

A documentation about a backup project
that involves a backup of files, email-
server and database server

M143 Backup

Implement backup and restore
systems

Bopp Rayan Lee

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Introduction

After a gruelling six years of studying me and my friend

Some of my old childhood friends have decided to open a game developing studio.

With me as one of its co-founders. As one of the co-founders and as the only IT-Person with background in platform development I was tasked with providing a plan for an Infrastructure as well as managing the backup system.

So, they have sent me the following over the group chat we've created.

As per our last meeting we've in which we assigned the tasked to different members of our startup I've taken the liberty in creating a small reminder for all of you, so that you know exactly what we need to do.

Rayan:

In charge of creating and planning an adequate ICT-Environment. This includes the following:

1. *Providing a list of all the necessary components for the different workstations*
2. *Providing a document of the planned ICT-environment*
3. *Providing a adequate backup-system for that fit our needs this includes (guidelines, backup-strategy, etc.)*

Alex:

.....

As you can see from this text, I've been given the role of creating an adequate ICT-environment that includes the following points:

1. **Providing a list of all the necessary components for the different workstations**
2. **Providing a document of the planned ICT-environment**
3. **Providing a adequate backup-system for that fit our needs this includes (guidelines, backup-strategy, etc.)**

I will break each of these down first, so it'll be easier for me to create the plan

Workstations and Hardware

- 1. Providing a list of all the necessary components for the different workstations (developer and graphic designer)**
- 2. Creating a standardized list component for components that don't need to be have much impact on over all work performance**

Networking

- 3. Creating a logical network plan for the Studio with different subnets**
- 4. Creating a route table for these different subnet**

Users and Permissions

- 5. Creating a user table which includes their permissions and their AD-Group name.**

Backup

- 6. Guidelines for the backup (interval, when, which files, where to)**
- 7. Guidelines for the backup (legal)**
- 8. 3, 2, 1 System**
- 9. Sorting files by priority**
- 10. How much storage do I need for this monthly calculated.**
- 11. Costs**

So, I'll start with the first point by *creating a list of all the necessary components for the different workstations.*

Workstations and Hardware

Workstations

So before we dive into the configurations for the different workstations we need to address the different types of workstations we need, so there for I set some guidelines to which I need to hold myself true:

Developer workstation:

- Good CPU for computing power
- High amount of RAM
- Fast Storage device
- Adequate graphics card for developing with UE5

Graphic designer workstation:

- Good CPU for computing power to render
- High amount of RAM to render
- Medium fast Storage devices with focus point on storage safety rather than speed
- Good graphics card for graphic design and modelling in blender

With those guidelines in mind, I can now head on over to [digitec](#) to look for an adequate PC-configuration.

Developer workstation

Name	Price	Amount
AMD Ryzen 7 5800X Processor	CHF 399.00	1
G.Skill RipJaws V 16GB DDR4-3600 CL16 Memory	CHF 129.00	2
Samsung 980 Pro 1TB NVMe SSD	CHF 229.00	1
MSI GeForce RTX 3060 Ti GAMING X 8G Graphics Card	CHF 699.00	1

Graphic designer workstations

Name	Price	Amount
AMD Ryzen 9 5900X Processor	599.00	1
G.Skill RipJaws V 32GB DDR4-3600 CL16 Memory	259.00	2
Samsung 870 QVO 4TB SATA III SSD	229.00	1
MSI GeForce RTX 3070 GAMING X 8G Graphics Card	799.00	1

Standardized Components

Now you might have noticed that some components are missing.

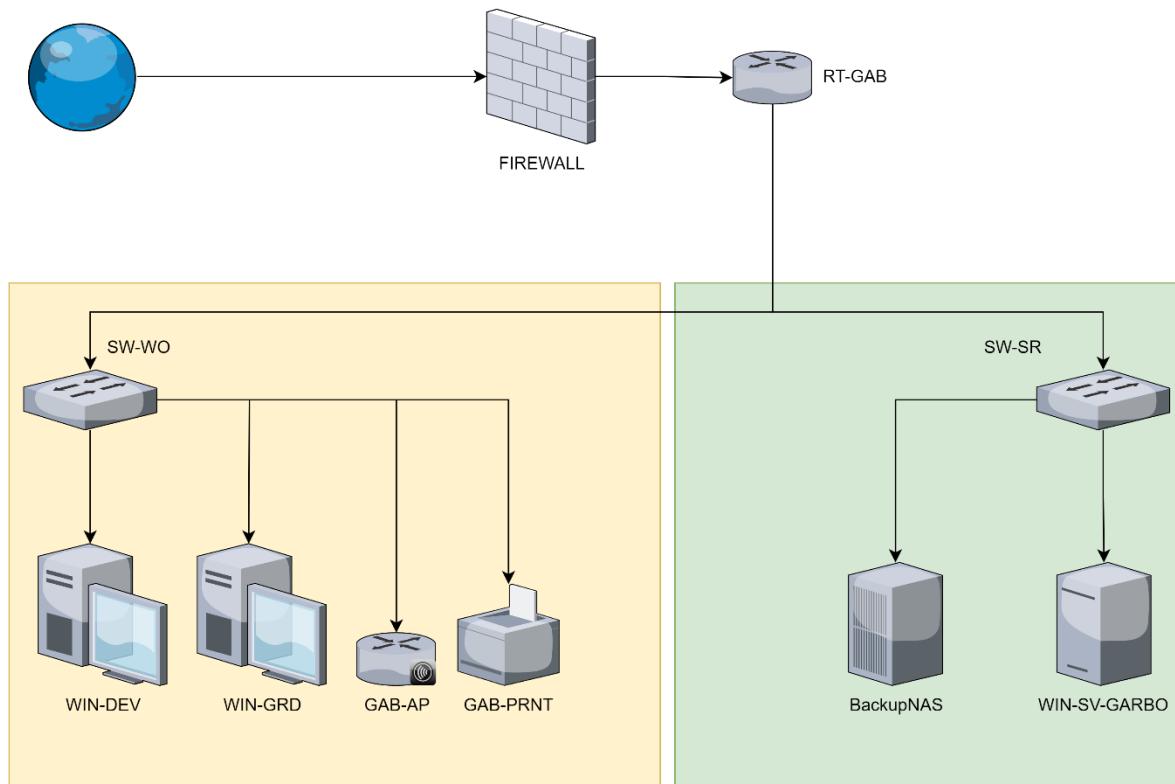
Name	Price	Amount
be quiet! Pure Base 500DX Midi Tower Case	129.00	1
Motherboards		
MSI B550M Mortar WiFi Micro ATX AM4 Motherboard	169.00	1
PSUs		
Seasonic Prime PX-1000 1000 W 80+ Titanium Certified Fully Modular ATX Power Supply	399.00	1
Coolers		
Be quiet! Dark Rock Pro 4	86.70	1

Disclaimer

Please note that all prices are in CHF and all articles can be purchased on <https://www.digitec.ch/>

Networking

Logical Network plan



IP-Matrix Workstations

NAME	IP	User
WIN-DEV-001	DHCP	Miguel Juan Carlos Alejandro Ignacio Fernando Jose Francisco Ernesto Ricardo Antonio Guillermo Eduardo Roberto Esteban Alfonso Gonzales Hernandez Rodriguez de la Cruz de Jesus Gutierrez
WIN-DEV-002	DHCP	Fabio Neumann
WIN-DEV-003	DHCP	Li Xao Huawong
WIN-GRD-001	DHCP	Patrick Janis Mustermann
WIN-GRD-002	DHCP	Marcelious Alexander III Unterernährer

Naming Conventions Workstations

Name	Name Full
WIN-DEV	Windows-Developer
WIN-GRD	Windows-Graphic-Designer

IP-Matrix Components

NAME	IP	MAC
RT-GAB	192.168.5.1	A3:E6:F1:B3:C3:D5
SW-SR	192.168.5.10	3A:7B:9E:2F:4C:1D
SW-WO	192.168.5.15	8F:A2:C5:6B:0D:9E
GAB-AP	192.168.5.20	A1:B2:C3:D4:E5:F6
GAB-PRNT	192.168.5.25	A2:F3:E2:B5:F6:D9

Naming Conventions Components

Name	Name Full
RT-GAB	Router-Garbo
SW-SR	Switch-Server-room
SW-WO	Switch-Work-office
GAB-AP	Garbo-Access-Point
GAB-PRNT	Garbo-Printer

IP-Matrix Server/NAS

NAME	IP	MAC
Backup-NAS	192.168.5.110	00:1A:2B:3C:4D:5E
WIN-SV-GARBO	192.168.5.100	08:76:54:32:10:AB

Naming Conventions Server/NAS

Name	Name Full
Backup-NAS	Backup-NAS
WIN-SV-GARBO	Windows-Server-GARBO

Route-Table for different subnets

I will simulate the communication between server and WS with Filius

The table looks the following:

Ziel	Netzmaske	Nächstes Gateway	
192.168.10.1	255.255.255.255	127.0.0.1	127.0.0.1
192.168.5.1	255.255.255.255	127.0.0.1	127.0.0.1
192.168.10.0	255.255.255.0	192.168.10.1	192.168.10.1
192.168.5.0	255.255.255.0	192.168.5.1	192.168.5.1

The ping result from **WIN-DEV-001**

```
/> ping 192.168.10.100
PING 192.168.10.100 (192.168.10.100)
From 192.168.10.100 (192.168.10.100): icmp_seq=1 ttl=63 time=977ms
From 192.168.10.100 (192.168.10.100): icmp_seq=2 ttl=63 time=987ms
From 192.168.10.100 (192.168.10.100): icmp_seq=3 ttl=63 time=976ms
From 192.168.10.100 (192.168.10.100): icmp_seq=4 ttl=63 time=399ms
--- 192.168.10.100 Paketstatistik ---
4 Paket(e) gesendet, 4 Paket(e) empfangen, 0% Paketverlust
```

The ping result from **WIN-SV-GARBO**

```
/> ping 192.168.5.100
PING 192.168.5.100 (192.168.5.100)
From 192.168.5.100 (192.168.5.100): icmp_seq=1 ttl=63 time=1960ms
From 192.168.5.100 (192.168.5.100): icmp_seq=2 ttl=63 time=985ms
From 192.168.5.100 (192.168.5.100): icmp_seq=3 ttl=63 time=980ms

From 192.168.5.100 (192.168.5.100): icmp_seq=4 ttl=63 time=977ms
--- 192.168.5.100 Paketstatistik ---
4 Paket(e) gesendet, 4 Paket(e) empfangen, 0% Paketverlust
```

Hey, I wanted to note that this didn't quite work out as planned in the conceptualization, so I opted to just pack everything in one subnet.

Subnet Pool for WO Subnet

NET-ADDRESS	SUBNETMASK	STARTING IP	ENDING IP
192.168.5.0	255.255.255.0	192.168.5.50	192.168.5.250

Users and Permissions

User-table

FULL NAME	USERNAME	PASS	AD-ROLE	PERMISSIONS
Miguel Juan Carlos	MIJUCA	Ab1234!	GARBO-DEV	R-W-X to Game-Dev Shared Drive
Fabian Neumann	FABNEU	Ab1234!	GARBO-DEV	R-W-X to Game-Dev Shared Drive
Li Xiao Huawong	LIXAHU	Ab1234!	GARBO-DEV	R-W-X to Game-Dev Shared Drive
Patrick Janis Mustermann	PAJAMU	Ab1234!	GARBO-GRD	R-W-X to Graphic-Design Shared Drive
Marcelious Alexander III Unterernährer	MAALUN	Ab1234!	GARBO-GRD	R-W-X to Graphic-Design Shared Drive

AD-Groups

AD-ROLE	TYPE
GARBO-MEMBER	Standard-auto-assigned
GARBO-DEV	Assigned if you are a developer
GARBO-GRD	Assigned if you are a graphic designer

Backup

Guidelines

These guidelines set when the backups should take place, they set where they should be saved to and what.

When should they take place?

The Backups should take place every night at 11 o' clock pm.

Where should they be saved to?

They should be saved to the TrueNAS.

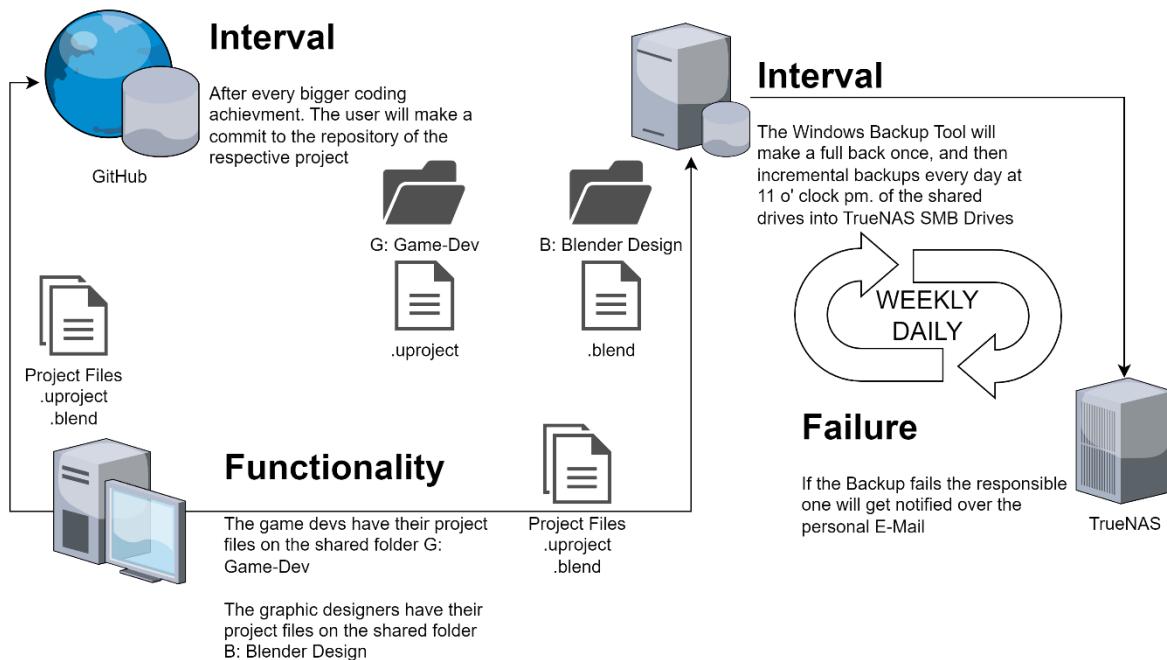
What should be saved?

The following things should be saved to TrueNAS:

- Webserver
- Mail Cow mail server

Scope of Backup?

The Scope of the Backup isn't that big since we developers use GitHub, and this makes up for a big portion of our backup game. Either way, I will make a backup after 3, 2 , 1 Principle



Concept

The 3, 2, 1 Principle states that there must be **3 Copies, 2 Mediums, 1 Offsite**

In this case the following would hold true

3 Copies → 1 copy on the hard drive of workstation

1 copy on the Win FileServer → Backup on TrueNAS

1 copy on the cloud with github

2 Mediums → 1 Medium Hard drive of workstation

1 Medium Win FileServer → Backup on TrueNAS

1 Offsite → GitHub Cloud

The 3-2-1 Rule



Have at Least Three Copies of Your Data



Store Two Copies on Different Storage Types



Keep One Copy Off-Site

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V O O N A M I

Legal ramifications

Since this is a personal kind of startup there isn't much there is to say.

The legal ramifications are in line with the guidelines of the Switzerland Data Protection Law and are encrypted by standards of the BSI.

Cost Efficiency

The bulk of the data will be stored in GitHub so it won't be that expensive, the project files are also not that big at most 5GB per Project.

Data set size (GB):	<input type="text" value="5"/>	Data change rate (between backups) (%):	<input type="text" value="5"/>
Number of full backups to store per week:	<input type="text" value="7"/>	Number of incremental backups to store per week:	<input type="text" value="1"/>
Number of full backups to store per month:	<input type="text" value="7"/>	Number of incremental backups to store per month:	<input type="text" value="4"/>
Total number of full backups to store:	<input type="text" value="7"/>	Total number of incremental backups to store:	<input type="text" value="4"/>
Target full backup window (hr):	<input type="text" value="4"/>	Target incremental backup windows (hr):	<input type="text" value="2"/>
Expected compression ratio:	<input type="text" value="2:1"/>	Expected de-duplication ratio:	<input type="text" value="1:1"/>
Storage cost per TB/month:	<input type="text" value="12.5"/>		
<input type="button" value="Calculate"/>			

Backup storage size	Non - compressed	Compressed	De-dupl.	Compressed + De-dupl.
Full (GB):	5	2.50	5	2.50
Incremental (GB):	0.25	0.12	0.25	0.12
Weekly (GB):	35.25	17.62	35.25	17.62
Monthly (GB):	36	18	36	18
Total (GB):	36	18	36	18
Cost per month:	0.45	0.23	0.45	0.23
Cost per year:	5.40	2.70	5.40	2.70

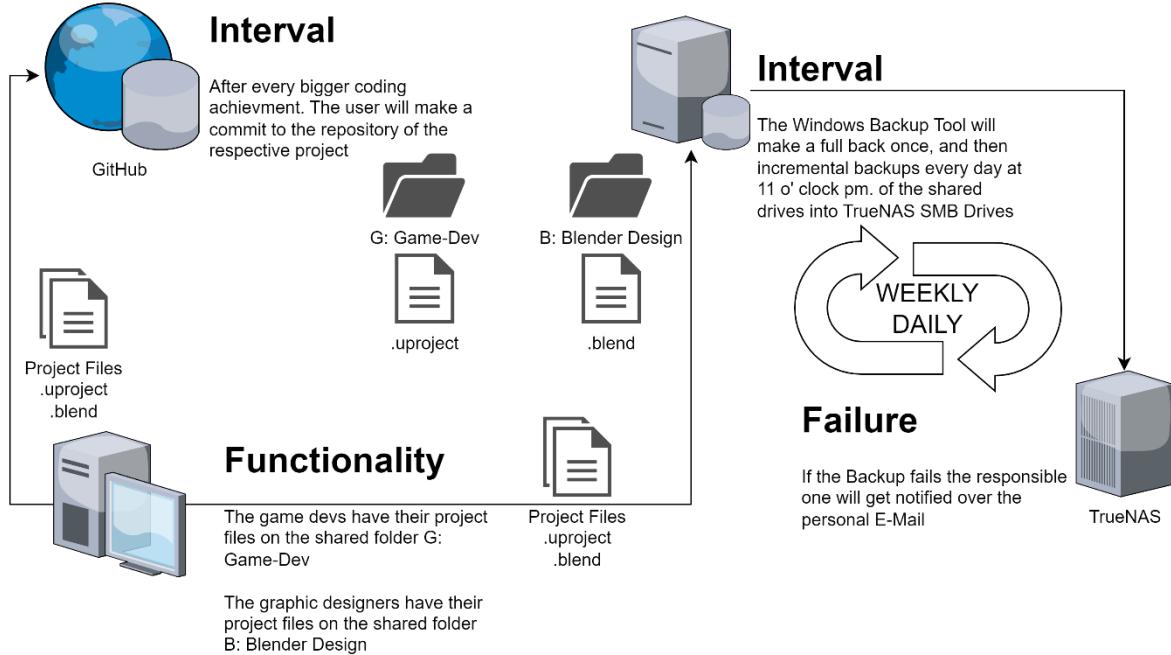
Throughput required to meet backup window (non-compressed)	(GByte/hour)	(Mbit/sec)
- for full backup:	1.25	2.78
- for incremental backup:	0.12	0.28

This means that storage of about 16TB will be sufficient to last us a while.

Long-term Storage necessity

As I already mentioned, with the max file size of about 5GB per Project maximal one project in development there will be enough space for our project in our 16 TB storage capacity.

Concept of the backup



As I said before, we aim to have a 3,2,1 backup concept.

If something needs to be restored, we'll do that manually since it's as simple as drag and dropping it into our shared drive.

If we notice that something isn't right, we can immediately roll back via version control from github, so this doesn't really pose a threat.

Automation

The backups are configured in such a way that the windows server will recognize when its 11 o' clock pm and it will automatically make a backup to TrueNAS.

However, the bulk will still be committed by hand, because of the commits to GitHub.

Tests

The created procedure and the automation of the windows server are thoroughly tested, to ensure that they run smoothly and cater to our needs at Garbo-development-studio. The test in tale:

- The verification of whether backups are created and updated properly.
- The simulation of data loss and the restoration of data to assess the effectiveness of the procedure.
- The validation that automated backups occur at the scheduled times.
- Check whether the project files are accessible from different locations to ensure that the backup solution is functioning properly.

Comprehensive tests and checks ensure that the backup and recovery procedure meet the specific requirements of our company standards and that the data is reliably and securely protected. This ensures that in the event of an unexpected occurrence, such as data loss.

Automated backup solution with Backup Schedular

Garbo Development Studio continuously improves its games every year and every day. To ensure that the latest enhancements are always available, it is recommended to perform daily backups and upload the code onto GitHub and TrueNAS.

Concrete advantages with GitHub

1. **Built in version control:** We don't have to do much, it already has version control with a SHA1-C checksum to validate that the commit is real.
2. **Reliability:** In the past years all employees at Garbo-development-studio have only made good experiences with GitHub, since it's reliable and you can download your progress anywhere.
3. **No-Vendor-Lock-in:** Since GitHub isn't a traditional Cloud Provider/Service it's easy to transport your data from one provider to another.
4. **Cost efficiency:** GitHub is incredibly cheap, even a GitHub Pro Organization only cost about 4 Euro per member, this means that we at maximum spend 20 to 25 Euro per month, given we are 5 members.

Backup-Holding period

On-Prem: Until we don't have enough space and until we have no money left to spend.

Cloud GitHub: Until GitHub has no money for storage anymore.

Emergency restoration plans

In case of a catastrophic failure of a disk we already have measures in place to prevent this from happening. We have configured TrueNAS' storage pools this way so that they use RAID 5 technology so even if a drive goes kaput, we always can restore them by using **XOR-Logic**.

Advantages of automation

Time Savings: Automated backups can be scheduled to occur at specified times, eliminating the need for manual intervention.

Reliability: Automated backups reduce the risk of human errors that can lead to data loss.

Consistency: Automation ensures that backups are carried out regularly and consistently.

Scalability: With automated backups, you can easily scale up data protection efforts since the process is not dependent on manual capacity.

Quick Recovery: In the event of data loss, automated backups enable a fast and efficient data restoration.

Backup-Realization

TrueNAS Configuration

I've allocated six hard disks that will be used for storage pools.

TrueNAS will have two configuration pools

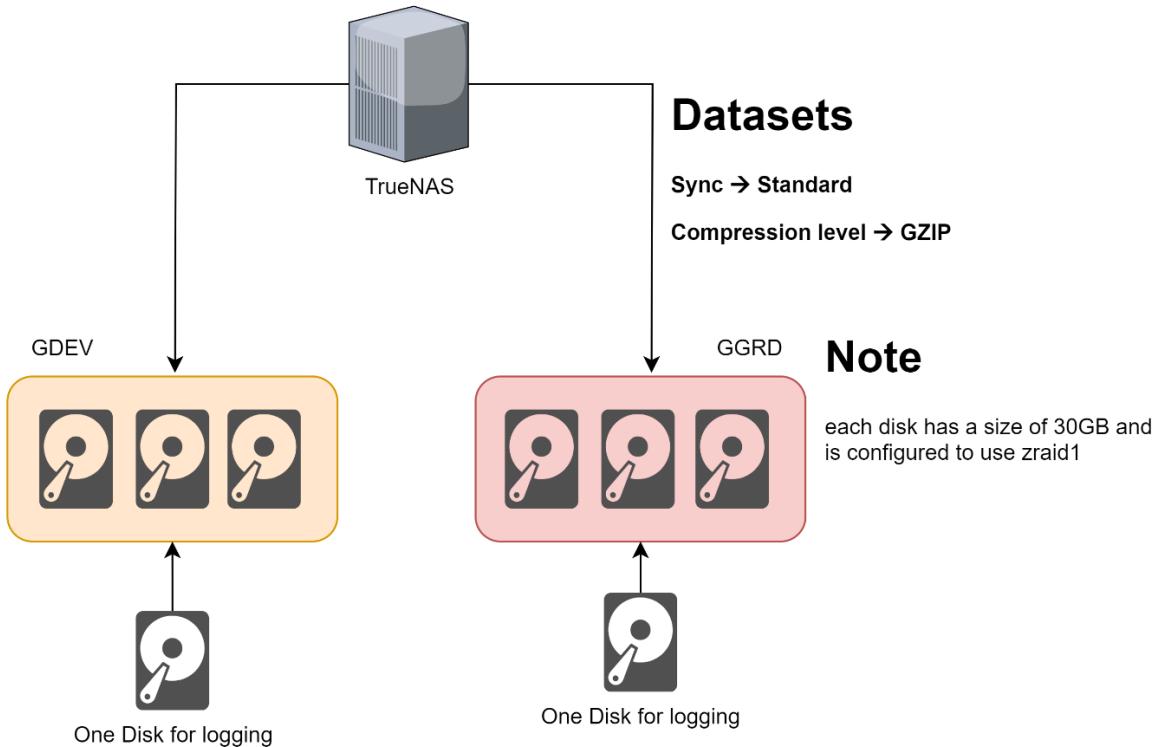
GDEV → Encryption → RAID 5 or zraid1

GGRD → Encryption → RAID 5 or zraid1

GDEV → Log function on

GGRD → Log function on

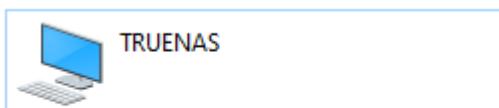
Details



Shared Drives are B and G



The backups are getting backed up here



Address to this would vary on the dataset:

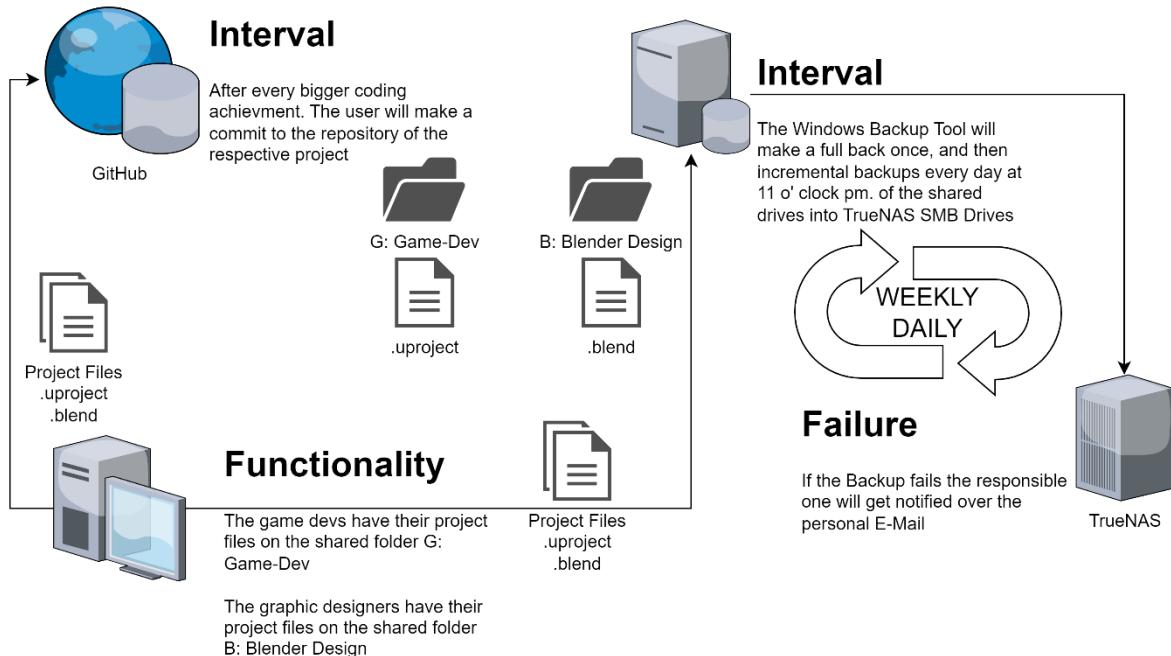
GDEV → \\192.168.5.110\GDEV\GDEV

GGRD → \\192.168.5.110\GGRD\GGRD

Alarm

I've configured windows so that if something goes wrong it will mail me an email onto my private email-adress: ryanleebopp@outlook.com

System overview



Backup Solution

Within the scope of the Garbo-Development-Studio project, an SMB Drive named "GDEV" and "GDRG" have been created, where in set intervals backups are getting made from the windows server onto the TrueNAS' shared SMB Drive.

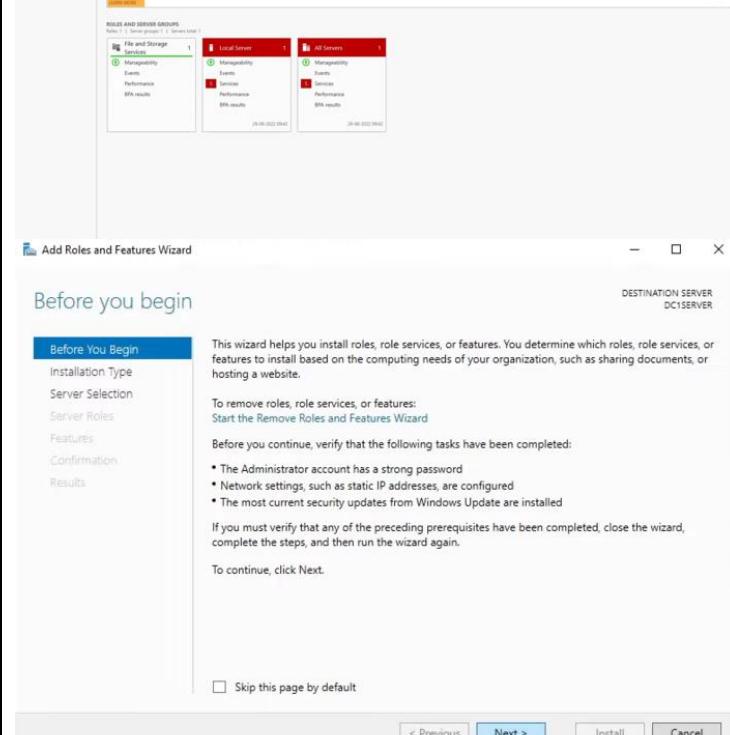
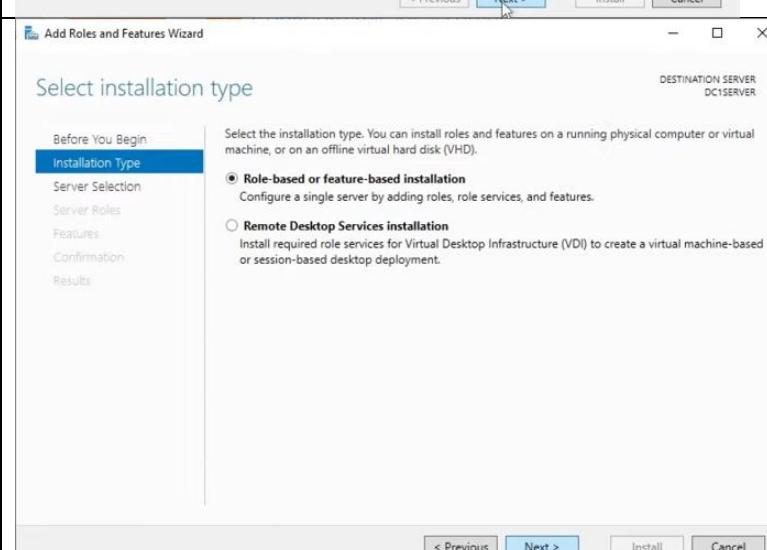
This should be a part of the 3, 2 , 1 Backup concept I previously mentioned before.

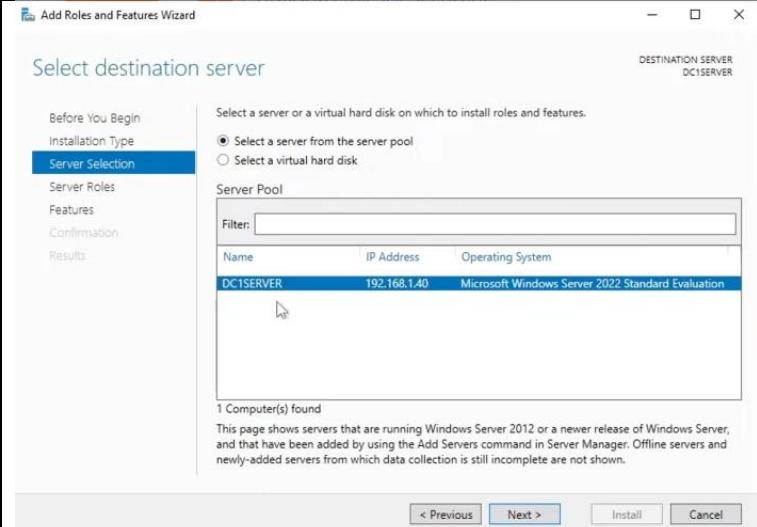
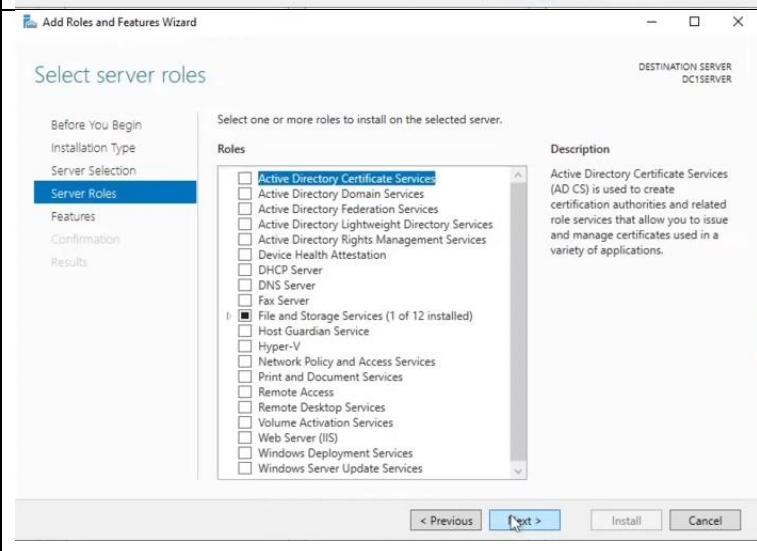
Management

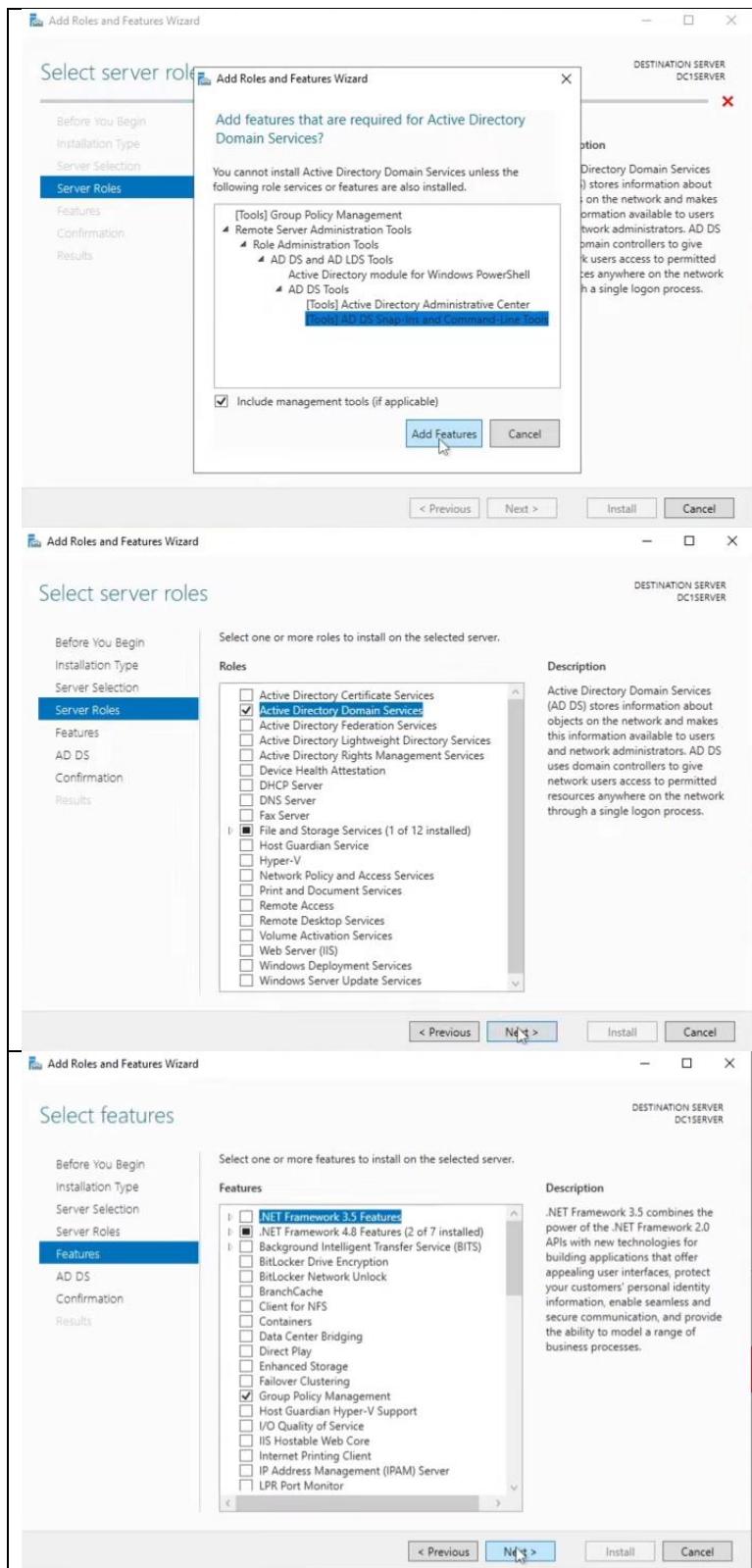
Management: The management of the backup solution lies with me, Lee. I am responsible for supervising the backup solution so that it keeps its integrity and consistency.

Realization

AD-DS

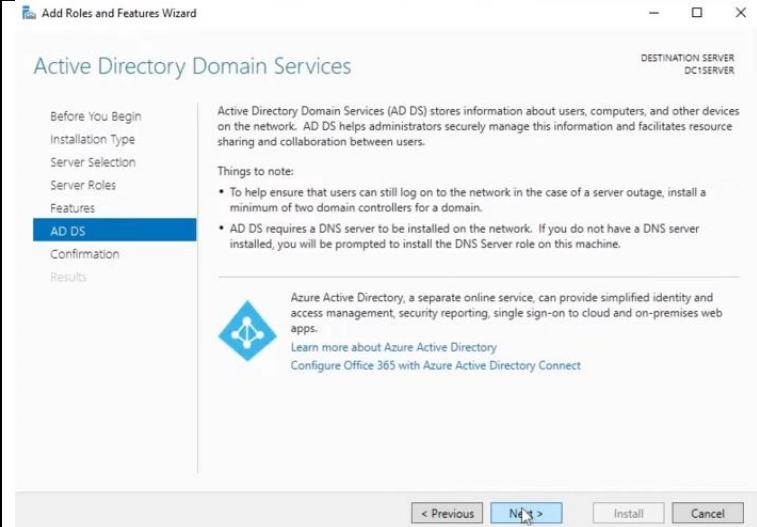
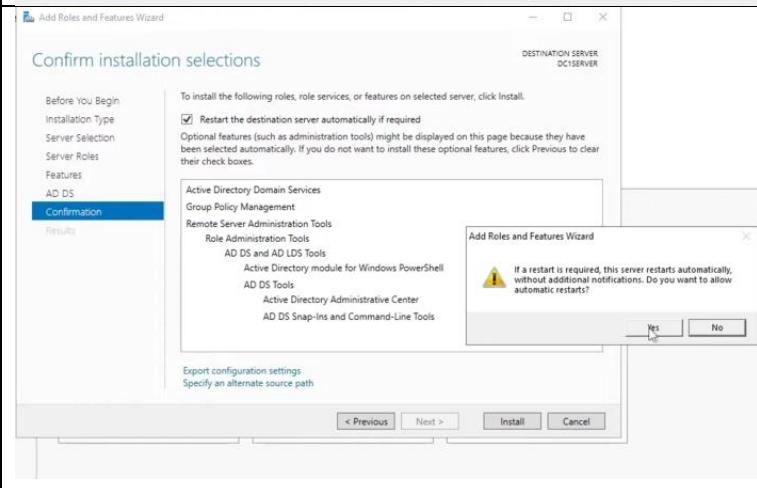
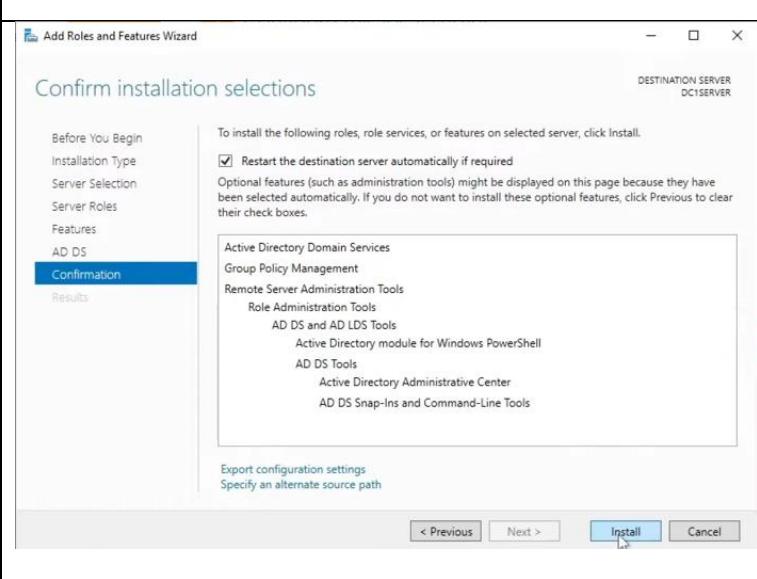
SCREENSHOT	DESCRIPTION
 	<p>The first step is to access the Server Manager. Do this by clicking the Windows home button and typing Server Manager into the search bar.</p> <p>Select the Dashboard from the page's left panel, right-click Manage on the top bar, and select Add Roles and Features in the drop-down menu. You'll then enter the Add Roles and Features Wizard page, leading you to the next step by clicking next.</p>
	<p>By default, Role-based installation is activated; you can just click Next for this step.</p>

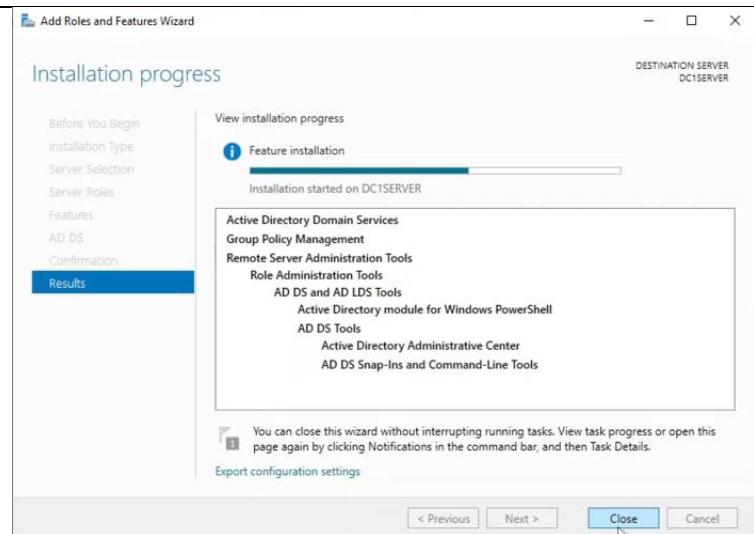
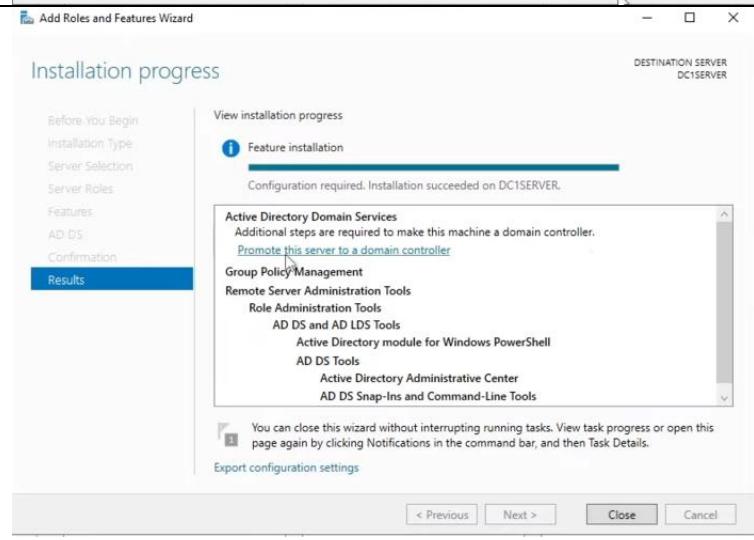
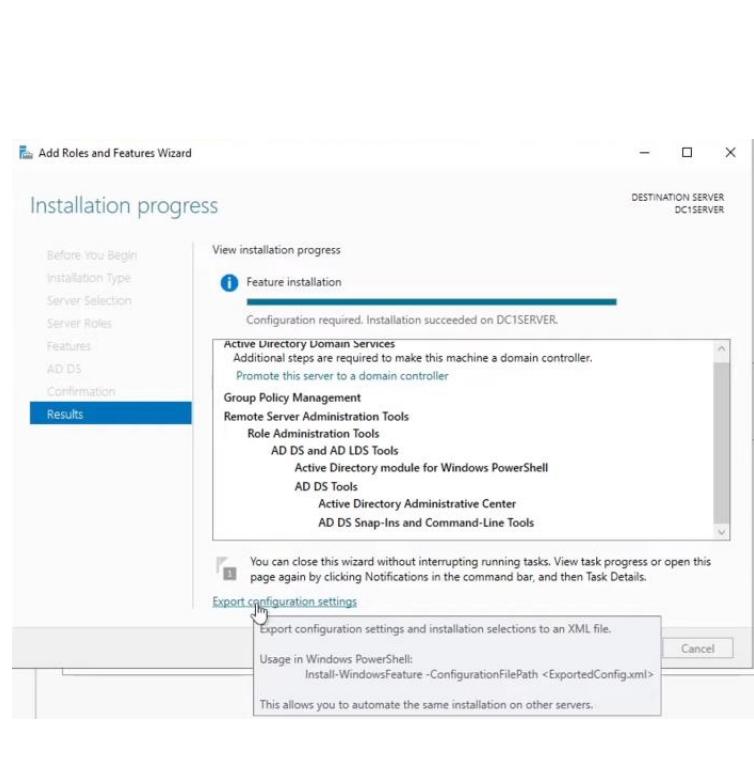
	<p>This step is to select the server on which you plan to set up Active Directory Domain Services. First, select the select a server from the server pool option, select the server's name and IP address displayed, and click Next.</p> <p>(For me the server's name would be WIN-SV-GARBO and the IP-address would be 192.168.5.100)</p>
	<p>To specify server roles, you will be faced with a list of different options that you should check the Active Directory Domain Services checkbox.</p>

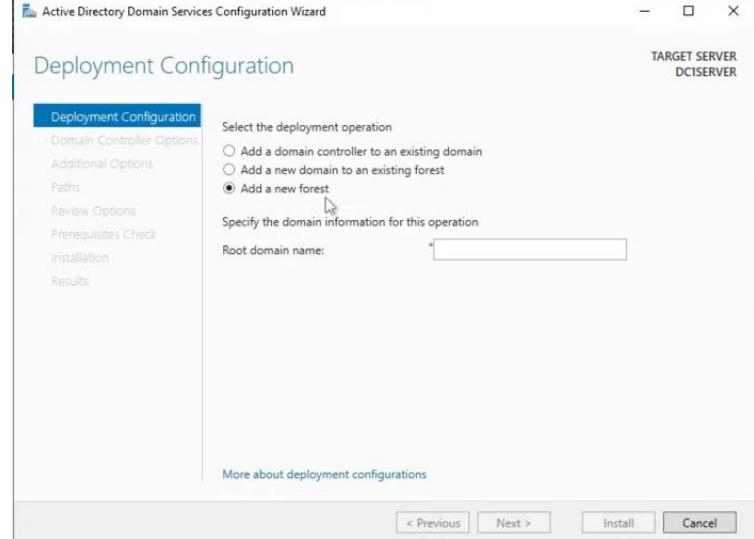
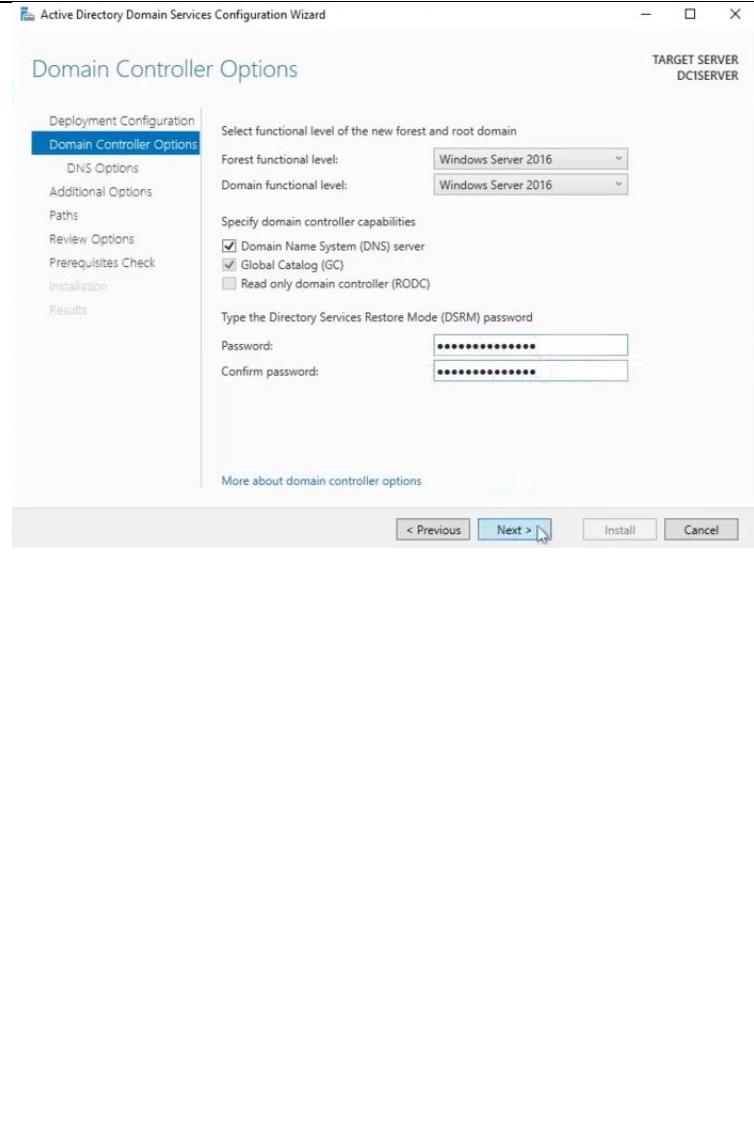


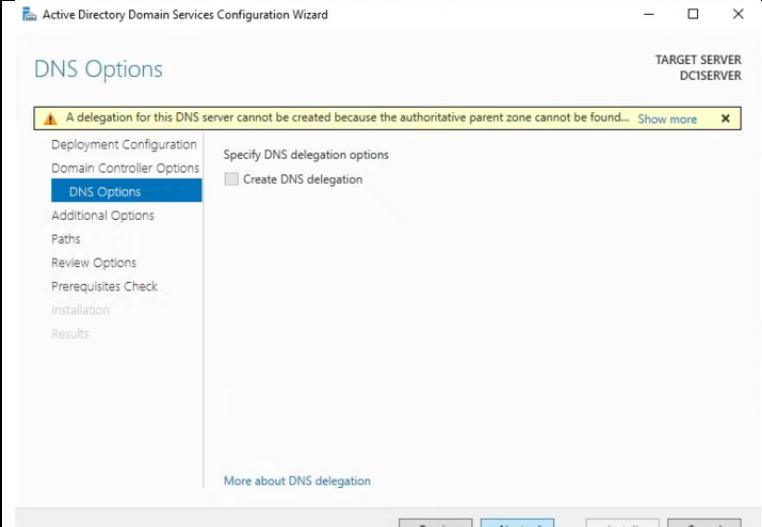
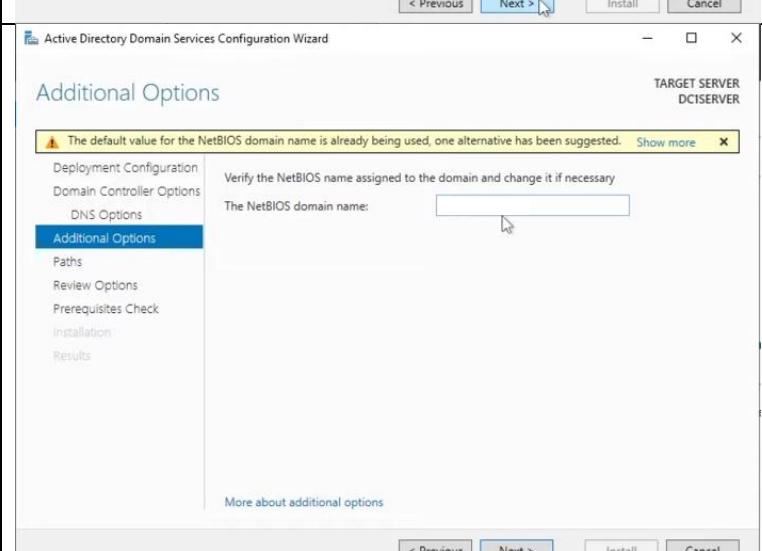
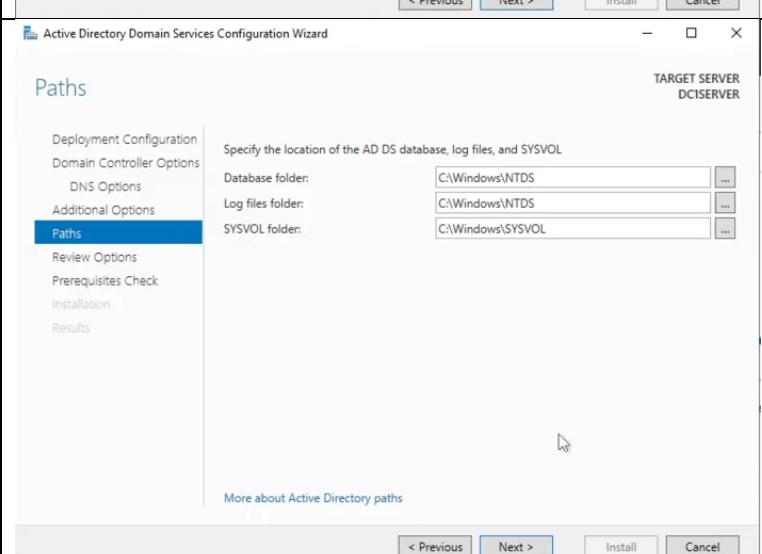
Add Roles and Features Wizard window appears automatically after step 5, which displays additional features required for **Active Directory Domain Services**, such as **group policy management, remote server, administration tools, AD LDS tools, etc.** To add the necessary features, click **Add Features** and **Next**.

Adding a special feature on the **select features** page is not mandatory. If you need, you can add a special feature, otherwise, go to the next step by selecting **Next** to run the active directory domain services wizard.

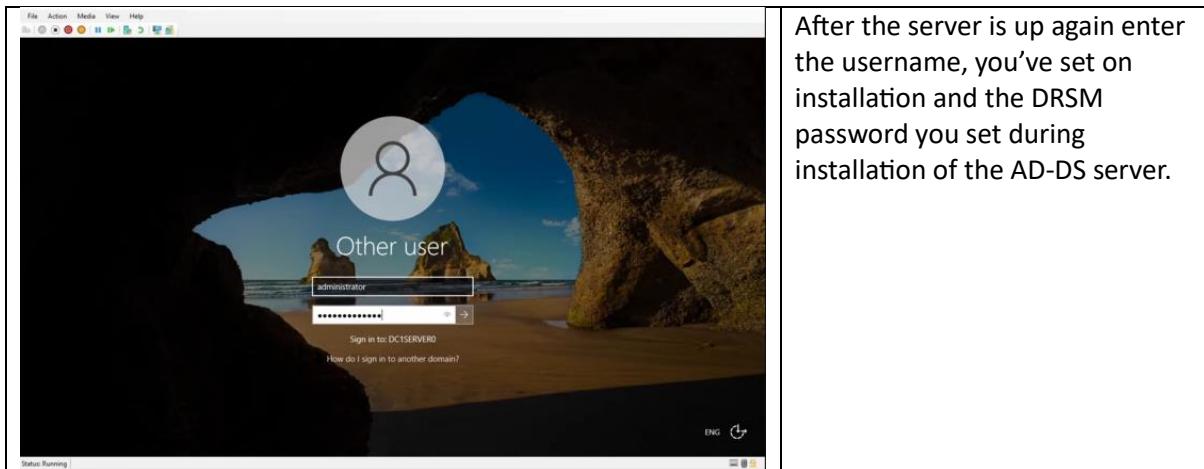
	<p>On this page you can choose to either read or if you're just like me you can skip this part by clicking Next.</p>
	<p>In this step, you can see the items that we have selected during the installation of active directory domain services to be installed before the installation of AD DS. Check the specified items and click the Install button after making sure. Before choosing Install, check the restart the destination server automatically if required box, answer yes to the request, and continue.</p>
	<p>As a result, the installation process starts; wait until the installation process of active directory domain services features is completed. It won't take much time.</p>

 <p>The screenshot shows the "Add Roles and Features Wizard" window titled "Installation progress". The left sidebar lists steps: Before You Begin, Installation Type, Server Selection, Server Roles, Features, AD DS, Confirmation, and Results. The "Results" step is selected. The main pane displays the "Feature installation" step for "DESTINATION SERVER DC1SERVER". It shows a progress bar and a list of installed features under "Active Directory Domain Services" and "Remote Server Administration Tools". A note at the bottom says "You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details." Buttons at the bottom include < Previous, Next >, Close, and Cancel.</p>	
 <p>This screenshot is identical to the one above, but the "Promote this server to a domain controller" link under "Active Directory Domain Services" is highlighted with a red box.</p>	<p>Now you have successfully installed the features and prerequisites of active directory domain services, and it is time to upgrade the server to Domain Controller. To do this, click on the "Promote this server to a domain controller" option after installing additional features.</p>
 <p>This screenshot is identical to the ones above, but the "Export configuration settings" link at the bottom of the main pane is highlighted with a red box.</p>	<p>Cool Side Note: At the bottom of the page, the "Export configuration settings" option is used to implement configuration and similar settings on another server to set up an active directory.</p>

	<p>In this step, you must select the deployment operation from the three available options. If you have not created a domain controller in the network before and are creating a domain controller for the first time, select the Add a new forest option and enter the Root domain name in the Empty dialog box. Finally, select the Next option.</p> <p>The Root domain name would be garbo.ch</p>
	<p>In domain controller options, you must specify the forest functional level and the domain functional level. By default, forest functional level is set to windows server 2016.</p> <p>This is also the latest version you can select, since there is no windows server 2022 option</p> <p>That means all domain controllers in your network should be 2016. If there is a domain controller below 2016, you should select a lower version of the operating system.</p> <p>The domain functional level can be higher than the forest functional level but cannot be lower than the forest functional level.</p> <p>Do not change the default settings in the Domain Controller Options window. All you must do is enter the Directory Services Restore Mode (DSRM) password and then click Next.</p> <p>DRSM Password: Abcd12s8rkds!</p>

	<p>At this step, you will see the A delegation for this DNS server cannot be created because the authoritative parent zone nameserver cannot be found error, ignore it, and continue by selecting the Next option.</p>
	<p>You can specify the NetBIOS domain name if needed or use the default value for the NetBIOS domain name. I'd suggest going with the default version, since it's just your AD-domain name.</p> <p>NetBIOS domain Name: garbo.ch</p>
	<p>In this step, you must specify the location of the AD DS database, log files, and SYSVOL (cessfull folder).</p> <p>We prefer to accept the default settings of the paths and not make any changes and complete the process of installing active directory domain services by selecting the Next option.</p>

	<p>This step is here for you to check if you've forgotten anything and to check if you've configured it all correctly. If you're happy you can click Next if not click Previous</p>
	<p>At this step, the prerequisites for the Active Directory Domain Services installation are checked and confirmed, and you can see the results of the prerequisites check in the View Results dialog box. If you encounter an error, return to the previous steps, make the necessary corrections, and then select Install to start the installation process.</p>
	<p>This process will take a while, and after it's done installing, the server will reboot.</p>



Why do I setup a AD-DS server?

I set one up to make AD-Groups and AD-Members so I have a **centralized permission control system**. This makes it easier to set the permissions after wards when I setup the shared drives.



GAB-DEV GROUP

Name	Typ	Beschreibung
GAB-DEV	Sicherheitsgru...	

Left sidebar navigation:

- Active Directory-Benutzer und -Gruppen
- Gespeicherte Abfragen
- garbo.ch
 - Builtin
 - Computers
 - Domain Controllers
 - ForeignSecurityPrincipals
 - Managed Service Accounts
 - Users
 - GAB-DEV
 - GAB-GRD

Members

Eigenschaften von GARBO-DEV

Allgemein Mitglieder Mitglied von Verwaltet von

Mitglieder:

Name	Active Directory-Domänen Dienste-Ordner
Fabian FN. N...	garbo.ch/GARBO-DEV-STUDIO-MEMBERS
Li Xiao LXH. ...	garbo.ch/GARBO-DEV-STUDIO-MEMBERS
Marcelious Al...	garbo.ch/GARBO-DEV-STUDIO-MEMBERS

GARBO-DEV-STUDIO-MEMBERS

Name	Typ	Beschreibung
Fabian FN ...	Kontakt	
Li Xiao LXH. ...	Benutzer	
Marcelious ...	Benutzer	
Miguel Juan ...	Benutzer	
Patrick Janis ...	Benutzer	

GAB-GRD GROUP

Active Directory-Benutzer und -Gruppen	Name	Typ	Beschreibung
> Gespeicherte Abfragen			
garbo.ch	GAB-GRD	Benutzer	Sicherheitsgruppe
> Builtin			
> Computers			
> Domain Controllers			
> ForeignSecurityPrincipal:			
> Managed Service Accounts			
> Users			
GAB-DEV			
GAB-GRD			

Members

Eigenschaften von GAB-GRD

?

X

Allgemein Mitglieder Mitglied von Verwaltet von

Mitglieder:

Name	Active Directory-Domänenordner
Miguel Juan ...	garbo.ch/GARBO-DEV-STUDIO-MEMBERS
Patrick Janis ...	garbo.ch/GARBO-DEV-STUDIO-MEMBERS

Permissions table to drive.

Game-Dev (G:)

29.7 GB frei von 29.7 GB

GARBO-DEV (GARBO\GARBO-DEV)	Jeder	Hinzufügen... Entfernen
GARBO-DEV (GARBO\GARBO-DEV)	Jeder	Hinzufügen... Entfernen

Berechtigungen für "Jeder"

Vollzugriff	<input type="checkbox"/>	<input type="checkbox"/>
Ändern	<input type="checkbox"/>	<input type="checkbox"/>
Lesen	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Berechtigungen für "GARBO-DEV"

Vollzugriff	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ändern	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lesen	<input checked="" type="checkbox"/>	<input type="checkbox"/>

permissions table to drive.

The screenshot shows a Windows file sharing interface with two drives listed:

- Blender-Design (B:)**
 - 30.1 GB frei von 30.1 GB
- GARBO-GRD (GARBO\GARBO-GRD)**
 - 30.1 GB frei von 30.1 GB

For each drive, the "Jeder" (Everyone) group is selected. Below each drive are two tables showing permissions for "Jeder" and "GARBO-GRD".

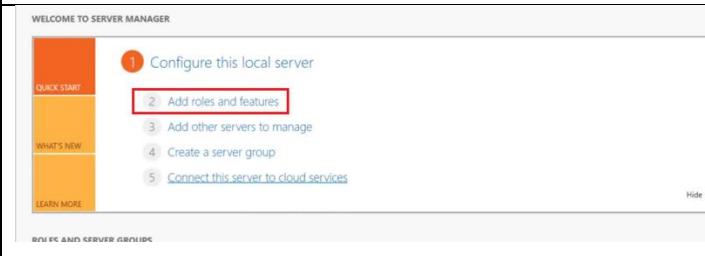
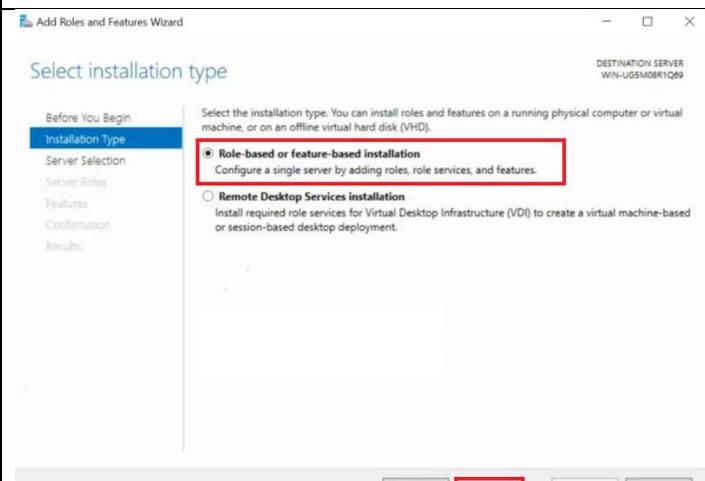
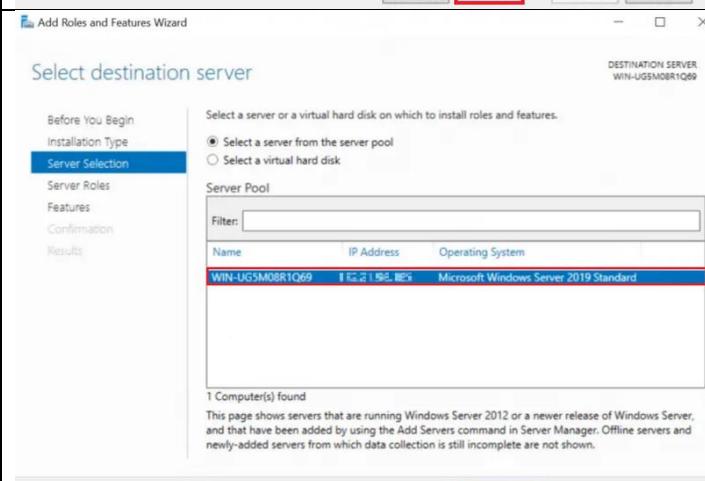
Permissions for "Jeder":

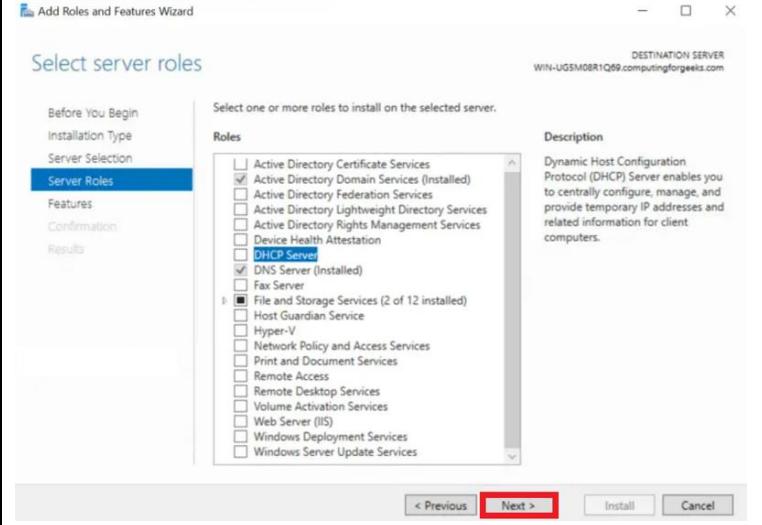
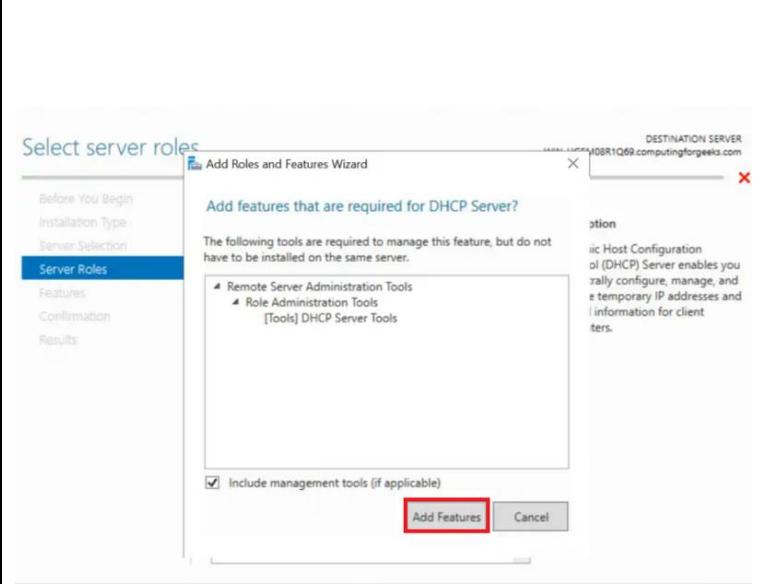
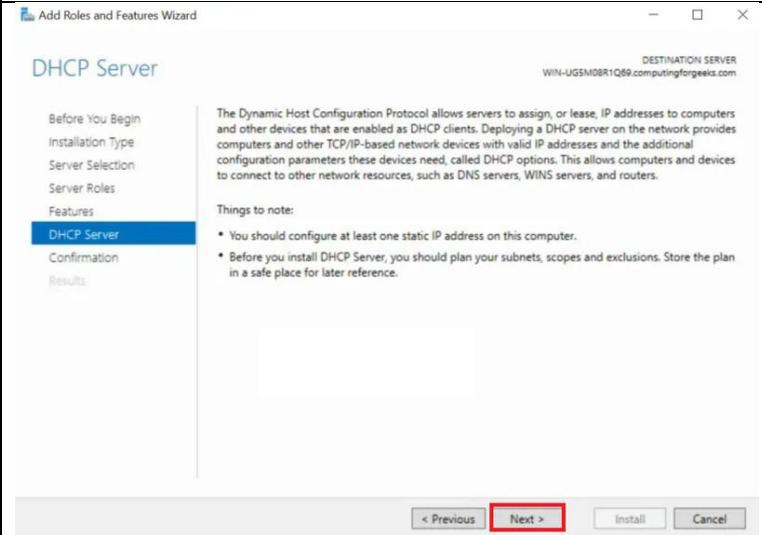
	Zulassen	Verweigern
Vollzugriff	<input type="checkbox"/>	<input type="checkbox"/>
Ändern	<input type="checkbox"/>	<input type="checkbox"/>
Lesen	<input checked="" type="checkbox"/>	<input type="checkbox"/>

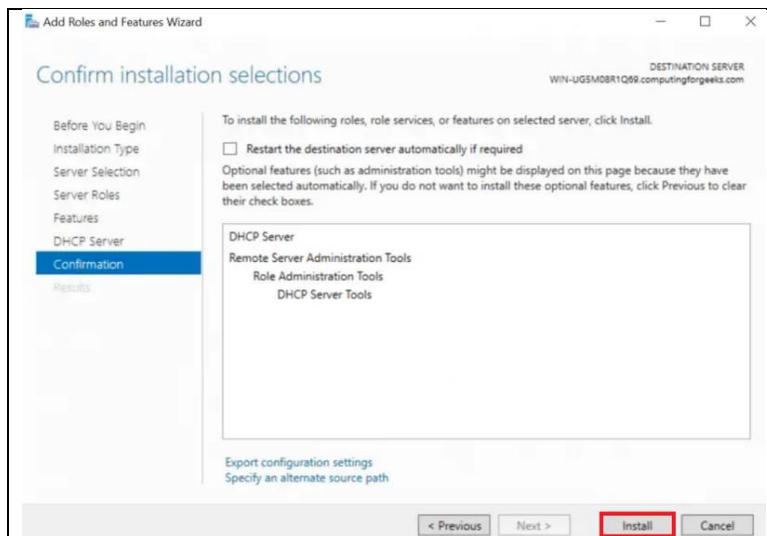
Permissions for "GARBO-GRD":

	Zulassen	Verweigern
Vollzugriff	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ändern	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lesen	<input checked="" type="checkbox"/>	<input type="checkbox"/>

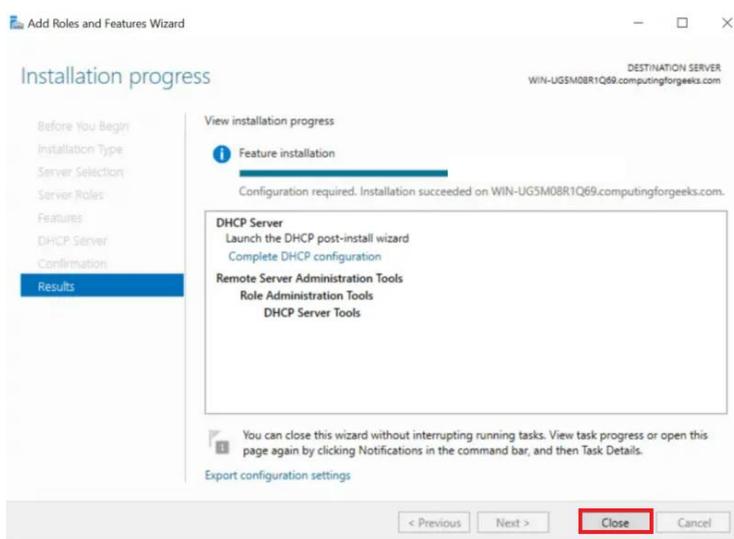
DHCP-Server

SCREENSHOT	DESCRIPTION						
 <p>WELCOME TO SERVER MANAGER</p> <p>QUICK START</p> <p>1 Configure this local server 2 Add roles and features 3 Add other servers to manage 4 Create a server group 5 Connect this server to cloud services</p> <p>WHAT'S NEW</p> <p>LEARN MORE</p> <p>ROLES AND SERVER GROUPS</p>	<p>To start the installation process, you need to open Server Manager. From the Start Menu, open the Server Manager console.</p> <p>Then, click “Add Roles and Features” in the “Server Manager” window. This will cause a pop-up window to appear. On the pop-up, click “Next”</p>						
 <p>Add Roles and Features Wizard</p> <p>Select installation type</p> <p>Before You Begin</p> <p>Installation Type</p> <p>Server Selection</p> <p>Server Roles</p> <p>Features</p> <p>Confirmation</p> <p>Results</p> <p>DESTINATION SERVER WIN-UGSM08R1Q69</p> <p>Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).</p> <p><input checked="" type="radio"/> Role-based or feature-based installation Configure a single server by adding roles, role services, and features.</p> <p><input type="radio"/> Remote Desktop Services installation Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.</p> <p>< Previous Next > Install Cancel</p>	<p>Once the below page is displayed, choose the Role-Based or Feature-based installation radio option, and click on the Next button.</p>						
 <p>Add Roles and Features Wizard</p> <p>Select destination server</p> <p>Before You Begin</p> <p>Installation Type</p> <p>Server Selection</p> <p>Server Roles</p> <p>Features</p> <p>Confirmation</p> <p>Results</p> <p>DESTINATION SERVER WIN-UGSM08R1Q69</p> <p>Select a server or a virtual hard disk on which to install roles and features.</p> <p><input checked="" type="radio"/> Select a server from the server pool <input type="radio"/> Select a virtual hard disk</p> <p>Server Pool</p> <p>Filter:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>IP Address</th> <th>Operating System</th> </tr> </thead> <tbody> <tr style="background-color: #0078d4; color: white;"> <td>WIN-UGSM08R1Q69</td> <td>192.168.1.2</td> <td>Microsoft Windows Server 2019 Standard</td> </tr> </tbody> </table> <p>1 Computer(s) found</p> <p>This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.</p> <p>< Previous Next > Install Cancel</p>	Name	IP Address	Operating System	WIN-UGSM08R1Q69	192.168.1.2	Microsoft Windows Server 2019 Standard	<p>Select the server you want to install the DHCP Server on from the list on the page below. After choosing the Server machine that hosts your DHCP server, click Next.</p>
Name	IP Address	Operating System					
WIN-UGSM08R1Q69	192.168.1.2	Microsoft Windows Server 2019 Standard					

	<p>In this step of Configuring DHCP Server in Windows, you need to Select Server Roles.</p>
	<p>A pop-up window will appear when you choose the option, requesting that you add features needed by the DHCP server. If you want to add the DHCP management tools along with the DHCP role, keep the Include Management Tools checked selected. Then, click on Add Features and then click on the Next button to move on.</p>
	<p>Click Next</p>



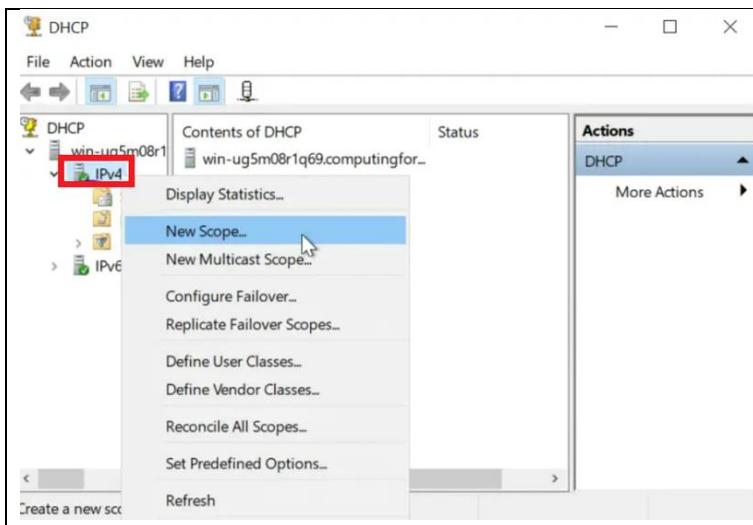
You are so close to finishing Configuring DHCP Server in Windows. In this step, verify that DHCP Server and other names are on the list by looking at it. Click **Install** after that.



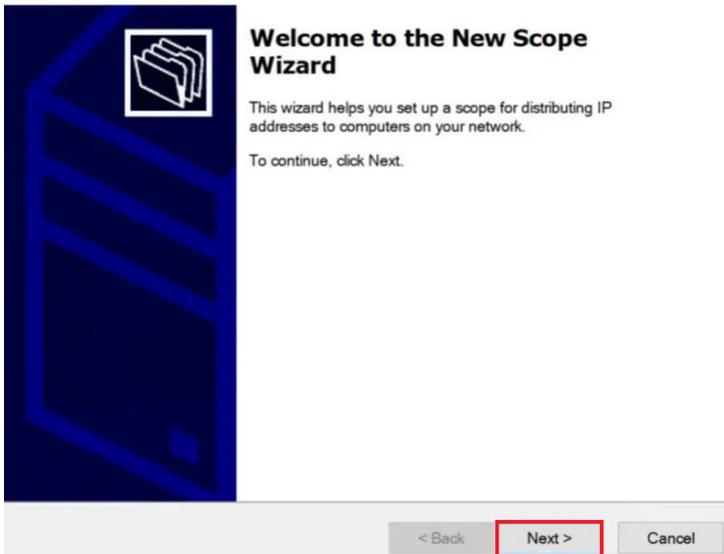
Click **Close** once everything has been installed successfully, and your DHCP server will be up and running.
Let's start the DHCP post-deployment configuration process.

The screenshot shows two windows side-by-side. The left window is the 'Tools' menu of the Windows Server Manager. The 'DHCP' option is highlighted with a blue selection bar. The right window is the 'DHCP' management console, showing a tree view of DHCP scopes and their sub-options like IPv4 and IPv6.

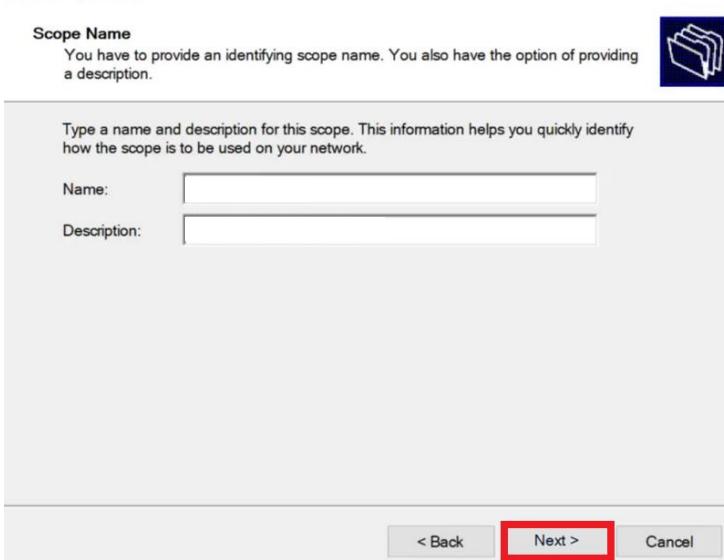
To continue Configuring DHCP Server in Windows, return to Server Manager and select **DHCP** from the **Tools** menu. The DHCP Configuration Window will then open as displayed below.



New Scope Wizard



New Scope Wizard



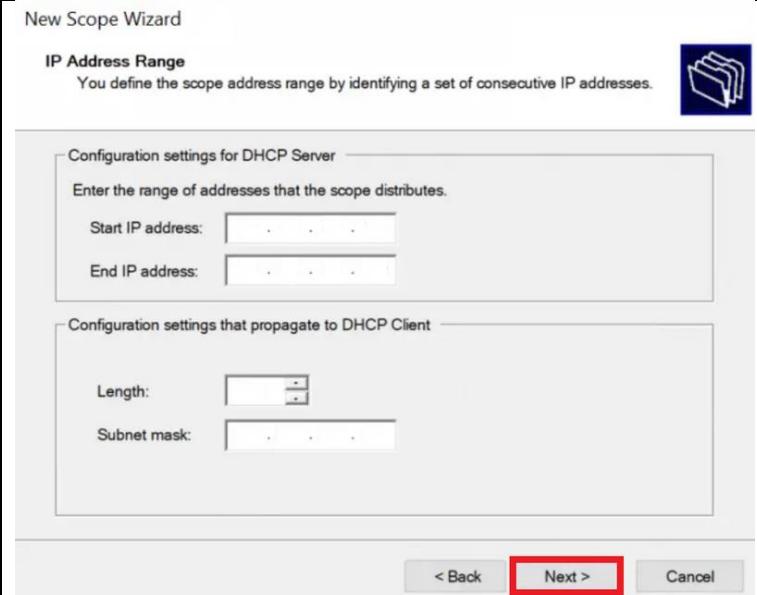
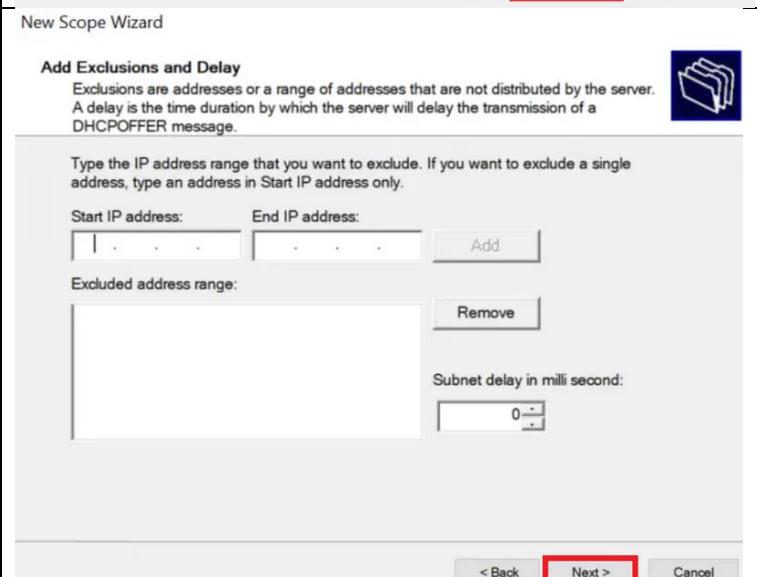
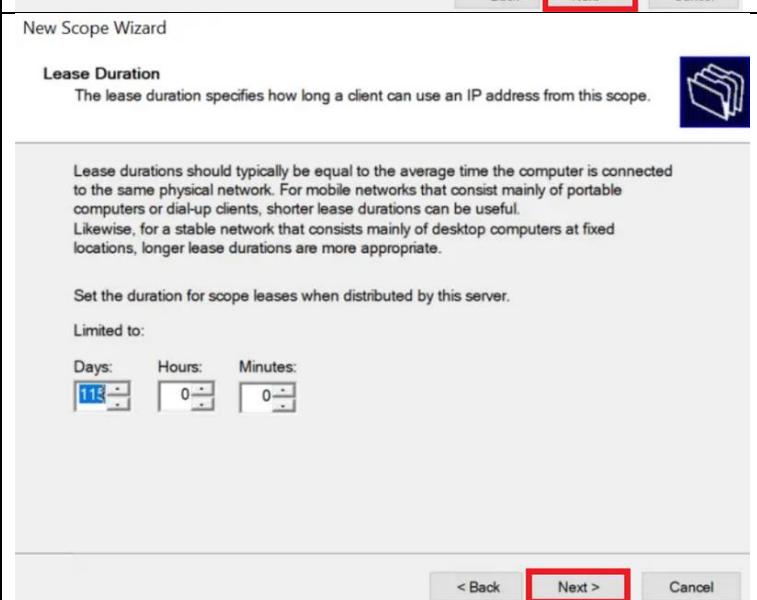
Before you set scopes make sure to authorize the server.

Click the drop-down arrow as indicated above, then right-click **IPv4** in the window's left pane and select **New Scope**.

As seen, a new window for the scope wizard will open. Choose **Next**

Select “**Next**” after entering the new scope’s name and description.

Name: GAB-WO
Description: GARBO-Work office

 <p>New Scope Wizard</p> <p>IP Address Range</p> <p>You define the scope address range by identifying a set of consecutive IP addresses.</p> <p>Configuration settings for DHCP Server</p> <p>Enter the range of addresses that the scope distributes.</p> <p>Start IP address: [] . . .</p> <p>End IP address: [] . . .</p> <p>Configuration settings that propagate to DHCP Client</p> <p>Length: []</p> <p>Subnet mask: [] . . .</p> <p>< Back Next > Cancel</p>	<p>In this step, you need to input the preferred IP address range. To do this, input your start and End IPs, Length, and Subnet Mask. When you are finished, click on Next.</p> <p>Starting IP address: 192.168.5.50 End IP address: 192.168.5.250 Length: 24 Subnet mask: 255.255.255.0</p>
 <p>New Scope Wizard</p> <p>Add Exclusions and Delay</p> <p>Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCPOFFER message.</p> <p>Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.</p> <p>Start IP address: [] . . . End IP address: [] . . . Add</p> <p>Excluded address range:</p> <p>Remove</p> <p>Subnet delay in milli second: [] 0 . . .</p> <p>< Back Next > Cancel</p>	<p>Consider excluding some IP-ranges because you maybe want to add some network components like, printers, IP-cameras, Access Points, Switches or Servers.</p> <p>I've excluded the following IP-addresses:</p> <p>Start: 192.168.5.100 End: 192.168.5.150</p> <p>This still leaves the Normal DHCP range with 200 different DHCP IP-addresses.</p>
 <p>New Scope Wizard</p> <p>Lease Duration</p> <p>The lease duration specifies how long a client can use an IP address from this scope.</p> <p>Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.</p> <p>Set the duration for scope leases when distributed by this server.</p> <p>Limited to:</p> <p>Days: [] 115 Hours: [] 0 Minutes: [] 0</p> <p>< Back Next > Cancel</p>	<p>DHCP-Clients will receive a random address withing the DHCP range starting from 5.50 - 5.250</p> <p>They won't be assigned this IP-address forever, they will be assigned to them until their lease time runs out.</p> <p>I've set them here to a 115 Days since we at Garbo's-development-Studio's often work with IP-addresses to test game servers on the workstations.</p>

New Scope Wizard

Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.

When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

Yes, I want to configure these options now

No, I will configure these options later

< Back **Next >** Cancel

If you agree with the DHCP Options as they are shown on the page, simply click “**Next**” on this page.

New Scope Wizard

Router (Default Gateway)

You can specify the routers, or default gateways, to be distributed by this scope.

To add an IP address for a router used by clients, enter the address below.

IP address:

Add Remove Up Down

< Back **Next >** Cancel

In this step of Configuring DHCP Server in Windows, you must enter the Default Gateway that will be given to the clients during the leasing period on this page. Enter it in and select **Add** next to it. Click **Next** after that.

New Scope Wizard

Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.

You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain:

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name: IP address:

Resolve Add Remove Up Down

< Back **Next >** Cancel

Previously, you got familiar with DNS Records and you know the DNS is crucial since it makes it easier to resolve FQDNs to IP Addresses.

So, enter it and press “**Next**”

Since we already set a parent domain let us use that domain:

Parent domain: garbo.ch
Server name: WIN-SV-GARBO
IP-adress: 192.168.5.100

Click **Add** to make a new entry.

<p>New Scope Wizard</p> <p>WINS Servers</p> <p>Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.</p> <p>Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.</p> <p>Server name: [] IP address: [.] . . .</p> <p>[Resolve] [Add] [Remove] [Up] [Down]</p> <p>To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.</p>	<p>We don't have one so skip this part, click on Next</p>
<p>New Scope Wizard</p> <p>Activate Scope</p> <p>Clients can obtain address leases only if a scope is activated.</p> <p>Do you want to activate this scope now?</p> <p><input checked="" type="radio"/> Yes, I want to activate this scope now <input type="radio"/> No, I will activate this scope later</p>	<p>Simply click “Next” to activate the scope we have set for this Step. Pick the second radio option if you want to activate it later.</p>
<p>New Scope Wizard</p> <p>Completing the New Scope Wizard</p> <p>You have successfully completed the New Scope wizard.</p> <p>To provide high availability for this scope, configure failover for the newly added scope by right clicking on the scope and clicking on configure failover.</p> <p>To close this wizard, click Finish.</p>	<p>Create additional scopes as shown above for the VLANs you have segmented in your LAN/Network, then set up your router so that it requests IP addresses from the DHCP server in accordance if you have done so.</p>

 192.168.237.200	ubuntu1.kremer.local	Lease Expiration 11/3/2012 1:26:35 PM	Unique ID 000c29c757ba	T. D.
 192.168.237.201	box.kremer.local	Lease Expiration 10/27/2012 1:17:48 ...	Unique ID 000c292804b9	D.
 192.168.237.220	box.kremer.local	Lease Expiration 10/27/2012 1:19:48 ...	Unique ID 000c29cbc1b7	D.

Your DHCP Server works if you see that Client could get an IP-address in your set IP-range.

NOTE: This screenshot isn't mine I've used this as an example.

Configure DHCP-Client

Configuring a Windows 10 client to obtain its IP address dynamically from a DHCP server involves a straightforward process. Here are the steps:

Configure Windows 10 for DHCP:

1. Open Network Settings

- Click on the Start menu and select "Settings" (gear icon).
- Go to "Network & Internet."

2. Select Ethernet or Wi-Fi

- Choose either "Ethernet" or "Wi-Fi," depending on your network connection.

3. Change Adapter Options:

- Click on "Change adapter options" to open the Network Connections window.

4. Choose Network Adapter:

- Right-click on the network adapter you're using (Ethernet or Wi-Fi) and select "Properties."

5. Select Internet Protocol Version 4 (TCP/IPv4):

- In the list of items, locate "Internet Protocol Version 4 (TCP/IPv4)," select it, and click on the "Properties" button.

6. Configure for DHCP:

- In the properties window, make sure the option for "Obtain an IP address automatically" is selected.
- Also, ensure that "Obtain DNS server address automatically" is selected.

7. Apply Changes:

- Click "OK" to close the properties window.

8. Verify Configuration:

- To verify the configuration, open a command prompt.
- Type the command **ipconfig /all** and press Enter.
- Check that the IPv4 address, subnet mask, default gateway, and DNS servers are assigned dynamically.

Verify DHCP Server Configuration:

1. Check DHCP Server:

- On the DHCP server (192.168.5.100 in my case), ensure that the DHCP service is running.
- Verify that the DHCP scope is configured correctly to provide IP addresses in the range specified (192.168.5.50 - 192.168.5.250).

2. Check DHCP Logs (Optional):

- Optionally, you can check DHCP logs on the server for any issues or to confirm that the client received an IP address.

Test Connectivity:

1. Check IP Address:

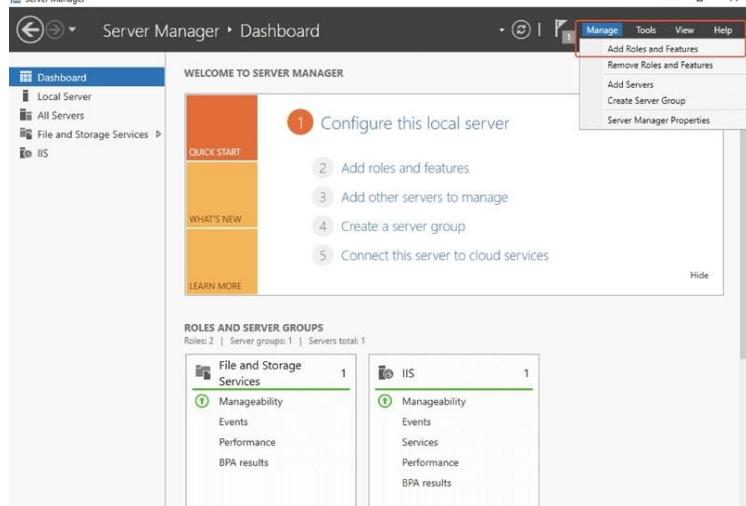
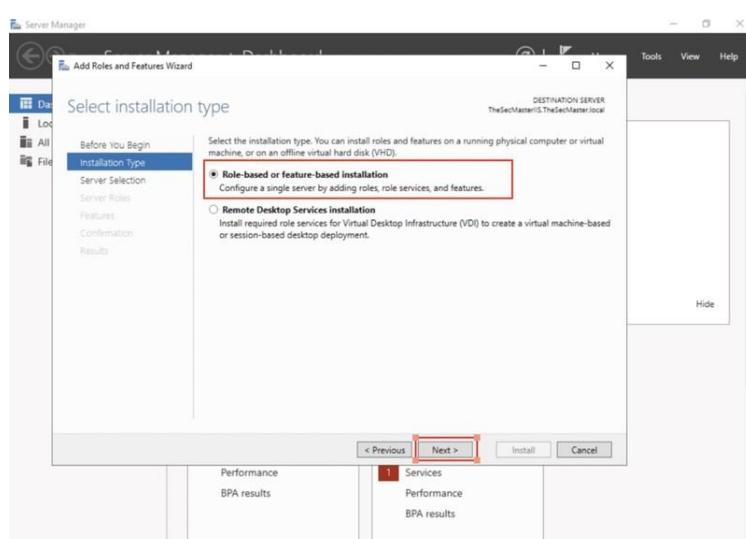
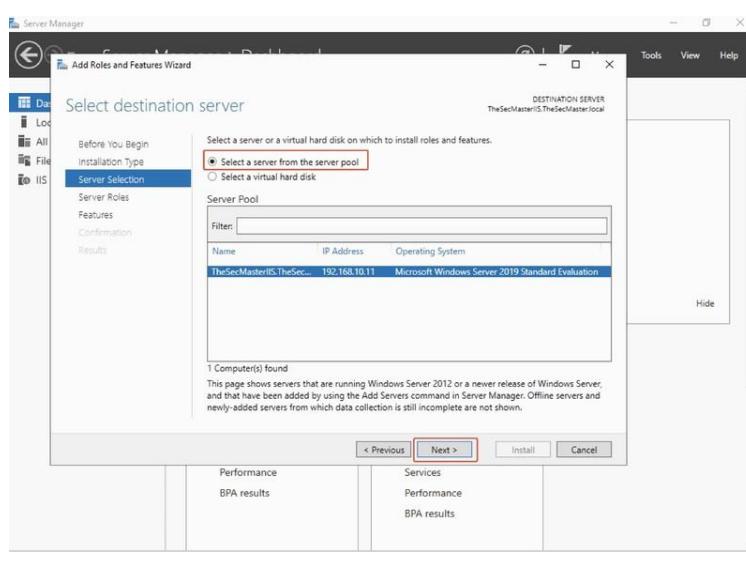
- After configuring the client for DHCP, check the assigned IP address using **ipconfig** in the command prompt.

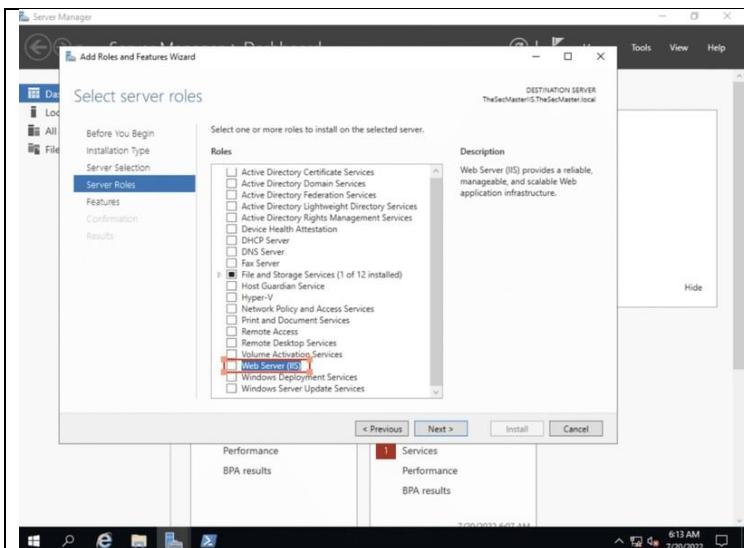
2. Test Connectivity:

- Ensure that the client can connect to the network and access resources.
- Test internet connectivity and try accessing resources within the local network.

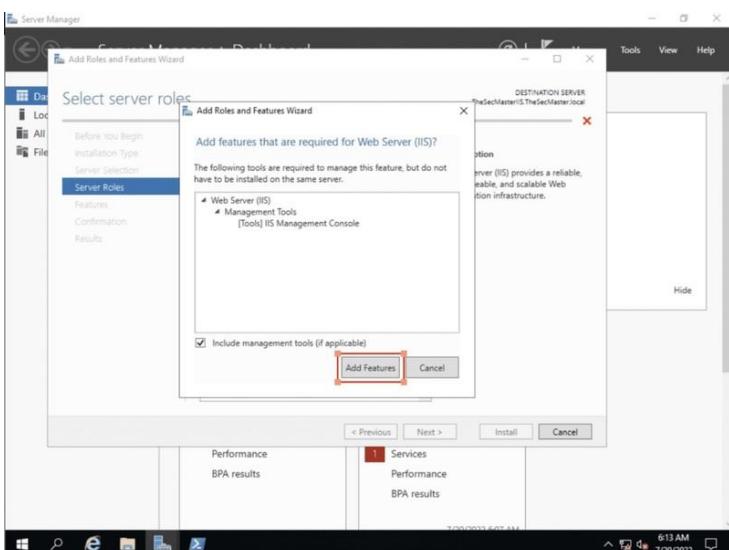
By following these steps, you should have successfully configured your Windows 10 client to obtain an IP address dynamically from the DHCP server at 192.168.5.100.

Webserver

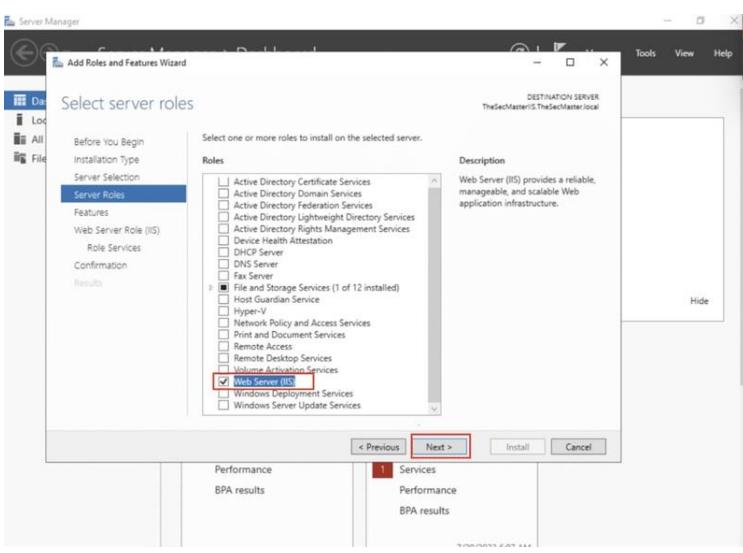
SCREENSHOTS	DESCRIPTION
 <p>The screenshot shows the Windows Server Manager Dashboard. The 'Manage' menu is open, showing options like 'Add Roles and Features', 'Remove Roles and Features', 'Add Servers', 'Create Server Group', and 'Server Manager Properties'. The 'QUICK START' section lists five steps: 1. Configure this local server, 2. Add roles and features, 3. Add other servers to manage, 4. Create a server group, and 5. Connect this server to cloud services. Below this, the 'ROLES AND SERVER GROUPS' section shows two roles: 'File and Storage Services' and 'IIS', each with its own set of management tools.</p>	<p>After a successful installation, you can start configuring IIS in Windows. Setting up and configuring IIS on Windows is simple, and you can customize it according to your priorities and particular needs.</p>
 <p>The screenshot shows the 'Add Roles and Features Wizard' - 'Select installation type' screen. The 'Installation Type' section has two options: 'Role-based or feature-based installation' (selected) and 'Remote Desktop Services installation'. Below this, there are sections for 'Performance' and 'BPA results'.</p>	<ol style="list-style-type: none"> First, you should begin with setting up the IIS role. To do this, open the "Add Roles and Features" and in Server Manager, go to Manage → Add Roles and Features. Click the Next button when you are finished.
 <p>The screenshot shows the 'Add Roles and Features Wizard' - 'Select destination server' screen. The 'Server Selection' section has two options: 'Select a server from the server pool' (selected) and 'Select a virtual hard disk'. The 'Server Pool' section shows a table with one server listed: 'TheSecMaster\IIS.TheSecMaster.local' (IP Address: 192.168.10.11, Operating System: Microsoft Windows Server 2019 Standard Evaluation). Below the table, a note states: 'This page shows servers that are running Windows Server 2019 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.'</p>	<ol style="list-style-type: none"> In the Select Installation Type screen, select Role-based or Feature-based installation since it is role-based. Click Next and go on. The server on which you intend to deploy the Web Server (IIS) Role is known as the destination server. Since we will be installing IIS on the local server in this guide, choose that server on the Select the Destination Server screen and then click Next.



4. On the Select Server roles, click on the "Web Server (IIS)" role and then click on Next.



5. Then, to add the IIS features, click on the "Add Features" button.

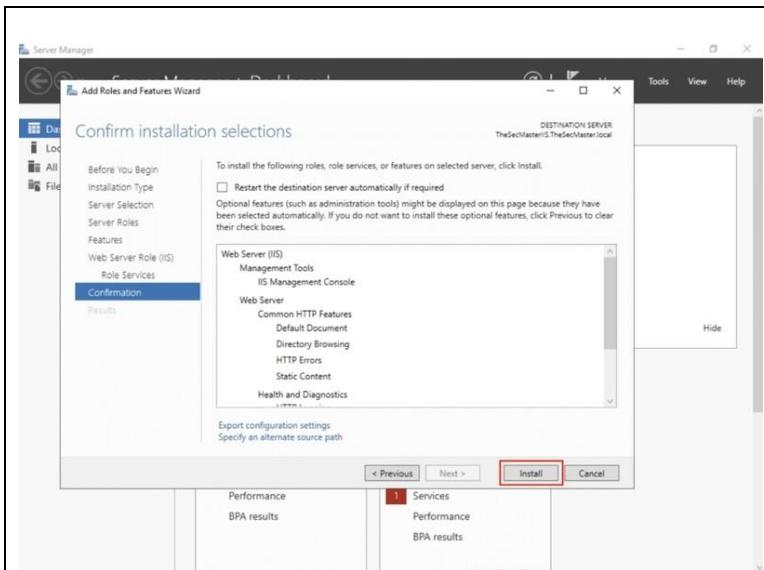


6. On the Select Server roles, click on the Server Roles to select the roles to install IIS on the selected server. Click Next and continue.

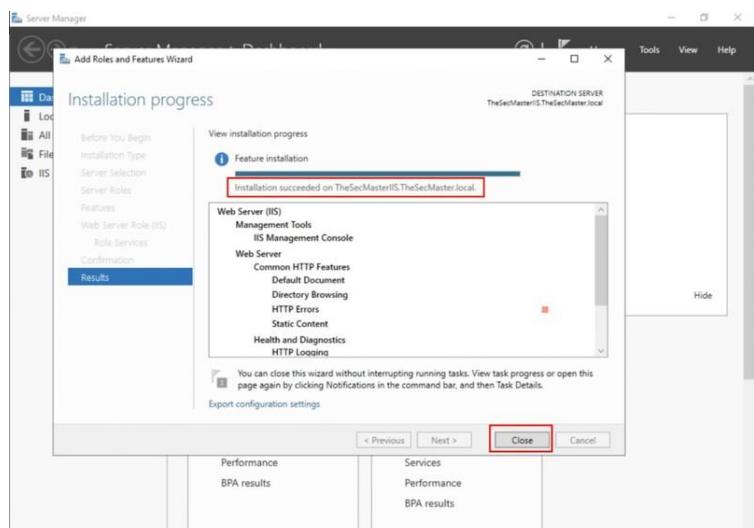
7. In this step, to install IIS on the selected server, **Select features**.

8. To install the default Role service, select Web Server Roles (IIS) and click Next.

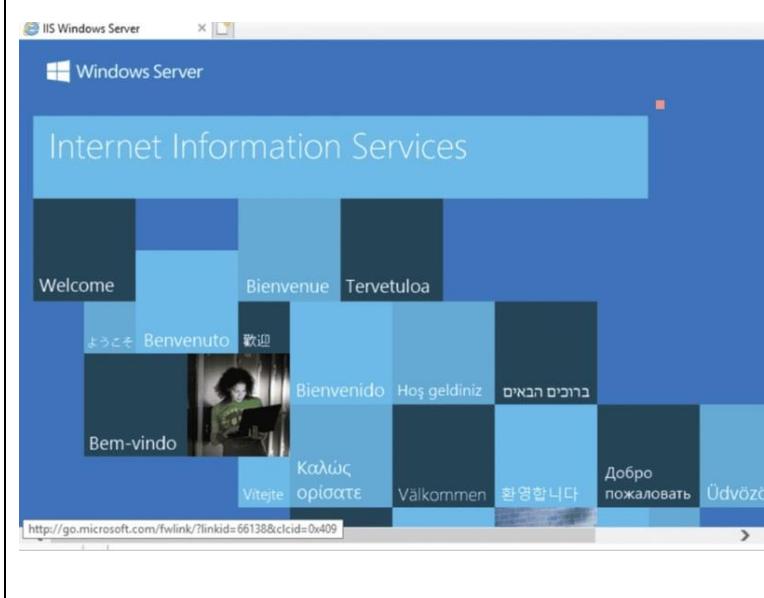
9. To install the IIS Web Server, select the role service. The "Role Services" is the default selection. Let it be chosen since the "Role Services" are good for configuring the Basic IIS site. When you are finished, click Next.



10. On the Confirm installation selection, the installation configuration of the “Web server (IIS)” role must be confirmed. To do this, confirm the settings and click on the **Install** button to begin the installation of “Web server (IIS)” role.



11. On the Installation progress, once the **configuration wizard** is completed click on the **Close** button.

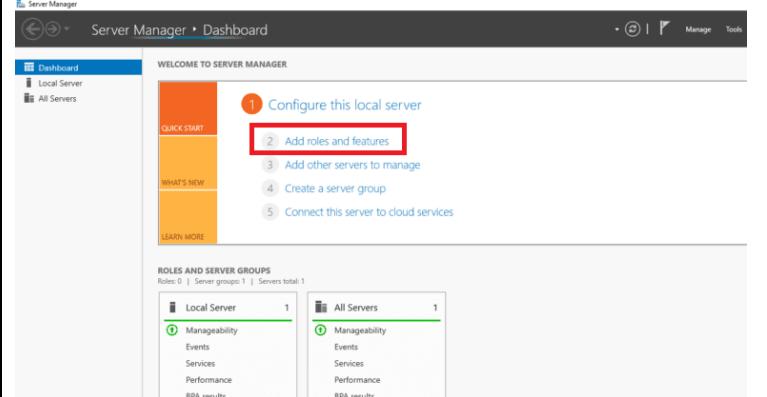
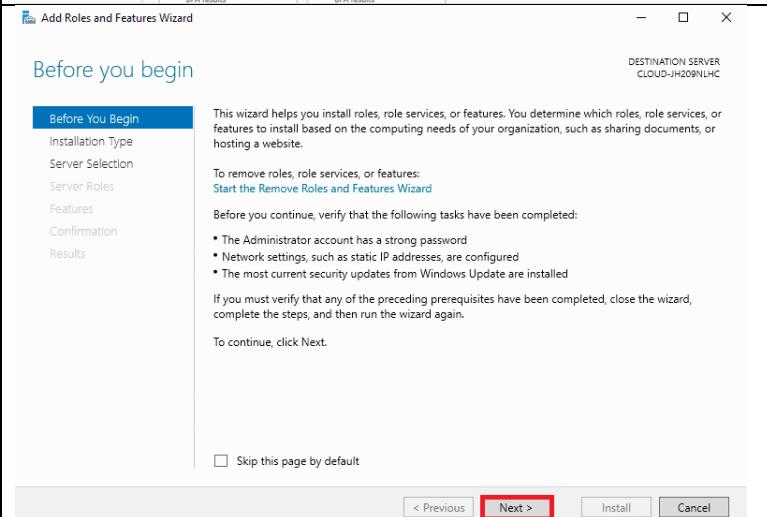
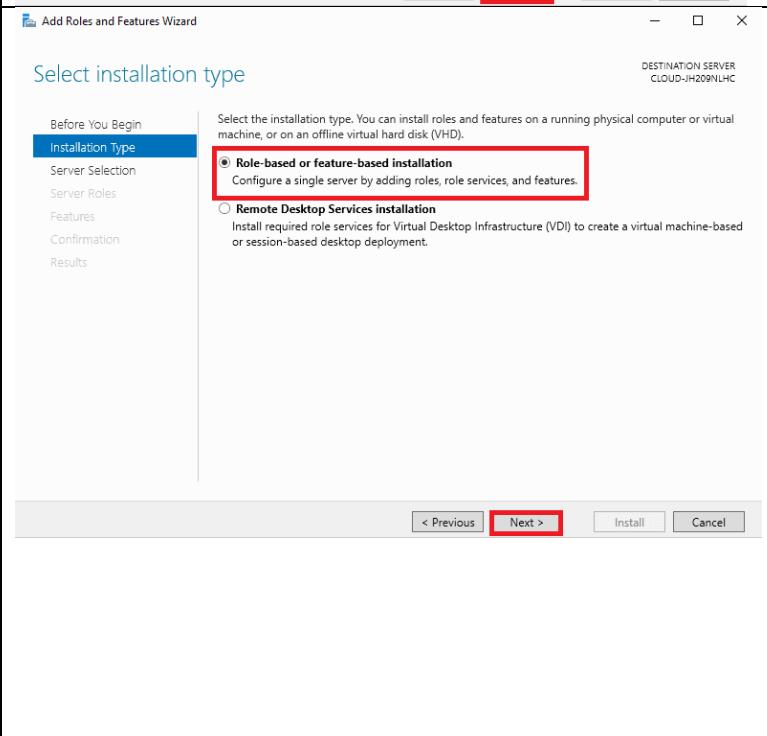


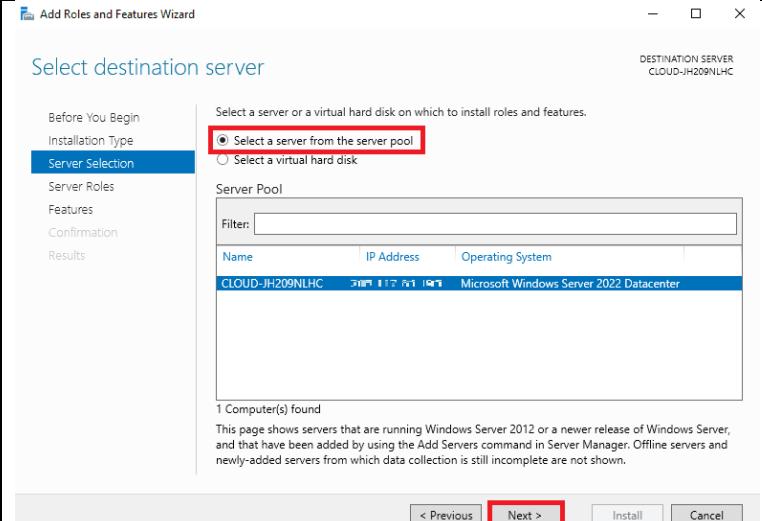
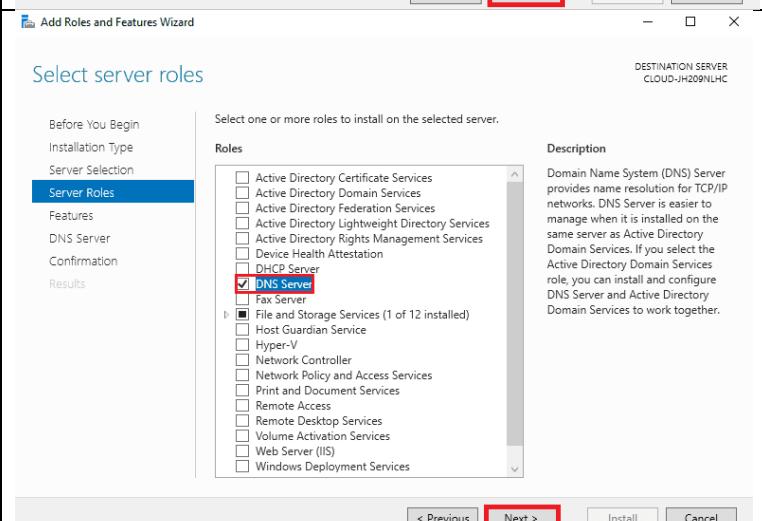
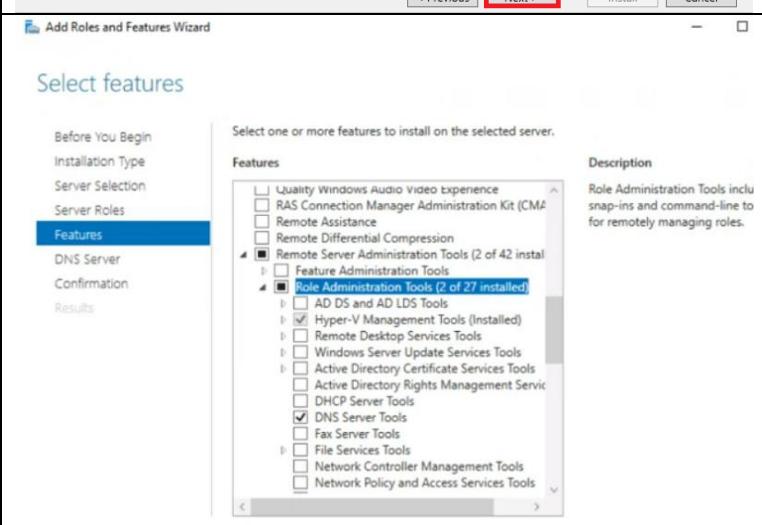
12. It is time to verify the IIS web server is running. To do this, visit the default page of your IIS server to check it out. Open a browser on the server, input the server hostname or IP address in the address box, and press enter to view the default web page.

IP-Address: 192.168.5.100

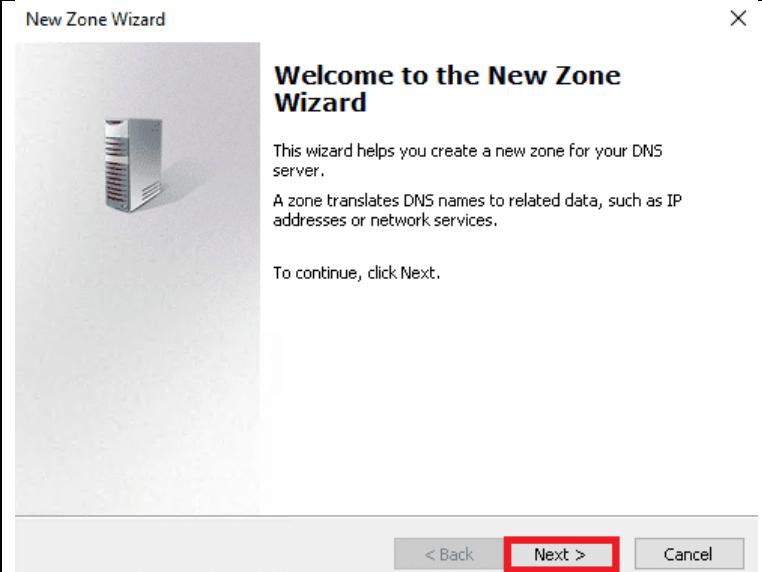
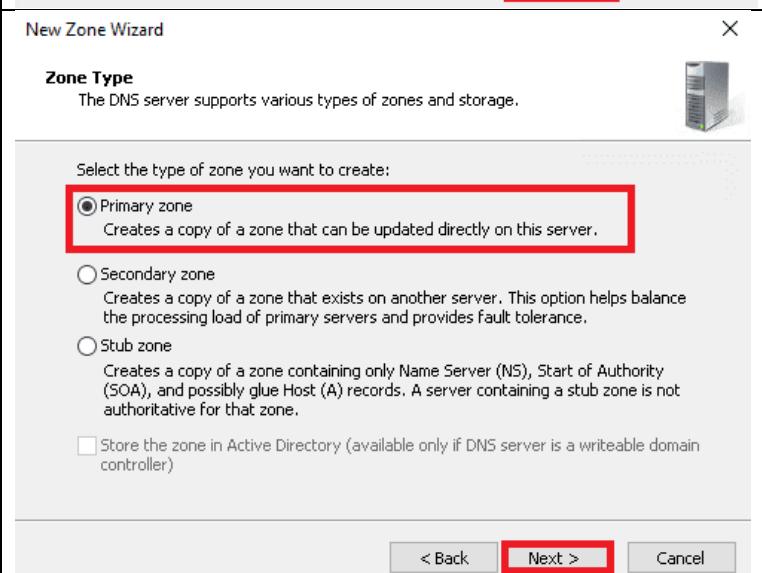
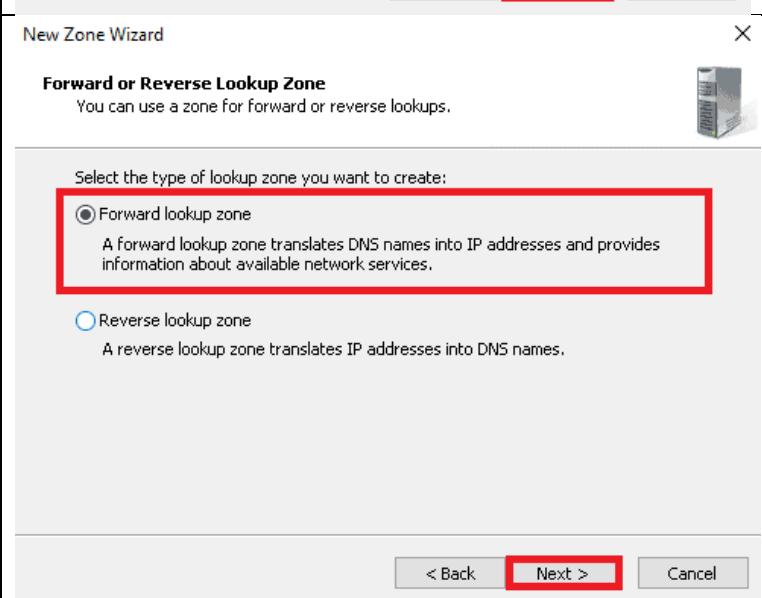
**Search: localhost:80 or
192.168.5.100:80**

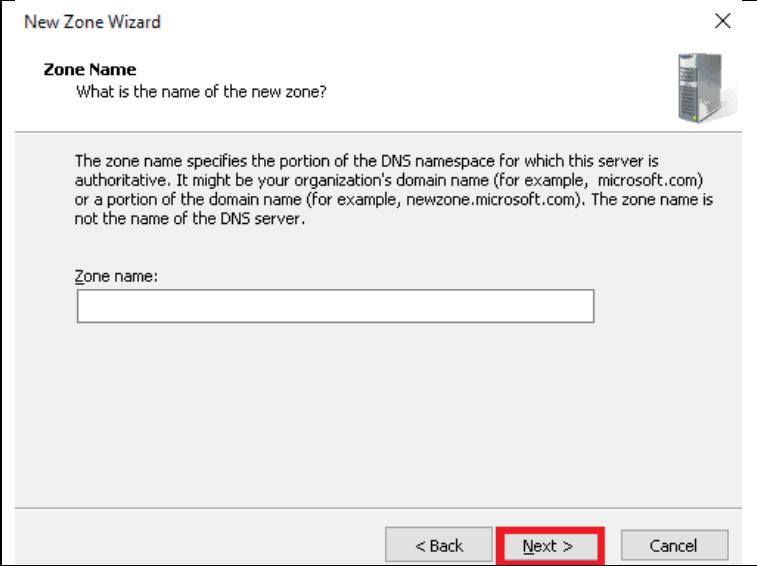
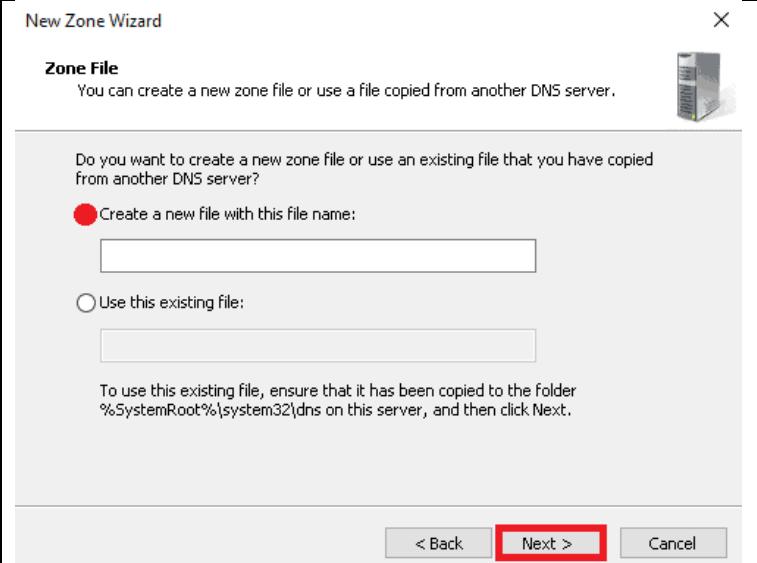
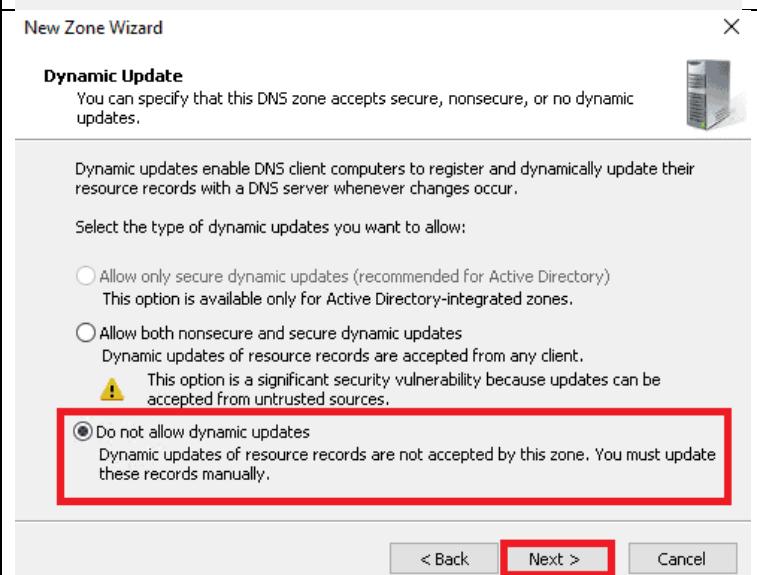
DNS-Server

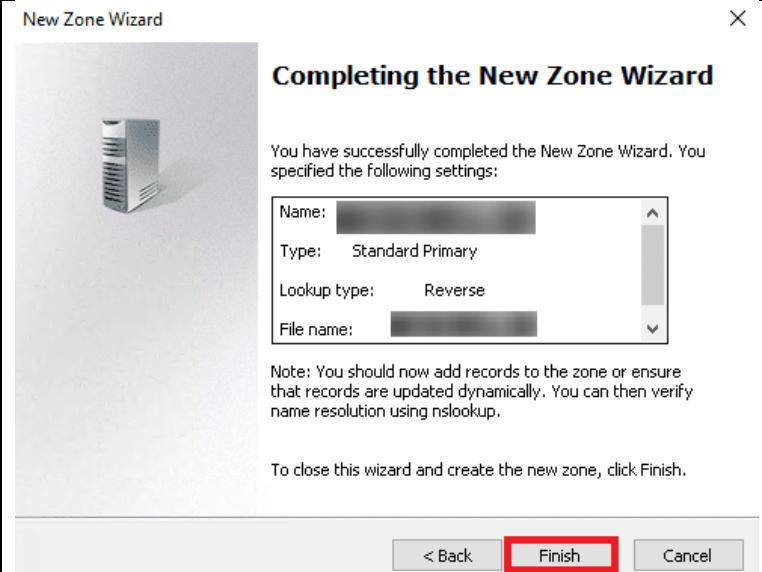
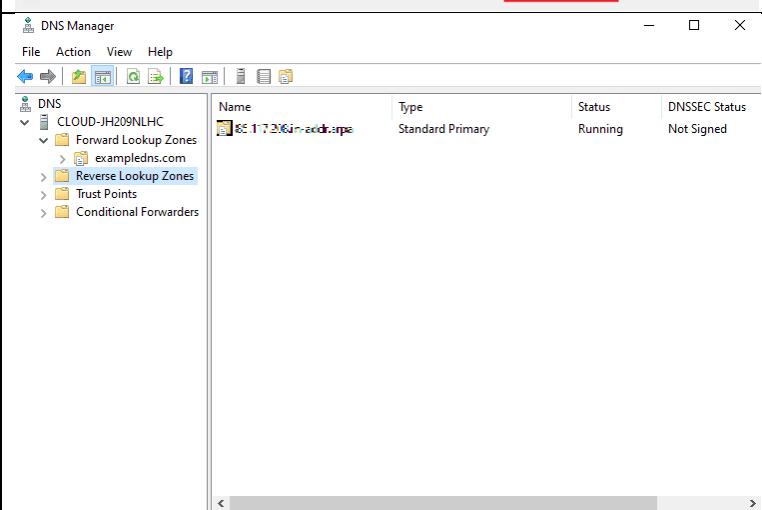
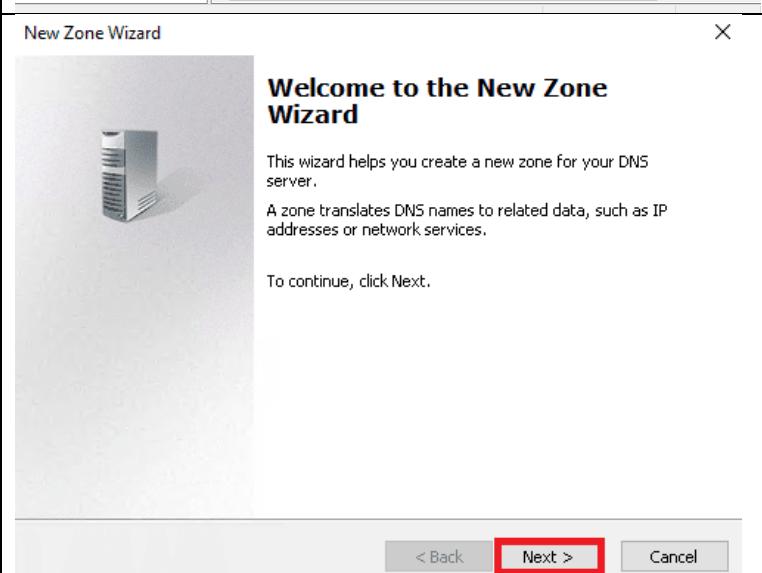
SCREENSHOT	DESCRIPTION
	<p>Click Start, then click Server Manager and open it. When you see the screen below, click on Add roles and features.</p>
	<p>Once you see the Before You Begin screen, click Next.</p>
	<p>After clicking the Next button in the previous step, you must see the Select installation type screen. There, select Role-based and feature-based installation and click on the Next button to continue.</p>

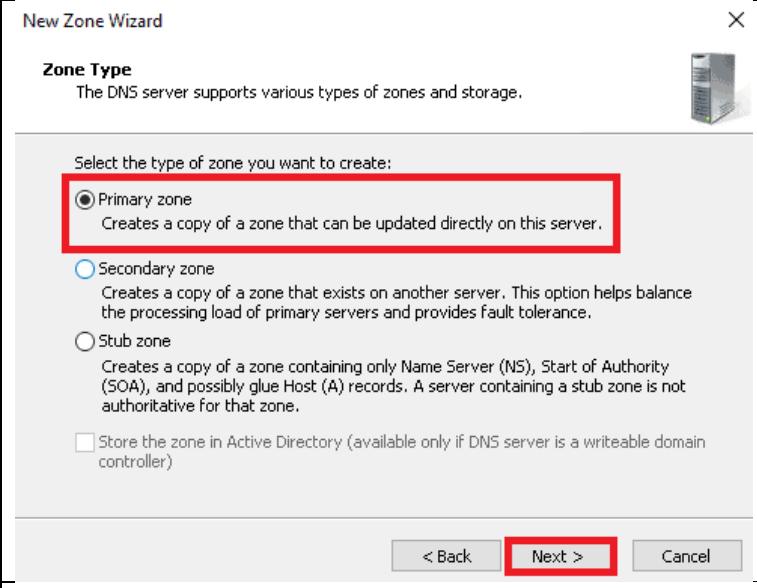
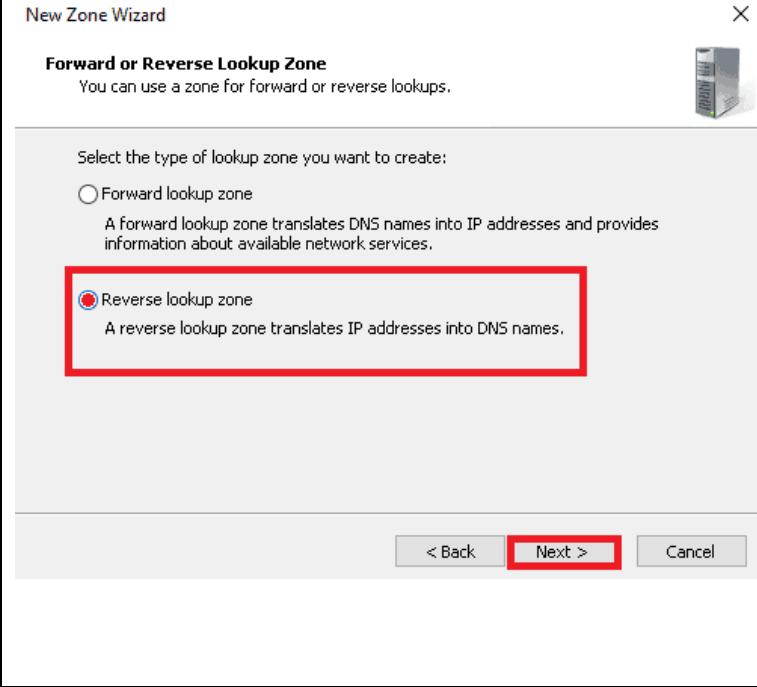
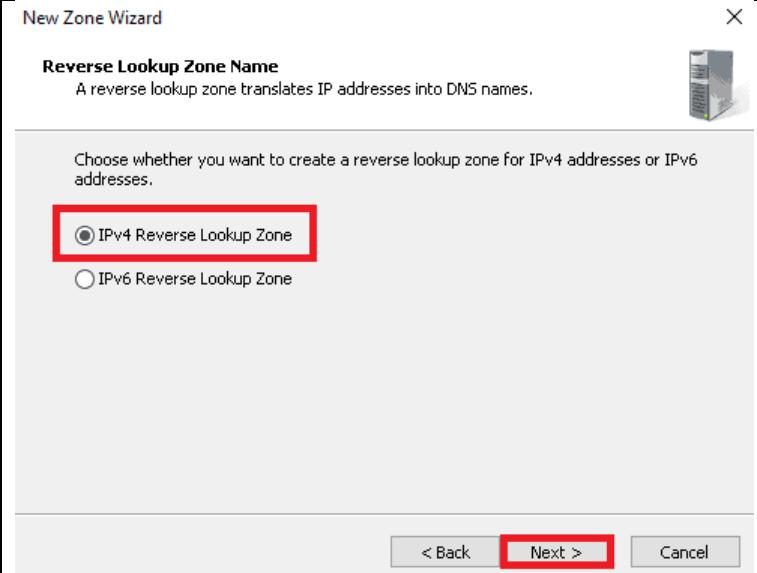
	<p>On the Select destination server screen, you should select the server from the server pool and click on the Next button.</p>
	<p>On the Select server roles, select the DNS server and click on the Next button.</p>
	<p>A pop-up window will appear asking you to install some more tools for the DNS server. Check your needs if you want to install the tools, then proceed as necessary. You can see some more features for your DNS server in the following window. Read them attentively, and if necessary, add them.</p>

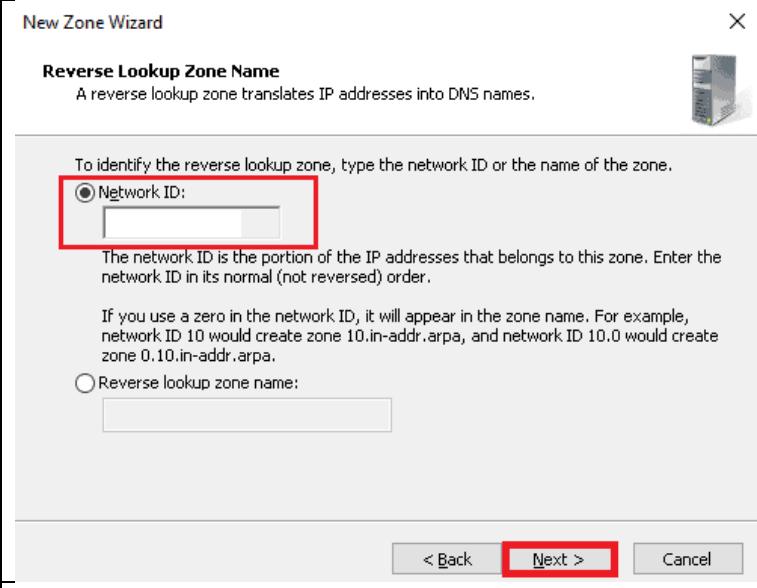
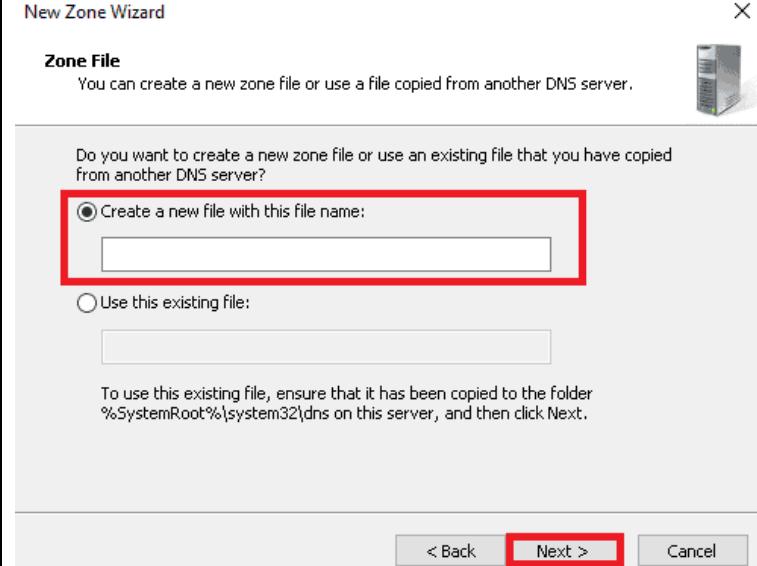
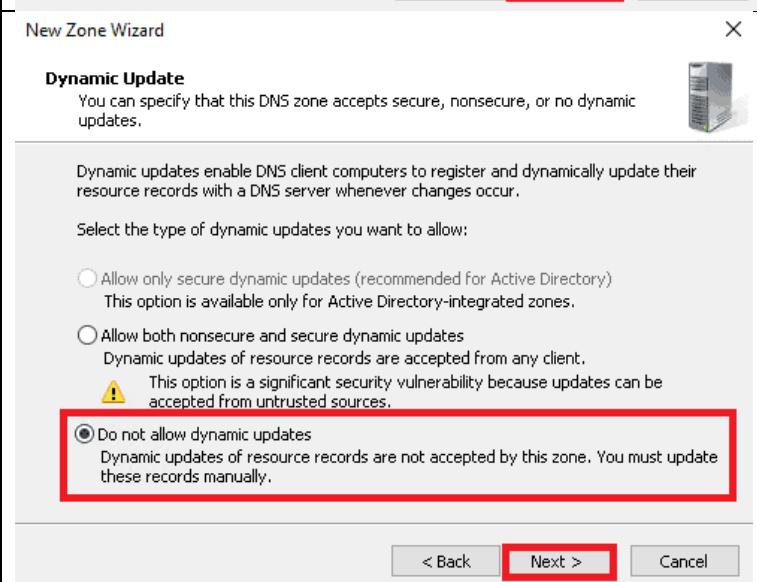
	<p>When you see the below screen, you should verify all settings. Then, click on the Install button to start the installation process.</p>
	<p>Now, you must see the Installation progress screen. Just wait till the installation is complete. When the installation is complete, click on the Close button to close the installation wizard.</p>
	<p>Create a Forward Lookup Zone Open the Server Manager and click Tools > DNS. So, you can see the DNS manager will be opened. Right-click on the server's name and click on the New Zone.</p>

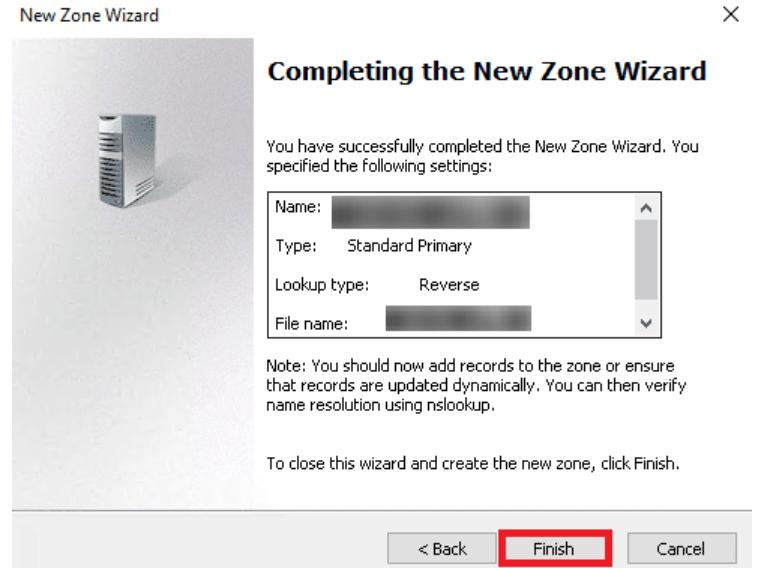
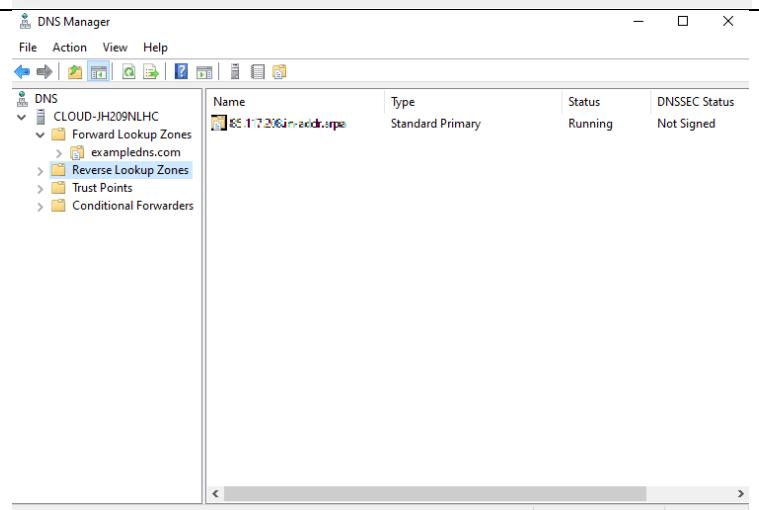
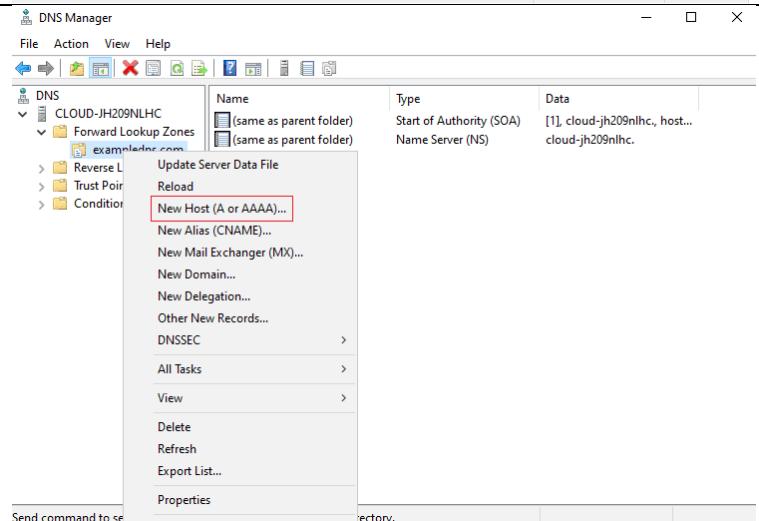
	<p>Once you see the zone configuration wizard screen, click on the Next button.</p>
	<p>Now, you must see the zone type selection screen. Just select the Primary zone and click on the Next button.</p>
	<p>On the below screen, select Forward lookup zone and click on the Next button.</p>

	<p>On the below screen, you will be asked for the name of the new zone. So, give your zone name and click on the Next button.</p> <p>Zone name: garbo.ch</p>
	<p>On the Zone File screen, select “Create a file with the file name” and click on the Next button.</p> <p>File name: garbo.ch</p>
	<p>Once the Dynamic Update screen is displayed, select “Do not allow dynamic update” and click on the Next button.</p>

	<p>After viewing the below screen, click on the Finish button.</p>
	<p>when you see your reverse lookup zone in the below screen, you're done with this step.</p>
	<p>Create a Reverse Lookup Zone</p> <p>On the DNS manager, right-click on the server's name and click on the New Zone to view the zone creation wizard:</p>

	<p>The Zone Type selection screen should be displayed. Select the Primary zone and click on the Next button.</p>
	<p>On the Forward or Reverse Lookup Zone screen, select “Reverse lookup zone” and click on the Next button.</p>
	<p>Once you see the Reverse Lookup Zone Name screen, select IPv4 Reverse Lookup Zone and click on the Next button.</p>

	<p>As you see below, it is time to define your network id. Then, click on the Next button.</p> <p>Network ID: 192.168.5</p>
	<p>When the below screen is shown, select “Create a file with this file name” and click on the Next button.</p>
	<p>Again, on the Dynamic Update screen, select “Do not allow dynamic update” and click on the Next button.</p>

 <p>Completing the New Zone Wizard</p> <p>You have successfully completed the New Zone Wizard. You specified the following settings:</p> <table border="1"> <tr><td>Name:</td><td>[REDACTED]</td></tr> <tr><td>Type:</td><td>Standard Primary</td></tr> <tr><td>Lookup type:</td><td>Reverse</td></tr> <tr><td>File name:</td><td>[REDACTED]</td></tr> </table> <p>Note: You should now add records to the zone or ensure that records are updated dynamically. You can then verify name resolution using nslookup.</p> <p>To close this wizard and create the new zone, click Finish.</p> <p style="text-align: center;">< Back Finish Cancel</p>	Name:	[REDACTED]	Type:	Standard Primary	Lookup type:	Reverse	File name:	[REDACTED]	<p>When the below screen is displayed, click on the Finish button.</p>
Name:	[REDACTED]								
Type:	Standard Primary								
Lookup type:	Reverse								
File name:	[REDACTED]								
 <p>DNS Manager</p> <p>The DNS Manager interface shows the newly created reverse lookup zone '192.168.5.in-addr.arpa' under the 'Forward Lookup Zones' section. The zone details are:</p> <table border="1"> <thead> <tr><th>Name</th><th>Type</th><th>Status</th><th>DNSSEC Status</th></tr> </thead> <tbody> <tr><td>192.168.5.in-addr.arpa</td><td>Standard Primary</td><td>Running</td><td>Not Signed</td></tr> </tbody> </table>	Name	Type	Status	DNSSEC Status	192.168.5.in-addr.arpa	Standard Primary	Running	Not Signed	<p>And finally, when you see your reverse lookup zone on the following screen, it says you have successfully completed the second step to Configure DNS Server in Windows Server.</p> <p>Name: 192.168.5.in-addr.arpa</p>
Name	Type	Status	DNSSEC Status						
192.168.5.in-addr.arpa	Standard Primary	Running	Not Signed						
 <p>DNS Manager</p> <p>The context menu for a forward lookup zone ('exampledns.com') is open. The 'New Host (A or AAAA)...' option is highlighted with a red box.</p> <ul style="list-style-type: none"> Update Server Data File Reload New Host (A or AAAA)... New Alias (CNAME)... New Mail Exchanger (MX)... New Domain... New Delegation... Other New Records... DNSSEC All Tasks View Delete Refresh Export List... Properties 	<p>Add A and PTR Records to DNS</p> <p>On the DNS manager, right-click on the forward lookup zone. Then, click on the New Host (A or AAAA).</p>								

The screenshot shows two windows of the Microsoft DNS Manager. The top window is the 'New Host' dialog, which asks for the host name, IP address, and whether to create a PTR record. The bottom window shows the 'Forward Lookup Zones' list, where 'exampledns.com' is selected.

Now, define the parent domain name and IP address of your host in the below screen. then, select “Create associated pointer record” then click on the Add Host button.

Name: intranet
FQDN: intranet.garbo.ch
IP-address: 192.168.5.100

When the below screen is displayed, click on the forward lookup zone.

Check:
nslookup intranet.garbo.ch
Server: garbo.ch
Address: 192.168.5.100

authoritative answer:
Name: intranet.garbo.ch
Address: 192.168.5.100

TrueNAS configuration

Users

Username	UID	Builtin	Full Name
root	0	Yes	root
admin	950	No	Local Administrator
lixahu	3000	No	LIXAHU

Groups

The screenshot shows the 'Manage members of GARBO-DEV group' interface. It lists all users on the left and group members on the right, with arrows to move users between them. 'lixahu' is currently listed as a member.

SMB

NetBIOS

NetBIOS Name* ⓘ
truenas

NetBIOS Alias* ⓘ
tn.garbo.ch

Workgroup* ⓘ
WORKGROUP

Description* ⓘ
TrueNAS Server

Enable SMB1 support ⓘ

NTLMv1 Auth ⓘ

Save **Cancel** **Advanced Settings**

SMB File Permissions

Access Control Entry

Who* ⓘ
Group

Group* ⓘ
GARBO-DEV

Permissions ⓘ
 Read Write Execute

Flags
 Default

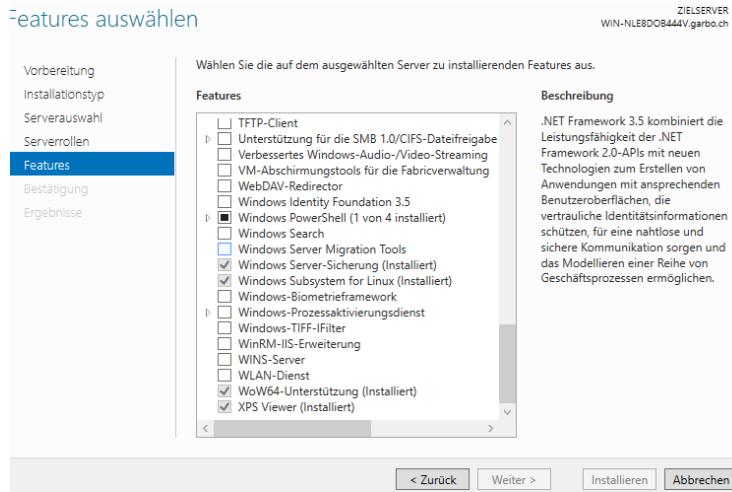
Save **Cancel** **Advanced Settings**

- ➔ Storage Pool allocation GDEV
- Name: GDEV
 - Description: None
 - Encrypted: Yes
 - What technology: zraid1
 - How many disks: 3
 - How big are the disks: 30gb each.

- ➔ Storage Pool allocation GGRD
 - Name: GDEV
 - Description: None
 - Encrypted: Yes
 - What technology: zraid1
 - How many disks: 3
 - How big are the disks: 30gb each.
- ➔ Dataset GDEV
 - Name: GDEV
 - Encrypted: Yes
 - Sync: Yes
 - Presets: Restricted
- ➔ Dataset GGRD
 - Name: GGRD
 - Encrypted: Yes
 - Sync: Yes
 - Presets: Restricted
- ➔ SMB Drive GDEV
 - Name: gdev
 - Path: mnt/gdev/gdev
 - Type: standard
- ➔ SMB Drive GGRD
 - Name: ggrd
 - Path: mnt/ggrd/ggrd
 - Type: standard

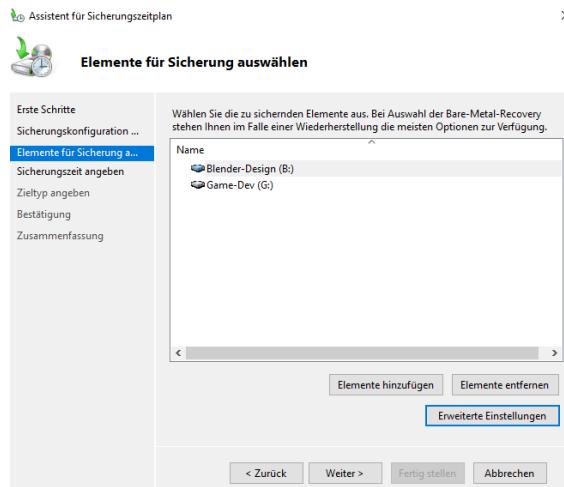
Backup of Shared Drives

→ How to enable

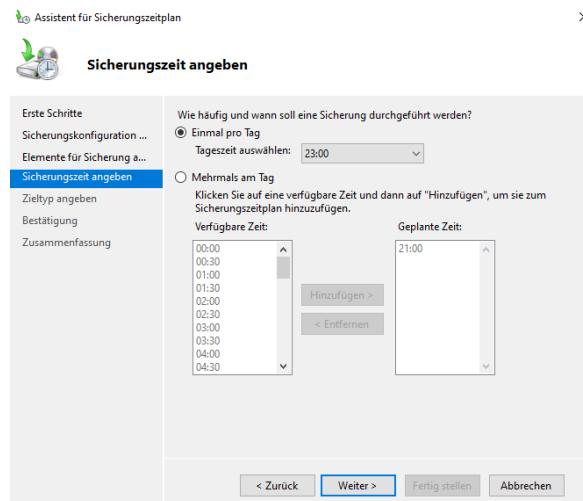


Enable Windows Server-Backup

→ Which drives should get backed up



→ When should the drives get backed up?



→ To where should they get backed up.

 **Zieltyp angeben**

Erste Schritte Sicherungskonfiguration ... Elemente für Sicherung a... Sicherungszeit angeben Zieltyp angeben Freigegebenen Remoteor... Bestätigung Zusammenfassung	Wo sollen die Sicherungen gespeichert werden? <input type="radio"/> Sicherung auf spezieller Backupfestplatte erstellen (empfohlen) <small>Bei dieser Option handelt es sich um die sicherste Möglichkeit zur Sicherungserstellung. Die verwendete Festplatte wird formatiert und künftig ausschließlich zum Speichern von Sicherungen verwendet.</small> <input type="radio"/> Sicherung auf einem Volume erstellen <small>Wählen Sie diese Option, wenn keine Festplatte speziell für Sicherungen reserviert werden kann. Hinweis: Die Leistung des Volumes kann sich während des Sicherungsvorgangs um bis zu 200 Prozent verringern. Von der Speicherung anderer Serverdaten auf dem gleichen Volume wird abgeraten.</small> <input checked="" type="radio"/> Sicherung auf einem freigegebenen Netzwerkordner erstellen <small>Wählen Sie diese Option, wenn Sicherungen nicht lokal auf dem Server gespeichert werden sollen. Hinweis: Es steht immer nur jeweils eine Sicherung zur Verfügung, da die vorherige Sicherung mit der neuen Sicherung überschrieben wird.</small>
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 **Freigegebenen Remoteordner angeben**

Erste Schritte Sicherungskonfiguration ... Elemente für Sicherung a... Sicherungszeit angeben Freigegebenen Remoteor... Bestätigung Zusammenfassung	Pfad: <input type="text" value="\\192.168.15.132\"/> <small>Beispiel: \\DateServer\Name\FreigegebenerOrdner</small> <small>Dieser Assistent dient zum Erstellen eines Ordners auf Basis des Namens des zu sichernden Servers. Beispiel: "Server-SicherungsDateien".</small> Zugriffssteuerung <input type="radio"/> Nicht vererben <small>Diese Option macht die Sicherung nur für den Benutzer zugänglich, dessen Anmeldeinformationen im nächsten Schritt eingegeben werden.</small> <input checked="" type="radio"/> Vererben <small>Diese Option macht die Sicherung für jeden Benutzer zugänglich, der Zugriff auf den angegebenen freigegebenen Remoteordner hat.</small> <small>(i) Die gesicherten Daten können für dieses Ziel nicht sicher geschützt werden. Weitere Informationen</small>
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Username for auth: lixuha

Password for auth: abcd12s8rkds

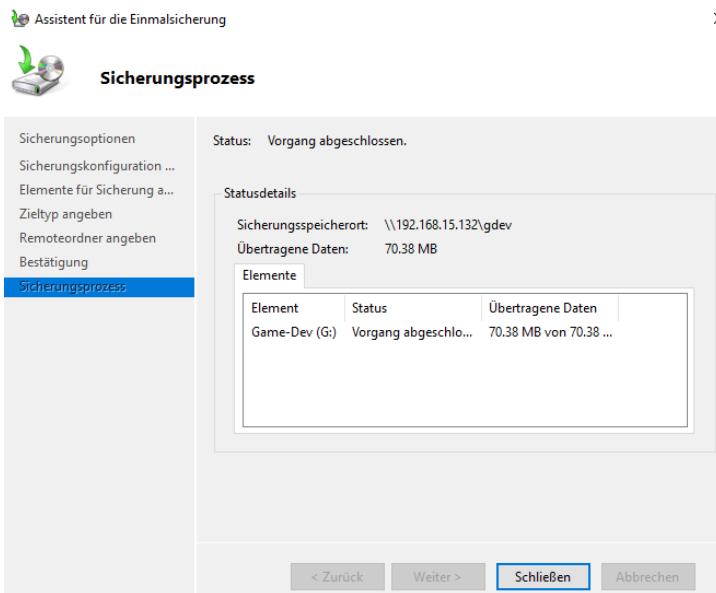
Erste Schritte Sicherungskonfiguration ... Elemente für Sicherung a... Sicherungszeit angeben Zieltyp angeben Freigegebenen Remoteor... Bestätigung Zusammenfassung	Sie sind im Begriff, den folgenden Sicherungszeitplan zu erstellen. Sicherungszeit: 23:00 Ausgeschlossene Dateien: Keine Erweiterte Option: VSS-Kopiesicherung Sicherungsziel: \\192.168.15.132\gdev Sicherungselemente Name  Game-Dev (G)
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Status: Der Sicherungszeitplan wurde erstellt.

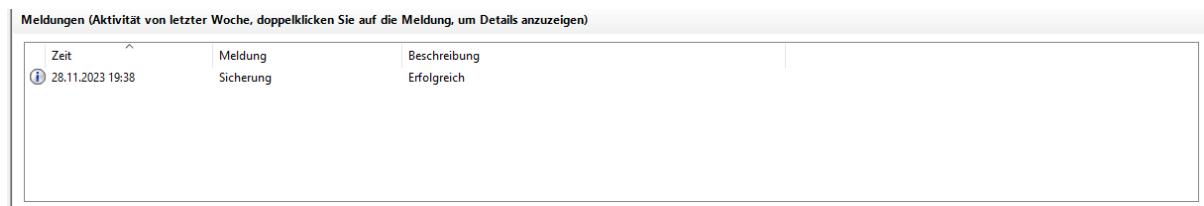
Zeitpunkt der ersten geplanten Sicherung: 28.11.2023 23:00.

Sie haben mehrere Datenträger für die geplante Sicherung ausgewählt. Jeder der angeschlossenen Datenträger kann als Sicherungsziel ausgewählt werden. Es wird empfohlen, nur den Datenträger, auf dem die nächste Sicherung gespeichert werden soll, an den Server anzuschließen.

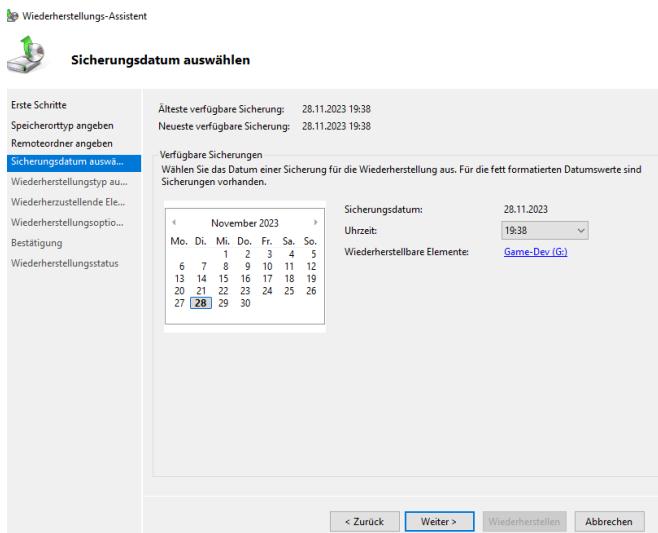
→ Test to show that it was successful.



Proof that it was successful



→ Restoration



Erste Schritte
Speicherorttyp angeben
Remoteordner angeben
Sicherungsdatum auswählen
Wiederherstellungstyp auswählen
Wiederherstellende Elemente...
Wiederherstellungsoptionen...
Bestätigung
Wiederherstellungsstatus

Durchsuchen Sie die Struktur der verfügbaren Elemente nach den wiederherstellenden Dateien oder Ordnern.
Klicken Sie in der Struktur oder unter "Name" auf ein Element, um das Element auszuwählen.

Verfügbare Elemente:

	Name	Geändert am
<input type="checkbox"/>	WIN-NLEBDOB44V	
<input type="checkbox"/>	Game-Dev (G:)	
<input type="checkbox"/>	SRECYCLE.BIN	
<input type="checkbox"/>	System Volume Information	
<input type="checkbox"/>	Test	

Wiederherstellende Elemente:

Name	Geändert am
Test.txt	28.11.2023 19:10

Incremental restoration

 **Wiederherstellungsoptionen angeben**

Erste Schritte
Speicherorttyp angeben
Remoteordner angeben
Sicherungsdatum auswählen
Wiederherstellungstyp auswählen
Wiederherstellende Elemente...
Bestätigung
Wiederherstellungsstatus

Wiederherstellungsziel

Ursprünglicher Ort
 Anderer Speicherort
G:\

Für Elemente in der Sicherung, die am Wiederherstellungsziel bereits vorhanden sind, Folgendes ausführen:

Kopien erstellen, sodass beide Versionen vorhanden sind
 Vorhandene Versionen mit wiederhergestellten Versionen überschreiben
 Am Wiederherstellungsziel bereits vorhandene Elemente nicht wiederherstellen

Sicherheitseinstellungen

ACL-Berechtigungen für wiederherstellende(n) Datei/Ordner wiederherstellen

Achtung: Bei der Dateiwiederherstellung auf einem Nicht-NTFS-Zielvolume kann aufgrund nicht unterstützter Dateieigenschaften möglicherweise ein Fehler auftreten.

< Zurück

before

H:\ Game-Dev (G:) Test

	Name	Änderungsdatum	Typ	Größe
				Dieser Ordner ist leer.

igriff
ads
ente
Design (B:
fwerk (D:) S:
ry (G:)

After

The screenshot shows a Windows File Explorer window with the path 'Game-Dev (G:)' selected. A single file named 'Test' is listed, with details: Änderungsdatum (Change Date) 28.11.2023 19:36, Typ (Type) Textdokument, Größe (Size) 1 KB. To the left, there's a sidebar with icons for 'riff', 'is', 'ite', and 's'. Below the file list is a log table:

Zeit	Meldung	Beschreibung
28.11.2023 19:38	Sicherung	Erfolgreich
28.11.2023 19:45	Dateiwiederherstellung	Erfolgreich

Backup of Webserver

For the Webserver I'll just use the default website.

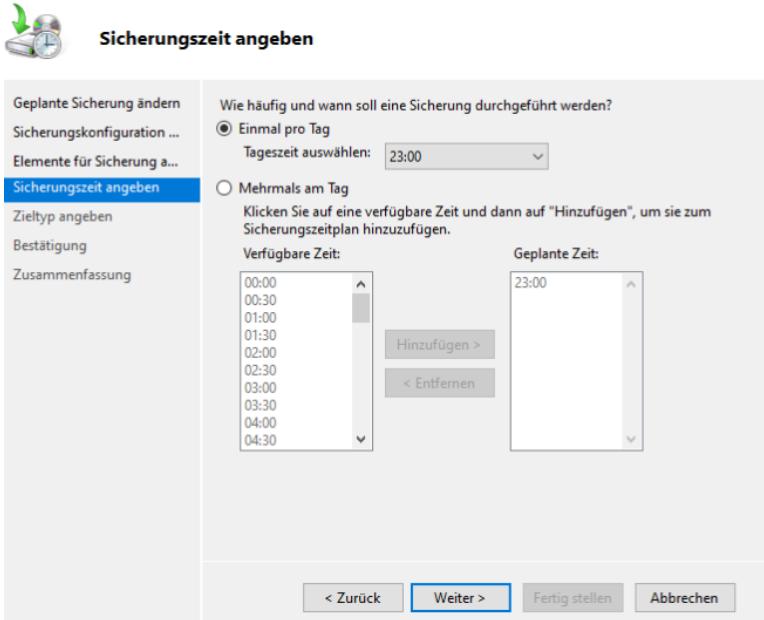
So I'll backup the destination where the folder is which contains the default website

C:\inetpub\wwwroot

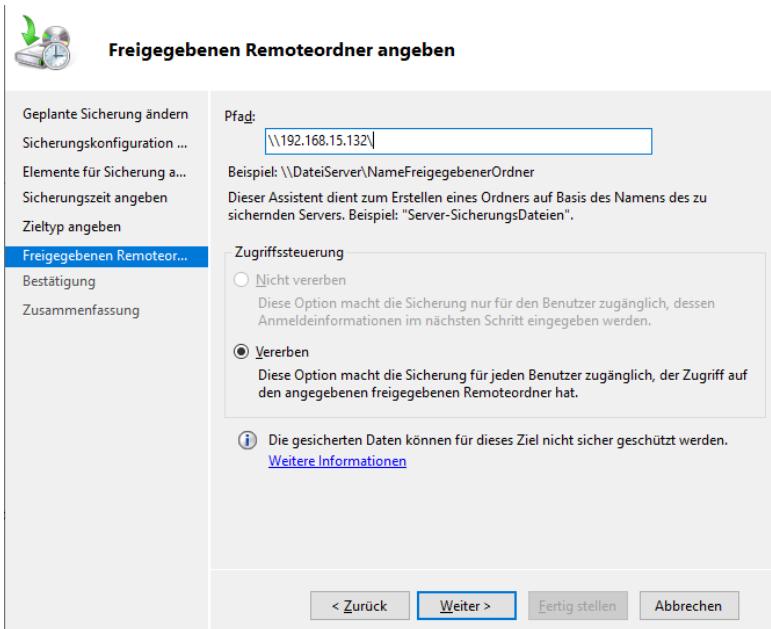
→ Planned backup

The screenshot shows the 'Elemente für Sicherung auswählen' (Select backup elements) dialog box. On the left, a sidebar lists options: Geplante Sicherung ändern, Sicherungskonfiguration ..., Elemente für Sicherung a..., Sicherungszeit angeben, Zieltyp angeben, Bestätigung, and Zusammenfassung. The main area displays a list of elements to be backed up, with 'C:\inetpub' selected. Buttons at the bottom include 'Elemente hinzufügen' (Add elements), 'Elemente entfernen' (Remove elements), 'Erweiterte Einstellungen' (Advanced settings), and navigation buttons: < Zurück, Weiter >, Fertig stellen, and Abbrechen.

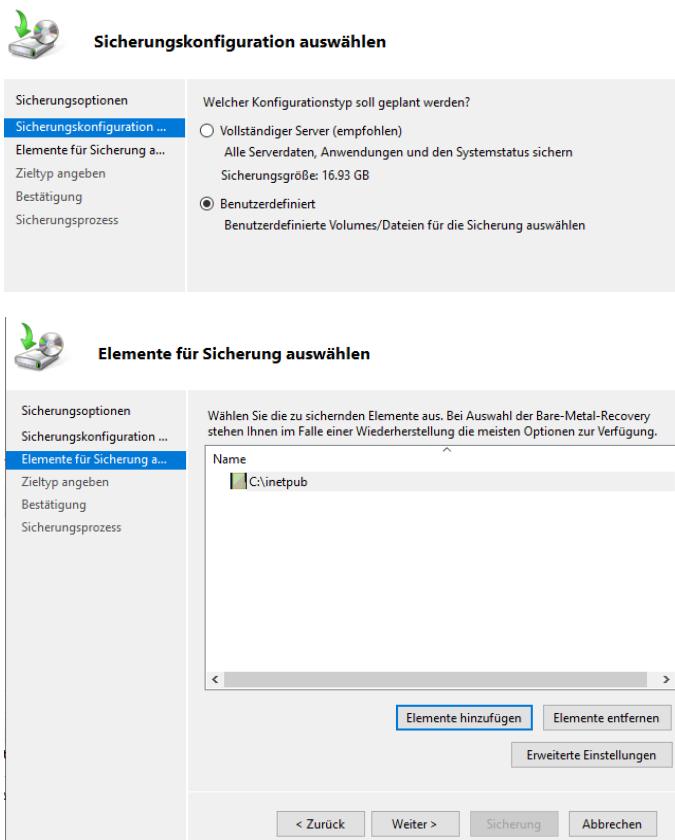
→ Interval of backup



→ Where to



→ Test backup to gdev



Before

Netzwerk > 192.168.15.132 > gdev				
iff	Name	Änderungsdatum	Typ	Größe
ls	WindowsImageBackup	28.11.2023 19:38	Dateiordner	
te				
sign (B:)				

After

Netzwerk > 192.168.15.132 > gdev >				
griff	Name	Änderungsdatum	Typ	Größe
ads	inetpub	28.11.2023 20:28	Dateiordner	
ente	WindowsImageBackup	28.11.2023 20:28	Dateiordner	
sign (B:)				
Netzwerk (D:) SS				

Logs

Zeit	Meldung	Beschreibung
28.11.2023 19:38	Sicherung	Erfolgreich
28.11.2023 19:45	Dateiwiederherstellung	Erfolgreich
28.11.2023 20:13	Sicherung	Erfolgreich