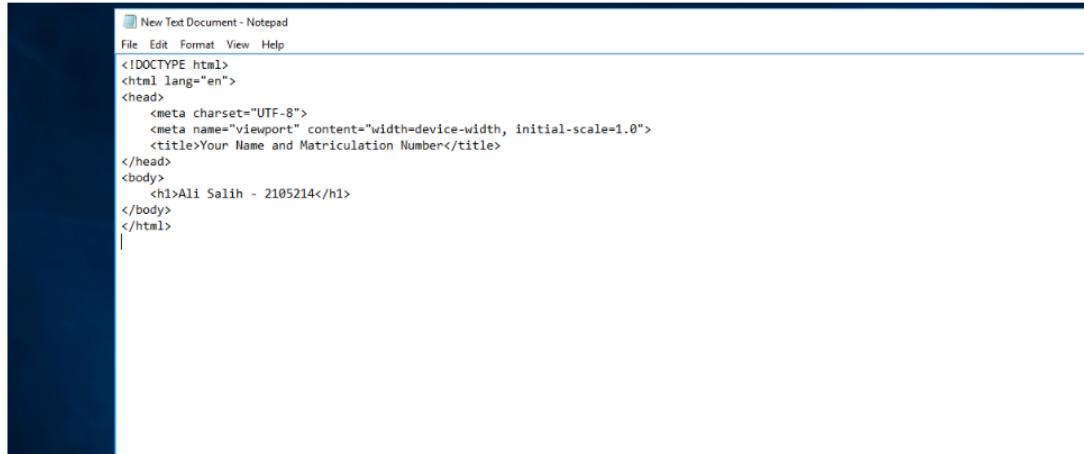




And once we are greeted with this screen we have successfully **installed IIS** and ready to move to the next step.

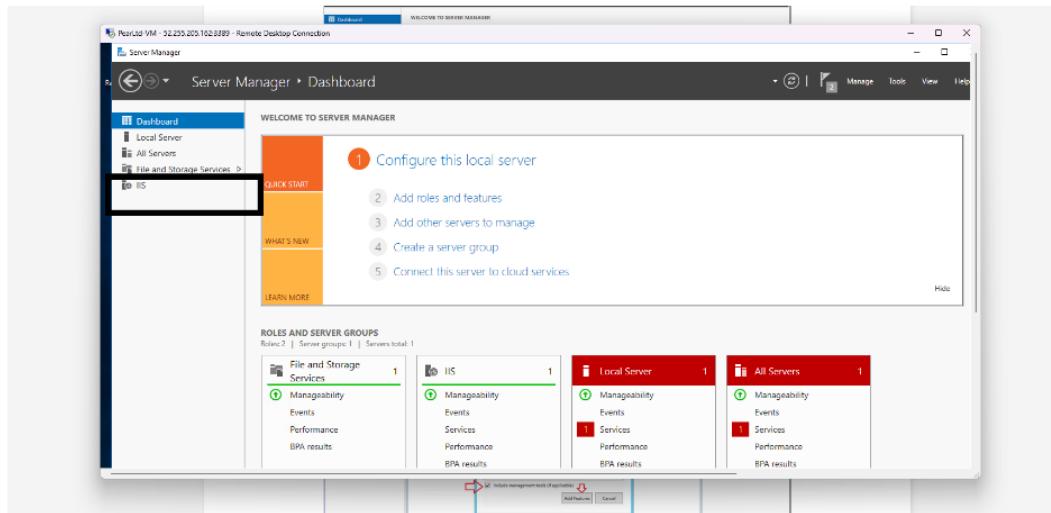
VI. Modifying index page.

Now that we have a website up and running, we want to modify it and in doing that we want to add our name and student number to it so we want to start with writing a little code so that the website can read and present



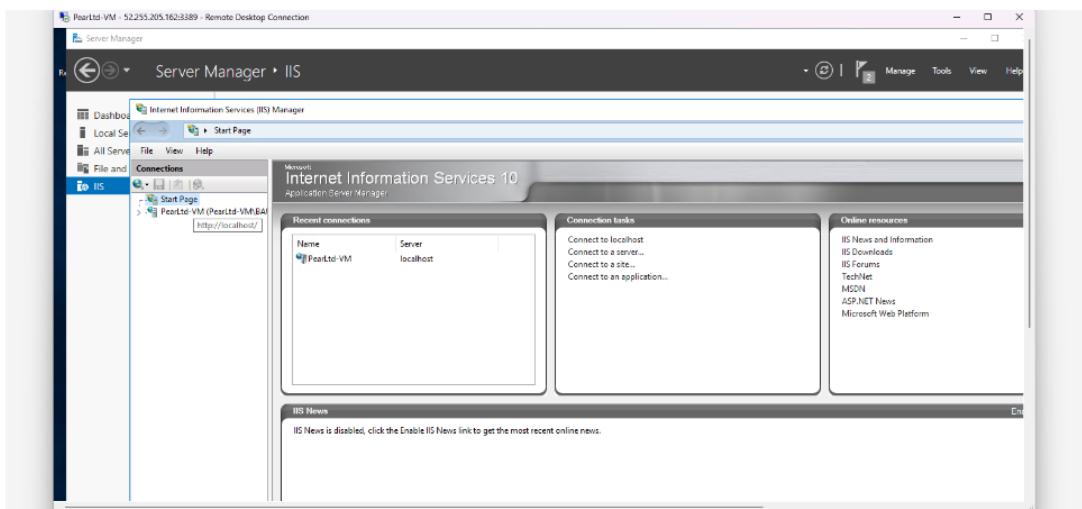
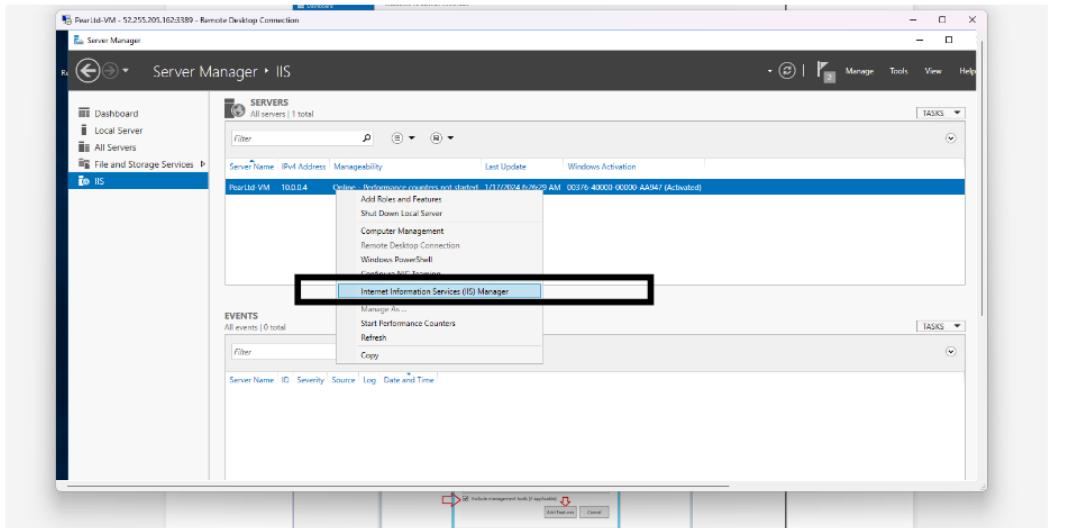
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Your Name and Matriculation Number</title>
</head>
<body>
    <h1>Ali Salih - 2105214</h1>
</body>
</html>
```

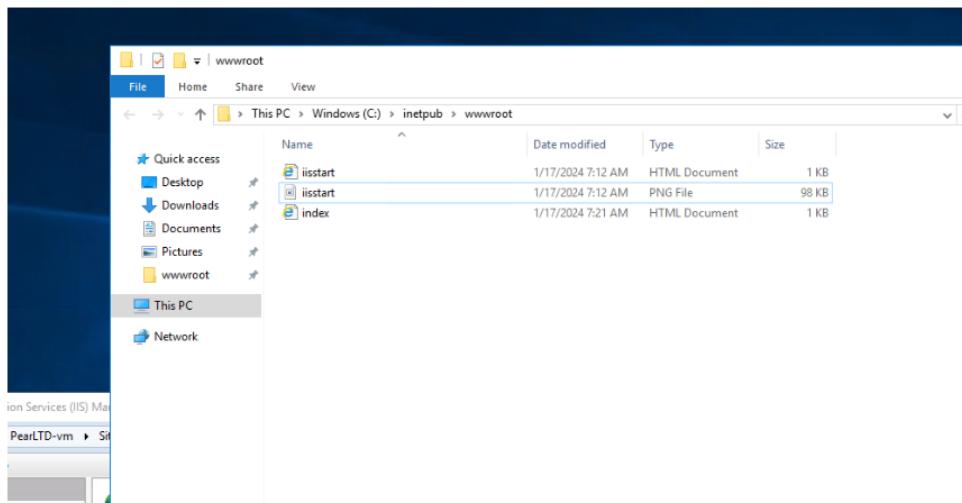
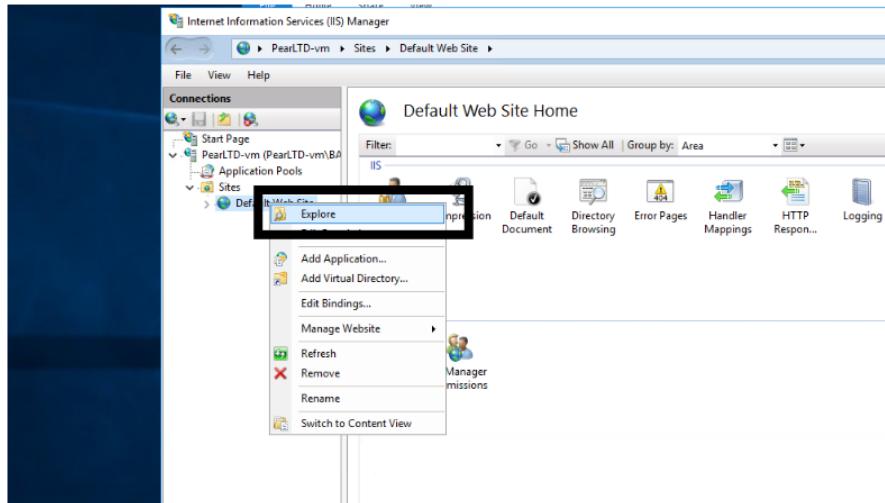
We want to make sure to **save this as an html** so that it wont cause any problems in the future and now we want to implement this code on the **index page** we start by finding the **directory** which sends us back to server manager, we will press the right blade this time and click on **IIS**.



Then again **click on the right blade** and right click and press **internet Information services manager** then Then again click on the right blade then on

on our vm a dropdown menu would appear and then we will see the **default website** we will click on that and then press **explore** to find the **directory**, and then we will **paste** our next index to it so it changes.





And now we will refresh the website to see if the change has been made and once, we see that the change has been made we are ready to move to our next step.



V. Adding an additional hard disc to the webserver.

We go on our **virtual machine** main page, then go on the right blade and we can see disks then we will press on that and add a new **HDD disk with 500 gbs** so the **IOPS** can be higher then click create and make sure the option of read and write is on so that the **disk and be backed up and restored** to our liking.

The screenshot shows the Azure portal interface for managing a virtual machine named 'PearlTD-vm'. The left sidebar contains navigation links for Overview, Activity log, Tags, Diagnose and solve problems, Settings, Networking, Connect, Windows Admin Center, and Disks. The 'Disks' link is highlighted with a black box. The main content area is divided into several sections:

- Essentials:** Shows the resource group ('Iniced'), status ('Running'), location ('East US'), subscription ('Azure subscription 1'), and subscription ID ('d3c76928-21d9-488d-97db-b31ccb54af55').
- Properties:** Includes tabs for Properties, Monitoring, Capabilities (B), Recommendations, and Tutorials. The 'Virtual machine' tab is selected, displaying details like Computer name ('PearlTD-vm'), Operating system ('Windows Server 2016 Datacenter'), Image publisher ('MicrosoftWindowsServer'), Image offer ('WindowsServer'), Image plan ('2016-datacenter-genusecond'), VM generation ('V2'), VM architecture ('x64'), Agent status ('Ready'), Agent version ('2.7.41491.1102'), Hibernation ('Disabled'), Host group ('-'), Host ('-'), Proximity placement group ('-'), and Colocation status ('N/A').
- Networking:** Shows Public IP address (20.25.13.149) and Virtual network/subnet (PearlTD-VNET/default).
- Size:** Shows Size (Standard F2s v2), vCPUs (2), and RAM (4 GB).
- Disk:** Shows the OS disk ('PearlTD-vm_OsDisk_1_66c2e53f') with 127 GB of storage type Premium SSD LRS, Max IOPS 300, and Max throughput 100. It also shows 'Host caching' (Read/write) and 'Encryption' (SSE with PWSK).
- Data disks:** Shows a table for attaching new disks. A new disk named 'WebServer01' is being added with 500 GB of Standard HDD LRS storage type, Max IOPS 60, and Max throughput 60. The 'Encryption' column shows 'SSE with PWSK' and the 'Host caching' column shows 'Read/write'.
- Actions:** Buttons for Apply and Discard changes.

VI. Enabling automated backup for the hard disc.

I. Creating recovery vault.

II. Creating backup Protocol.

I. Creating recovery vault

Why do we need a recovery vault?

Having a **recovery vault** is like having a digital safety net for your important stuff. It's a special place, often part of services like **Azure Recovery Services**, where we keep backups of crucial data and system settings. Think of it as a **backup plan** for when things go wrong **accidental deletions**, **data glitches**, or even **major disasters**. This vault ensures that if something breaks, we can easily **restore** everything to how it was before, like a **snapshot** in time that saves us from headaches and keeps our digital world safe and sound.

We start by searching for **recovery services vault** and then clicking on It and again clicking **create** to start the procedure of making the vault we select our resource group (pearltd) and name for this we will name it **PearLTDRecVault**. And then we click next.

The screenshot shows the Azure portal search interface. The search bar at the top contains the query "Recovery Services vaults". Below the search bar, there is a "See all" link. The main results area is titled "SERVICES" and lists "Recovery Services vaults" as the top result, which is highlighted with a black rectangle. Other listed items include "App Services", "Service Health", "Azure Database for MySQL servers", and "Users". To the right of the main results, there is a sidebar with sections for "Open in mobile", "No grouping", and "Location" (with "East US" listed). At the bottom of the search results, there is a "Give feedback" link.

The screenshot shows two windows side-by-side. The left window is titled 'Recovery Services vaults' and displays a single record: 'defaultVault177'. The right window is titled 'Create Recovery Services vault' and is on the 'Basics' tab. It shows fields for 'Subscription' (set to 'Azure subscription 1') and 'Resource group' (set to 'PearlTD'). The 'Vault name' field contains 'PearlTDRestVault' and the 'Region' field is set to 'East US'. A note at the bottom states 'Cross Subscription Restore is enabled by default for all vaults. Visit vault > Properties to disable the same.' Buttons at the bottom are 'Review + create' and 'Next: Redundancy'.

We click **next** and go to **redundancy** and make sure it is **geo redundant** so that it can be safe from **region failures**, and we want to **enable cross region restore** so that across all regions our machines can be restored safely then we want to click on **review + create** and wait for the deployment and once don't move to the next step.

Home > Recovery Services vaults >
Create Recovery Services vault ...

Review + create

Previous: Basics Next: Vault properties

Microsoft.RecoveryServicesV2-1705479616015 | Overview

Your deployment is complete

Deployment name : Microsoft.RecoveryServicesV2-1705479616015
Subscription : Azure subscription 1
Resource group : pearl LTD

Start time : 1/17/2024, 11:20:29 AM
Correlation ID : 53314bc4-40d9-41d4-8442-5f10bee70d0

Give feedback

Tell us about your experience with deployment.

Cost management Get notified to prevent unexpected costs Set up cost alert

Microsoft Defender Secure your app Go to Microsoft Defender

Free Microsoft 365 Start learning today

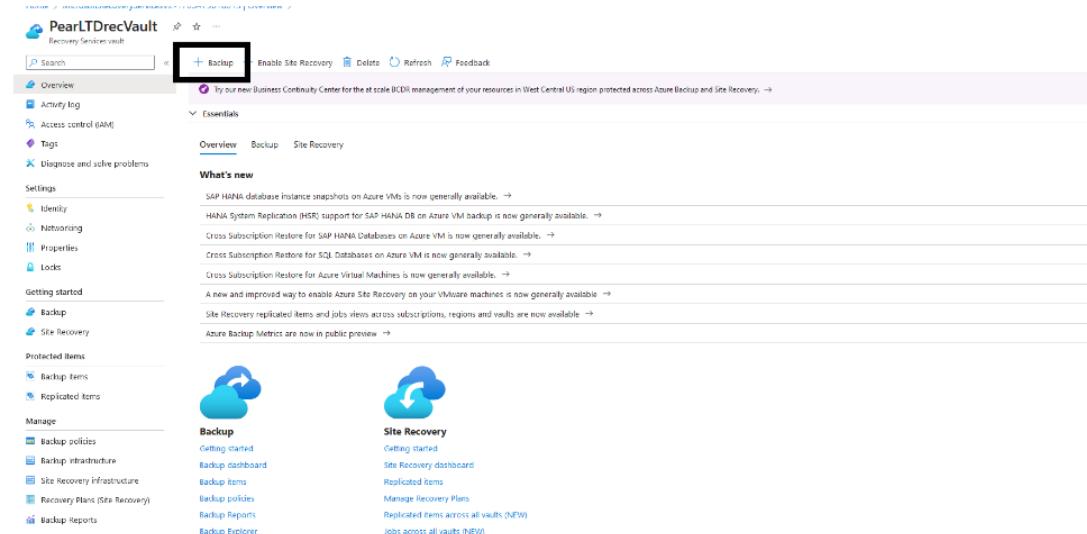
Work with an Azure expert Find an Azure expert who can help me and be your first point of contact

IV.II Creating backup Protocol.

Why do we need a backup protocol?

Implementing a robust **backup protocol** is a critical element of prudent **data management** and **system administration**. Unforeseen events, ranging from accidental deletions to hardware failures or catastrophic system crashes, can compromise valuable data and disrupt business operations. A well-structured backup protocol serves as a safeguard against such contingencies, ensuring the preservation and recovery of crucial information. By systematically creating and maintaining backup copies of data, applications, and system configurations, organizations establish a resilient framework that minimizes downtime, accelerates recovery processes, and ultimately enhances the overall integrity and continuity of their digital assets. In the dynamic landscape of information technology, a proactive backup strategy is an indispensable measure for mitigating risks and fortifying data security.

We start with going up our **recovery vault** that we created and we want to click on **back up** and then select **Azure for workload** and then click **virtual machine** for **what do you want to back up** and then clicking backup.





Then once we are on **configuring the backup** we want an **enhanced back up** for our machine and then for our **policy** we will **create a new policy** and make it **weekly**, on **Sundays at 0030 Sharp** and we will call it **S3RAP** then click **ok** to make the policy then we will **add our virtual machine**

And select our **virtual machine PearLTD-vm**

Create policy
Azure Virtual Machine

Policy name: S3RAP

Frequency: Weekly, Days: Sunday, Time: 00:00 AM, Timezone: UTC Coordinated Universal Time

Retention range:

- Retention of daily backup point: Not Configured
- Retention of weekly backup point: On Sunday At 00:00 AM For 12 Weeks
- Retention of monthly backup point: Not Configured
- Retention of yearly backup point: Not Configured

Enable tiering: Move to vault-archive tier option is not available based on the retention range selected. Modify the retention setting to use the feature.

Consistency type: OK

Configure backup

Backup Goal

Virtual machine

PearLTD-vm

Policy sub type * Enhanced

Backup policy * (new) EnhancedPolicy-1hsg1tp

Policy details

Full backup

Backup frequency Weekly on Sunday at 3:00 AM UTC

Instant restore Retain instant recovery snapshot(s) for 7 days

Retention of weekly backup point Retain backup taken every week on Sunday at 3:00 AM for 12 Weeks

Virtual machines

Name **Resource group**

No virtual machines selected.

Add

Selective disk backup option allows you to include or exclude specific data disks based on their LUN numbers. OS Disk exclusion is not supported. Know more about Selective Disk Backup feature, its limitation and pricing. Learn more

Enable backup Download a template for automation

Select virtual machines

Discovering virtual machines that can be backed up, are in the same region as vault and not protected by another vault.

Virtual machine name: PearLTD-vm
Resource Group: PearLTD

Page 1 of 1

OK Cancel

And then after that we will make sure that our disk **WebsrvrDB** is selected and then press ok and **Enable Backup**.

Configure backup

Virtual machine

PearLTD-vm

Policy sub type * Enhanced

Backup policy * (new) EnhancedPolicy-1hsg1tp

Policy details

Full backup

Backup frequency Weekly on Sunday at 3:00 AM UTC

Instant restore Retain instant recovery snapshot(s) for 7 days

Retention of weekly backup point Retain backup taken every week on Sunday at 3:00 AM for 12 Weeks

Virtual machines

Name **Resource group**

PearLTD-vm PearLTD

Selective disk backup option allows you to include or exclude specific data disks based on their LUN numbers. OS Disk exclusion is not supported. Know more about Selective Disk Backup feature, its limitation and pricing. Learn more

Enable backup Download a template for automation

Disks

2 selected

Select all

PearLTD-vm_OSSDisk_1 (992253fb77479b54b88111cf8a2a

LUN 1: WebsrvrDB

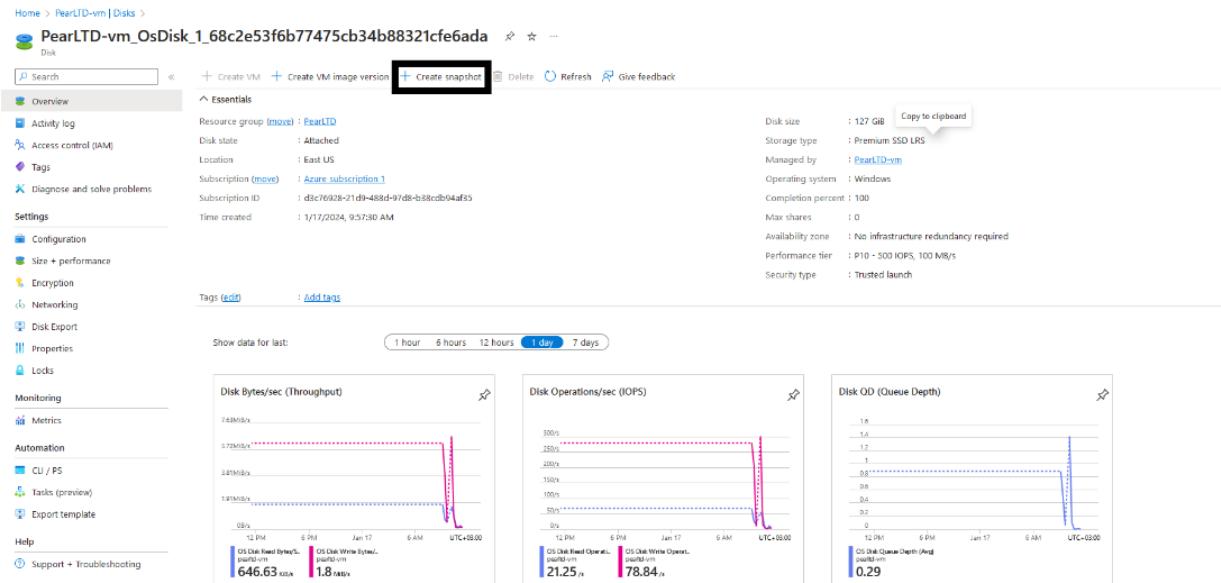
OK Cancel

VII. Backing up snapshot.

What is snapshot, and why do we need to back it up?

A **snapshot** is a point-in-time copy of a system or data set, capturing its specific state without altering the original. In **data storage** and **virtualization**, **snapshots** are read-only representations used for recovery, backup, or analysis, preserving the data's state at a given moment. However, while **snapshots** are valuable for quick captures, they aren't a complete replacement for traditional backups. Backing up snapshots involves creating an independent copy of the snapshot data, providing an additional layer of protection. This ensures that if the primary storage or infrastructure encounters issues, the backed-up **snapshots** can be used for **recovery**, contributing to a comprehensive and secure **backup** strategy.

Firstly we will go to our disk then click on **WebserverDB** and on top we can see the option of **create snapshot** and we will press that and we will name it **PearLTD-snapshot** so that we can access it easily in the future and then we will press on **review + create** then create and we are done.



Basics Encryption Networking Advanced Tags Review + create

A snapshot is a read-only copy of a virtual hard drive (VHD). You can take a snapshot of an OS or data disk VHD to use as a backup, or to troubleshoot virtual machine (VM) issues. [Learn more about snapshots in Azure](#)

Project details

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

Subscription *

Resource group *

Instance details

Name *

Region

Snapshot type * Full - make a complete read-only copy of the selected disk.
 Incremental - save on storage costs by making a partial copy of the disk based on the difference between the last snapshot.

Source type

Source subscription

Source disk

Security type

VM generation Generation 1
 Generation 2
 x64

< Previous Next : Encryption >

Create snapshot

Validation passed

Basics Encryption Networking Advanced Tags Review + create

Basics

Subscription	Azure subscription 1
Resource group	PearlTD
Region	East US
Name	PearlTDvM-Snapshot
Source subscription	Azure subscription 1
Source type	disk
Source disk	PearlTD-vm_OsDisk_1_68c2e5f9b77475cb34b68321cf6ada
Security type	Standard, 2TB
Storage type	Full
Snapshot type	x64

Encryption

Encryption type

Networking

Network access

Advanced

Tags
(none)

< Previous Next > Download a template for automation

VIII. Business continuity measures taken.

What is business continuity?

Business continuity is about ensuring a company can keep running smoothly even during unexpected events. It involves having plans in place to quickly recover from disruptions and minimize downtime, ensuring essential operations continue seamlessly.

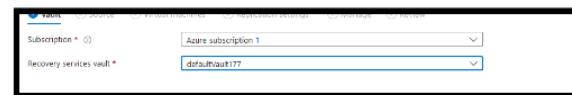
We start with going to the search bar and searching for **business continuity center** and then going on and clicking **configure protection**. Then on the next tab for **resources managed by** we will choose **azure**, for **datasource type** we will choose **virtual machine** and for **solution** **azur site**

The screenshot shows the Azure Business Continuity Center interface. On the left, there's a navigation sidebar with options like Overview, Getting started, Protection inventory, Monitoring, Security + threat management, Governance, Manage, and Support + troubleshooting. The main area is titled 'Configure protection' and has three tabs: 'PREVIEW', 'PROTECTION', and 'CONTINUITY'. The 'PROTECTION' tab is selected. It displays 'Protectable instance' (0) and 'Azure Virtual machines' (0). Under 'Protection status', it shows four categories: 'Protected in both primary and secondary regions' (0), 'Protected in primary region only' (0), 'Protected in secondary region only' (0), and 'Not protected currently' (0). Below this, under 'Security', it shows 'RCE severity coverage' (0/0) and 'Protected items have good or excellent security' (0). At the bottom, there are 'Continue' and 'Cancel' buttons.

Then we will pick our **vault** which was **PearLtdRec-vault** click **next** and go to source and we will select our **resource group PearLTD** and **enable disaster recovery between availability zones** so that we can have it up and running at all times and **set the zones to 3** and click **next**.

And on virtual machines click on our **Virtual machine PearLTD-vm** and click **review + create**.

Enable replication ...



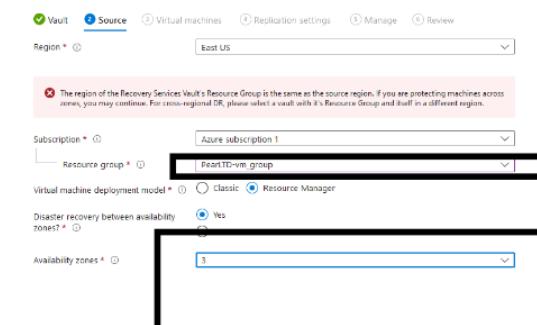
Vault

Subscription * Azure subscription 1

Recovery services vault * defaultvault1??

Previous Next

Enable replication ...



Vault Source Virtual machines Replication settings Manage Review

Region * East US

The region of the Recovery Services Vault's Resource Group is the same as the source region. If you are protecting machines across zones, you may continue. For cross-regional SR, please select a vault with its Resource Group and itself in a different region.

Subscription * Azure subscription 1

Resource group * PearLTD-vm-group

Virtual machine deployment model * Classic Resource Manager

Disaster recovery between availability zones? Yes

Availability zones * 3

Previous Next

Enable replication ...

Vault Source **Virtual machines** Replication settings Manage Review

Unable to view / select your VMs? Click [here](#) to know why.

Filter items...

Name	Virtual network	Tags
PearLTD-vm	PearLTD-vm-vnet	

Showing 1 - 1 of 1 results.
Selected machines: 1

And once it is all good and checked we'll Enable Replication and we are done.

Enable replication ...

Vault Source Virtual machines Replication settings Manage **Review**

Summary

Region	East US
Virtual machine deployment model	ResourceManagement
Subscription	Azure subscription 1
Resource group	Test1
Availability zones	3

Virtual machine selection summary

Virtual machines to replicate	1
-------------------------------	---

VM settings

Target subscription	Azure subscription 1
Target resource group	Test1-asr
Post-failover virtual network	PearLTD-vm-vnet-asr
Replication policy	24-hour-retention-policy
Extension settings	defaultvsa-4he-asr-automationaccount

Previous **Enable replication**

IX. Conclusion.

In conclusion, this project represents a dedicated effort to establish a resilient and efficient web server deployment on Azure. By leveraging the capabilities of Internet Information Services (IIS) and integrating advanced features such as a recovery vault, geo-redundant storage, and load balancing, we have fortified our infrastructure against potential disruptions. The incorporation of Azure Backup and a robust business continuity plan ensures the safeguarding of critical data and the swift recovery of operations in the face of unforeseen events. This strategic alignment with Azure technologies not only enhances security but also positions our web applications for scalability and future growth. Through this project, we have not only met the immediate objectives of a reliable and performant web server but have laid the groundwork for sustained success in the dynamic digital landscape.