Lab 08 – Windows Services

Documentation: File and Storage Services

1. Introduction

File and Storage Services are a core component of Windows Server, enabling the organization, management, and provision of files and storage resources within a network. They provide mechanisms to efficiently store, share, replicate, and synchronize data.
Key functionalities include:

- File sharing
- Storage management
- DFS (Distributed File System)
- Work Folders

2. Distributed File System (DFS)

2.1 Definition

DFS is a service that allows file shares across multiple servers to be unified into a single logical namespace. Users see a consistent path, regardless of which server actually stores the data.

2.2 Components

DFS Namespace:

- Organizes shares into a hierarchical folder structure.
- Users access files through a single path (e.g., \\Company\SharedData).
- DFS Replication (DFS-R):
- Replicates data between multiple servers.
- Synchronization occurs over the network with an efficient delta-transfer mechanism.

2.3 Advantages

- Simplified user access through a central namespace.
- Redundancy and high availability via replication.
- Load distribution across multiple servers.

2.4 Typical Use Cases

- Large companies with multiple locations.

- Redundant file shares for critical data.

- Synchronization of project files across departments.

3. Work Folders

3.1 Definition

Work Folders allow employees to store personal work files on corporate servers and automatically synchronize them with their Windows devices.

3.2 How It Works

- Users save files in a local Work Folder.
- Changes are automatically replicated to the central server.
- Devices can work offline; changes synchronize when the device reconnects.

3.3 Advantages

- Supports Bring Your Own Device (BYOD) scenarios.
- Automatic backup and centralized management of work files.
- Security through centralized policies and encryption.

3.4 Typical Use Cases

- Remote work or mobile workplaces.
- Synchronization of project data across multiple devices.

4. Conclusion

Windows Server File and Storage Services provide powerful tools for centralized file management while ensuring user convenience and data security.

- DFS is ideal for structured, central file shares across locations.

- Work Folders allow individual work files to be securely stored and synchronized across devices.

Demonstration: Distributed File System (DFS)

Purpose of the Demonstration

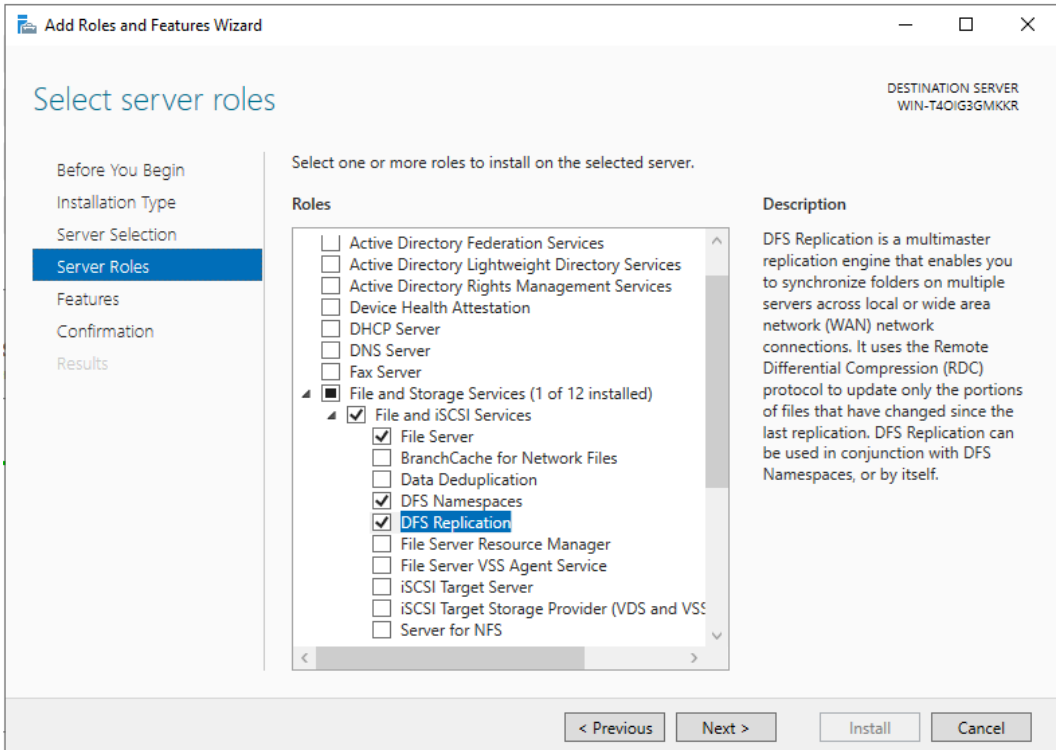
In this live demonstration, We will showcase how the Distributed File System (DFS) works in Windows Server and how it can be implemented in an enterprise environment. The goal is to demonstrate the use of DFS Namespaces and DFS Replication to create a centralized, highly available file structure.

Demonstration Contents

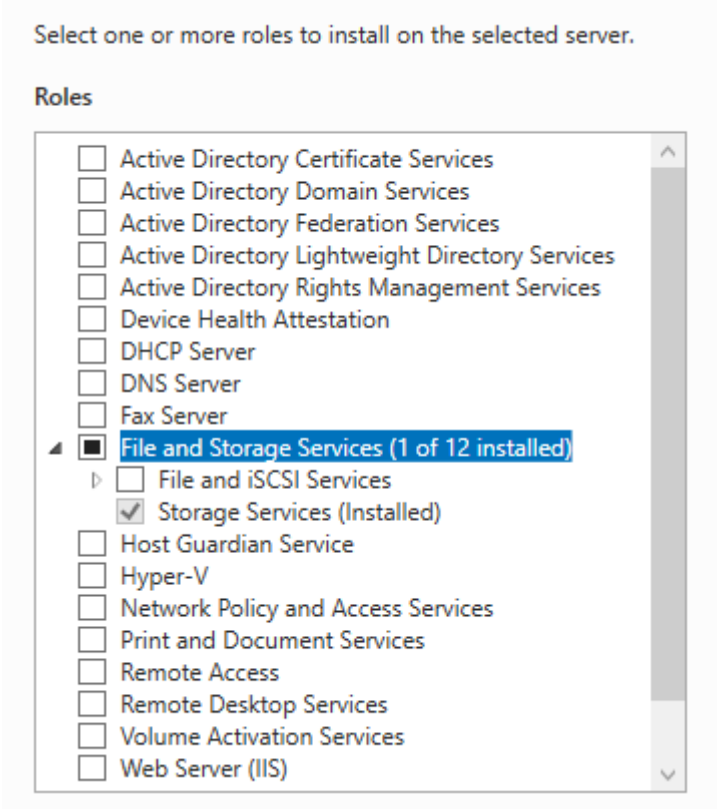
1. **Overview of the Environment**
    a. Windows Server systems
    b. Preconfigured file shares
    c. Active Directory environment
2. **Creating domain Server**
    a. Rename Server “Server1”
    b. Restart Server
    c. Ethernet Setting > Change adapter options > Ethernet > Properties > IPv4 > “Use the following ip address”
    d. IP address 192.168.10.101
    e. Subnet Mask 255.255.255.0
    f. DNS 127.0.0.1
    g. Open Server Manager
    h. Tools > Add Roles and Features
    i. Next > Next > Next > Server Roles : check box at “Active Directory Domain Services”
    j. check box at: DNS Server > Add Feature > Next > Next > Next > Next > Next > Install
    k. Open “Aktive directory domain services configuration Wizard“
    l. Klick “New Forest”
    m. Enter Domain example : “lme.lu”
    n. Add Password ******** > Next > Next > Next > Next > Next > Install
    o. restart

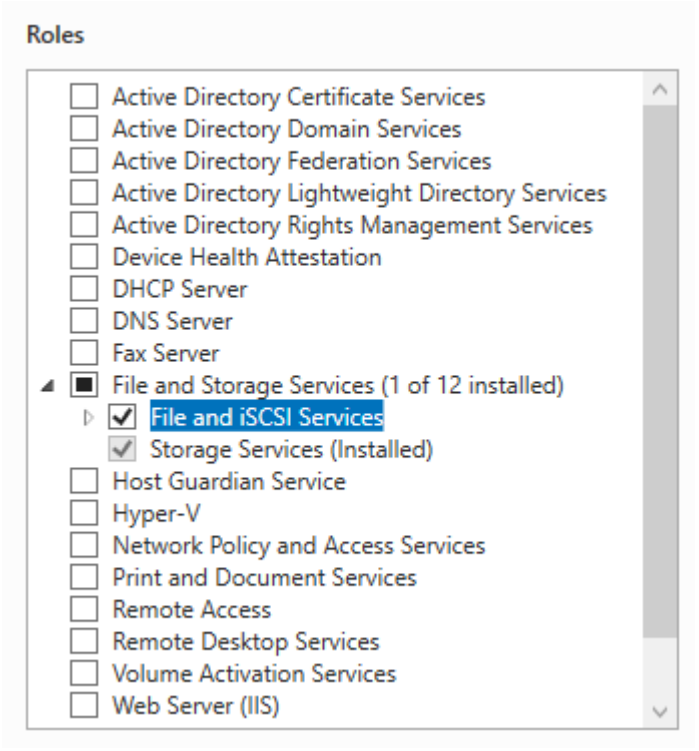
Creating a DFS Namespace

1. Open Server Manager.
2. Go to “Roles and Features”.
3. Click **Next** until you reach the **Server Roles** selection.



4. **Add**
    - File and Storgae Services
    - File and ISCSI Services
    - DFS Namespaces
    - DFS Replication


Select one or more roles to install on the selected server.
Roles
Active Directory Certificate Services
Active Directory Domain Services
Active Directory Federation Services
Active Directory Lightweight Directory Services
Active Directory Rights Management Services
Device Health Attestation
DHCP Server
DNS Server
Fax Server
File and Storage Services (1 of 12 installed)
File and iSCSI Services
Storage Services (Installed)
Host Guardian Service
Hyper-V
Network Policy and Access Services
Print and Document Services
Remote Access
Remote Desktop Services
Volume Activation Services
Web Server (IIS)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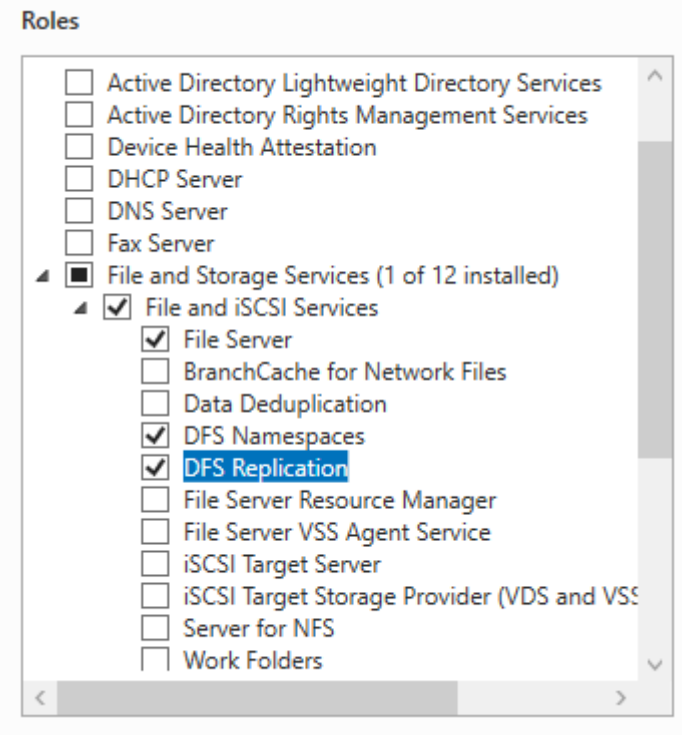
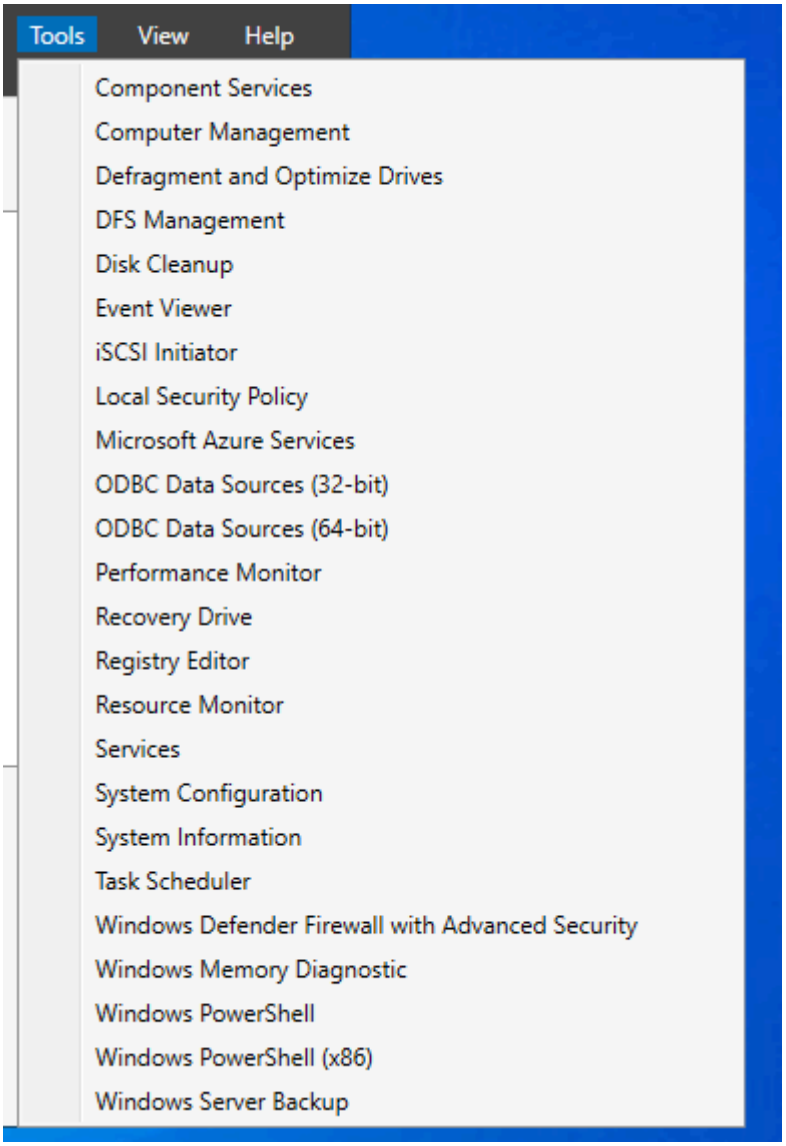


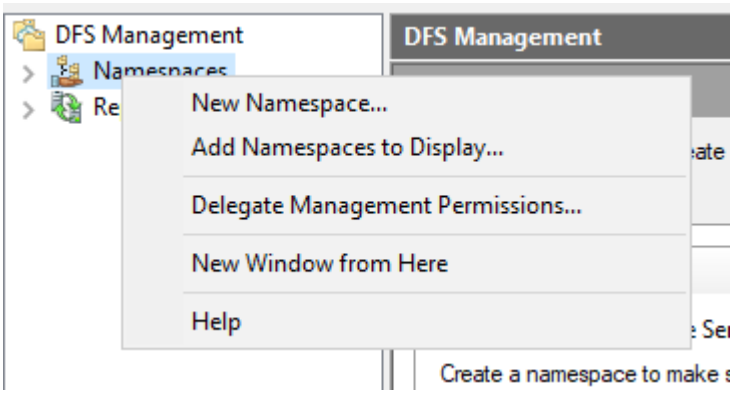
Click Install to complete the installation.

Teil 2: Create DFS-Namespace

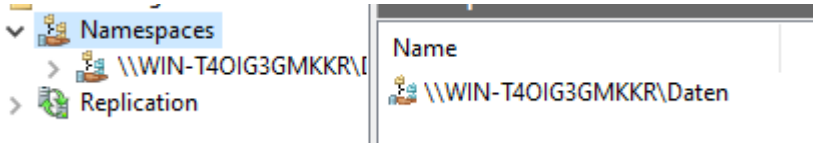
1. **By using the DFS Management console, a central share path is created, for example `\\firma.local\Daten`.**
    - The console can be accessed via Server Manager → Tools → DFS Management.



2. **Right-click on Namespaces and select New Namespace.**



3. **Select the server on which the DFS namespace will be hosted.**

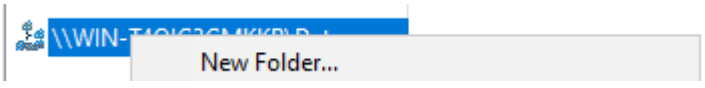


- Enter a name for the namespace (for example: Daten).
- Select the namespace type:
    - Domain-based namespace (recommended).
- Create the namespace.

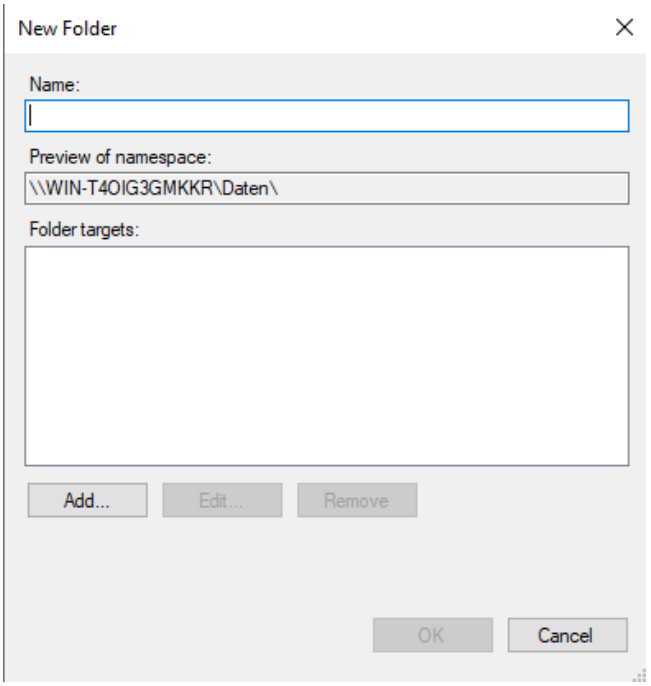
After the namespace has been created, the following path is available, for example: \\firma.local\Daten

Part 3: Adding Folders to the Namespace

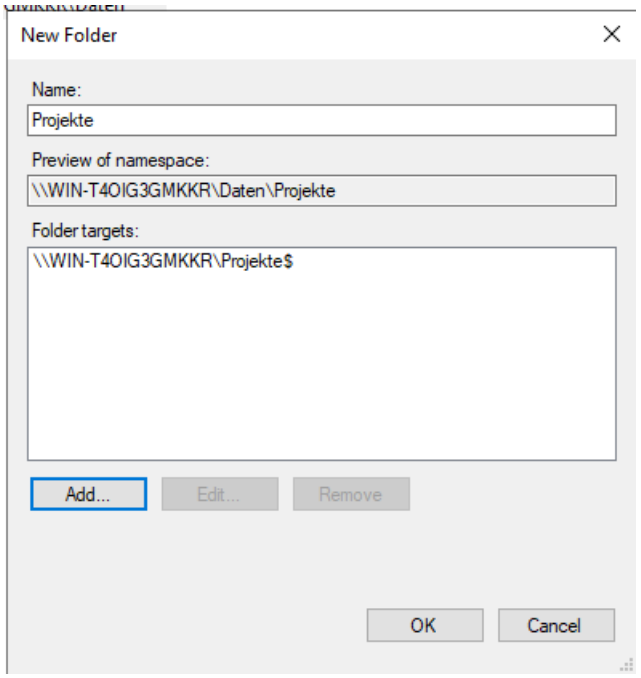
1. **Open your DFS namespace in DFS Management.**
2. **Right-click the namespace and select New Folder.**



3. **Assign a name to the folder (for example: "Projects").**
4. **Click Add Folder Target.**



5. **Select a real shared folder (for example: `\\Server1\Projects$`).**

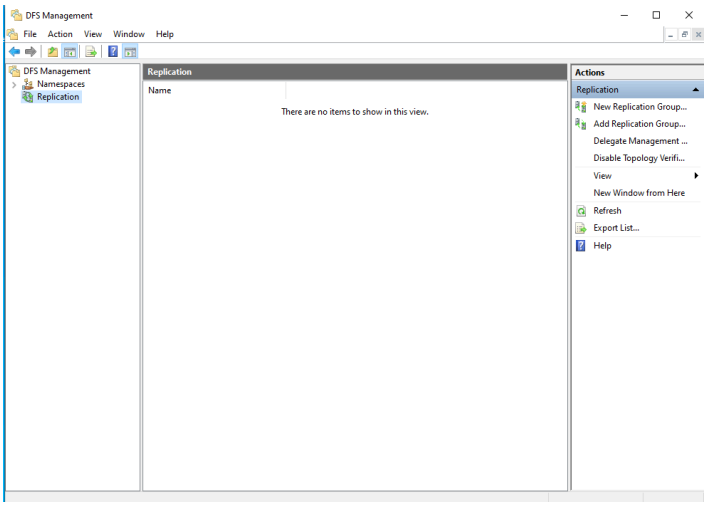


Important: The folder target must be an existing NTFS share.

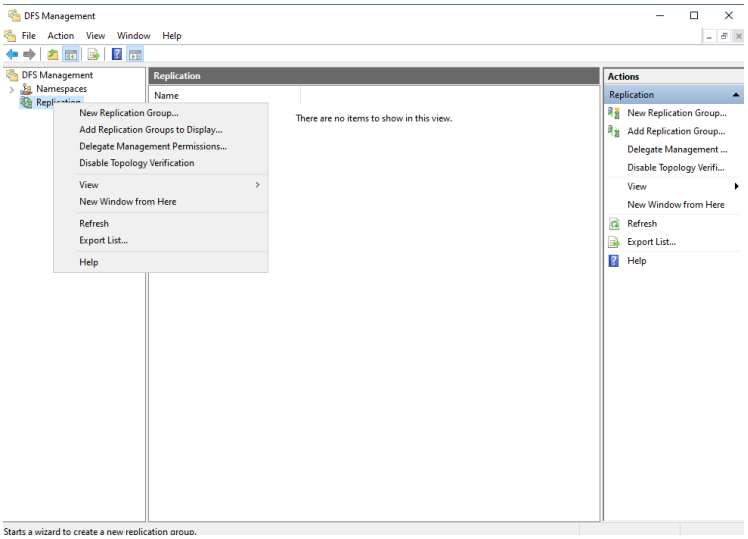
Part 4: Configuring DFS Replication

This will automatically synchronize data between servers.
Create a replication group:

- DFS Management → Replication

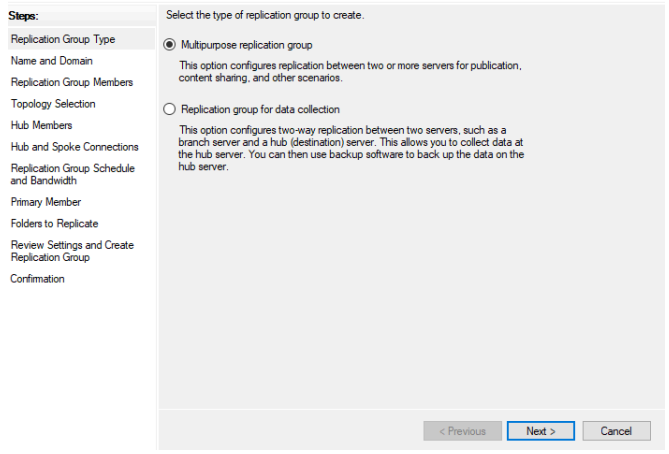


Right-click and select New Replication Group.

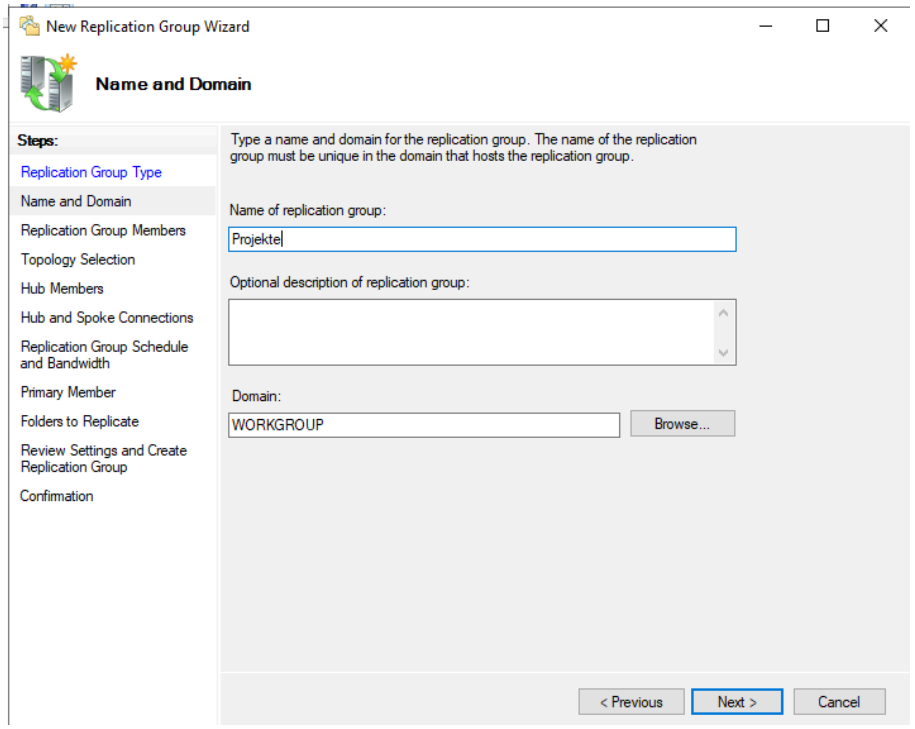


Select the replication type:

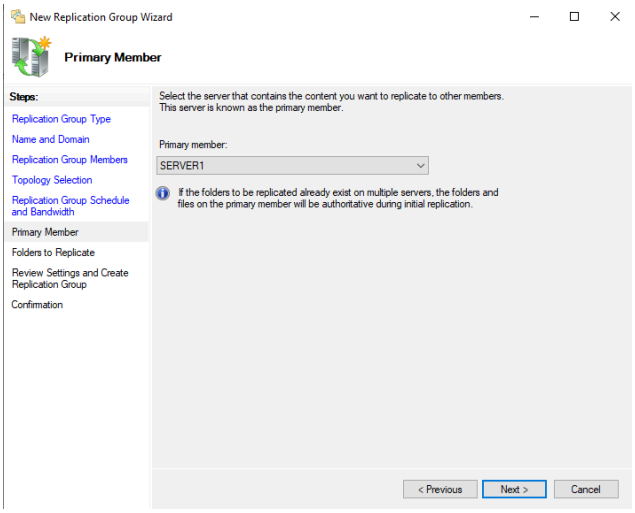
- Multipurpose replication group (Multiple Master – default)



Enter a name for the replication group and specify the domain.



- Add the servers (for example: Server1, Server2).
- Select the primary server.



- Specify the folder to be replicated.
- Specify the target folder on each server (for example: D:\Data).
- Configure the replication schedule and bandwidth (default: Always / Full bandwidth).

Note: DFS may take a few minutes before replication starts.

Part 5: Client Configuration and Access

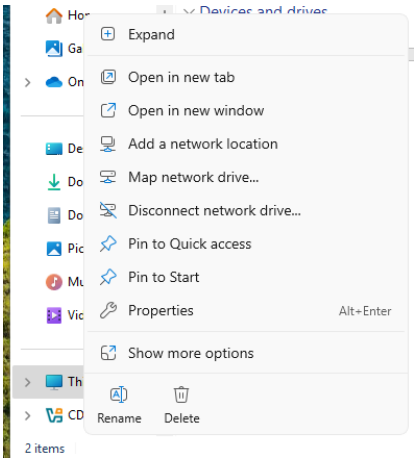
Prerequisites

Before a client can access the Distributed File System (DFS), the following requirements must be met:

- **DFS has been correctly configured on the servers.**
- **A DFS namespace exists (for example: `\\firma.local\Daten`).**
- **Folder targets are configured and point to both file servers.**
- **The client computer is a member of the same Active Directory domain.**
- **Appropriate permissions are configured:**
  - **NTFS permissions on the target folders**
  - **Share permissions on the file shares**
- **DNS name resolution is functioning correctly (the client can resolve the domain and file servers).**

Connecting the Client to the DFS Namespace

1. **Open File Explorer.**
2. **Right-click on This PC.**
3. **Select Map network drive.**



4. **Choose a drive letter (for example: `Z:`).**
5. **Enter the DFS namespace path in the Folder field:**

```
\\firma.local\Daten
```

6. **Enable Reconnect at sign-in.**
7. **Click Finish to establish the connection.**