



Chapter 5

WEB – FTP and File Services

Tran Thanh Dien, PhD

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Content

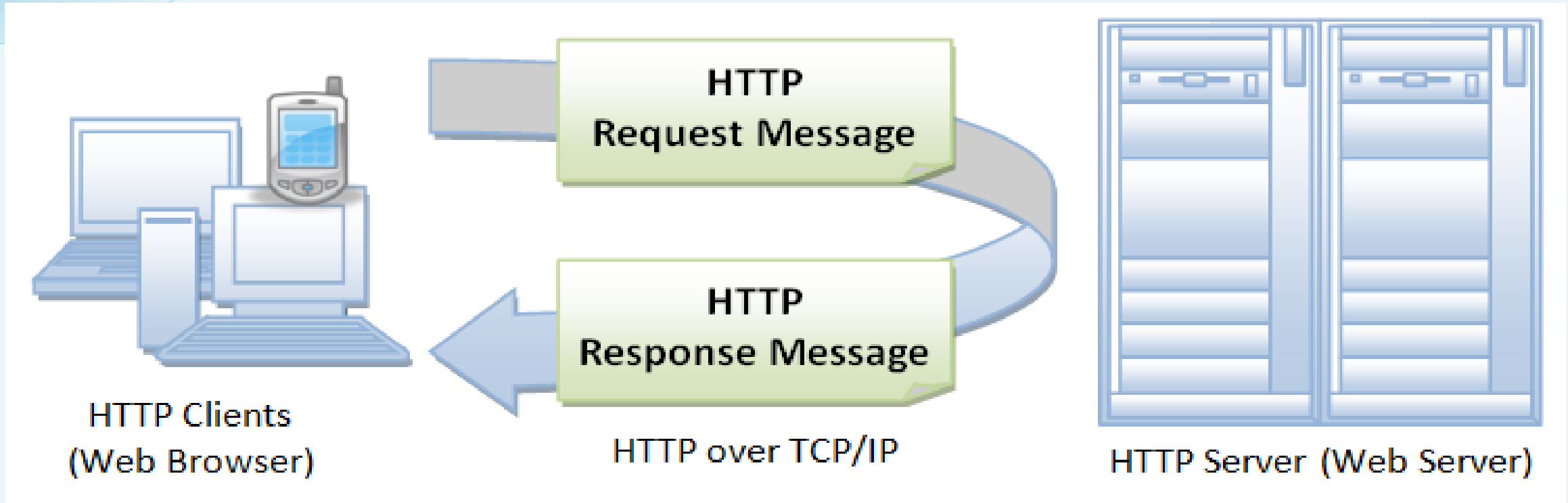
- Web Services
- FTP Services
- File services



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Web Services

Web Server



A program that generates and transmits responses to client requests for web resources



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Web Services

HTTP Protocol





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Web Services

Installing the Web Server role

Add Roles and Features Wizard

DESTINATION SERVER
SVR-MBR-C.clc.com

Select role services

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Web Server Role (IIS)

Role Services

Confirmation

Results

Select the role services to install for Web Server (IIS)

Role services

- ☒ Web Server
 - ☒ Common HTTP Features
 - ☒ Default Document
 - ☒ Directory Browsing
 - ☒ HTTP Errors
 - ☒ Static Content
 - ☒ HTTP Redirection
 - ☐ WebDAV Publishing
 - ☒ Health and Diagnostics
 - ☒ Performance
 - ☒ Security
 - ☐ Application Development
- ☒ FTP Server
 - ☒ FTP Service
 - ☒ FTP Extensibility
- ☒ Management Tools
 - ☒ IIS Management Console
 - ☐ IIS 6 Management Compatibility
 - ☐ IIS Management Scripts and Tools
 - ☒ Management Service

Description

Performance provides infrastructure for output caching by integrating the dynamic output-caching capabilities of ASP.NET with the static output-caching capabilities that were present in IIS 6.0. IIS also lets you use bandwidth more effectively and efficiently by using common compression mechanisms such as Gzip and Deflate.

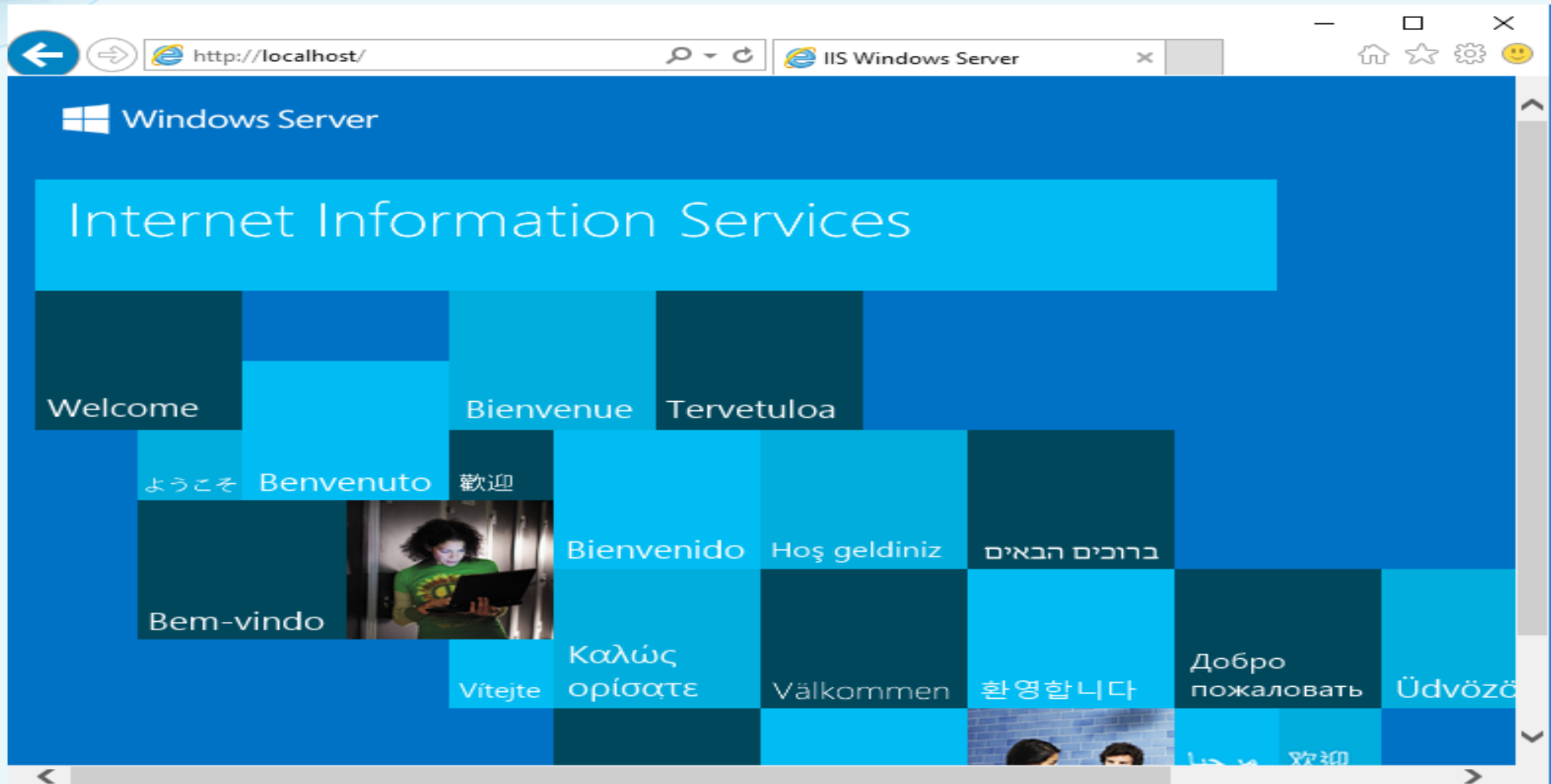
< Previous Next > Install Cancel



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Web Services

Installing the Web Server role



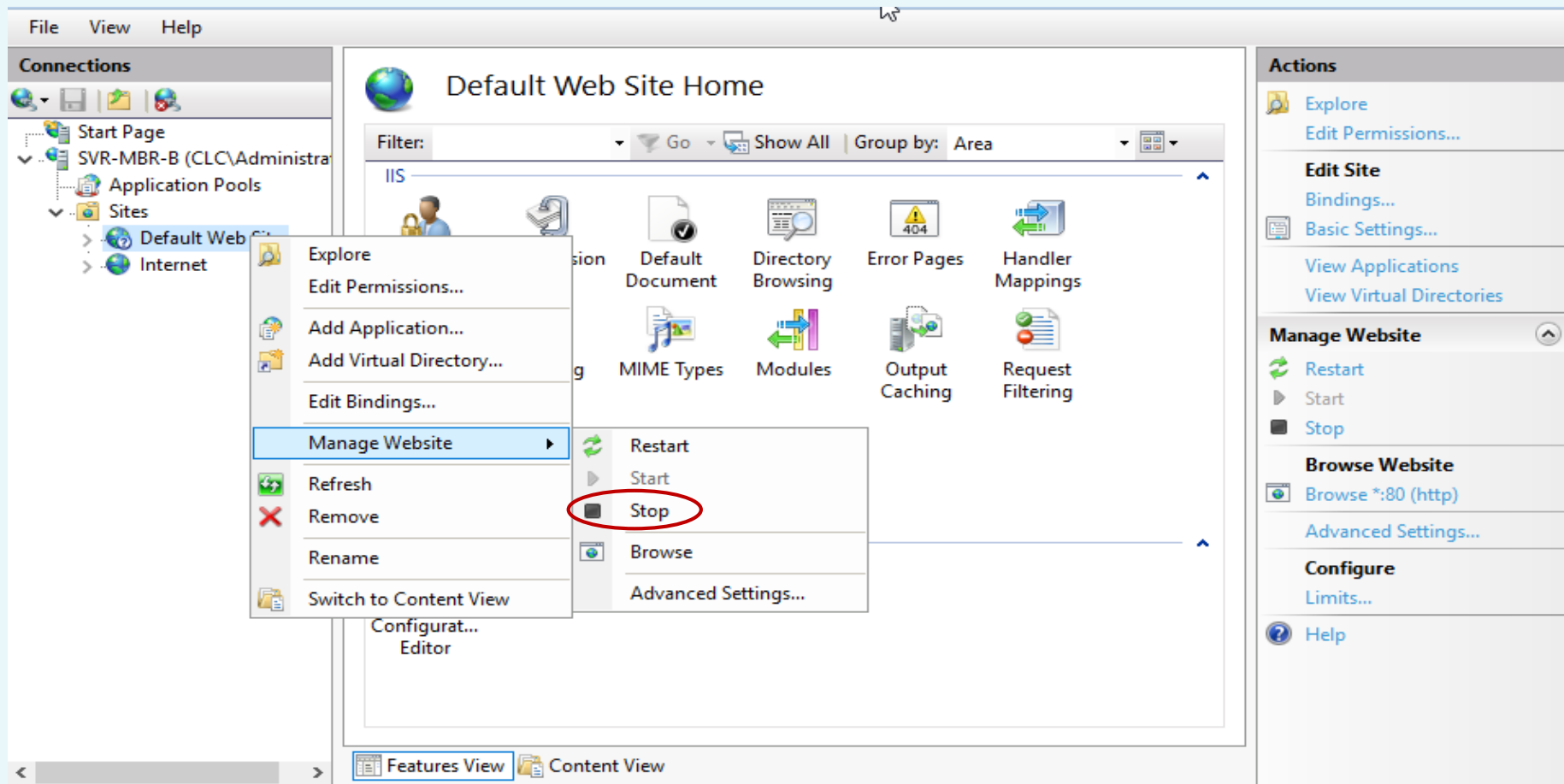


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Web Services

Launching the first website

Replace that default website with one of our own





Web Services

Launching the first website

- Server Manager -> Tools -> Internet Information Services (IIS) Manager
- Right-click on the **Sites** folder and choose **Add Website...**

Add Website

Site name: NewWebsite Application pool: NewWebsite Select...

Content Directory

Physical path: C:\inetpub\NewWebsite ...

Pass-through authentication

Connect as... Test Settings...

Binding

Type: http IP address: All Unassigned Port: 80

Host name:

Example: www.contoso.com or marketing.contoso.com

☒ Start Website immediately

OK Cancel

Web Services

Launching the first website

- From another computer on the network, open up Internet Explorer and browse to `http://<webserver>`
- Example: `http://www.clc.com`



Congratulations! You are viewing CLC website!



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Web Services

Changing the port on which the website runs

- Normally, a website runs on port 80 or 443 (HTTPS)
- It is very easy to change the port that a website is listening on if needed
- **Reasons:**
 - to keep the web server hidden
 - limited on IP addresses: Running multiple sites using the same IP address



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Web Services

Changing the port on which the website runs

The screenshot shows the IIS Manager interface. In the left-hand tree, the 'Sites' folder is expanded, and a right-click context menu is open over the 'NewWebSite' item. The 'Edit Bindings...' option in this menu is circled in red. The main pane displays the 'Configuration Editor' for the 'appSettings' section, showing a table with one entry: 'file' with a count of 0. To the right, a 'Site Bindings' dialog box is open, displaying a table with one binding: 'http' on port '80' with IP address '*'. The 'Edit...' button for this binding is circled in red. A second 'Edit Site Binding' dialog box is open in the foreground, showing the 'Type' as 'http', 'IP address' as 'All Unassigned', and 'Port' as '81'. The 'Host name' field is empty, and an example URL is provided at the bottom: 'Example: www.contoso.com or marketing.contoso.com'. The 'OK' and 'Cancel' buttons are at the bottom right of this dialog.

Type	Host Name	Port	IP Address	Binding Informa...
http		80	*	

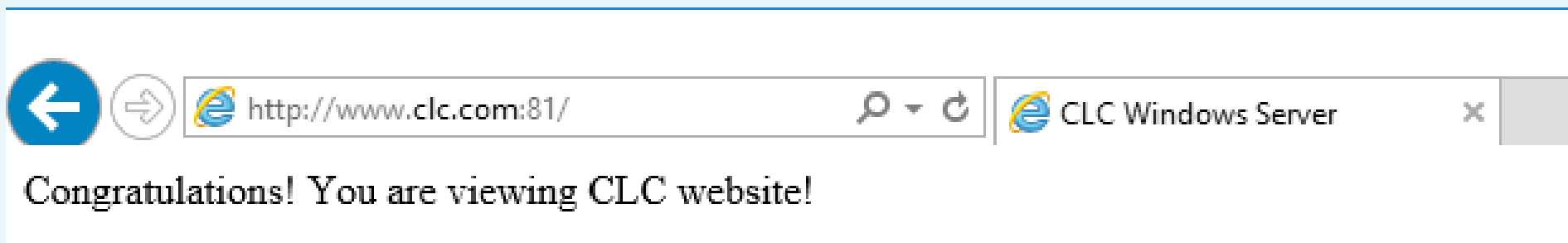
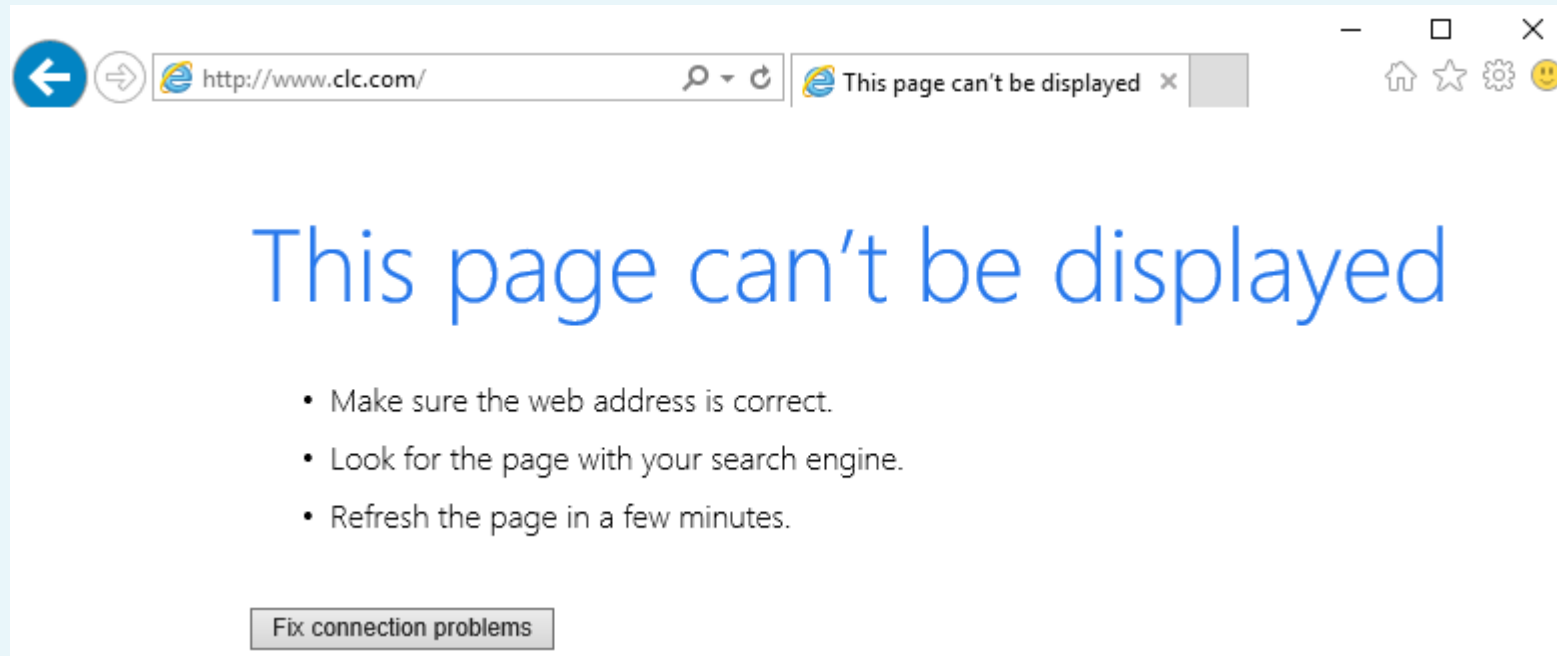
Type	IP address	Port
http	All Unassigned	81



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Web Services

Changing the port on which the website runs





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Web Services

Adding encryption to the website

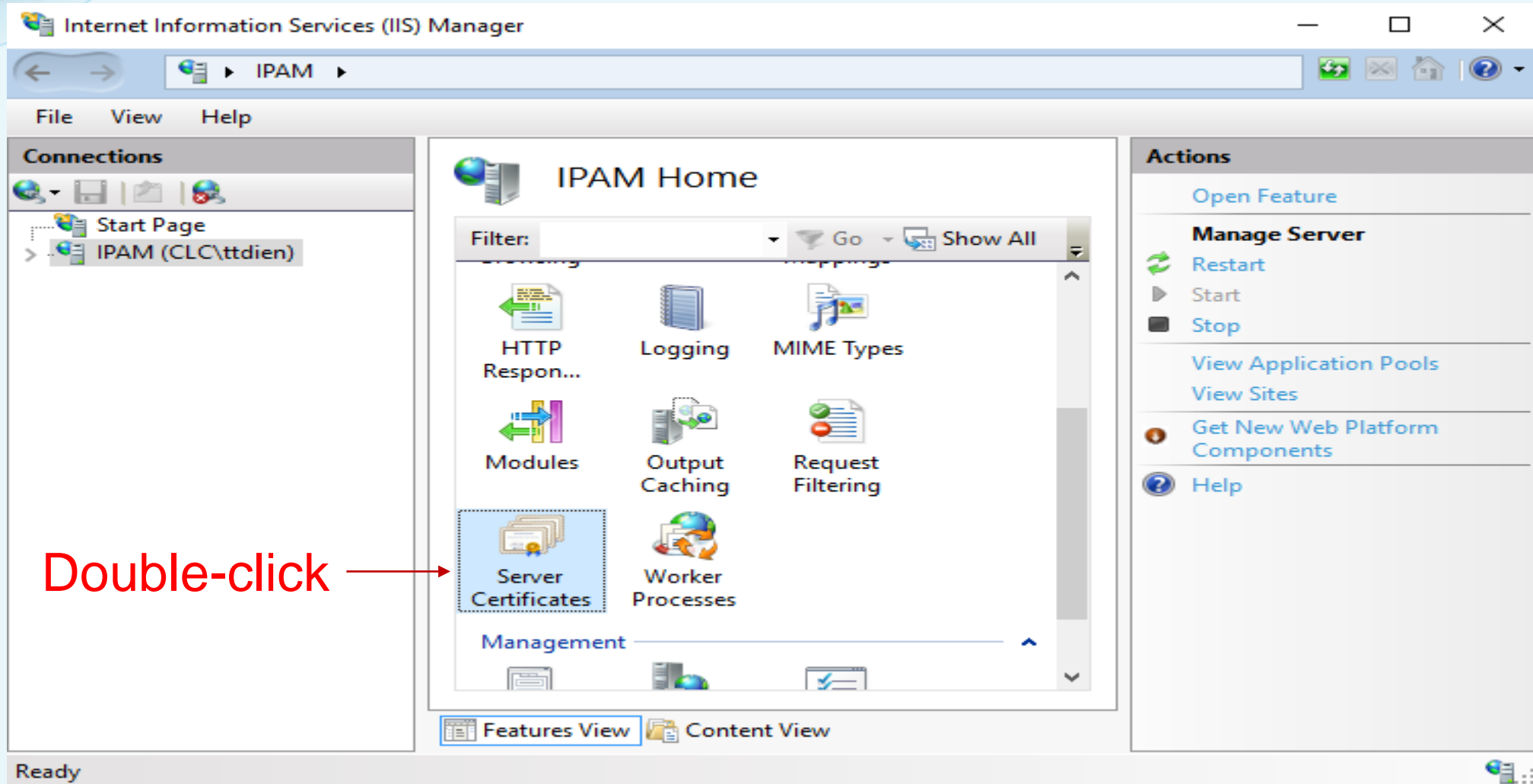
- Enable HTTPS on Web Server to protect data traversing back and forth between the web server and the browser
- Need SSL certificate installed on the web server:
 - Buy a Certificate from well-known company: Comodo, DigiCert, GlobalSign, Entrust
 - Create a self-signed Certificate



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Web Services

Adding encryption to the website



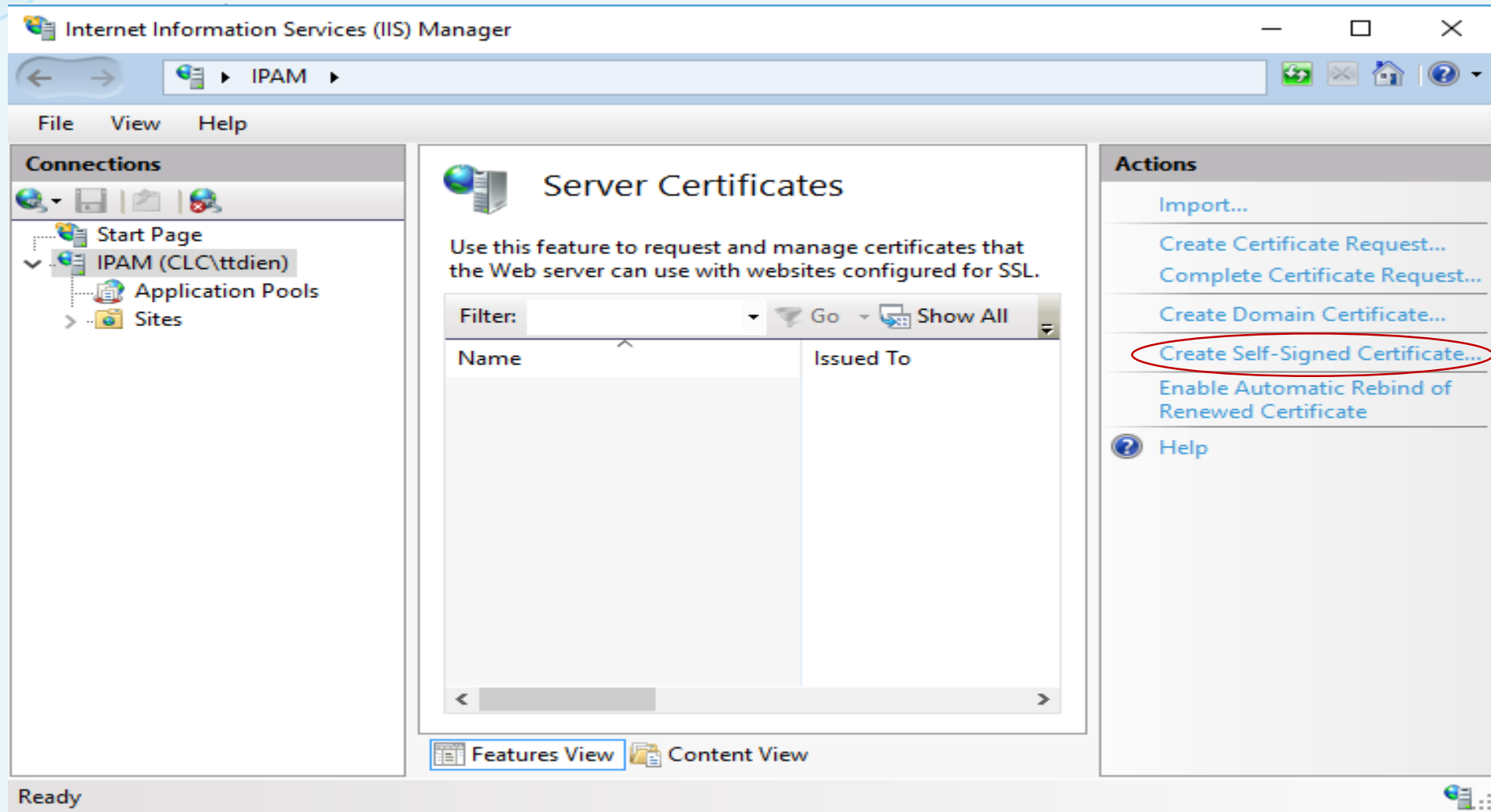
Double-click



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Web Services

Adding encryption to the website






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Web Services

Adding encryption to the website

Create Self-Signed Certificate ? X

 **Specify Friendly Name**

Specify a file name for the certificate request. This information can be sent to a certificate authority for signing:

Specify a friendly name for the certificate:

CLC Web Server

Select a certificate store for the new certificate:

Web Hosting v

OK Cancel



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Web Services

Adding encryption to the website

Internet Information Services (IIS) Manager

IPAM

File View Help

Connections

- Start Page
- IPAM (CLC\ttdien)
 - Application Pools
 - Sites

Server Certificates

Use this feature to request and manage certificates that the Web server can use with websites configured for SSL.

Filter: [v] Go [v] Show All | Group by: No Grouping [v]

Name	Issued To	Issued By	Expiration Date	Certificate Hash
CLC Web Server	IPAM.clc.com	IPAM.clc.com	9/15/2021 5:00:00 ...	69D860EEABE1915EEB734A8

The certificate is now ready for use

Actions

- Import...
- Create Certificate Request...
- Complete Certificate Request...
- Create Domain Certificate...
- Create Self-Signed Certificate...
- View...
- Export...
- Remove
- Enable Automatic Rebind of Renewed Certificate
- Help



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Web Services

Adding encryption to the website

The screenshot shows the Internet Information Services (IIS) Manager interface. The left-hand 'Connections' pane displays a tree view with the following structure:

- Start Page
- SVR-MBR-B (CLC\Administra...
- Application Pools
- Sites
 - Default Web Site
 - Internet
 - NewWebsite

A right-click context menu is open over the 'NewWebsite' site, showing options such as 'Explore', 'Edit Permissions...', 'Add Application...', 'Add Virtual Directory...', 'Edit Bindings...', 'Manage Website', 'Refresh', 'Remove', 'Rename', and 'Switch to Content View'. The 'Edit Bindings...' option is highlighted.

The main pane shows the 'NewWebsite' site with a 'Site Bindings' table. The table has the following columns: Type, Host Name, Port, IP Address, and Binding Informa... The table contains one entry:

Type	Host Name	Port	IP Address	Binding Informa...
http		81	*	

An 'Add Site Binding' dialog box is open, allowing the user to configure a new binding. The fields are as follows:

- Type: **https** (selected from a dropdown)
- IP address: **172.30.1.9** (entered in the text box)
- Port: **443** (entered in the text box)
- Host name: **www.clc.com** (entered in the text box)
- ☐ Require Server Name Indication
- SSL certificate: **CLC Website** (selected from a dropdown)

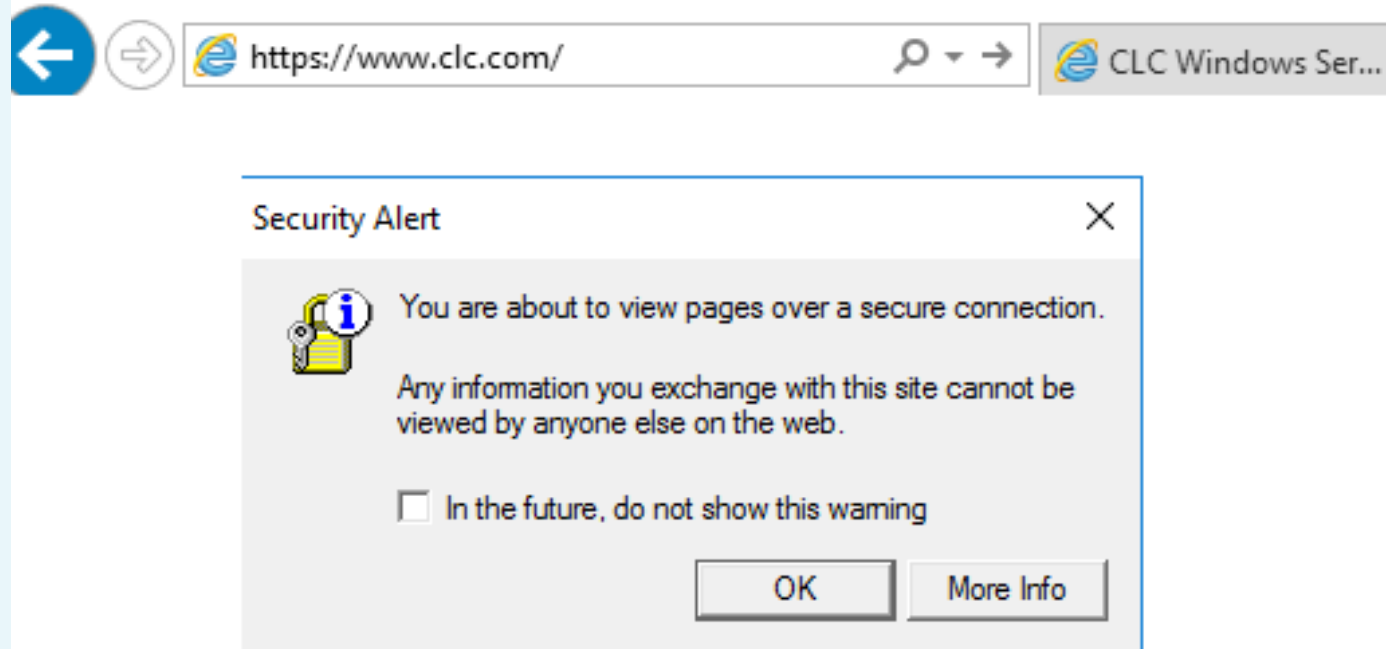
Buttons for 'Select...', 'View...', 'OK', and 'Cancel' are present at the bottom of the dialog.



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Web Services

Adding encryption to the website



Congratulations! You are viewing CLC website!



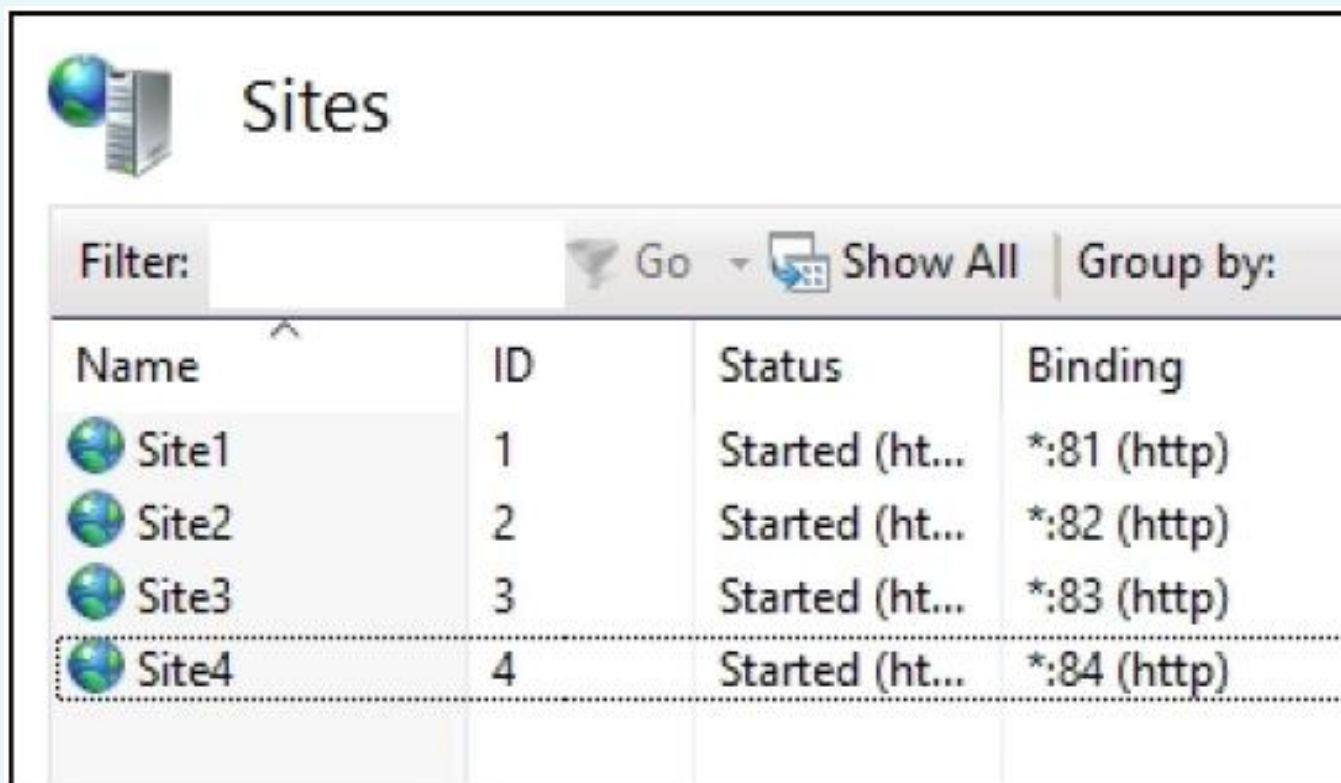
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Web Services

Hosting multiple websites on an IIS server

- Hosting many different websites at the same time on a server
- A couple of different ways:
 - Using multiple ports
 - Using Multiple IP addresses
 - Using host headers

Binding a unique port number for each site.



The screenshot shows the IIS Manager 'Sites' console tree. Below the tree, there is a table listing the configured sites. The table has four columns: Name, ID, Status, and Binding. Four sites are listed: Site1, Site2, Site3, and Site4. Each site is bound to a unique port (81, 82, 83, and 84 respectively) on the all-ports (*) address. Site4 is currently selected.

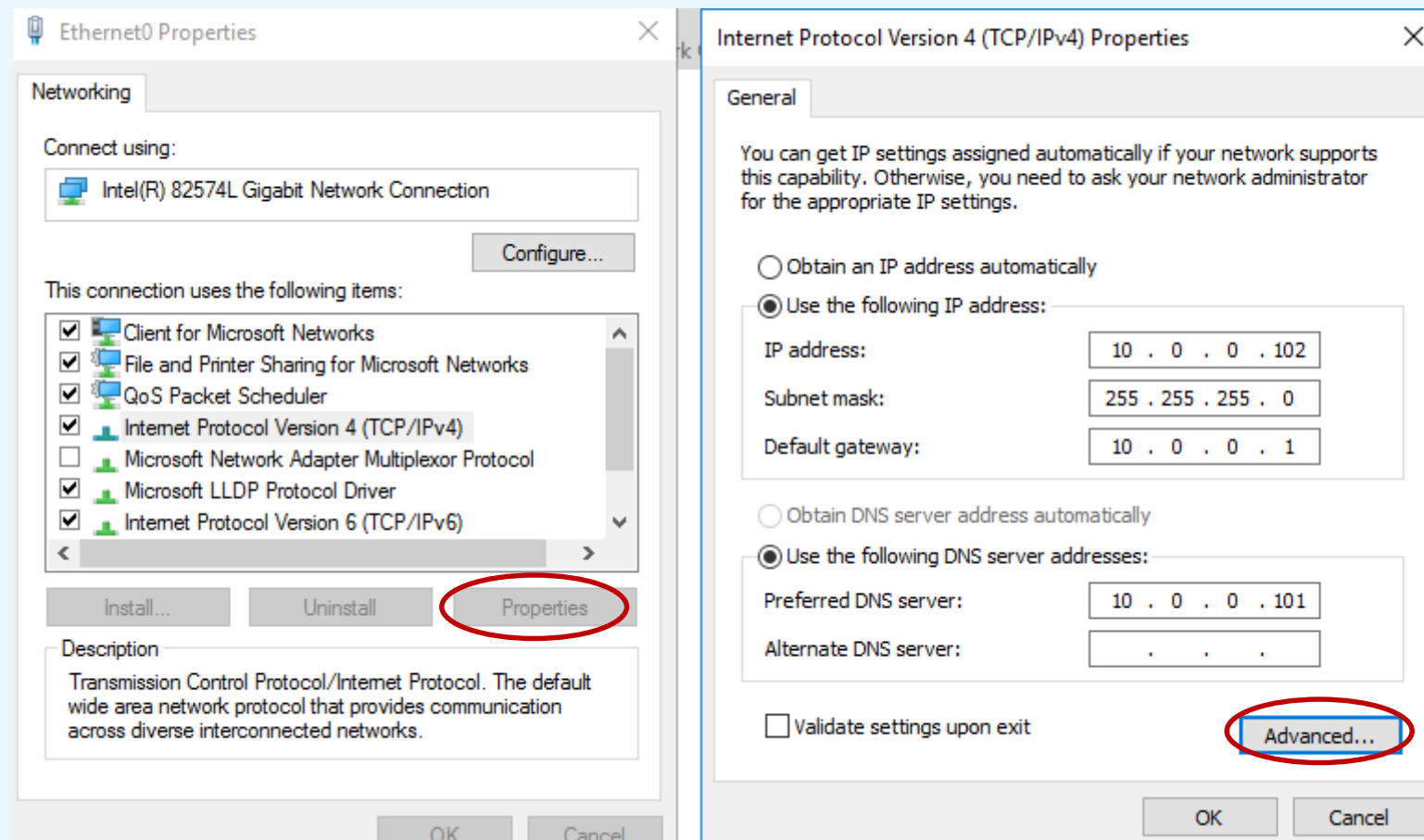
Name	ID	Status	Binding
Site1	1	Started (ht...	*:81 (http)
Site2	2	Started (ht...	*:82 (http)
Site3	3	Started (ht...	*:83 (http)
Site4	4	Started (ht...	*:84 (http)

<http://www.clc.com:81>
<http://www.clc.com:82>
<http://www.clc.com:83>
<http://www.clc.com:84>

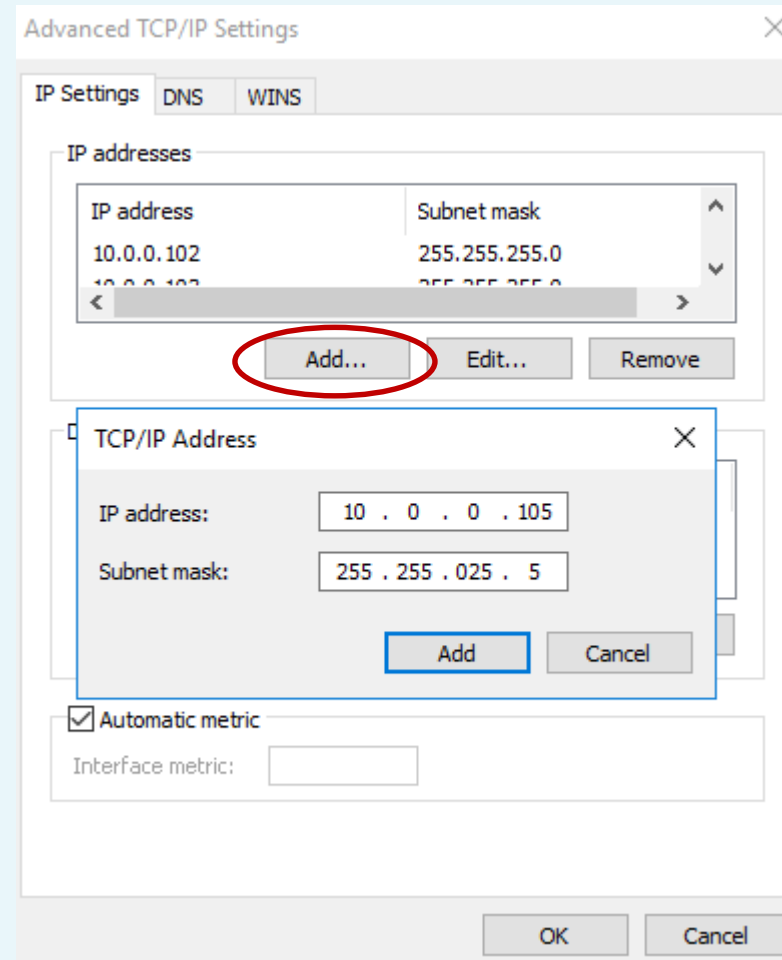
Hosting multiple websites on an IIS server: **Multiple IP addresses**

Hosting each website on its own unique IP address

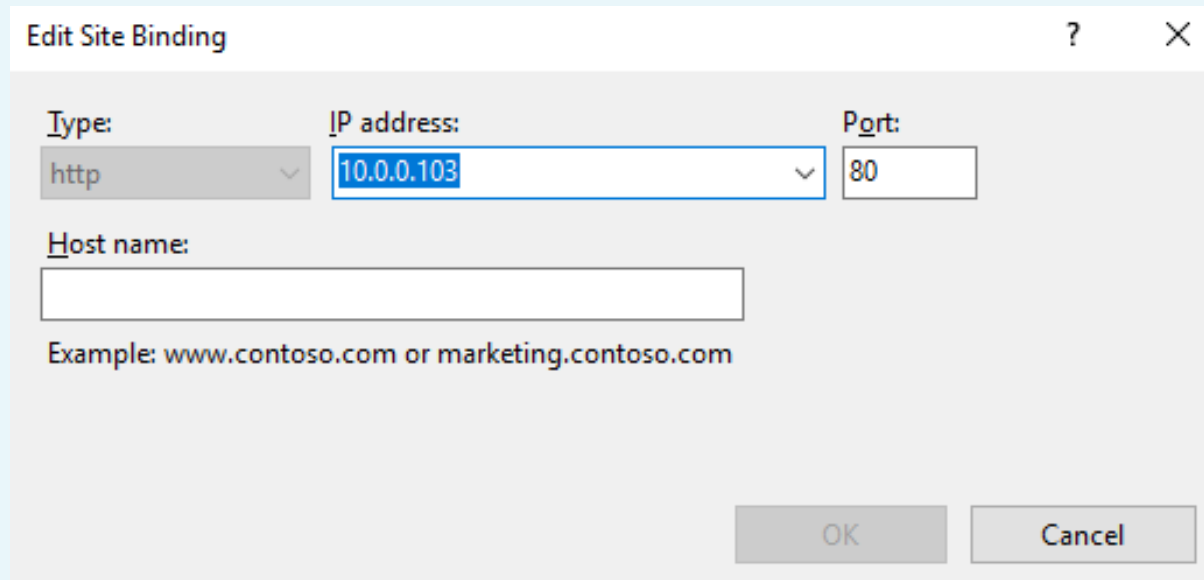
Plug in additional IP addresses for the NIC



Plug in additional IP addresses for the NIC



Modify Bindings... so that each website using the default port 80, but also running on its own unique IP address.



Edit Site Binding

Type: http IP address: 10.0.0.103 Port: 80

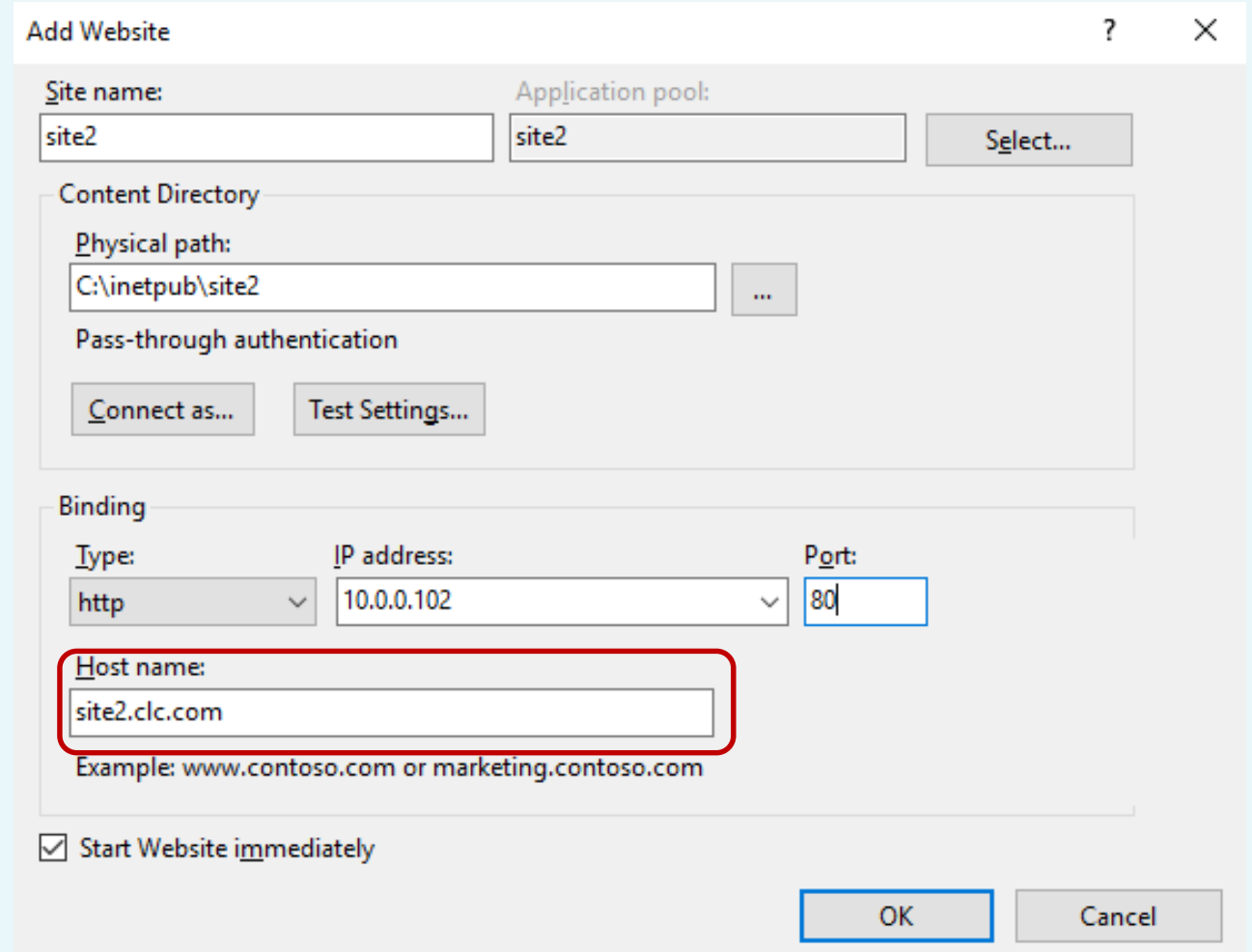
Host name:

Example: www.contoso.com or marketing.contoso.com

OK Cancel

- Multiple websites on a single IP address
- Each site has unique **domain name** to a particular request coming in from the client.
- These header requests can help the web server distinguish between traffic, directing users calling for websites to their appropriate site inside IIS.

- The same IP address and Port, but a different name in the **Host name** field
- Remember to create DNS records for these websites



Add Website

Site name: Application pool:

Content Directory

Physical path:

Pass-through authentication

Binding

Type: IP address: Port:

Host name: Example: www.contoso.com or marketing.contoso.com

☒ Start Website immediately



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Web Services

Hosting multiple websites on an IIS server: **Using host headers**



Congratulations! You are viewing CLC website!



Congratulations! You are viewing Site2 CLC website!



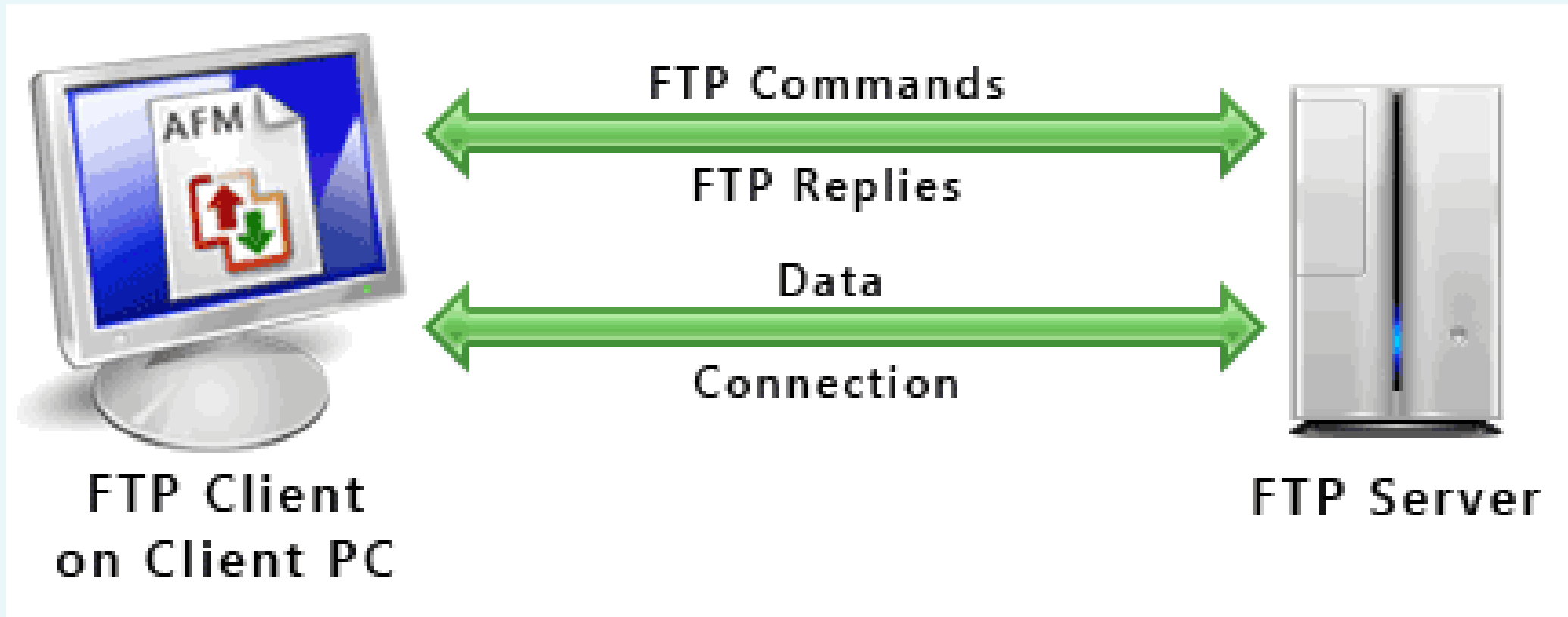
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FTP Services



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FTP Services





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FTP Services

Install FTP Server role

Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
IPAM.clc.com

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more roles to install on the selected server.

Roles	Description
<input type="checkbox"/> Device Health Attestation	
<input type="checkbox"/> DHCP Server	
<input type="checkbox"/> DNS Server	
<input type="checkbox"/> Fax Server	
<input checked="" type="checkbox"/> File and Storage Services (1 of 12 installed)	
<input type="checkbox"/> Host Guardian Service	
<input type="checkbox"/> Hyper-V	
<input type="checkbox"/> MultiPoint Services	
<input type="checkbox"/> Network Policy and Access Services	
<input type="checkbox"/> Print and Document Services	
<input type="checkbox"/> Remote Access	
<input type="checkbox"/> Remote Desktop Services	
<input type="checkbox"/> Volume Activation Services	
<input checked="" type="checkbox"/> Web Server (IIS) (8 of 43 installed)	
<input checked="" type="checkbox"/> Web Server (7 of 34 installed)	
<input checked="" type="checkbox"/> FTP Server	
<input checked="" type="checkbox"/> FTP Service	FTP Server enables the transfer of files between a client and server by using the FTP protocol. Users can establish an FTP connection and transfer files by using an FTP client or FTP-enabled Web browser.
<input type="checkbox"/> FTP Extensibility	
<input checked="" type="checkbox"/> Management Tools (1 of 7 installed)	
<input type="checkbox"/> Windows Deployment Services	

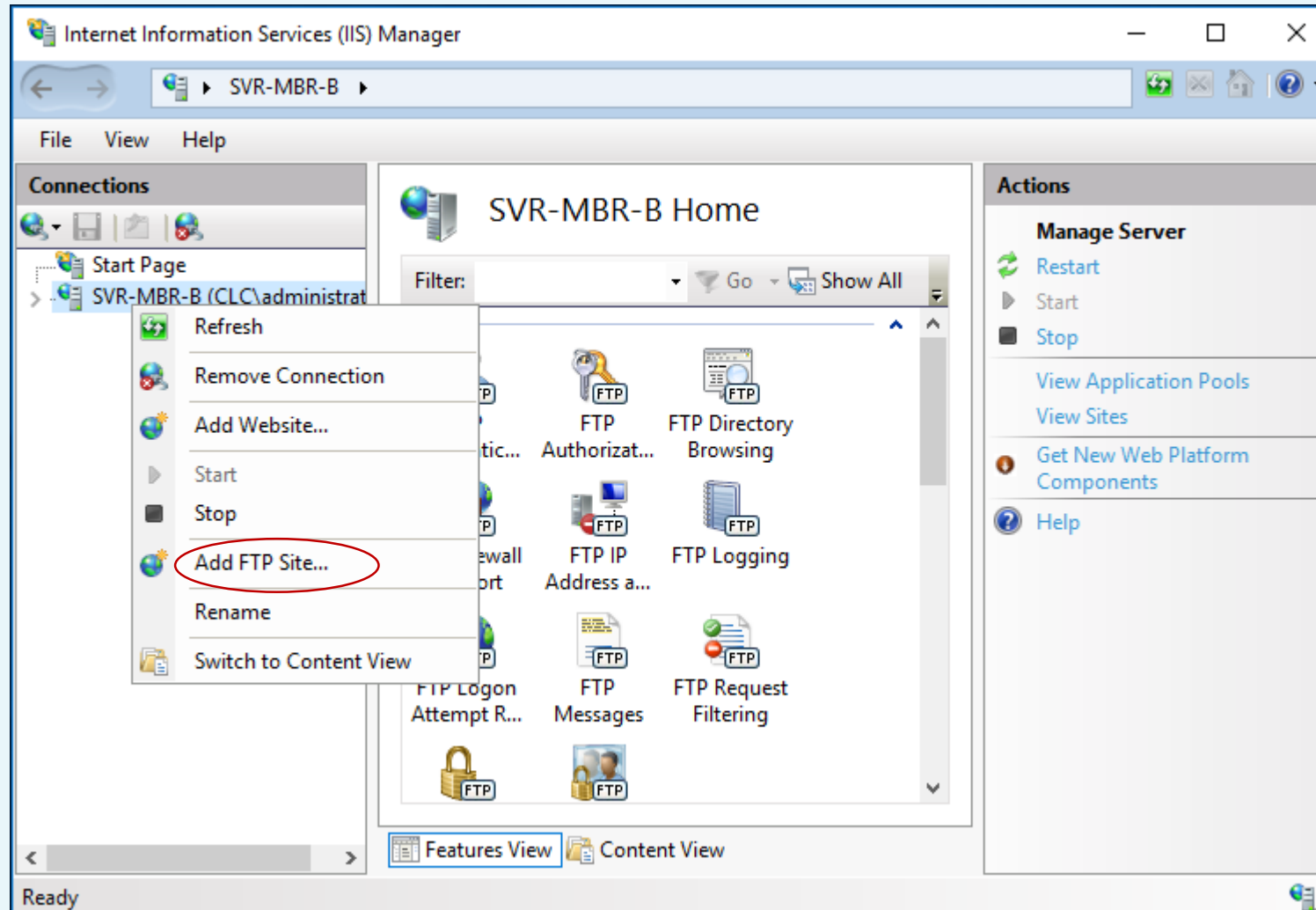
< Previous Next > Install Cancel



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FTP Services

Configuring FTP Server






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FTP Services


Configuring FTP Server

Add FTP Site ? X

 **Site Information**

FTP site name:

Content Directory

Physical path:
 


Previous Next Finish Cancel



FTP Services

Configuring FTP Server

Add FTP Site ? X

 **Binding and SSL Settings**

Binding

IP Address: All Unassigned Port: 21

☐ Enable Virtual Host Names:

Virtual Host (example: ftp.contoso.com):

☐ Start FTP site automatically

SSL

☒ No SSL

☐ Allow SSL

☐ Require SSL

SSL Certificate: Not Selected Select... View...

Previous Next Finish Cancel




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FTP Services

Configuring FTP Server

Add FTP Site ? X

 **Authentication and Authorization Information**

Authentication

☐ Anonymous

☒ Basic

Authorization

Allow access to:

All users v

Permissions

☒ Read

☒ Write

Previous Next Finish Cancel



FTP Services

Connect to FTP Server

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FileZilla window: clc%5Cttdien@10.0.1.11 - FileZilla

Host: 10.0.1.11 Username: clc\ttdien Password: Port: 21 Quickconnect

Status: Insecure server, it does not support FTP over TLS.
Status: Logged in
Status: Retrieving directory listing...
Status: Calculating timezone offset of server...
Status: Timezone offset of server is 25200 seconds.
Status: Directory listing of "/" successful

Local site: C:\Users\hp\ Remote site: /

Filename	Filesize	Filetype	Last modified
..			
.idlerc		File folder	14/03/2019 15:14:23
.zenmap		File folder	29/05/2019 16:46:18
3D Objects		File folder	04/03/2019 21:16:29
AppData		File folder	01/03/2019 02:39:33

7 files and 29 directories. Total size: 6.983.700 bytes

Filename	Filesize	Filetype	Last modified	Permissions	Ownr
..					
1.rtf	177	Rich Text F...	11/09/2019 16:...		
2.rtf	7	Rich Text F...	11/09/2019 16:...		
3.rtf	173	Rich Text F...	11/09/2019 16:...		

3 files. Total size: 357 bytes

Server/Local file	Direction	Remote file	Size	Priority	Status
-------------------	-----------	-------------	------	----------	--------

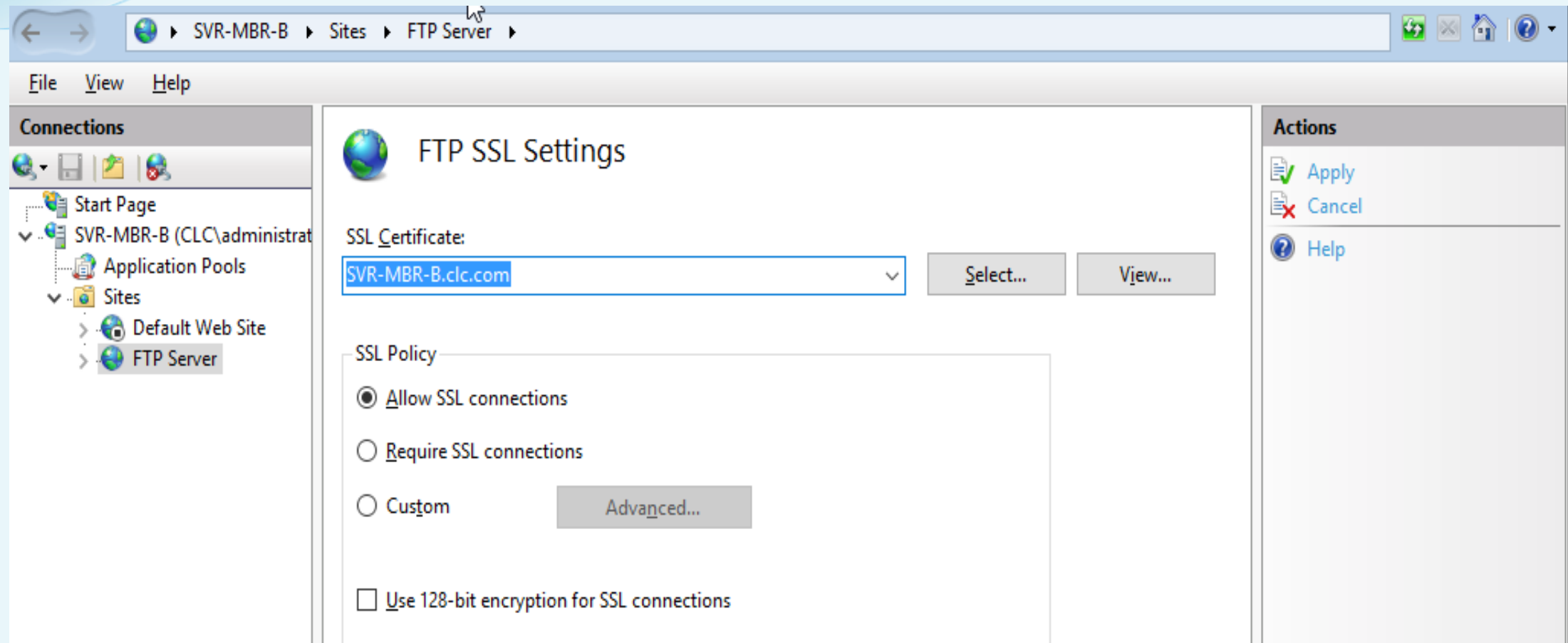
Queued files Failed transfers Successful transfers



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FTP Services

FTP Server: Allow SSL Connection





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FTP Services

Connect to SSL FTP Server

The screenshot shows the FileZilla application window with the 'Settings' dialog box open. The 'Edit' menu is selected, and the 'Settings...' option is highlighted. The 'Settings' dialog box has a tree view on the left with the following structure:

- Connection
 - FTP
 - Active mode
 - Passive mode
 - FTP Proxy
 - SFTP**
 - Generic proxy
- Transfers
 - FTP: File Types
 - File exists action
- Interface
 - Passwords
 - Themes
 - Date/time format
 - Filesize format
 - File lists
- Language
- File editing
 - Filetype associations
- Updates
- Logging
- Debug

The right pane of the 'Settings' dialog box is titled 'Public Key Authentication' and contains the following text:

To support public key authentication, FileZilla needs to know the private keys to use.

Private keys:

Filename	Comment	Data
----------	---------	------

Below the table are two buttons: 'Add key file...' and 'Remove key'.

Alternatively you can use the Pageant tool from PuTTY to manage your keys, FileZilla does recognize Pageant.

Other SFTP options

☐ Enable compression



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FTP Services

Connect to SSL FTP Server

FileZilla interface showing a connection to 10.0.1.11. The status bar indicates: Retrieving directory listing..., Directory listing of "/" successful, Connecting to 10.0.1.11:21..., Connection established, waiting for welcome message..., Initializing TLS..., Verifying certificate...

The local site is C:\Users\hp\, showing folders: hp, Public, win2016, and Windows. The remote site shows 7 files and 29 directories, totaling 7.614.484 bytes.

The "Unknown certificate" dialog box is displayed, warning that the server's certificate is unknown. It provides details about the certificate, including validity dates, serial number, public key algorithm, signature algorithm, and fingerprints (SHA-256 and SHA-1). It also shows the subject of the certificate (SVR-MBR-B.clc.com) and the certificate issuer (clc-SVR-MBR-B-CA).

Session details:

- Host: 10.0.1.11:21
- Protocol: TLS1.2
- Cipher: AES-256-GCM
- Key exchange: ECDHE-RSA
- MAC: AEAD

Trust this certificate and carry on connecting?

- ☐ Always trust certificate in future sessions.
- ☐ Trust this certificate on the listed alternative hostnames.

Buttons: OK, Cancel



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File Services

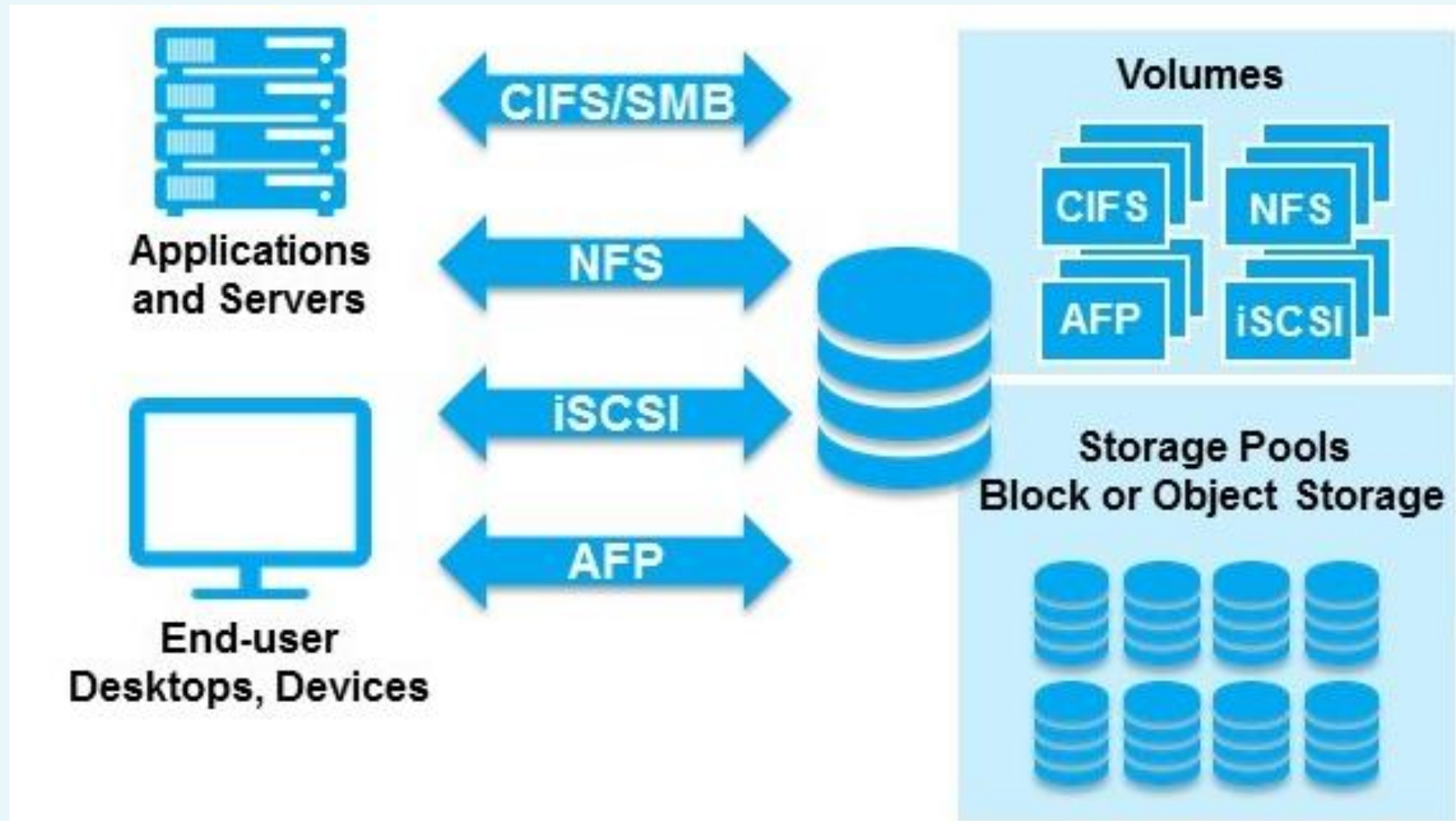


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File Services

Overview

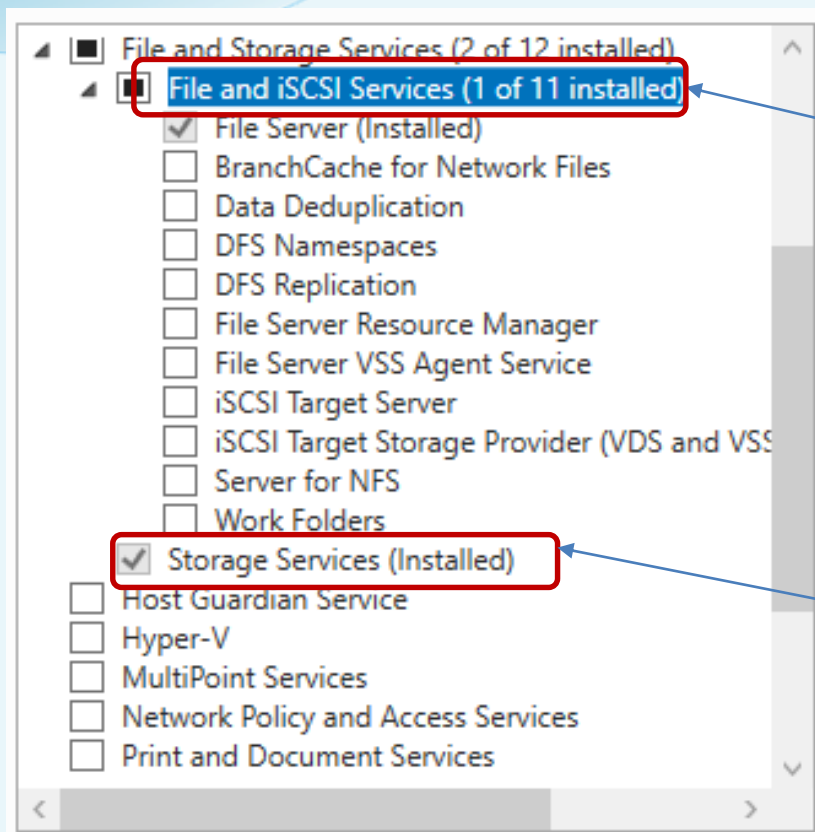
- Provide users the ability to access corporate files from various locations





File Services

Overview



To configure the Server as a file server and a storage server using iSCSI technology

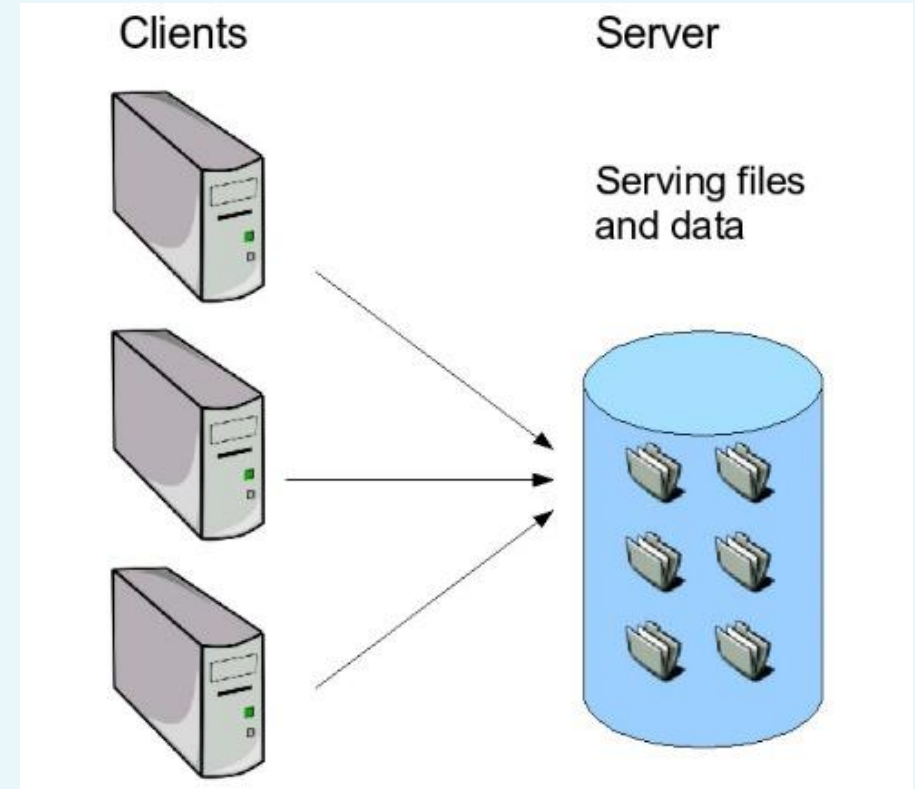
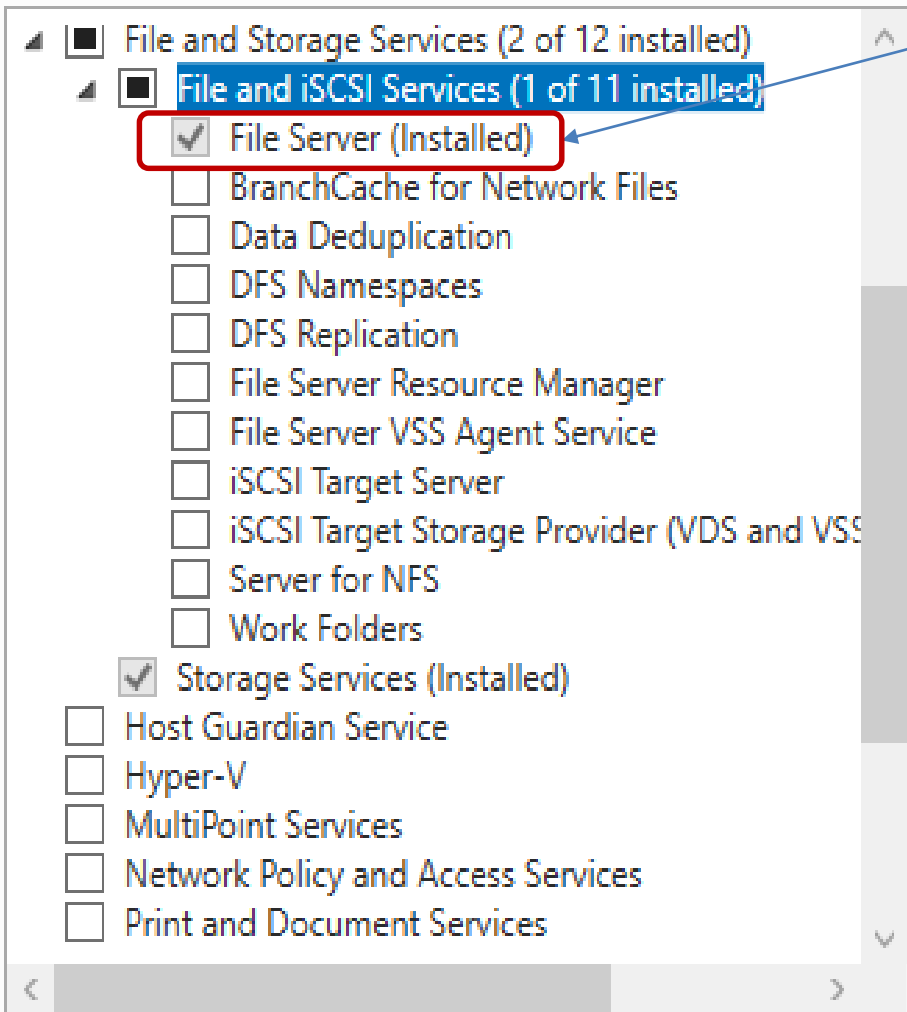
Provides storage management functionality; installed by default and cannot be removed



File Services

File Server

Enable creating, managing, and securing shared folders and provides access for users



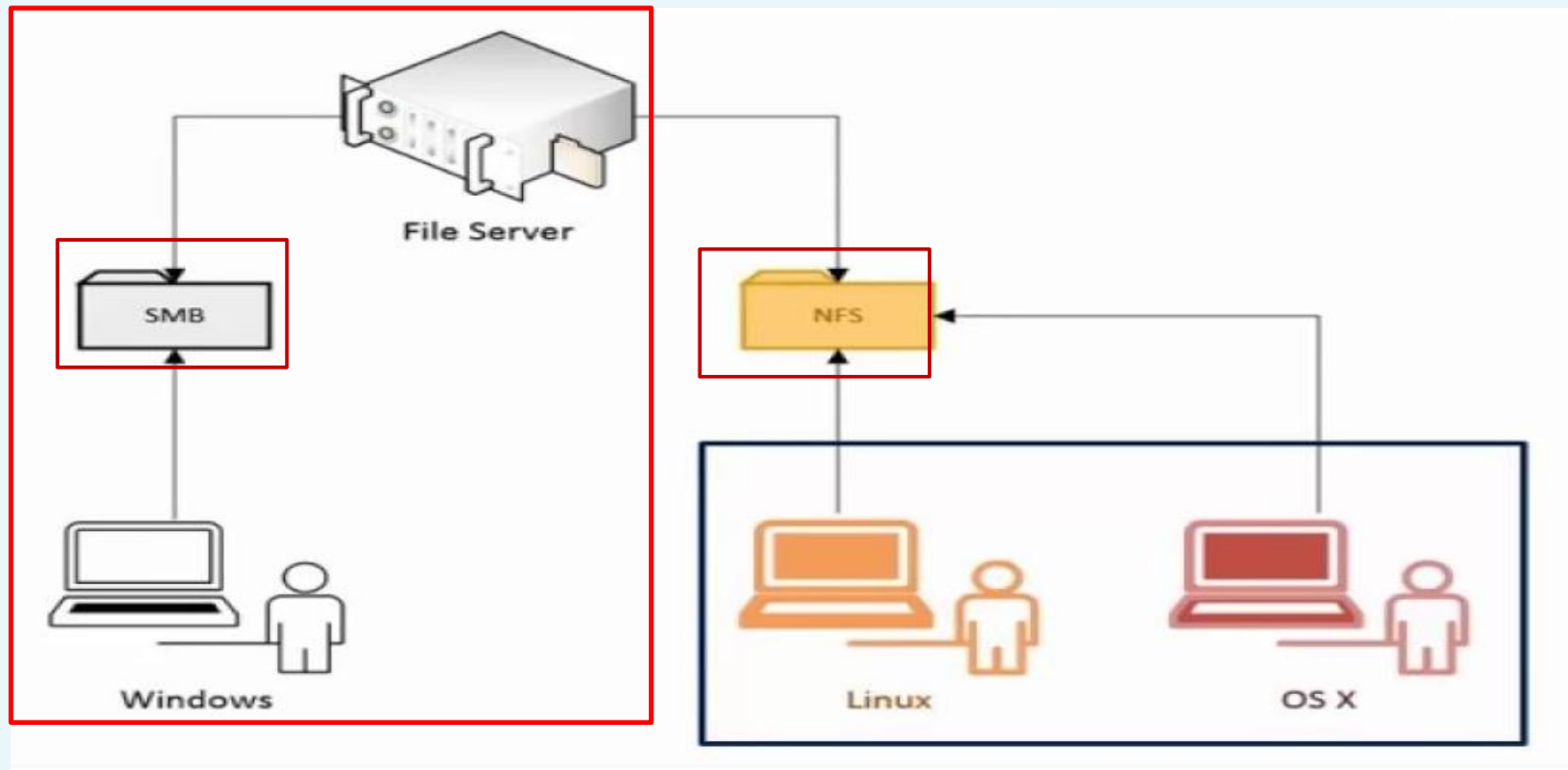


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File Services

File Server

- Provide access to files from different locations in your organization





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File Services

File Server: Creating a File Share

The screenshot shows the Windows Server Manager interface. In the left-hand navigation pane, the path **File and Storage Services > Shares** is highlighted with a red circle. The main pane displays the **SHARES** overview for the server **SRVR-DC1**, showing two shares: **NETLOGON** and **SYSVOL**. A red circle highlights the **TASKS** dropdown menu in the top right of the Shares pane, which includes the option **New Share...**. To the right, the **VOLUME** section for **NETLOGON on SRVR-DC1** shows a storage capacity of 19.5 GB, with 52.8% used (10.3 GB) and 9.18 GB free space. A **QUOTA** section is also visible at the bottom right.

Share	Local Path	Permissions
SRVR-DC1 (2)		
NETLOGON	C:\Windows\SYSVOL\sysvol\clc.co...	S
SYSVOL	C:\Windows\SYSVOL\sysvol	S

VOLUME
NETLOGON on SRVR-DC1
Capacity: 19.5 GB
52.8% Used (10.3 GB Used Space)
9.18 GB Free Space
[Go to Volumes Overview >](#)

QUOTA
NETLOGON on SRVR-DC1



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File Services

File Server: Creating a File Share

Provides basic SMB sharing with full share and NTFS permissions

Provides SMB sharing with full share and NTFS permissions, plus access to additional services, such as access-denied assistance, folder classification, and quotas. It requires FSRM role service installed

New Share Wizard

Select the profile for this share

Select Profile

Share Location

Share Name

Other Settings

Permissions

Confirmation

Results

File share profile:

- SMB Share - Quick
- SMB Share - Advanced
- SMB Share - Applications
- NFS Share - Quick
- NFS Share - Advanced

Description:

This basic profile represents the fastest way to create an SMB file share, typically used to share files with Windows-based computers.

- Suitable for general file sharing
- Advanced options can be configured later by using the Properties dialog

< Previous

Next >

Create

Cancel



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File Services

File Server: Creating a File Share

New Share Wizard

Specify share name

Select Profile
Share Location
Share Name
Other Settings
Permissions
Confirmation
Results

Share name:

Share description:

Local path to share:

i If the folder does not exist, the folder is created.

Remote path to share:

< Previous Next > Create Cancel



New Share Wizard

Specify permissions to control access

Select Profile
Share Location
Share Name
Other Settings
Permissions
Confirmation
Results

Permissions to access the files on a share are set using a combination of folder permissions, share permissions, and, optionally, a central access policy.

Share permissions: Everyone Full Control

Folder permissions:

Type	Principal	Access	Applies To
Allow	CREATOR OWNER	Full Control	Subfolders and files on
Allow	BUILTIN\Users	Special	This folder and subfold
Allow	BUILTIN\Users	Read & execu...	This folder, subfolders,
Allow	BUILTIN\Administrators	Full Control	This folder, subfolders,
Allow	NT AUTHORITY\SYSTEM	Full Control	This folder, subfolders,
Allow	NT AUTHORITY\Authenticated Users	Read & execu...	This folder, subfolders,

< >

Customize permissions...

< Previous Next > Create Cancel



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File Services

File Server: **Connect to a File Share**

← Map Network Drive



What network folder would you like to map?

Specify the drive letter for the connection and the folder that you want to connect to:

Drive:

Z:



Folder:

\\svr-mbr-c\FileServer-SMB



Browse...

Example: \\server\share

☒ Reconnect at sign-in

☐ Connect using different credentials

[Connect to a Web site that you can use to store your documents and pictures.](#)

Finish

Cancel



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File Services

File Server: **Connect to a File Share**

Windows Security

Enter network credentials

Enter your credentials to connect to: svr-mbr-c

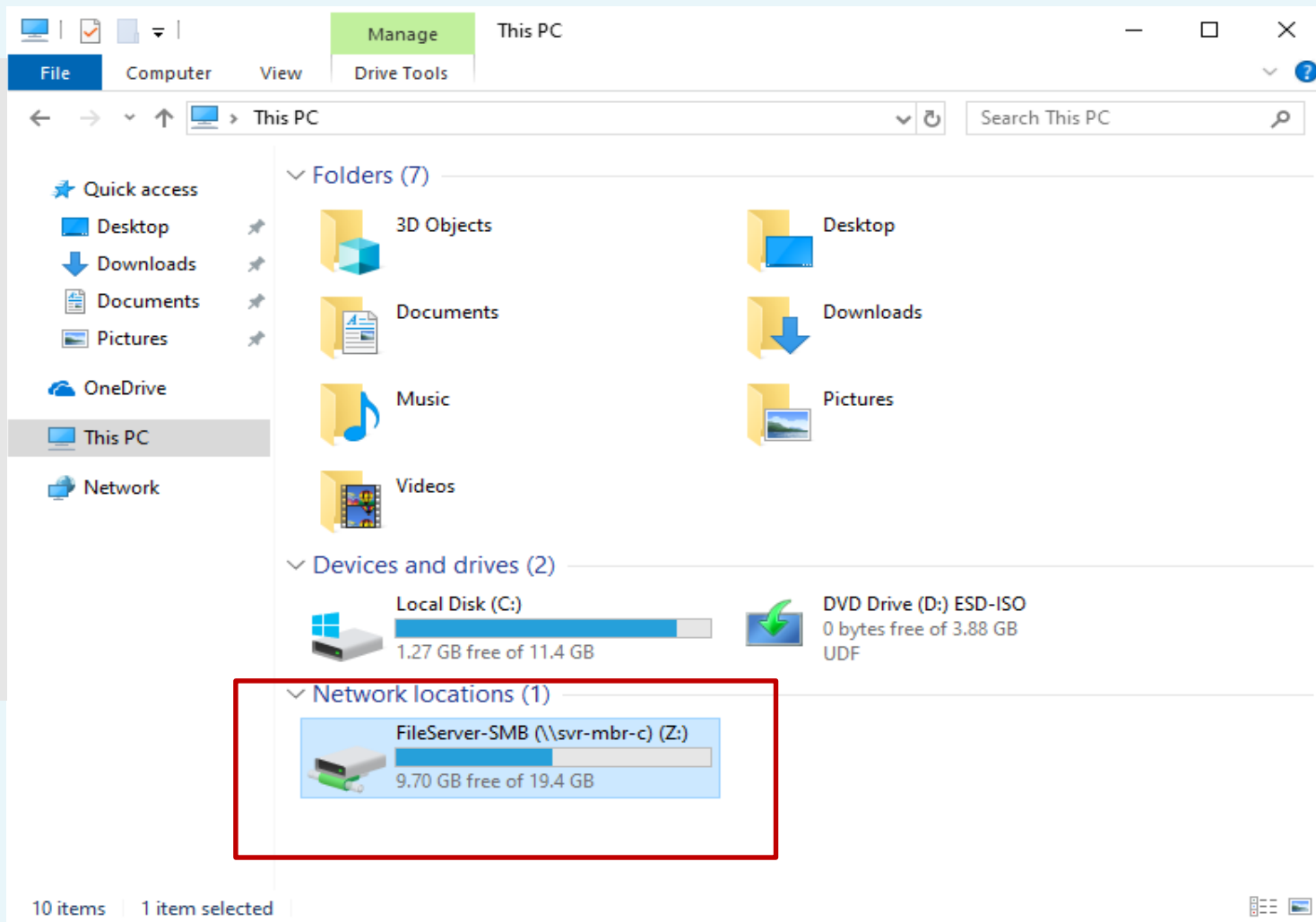
clc\user1

••••••••

☐ Remember my credentials

OK

Cancel



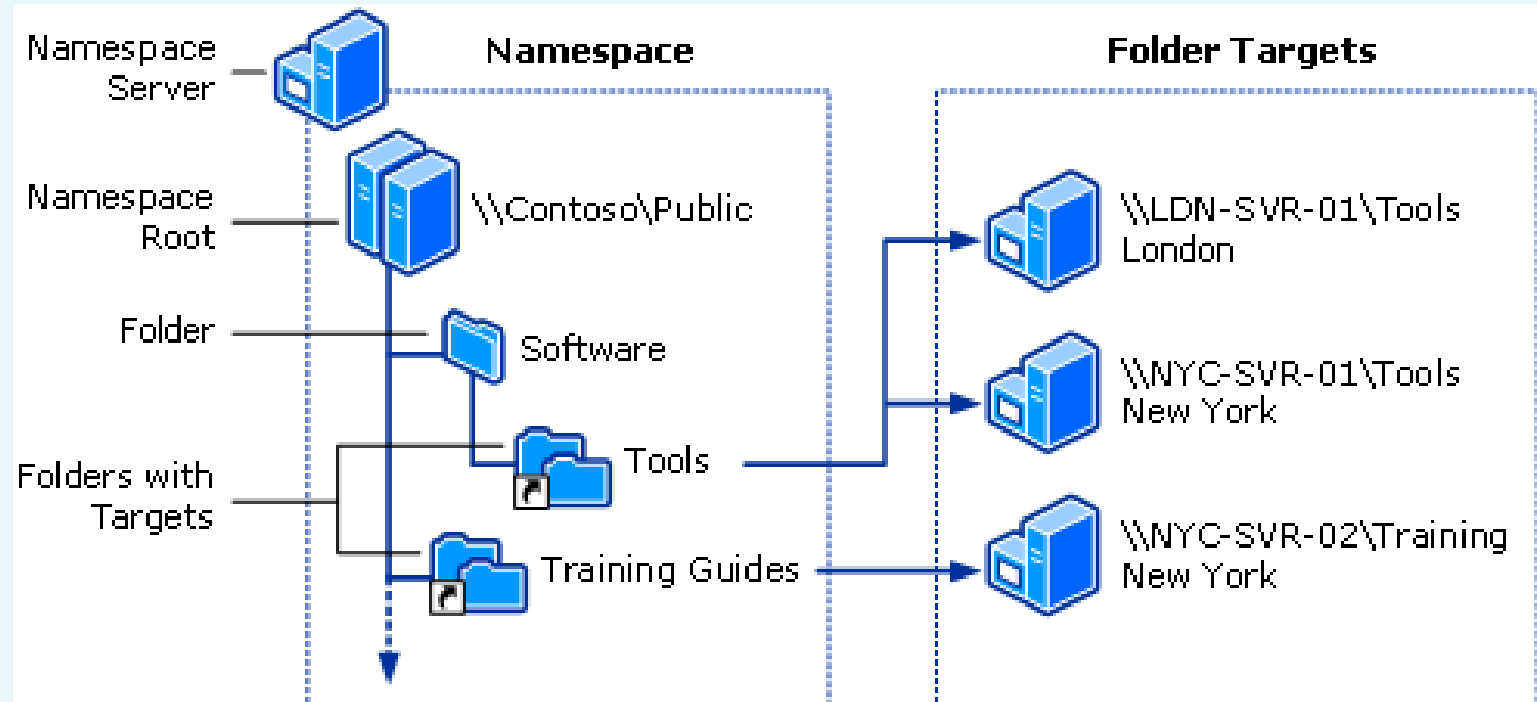
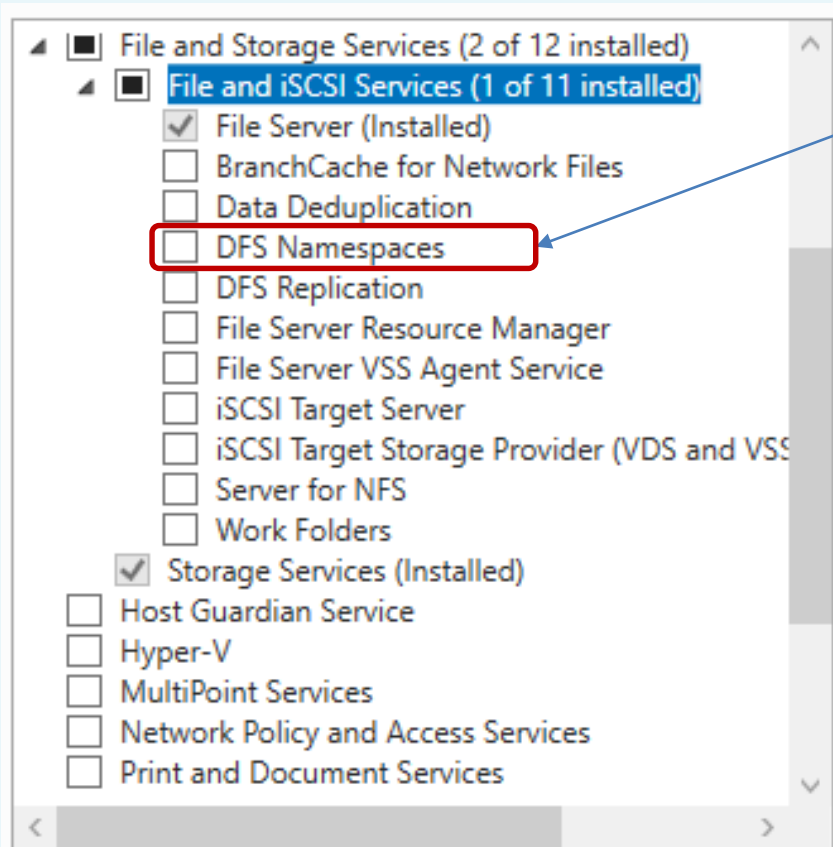


File Services

DFS Namespaces

- Enable multiple file servers to share a single Namespace

Create a file-server logical structure with folders physically stored on many different servers





File Services

DFS Namespaces

Add Roles and Features Wizard

DESTINATION SERVER
SVR-MBR-B.cic.com

Select server roles

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more roles to install on the selected server.

Roles	Description
<input type="checkbox"/> DHCP Server	
<input type="checkbox"/> DNS Server	
<input type="checkbox"/> Fax Server	
▲ <input checked="" type="checkbox"/> File and Storage Services (2 of 12 installed)	
▲ <input checked="" type="checkbox"/> File and iSCSI Services (1 of 11 installed)	
<input checked="" type="checkbox"/> File Server (Installed)	
<input type="checkbox"/> BranchCache for Network Files	
<input type="checkbox"/> Data Deduplication	
<input checked="" type="checkbox"/> DFS Namespaces	
<input checked="" type="checkbox"/> DFS Replication	
<input type="checkbox"/> File Server Resource Manager	
<input type="checkbox"/> File Server VSS Agent Service	
<input type="checkbox"/> iSCSI Target Server	
<input type="checkbox"/> iSCSI Target Storage Provider (VDS and VSS)	
<input type="checkbox"/> Server for NFS	
<input type="checkbox"/> Work Folders	
<input checked="" type="checkbox"/> Storage Services (Installed)	

DFS Replication is a multimaster replication engine that enables you to synchronize folders on multiple servers across local or wide area network (WAN) network connections. It uses the Remote Differential Compression (RDC) protocol to update only the portions of files that have changed since the last replication. DFS Replication can be used in conjunction with DFS Namespaces, or by itself.

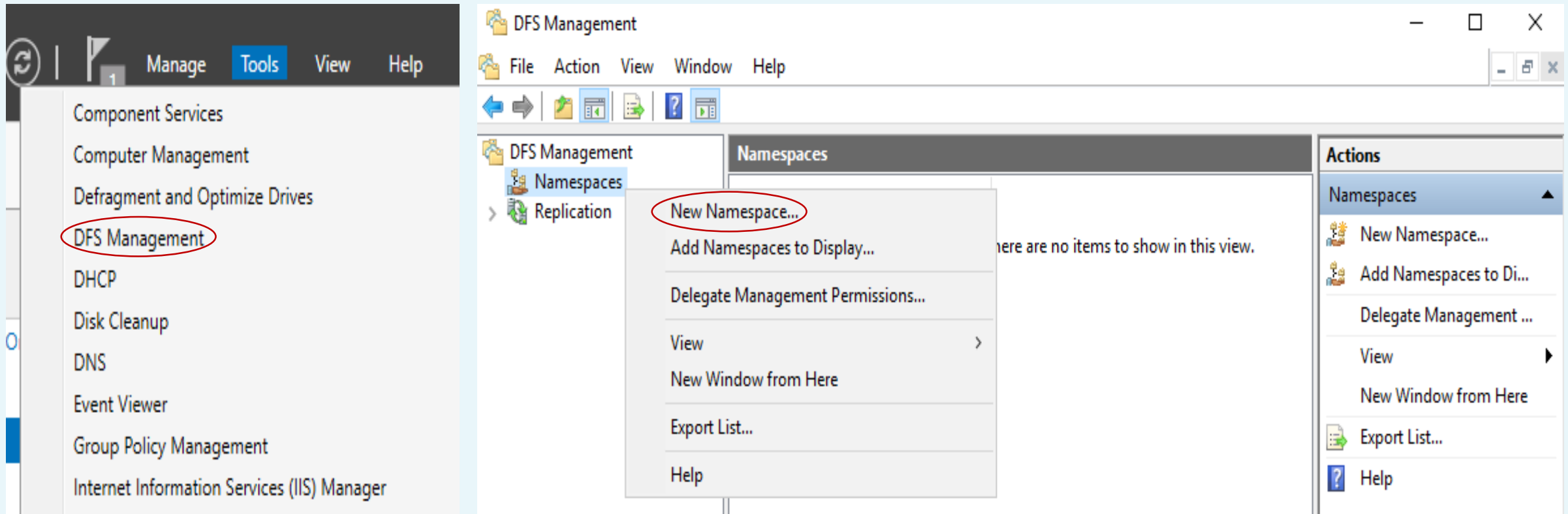


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File Services

DFS Namespace: Creating a Namespace

- Launch DFS Management and create a Namespace





File Services

DFS Namespace: Creating a Namespace

DFS Management

File Action View Window Help

DFS Management

- Namespaces
- Replication

New Namespace Wizard

Namespace Server

Steps:

- Namespace Server
- Namespace Name and Settings
- Namespace Type
- Review Settings and Create Namespace
- Confirmation

Enter the name of the server that will host the namespace. The server you specify will be known as the namespace server.

Server:

The name of the server that is going to be your Namespace server



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File Services

DFS Namespace: Creating a Namespace

New Namespace Wizard

Namespace Name and Settings

Steps:

- Namespace Server
- Namespace Name and Settings**
- Namespace Type
- Review Settings and Create Namespace
- Confirmation

Enter a name for the namespace. This name will appear after the server or domain name in the namespace path, such as \\Server\Name or \\Domain\Name.

Name: **A name for this new Namespace**
CLC-01

Example: Public

If necessary, the wizard will create a shared folder on the namespace server. To modify the settings of the shared folder, such as its local path and permissions, click Edit Settings.

Edit Settings...

< Previous Next > Cancel




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File Services

DFS Namespace: Creating a Namespace

New Namespace Wizard

 **Namespace Type**

Steps:

- Namespace Server
- Namespace Name and Settings
- Namespace Type**
- Review Settings and Create Namespace
- Confirmation

Select the type of namespace to create.

☒ Domain-based namespace

A domain-based namespace is stored on one or more namespace servers and in Active Directory Domain Services. You can increase the availability of a domain-based namespace by using multiple servers. When created in Windows Server 2008 mode, the namespace supports increased scalability and access-based enumeration.

☒ Enable Windows Server 2008 mode

Preview of domain-based namespace:

☐ Stand-alone namespace

A stand-alone namespace is stored on a single namespace server. You can increase the availability of a stand-alone namespace by hosting it on a failover cluster.

Preview of stand-alone namespace:

< Previous **Next >** Cancel




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File Services

DFS Namespace: Creating a Namespace

New Namespace Wizard

 **Review Settings and Create Namespace**

Steps:

- Namespace Server
- Namespace Name and Settings
- Namespace Type
- Review Settings and Create Namespace**
- Confirmation

You selected the following settings for the new namespace. If the settings are correct, click Create to create your new namespace. To change a setting, click Previous, or select the appropriate page in the orientation pane.

Namespace settings:

Namespace

- Namespace name: \\clc.com\CLC-01
- Namespace type: Domain (Windows Server 2008 mode)
- Namespace server: ipam
- Root shared folder: A shared folder will be created if one does not exist.
- Local path of namespace shared folder: C:\DFSRoots\CLC-01
- Permissions for namespace shared folder: Everyone read only

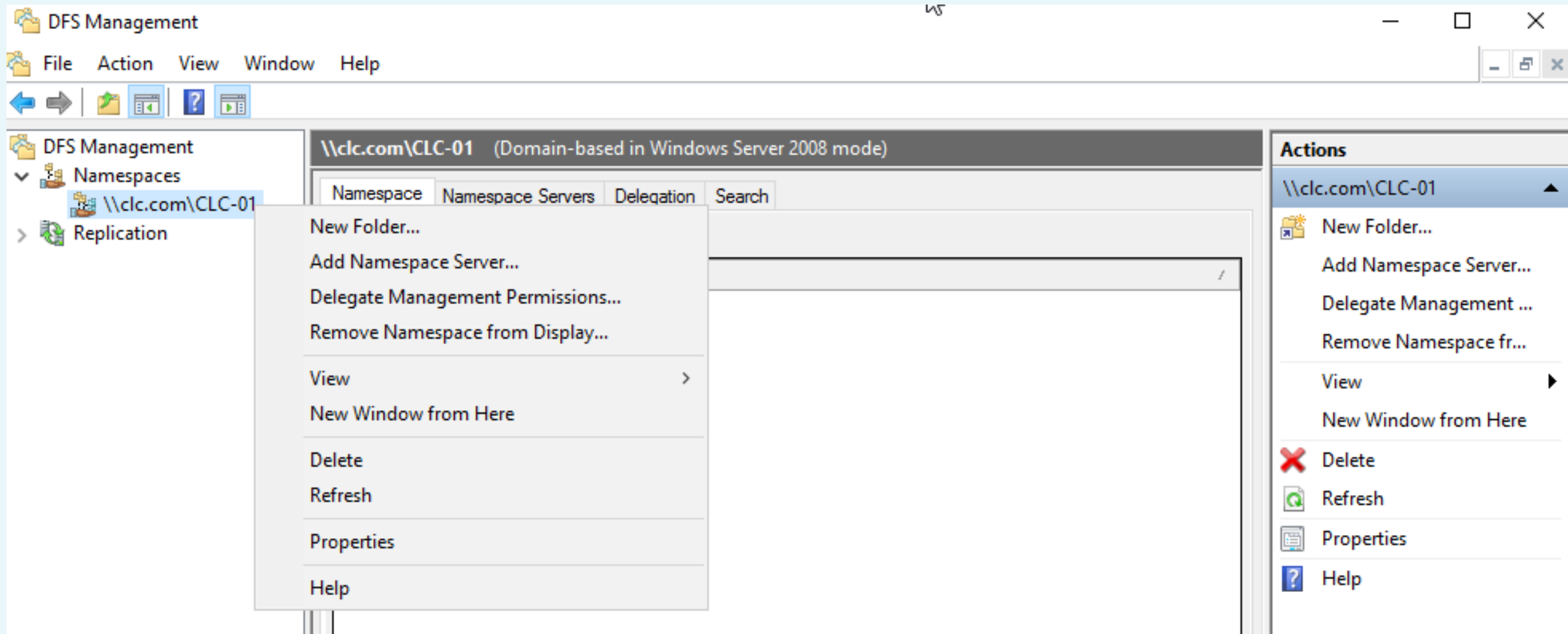
< Previous Create Cancel



File Services

DFS Namespace: Creating a shared folder

- Create a shared folder inside the Namespace



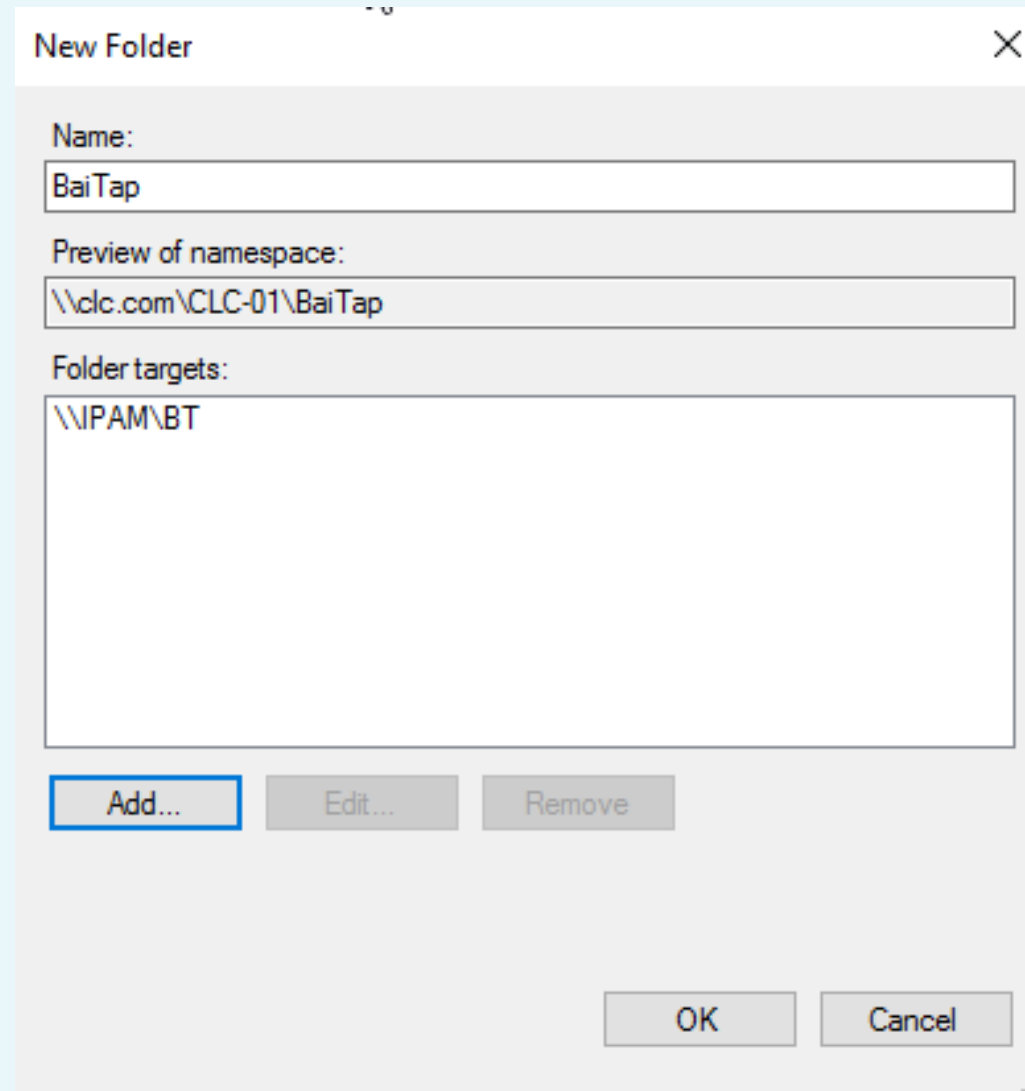


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File Services

DFS Namespace: **Creating a shared folder**

- Create a shared folder inside the Namespace

A screenshot of the "New Folder" dialog box in Windows. The dialog has a title bar "New Folder" with a close button. It contains three sections: "Name:" with a text box containing "BaiTap"; "Preview of namespace:" with a text box containing "\\clc.com\CLC-01\BaiTap"; and "Folder targets:" with a list box containing "\\PAM\BT". At the bottom, there are three buttons: "Add..." (highlighted with a blue border), "Edit...", and "Remove". At the very bottom right, there are "OK" and "Cancel" buttons.

New Folder

Name:
BaiTap

Preview of namespace:
\\clc.com\CLC-01\BaiTap

Folder targets:
\\PAM\BT

Add... Edit... Remove

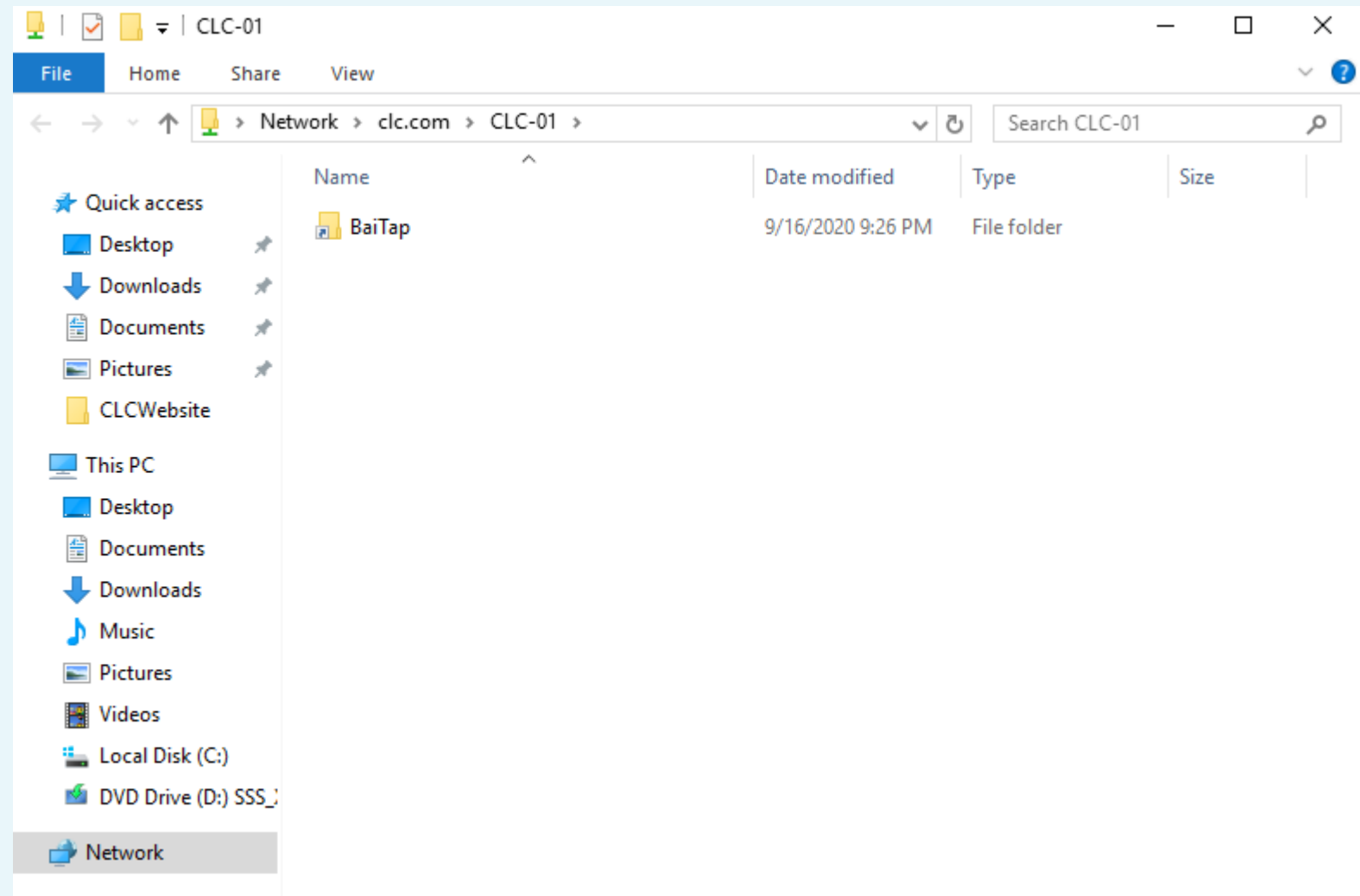
OK Cancel



File Services

DFS Namespace: **Access the namespace**

- Let's test this out! Log in to a client computer and try browsing to `\\clc.com\CLC-01`

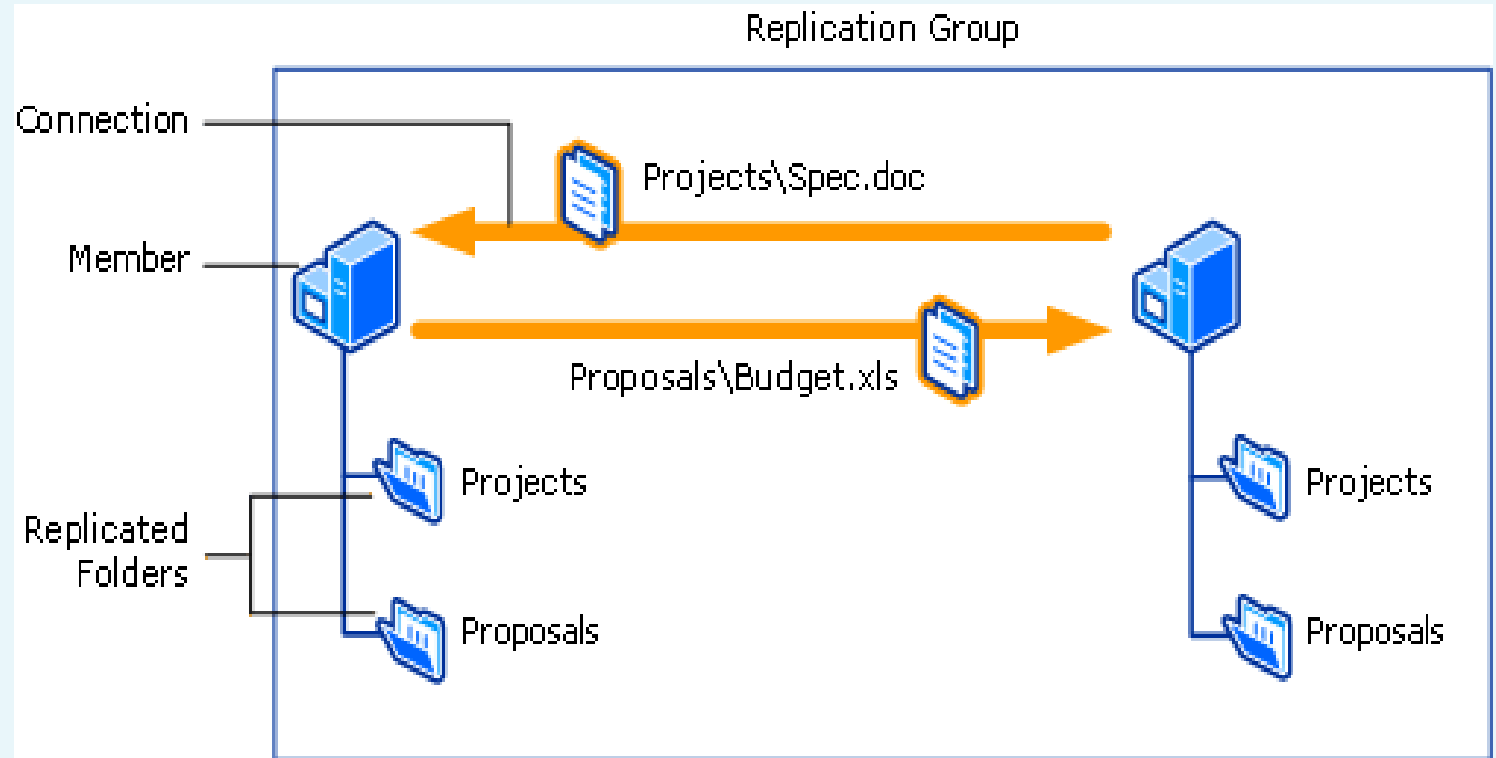
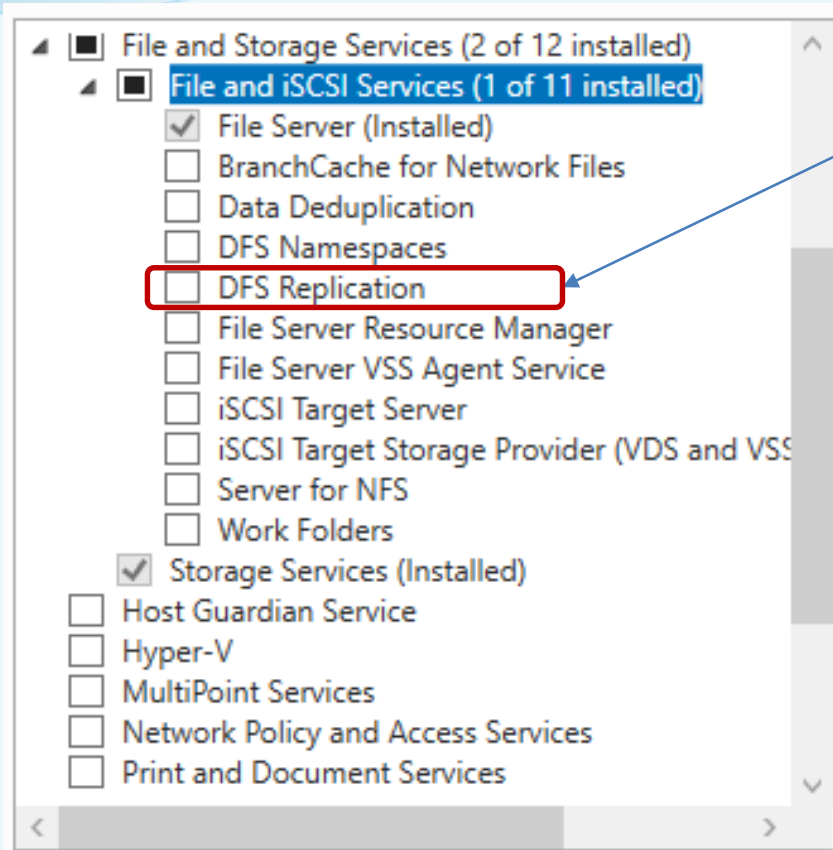




File Services

DFS Replication

Replicates multiple physical folders that are part of the DFS Namespaces infrastructure



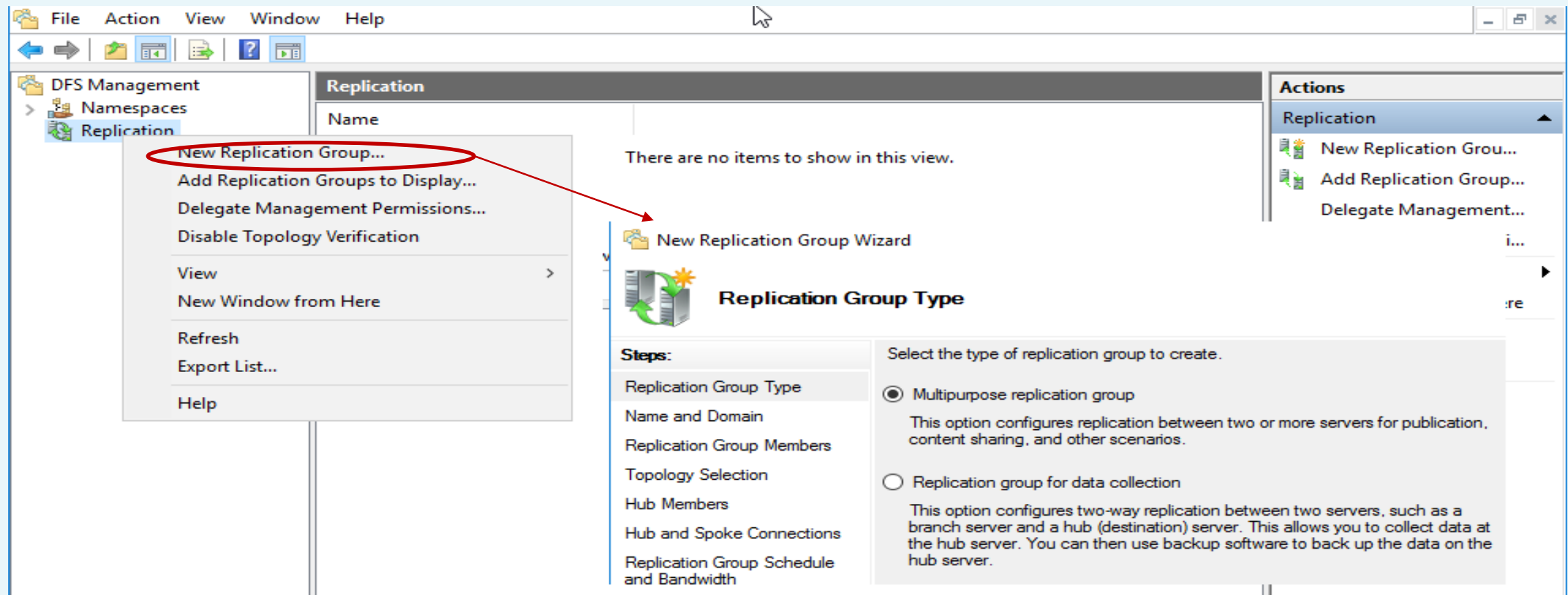


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File Services

DFS Replication: creating replication group

- Enables automatic file replication between multiple servers






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File Services

DFS Replication: creating replication group

- Name of replication group

New Replication Group Wizard

 **Name and Domain**

Steps:

- Replication Group Type
- Name and Domain**
- Replication Group Members
- Topology Selection
- Hub Members
- Hub and Spoke Connections
- Replication Group Schedule and Bandwidth
- Primary Member
- Folders to Replicate
- Review Settings and Create Replication Group
- Confirmation

Type a name and domain for the replication group. The name of the replication group must be unique in the domain that hosts the replication group.

Name of replication group:

CLC-01-BT

Optional description of replication group:

Domain:

clc.com

< Previous **Next >** Cancel




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File Services

DFS Replication: creating replication group

- Adding file servers to replication group

New Replication Group Wizard

 **Replication Group Members**

Steps:

- Replication Group Type
- Name and Domain
- Replication Group Members**
- Topology Selection
- Hub Members
- Hub and Spoke Connections
- Replication Group Schedule and Bandwidth
- Primary Member
- Folders to Replicate
- Review Settings and Create Replication Group
- Confirmation

Click Add and then select two or more servers that will become members of the replication group.

Members:

Server	Domain
DC1	clc.com
IPAM	clc.com




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File Services

DFS Replication: creating replication group

- Set the topology

New Replication Group Wizard

 **Topology Selection**


Steps:

- Replication Group Type
- Name and Domain
- Replication Group Members
- Topology Selection**
- Replication Group Schedule and Bandwidth
- Primary Member
- Folders to Replicate
- Review Settings and Create Replication Group
- Confirmation

Select a topology of connections among members of the replication group.


☐ Hub and spoke

This topology requires three or more members in the replication group. In this topology, spoke members are connected to one or two hub members. This topology works well in publication scenarios where data originates from the hub member and replicates out to the spoke members.



☒ Full mesh

In this topology, each member replicates with all other members of the replication group. This topology works well when there are ten or fewer members in the replication group.



☐ No topology

Select this option if you want to create a custom topology after you finish this wizard. No replication will take place until you create the custom topology.

< Previous Next > Cancel



File Services

DFS Replication: creating replication group

- Choose the Primary member

The image shows a screenshot of the 'New Replication Group Wizard' window in Windows Server. The window is titled 'New Replication Group Wizard' and has standard Windows window controls (minimize, maximize, close). The main area is titled 'Primary Member' with an icon of two servers and a green arrow. On the left, there is a 'Steps:' list with the following items: 'Replication Group Type', 'Name and Domain', 'Replication Group Members', 'Topology Selection', 'Replication Group Schedule and Bandwidth', 'Primary Member' (which is highlighted), 'Folders to Replicate', 'Review Settings and Create Replication Group', and 'Confirmation'. The main content area contains the following text: 'Select the server that contains the content you want to replicate to other members. This server is known as the primary member.' Below this, there is a label 'Primary member:' followed by a dropdown menu currently showing 'IPAM'. An information icon (i) is followed by the text: 'If the folders to be replicated already exist on multiple servers, the folders and files on the primary member will be authoritative during initial replication.' At the bottom right, there are three buttons: '< Previous', 'Next >' (which is highlighted with a blue border), and 'Cancel'.

New Replication Group Wizard

Primary Member

Steps:

- Replication Group Type
- Name and Domain
- Replication Group Members
- Topology Selection
- Replication Group Schedule and Bandwidth
- Primary Member**
- Folders to Replicate
- Review Settings and Create Replication Group
- Confirmation

Select the server that contains the content you want to replicate to other members. This server is known as the primary member.

Primary member:

IPAM

i If the folders to be replicated already exist on multiple servers, the folders and files on the primary member will be authoritative during initial replication.

< Previous **Next >** Cancel



File Services

DFS Replication: creating replication group

- Adding folders to replicate

Add Folder to Replicate [X]

Member:
IPAM

Local path of folder to replicate:
C:\shares\BT [Browse...]
Example: C:\Documents

Select or type a name to represent this folder on all members of the replication group. This name is known as the replicated folder name.

☒ Use name based on path:
BT

☐ Use custom name:
[]
Example: Documents

Select the NTFS permissions for the replicated folder:

☒ Existing permissions
☐ Custom permissions: [Edit Permissions...]

Permissions << [OK] [Cancel]



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File Services

DFS Replication: creating replication group

Specify the local path for the BT folder to exist on the other member server,

New Replication Group Wizard

Local Path of BT on Other Members

Steps:

- Replication Group Type
- Name and Domain
- Replication Group Members
- Topology Selection
- Replication Group Schedule and Bandwidth
- Primary Member
- Folders to Replicate
- Local Path of BT on Other Members
- Review Settings and Create Replication Group
- Confirmation

To specify the local path of the replicated folder or whether the folder is read-only, select the appropriate member and then click Edit

Primary member: IPAM
Primary member local path: C:\shares\BT

Member details:

Member	Local Path	Membership Stat...
DC1	<Not Set>	Disabled

Edit...

Edit

General

Member:
DC1

Select the initial status of the replicated folder on this member.

Membership status:

☐ Disabled
The replicated folder will not be stored on this member.

☒ Enabled
Keep the following folder synchronized with other members.

Local path of folder:
C:\shares\CLC-01-BT Browse...
Example: C:\Data

☐ Make the selected replicated folder on this member read-only.

OK Cancel



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File Services

DFS Replication: creating replication group

- DFS Replication is configured!

The screenshot shows the DFS Management console window. The left pane displays the tree structure: DFS Management > Namespaces > \\clc.com\CLC-01 > Replication > CLC-01-BT. The main pane shows the 'Replicated Folders' tab for the 'CLC-01-BT (clc.com)' group. It indicates there are 2 entries. Below this, a table lists the replicated folders:

State	Local Path	Membership St...	Member	Replicated Fol...	Staging Quota
Replicated Folder: BT (2 items)					
	C:\shares\CLC-0...	Enabled	DC1	BT	4.00 GB
	C:\shares\BT	Enabled	IPAM	BT	4.00 GB

The right pane shows the 'Actions' menu for the selected replication group, including options like 'New Member...', 'New Replicated Folders...', 'New Connection...', 'New Topology...', 'Create Diagnostic Repo...', 'Verify Topology...', 'Delegate Management ...', 'Edit Replication Group ...', 'Remove Replication Gr...', 'View', 'New Window from Here', 'Delete', and 'Refresh'.



File Services

DFS Replication: creating replication group

Test this thing out:

- From a client computer, open up File Explorer and navigate to the shared folder which is a part of DFS replication
- Create a few test files in this folder.
- Give it a little bit of time for replication to happen, then check inside the target folder on each file server
- Copies of the new files now located on both servers' hard drives!



File Services

DFS Replication: creating replication group

« clc.com > clc-01 > BaiTap > ↻ <input type="text" value="Search BaiTap"/>			
^			
Name	Date modified	Type	
Bt1	9/17/2020 2:26 AM	File folder	
Bt2	9/17/2020 2:27 AM	File folder	
BT3	9/17/2020 2:27 AM	File folder	

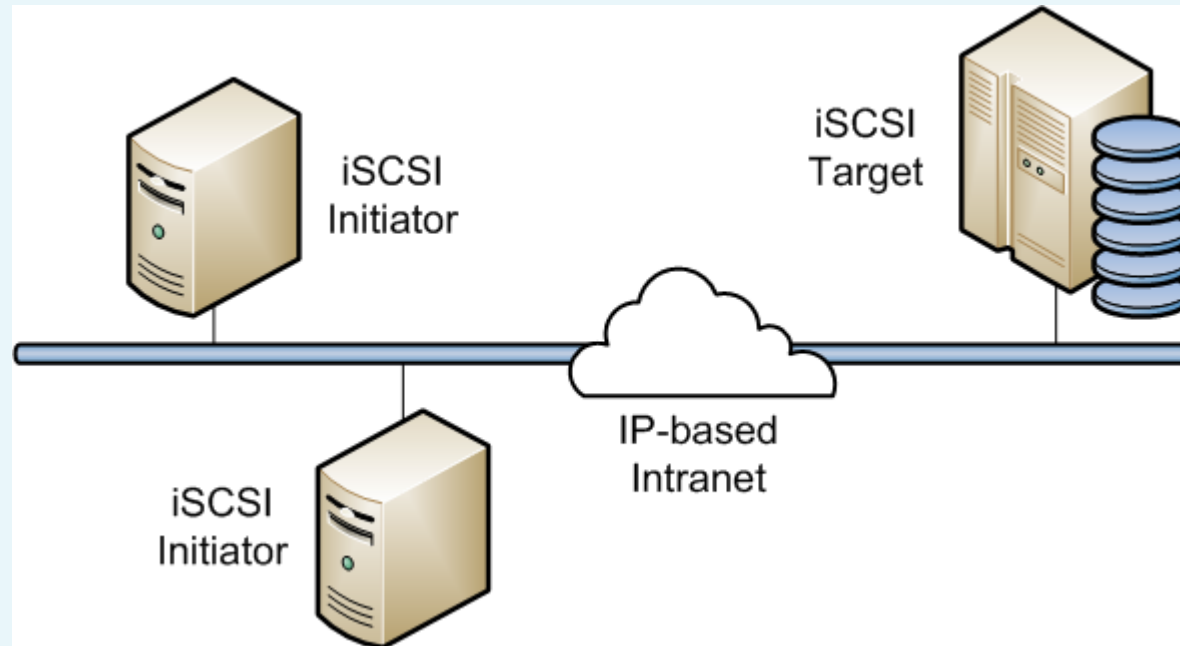
> This PC > Local Disk (C:) > shares > CLC-01-BT >			
^			
Name	Date modified	Type	
Bt1	9/17/2020 2:26 AM	File folder	
Bt2	9/17/2020 2:27 AM	File folder	
BT3	9/17/2020 2:27 AM	File folder	

> This PC > Local Disk (C:) > shares > BT		
^		
Name	Date modified	Type
Bt1	9/17/2020 2:26 AM	File folder
Bt2	9/17/2020 2:27 AM	File folder
BT3	9/17/2020 2:27 AM	File folder



File Services

iSCSI Service



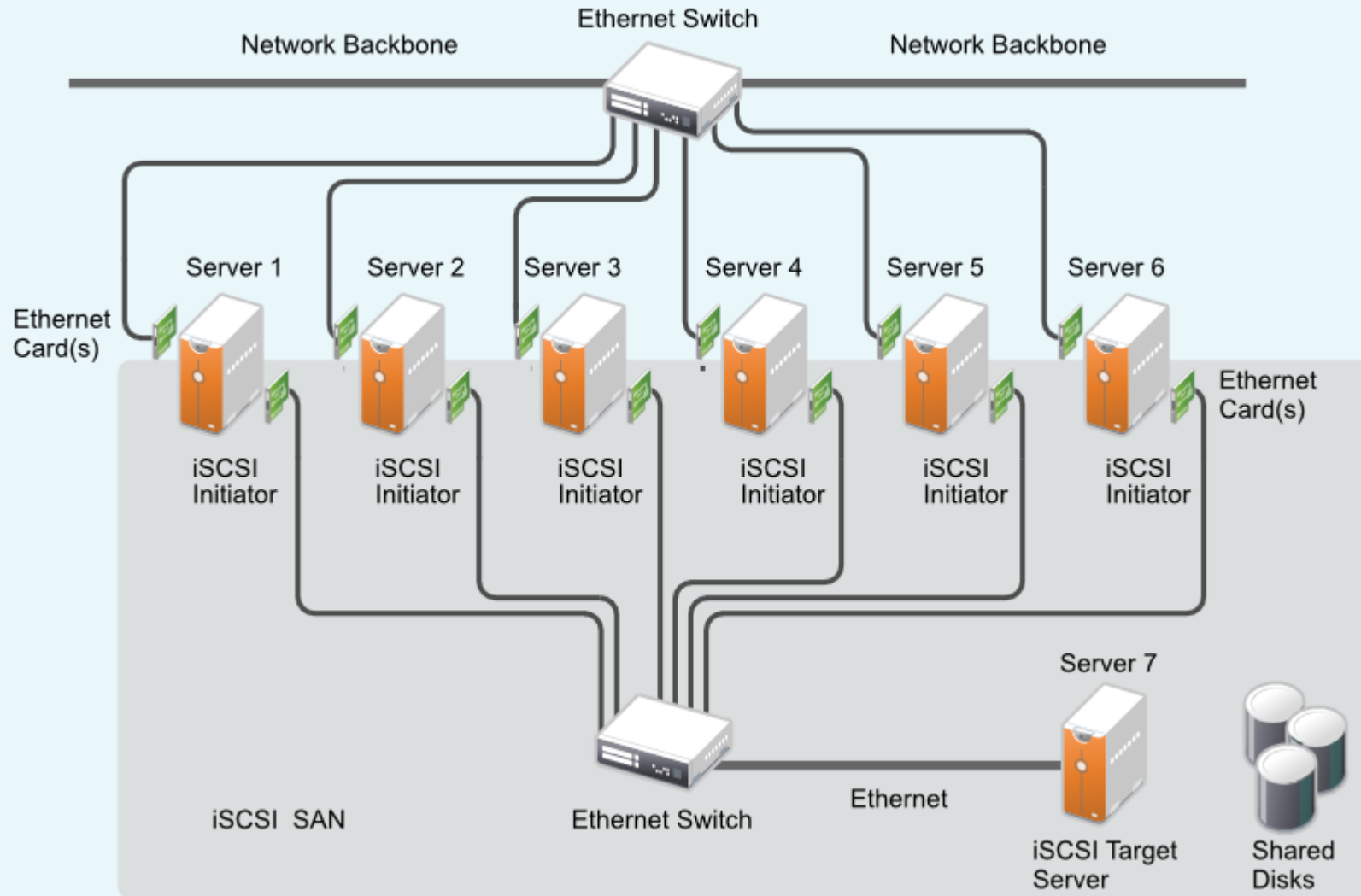
- Another way to share storage across a network
- A machine has a drive letter for a disk, but that disk is not physically connected to the server



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File Services

iSCSI Service





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File Services

iSCSI Service: Installing iSCSI Target Server

Add Roles and Features Wizard

DESTINATION SERVER
SVR-MBR-B.cic.com

Select server roles

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more roles to install on the selected server.

Roles	Description
<input type="checkbox"/> Device Health Attestation	
<input type="checkbox"/> DHCP Server	
<input type="checkbox"/> DNS Server	
<input type="checkbox"/> Fax Server	
<input checked="" type="checkbox"/> File and Storage Services (4 of 12 installed)	
<input checked="" type="checkbox"/> File and iSCSI Services (3 of 11 installed)	
<input checked="" type="checkbox"/> File Server (Installed)	
<input type="checkbox"/> BranchCache for Network Files	
<input type="checkbox"/> Data Deduplication	
<input checked="" type="checkbox"/> DFS Namespaces (Installed)	
<input checked="" type="checkbox"/> DFS Replication (Installed)	
<input type="checkbox"/> File Server Resource Manager	
<input type="checkbox"/> File Server VSS Agent Service	
<input checked="" type="checkbox"/> iSCSI Target Server	
<input type="checkbox"/> iSCSI Target Storage Provider (VDS and VSS)	
<input type="checkbox"/> Server for NFS	
<input type="checkbox"/> Work Folders	
<input checked="" type="checkbox"/> Storage Services (Installed)	

iSCSI Target Server provides services and management tools for iSCSI targets.

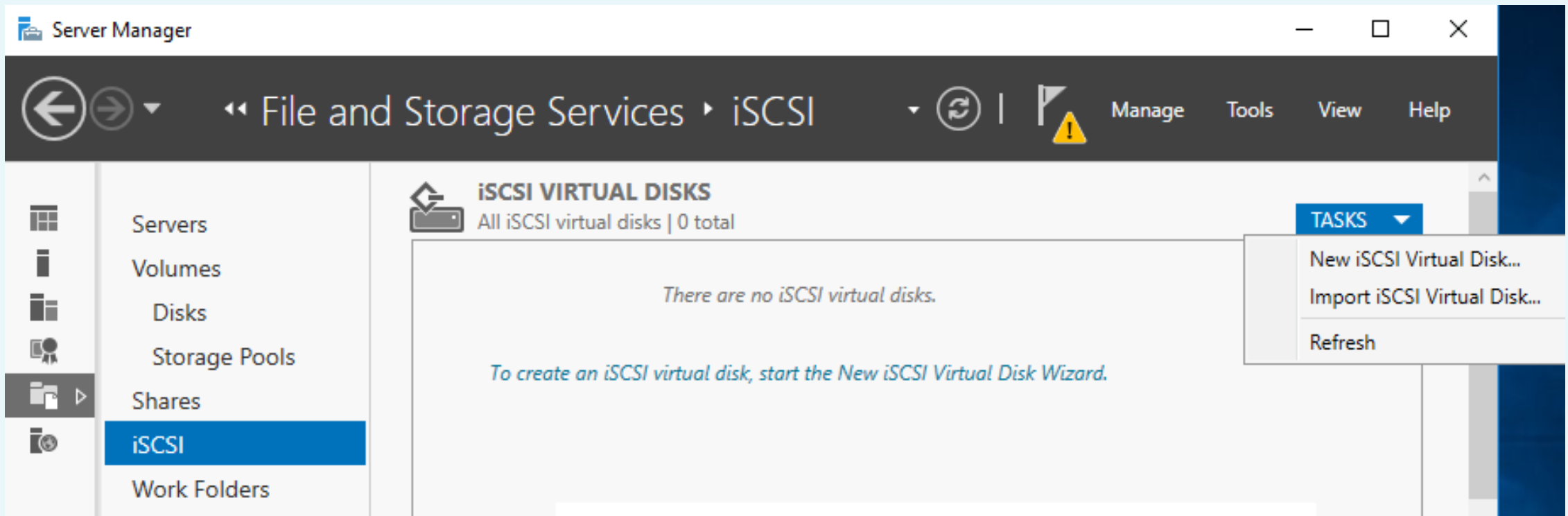


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File Services

iSCSI Service: **Creating an iSCSI target**

- Creating New iSCSI Virtual Disk



- Creating New iSCSI Virtual Disk

New iSCSI Virtual Disk Wizard

Select iSCSI virtual disk location

iSCSI Virtual Disk Location

- iSCSI Virtual Disk Name
- iSCSI Virtual Disk Size
- iSCSI Target
- Target Name and Access
- Access Servers
- Enable authentication ser...
- Confirmation
- Results

Server:

Server Name	Status	Cluster Role	Owner Node
IPAM	Online	Not Clustered	

i The list is filtered to show only servers with the iSCSI Target Server role installed.

Storage location:

☒ Select by volume:

Volume	Free Space	Capacity	File System
C:	8.47 GB	19.5 GB	NTFS

The iSCSI virtual disk will be saved at \iSCSIVirtualDisk on the selected volume.

☐ Type a custom path:



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File Services

iSCSI Service: **Creating an iSCSI target**

■ Name iSCSI Virtual Disk

New iSCSI Virtual Disk Wizard

Specify iSCSI virtual disk name

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Name: iSCSI-PAM

Description: iSCSI Virtual Disk

Path: C:\iSCSIVirtualDisks\iSCSI-PAM.vhdx

< Previous Next > Create Cancel



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File Services

iSCSI Service: Creating an iSCSI target

- Specify iSCSI Virtual Disk size

The screenshot shows the 'New iSCSI Virtual Disk Wizard' window with the 'Specify iSCSI virtual disk size' step selected in the left-hand navigation pane. The main area displays the 'Free space: 4.20 GB' and the 'Size:' field set to '1 GB'. The 'Fixed size' option is selected, and the 'Clear the virtual disk on allocation' checkbox is checked. The 'Dynamically expanding' and 'Differencing' options are also visible. The 'Parent virtual disk path:' field is empty, and the 'Browse...' button is present. The bottom of the window features navigation buttons: '< Previous', 'Next >', 'Create', and 'Cancel'.

New iSCSI Virtual Disk Wizard

Specify iSCSI virtual disk size

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Free space: 4.20 GB

Size: 1 GB

☒ Fixed size

This type of disk provides better performance and is recommended for servers running applications with a high level of disk activity. The virtual hard disk is created using the size of the fixed virtual hard disk. It does not change when data is added or deleted.

☒ Clear the virtual disk on allocation

Note: Un-selecting is NOT RECOMMENDED. Clearing a disk to zero will remove any fragments of data that remained on underlying storage, thus protecting from information leaks.

☐ Dynamically expanding

This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The .vhdx file is small when the disk is created and grows as data is written to it.

☐ Differencing

This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to this virtual hard disk without affecting the parent disk and easily revert the changes later.

Parent virtual disk path:

Browse...

< Previous Next > Create Cancel



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File Services

iSCSI Service: **Creating an iSCSI target**

■ Assign iSCSI Target

New iSCSI Virtual Disk Wizard

Assign iSCSI target

iSCSI Virtual Disk Location
iSCSI Virtual Disk Name
iSCSI Virtual Disk Size
iSCSI Target
Target Name and Access
Access Servers
Enable authentication ser...
Confirmation
Results

Assign this iSCSI virtual disk to an existing iSCSI target or create a new target for it.

☐ Existing iSCSI target:

Target Name	Initiator IDs	Description
-------------	---------------	-------------

☒ New iSCSI target

< Previous Next > Create Cancel



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File Services

iSCSI Service: **Creating an iSCSI target**

- Specify target name

New iSCSI Virtual Disk Wizard

Specify target name

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Name:

Description:

< Previous

Next >

Create

Cancel

Specify which initiators will later connect to this target

New iSCSI Virtual Disk Wizard

Specify access servers

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Click Add to specify the iSCSI initiator(s) that will access this iSCSI virtual disk.

Type	Value
IPAddress	172.30.1.5
IPAddress	172.30.1.9

Add... Remove

< Previous Next > Create Cancel

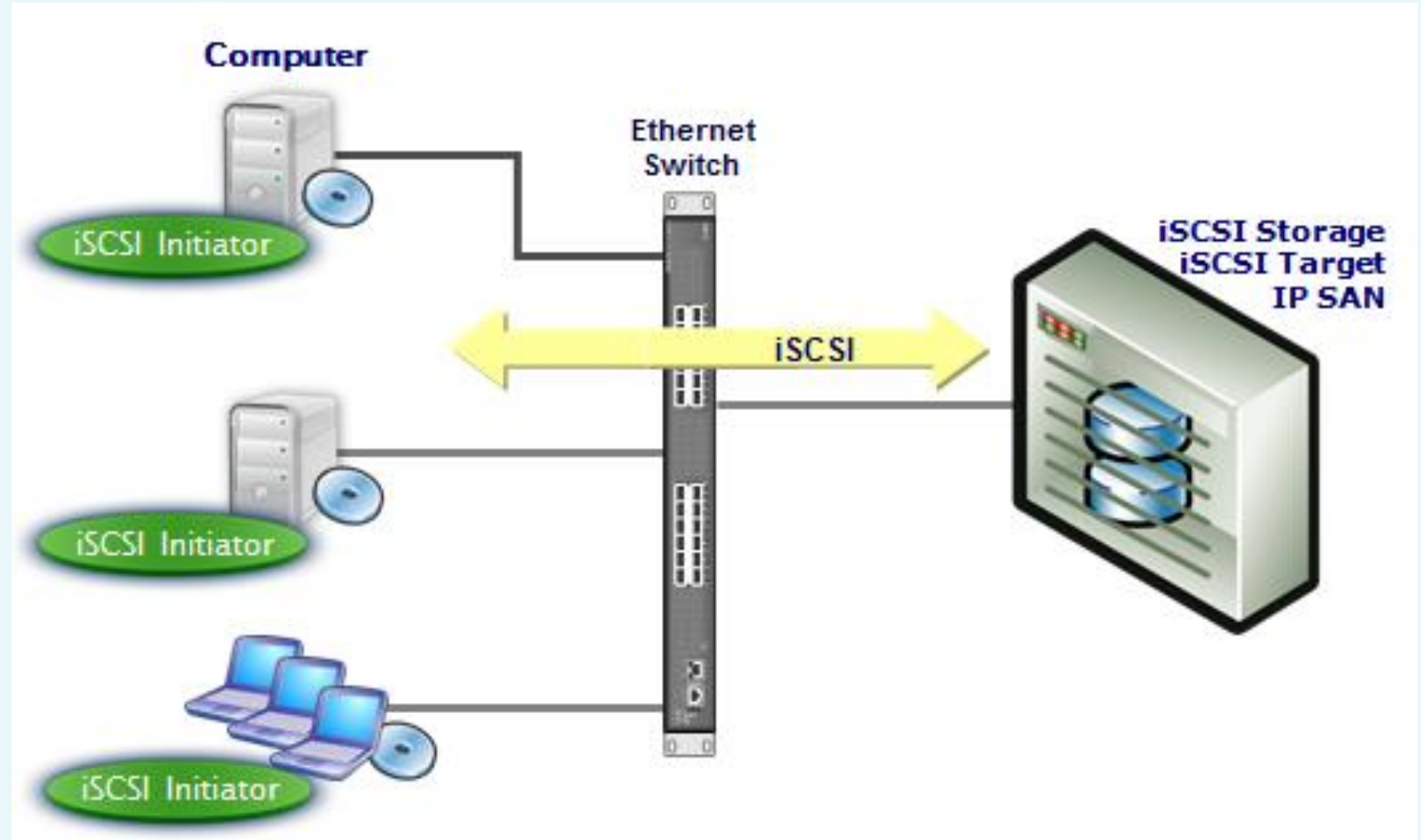


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File Services

iSCSI Service: Configuring an iSCSI initiator connection

- iSCSI initiators connect a server to an iSCSI target to use the iSCSI storage





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File Services

iSCSI Service: Configuring an iSCSI initiator connection

Server Manager ->
Tool -> iSCSI
Initiator

iSCSI Initiator Properties

Targets **Discovery** Favorite Targets Volumes and Devices RADIUS Configuration

Target portals

The system will look for Targets on following portals:

Address	Port	Adapter	IP address
---------	------	---------	------------

To add a target portal, click Discover Portal.

To remove a target portal, select the address above and then click Remove.

Refresh

Discover Portal...

Remove

iSNS servers

The system is registered on the following iSNS servers:

Name

To add an iSNS server, click Add Server.

To remove an iSNS server, select the server above and then click Remove.

Refresh

Add Server...

Remove

Discover Target Portal

Enter the IP address or DNS name and port number of the portal you want to add.

To change the default settings of the discovery of the target portal, click the Advanced button.

IP address or DNS name: 172.30.1.9 Port: (Default is 3260.) 3260

Advanced... OK Cancel



iSCSI Service: Configuring an iSCSI initiator connection

iSCSI Initiator Properties

Targets | Discovery | Favorite Targets | Volumes and Devices | RADIUS | Configuration

Quick Connect
To discover and log on to a target using a basic connection, type the IP address or DNS name of the target and then click Quick Connect.

Target: Quick Connect...

Discovered targets

Name	Status
iqn.1991-05.com.microsoft:ipam-iscsi-ipam-target	Inactive

Refresh

To connect using advanced options, select a target and then click Connect.

To completely disconnect a target, select the target and then click Disconnect.

For target properties, including configuration of sessions, select the target and click Properties...

For configuration of devices associated with a target, select the target and then click Devices...

Connect

Disconnect

Properties...

Devices...

iSCSI Initiator Properties

Targets | Discovery | Favorite Targets | Volumes and Devices | RADIUS | Configuration

Quick Connect
To discover and log on to a target using a basic connection, type the IP address or DNS name of the target and then click Quick Connect.

Target: Quick Connect...

Discovered targets

Name	Status
iqn.1991-05.com.microsoft:ipam-iscsi-ipam-target	Connected

Refresh

To connect using advanced options, select a target and then click Connect.

To completely disconnect a target, select the target and then click Disconnect.

For target properties, including configuration of sessions, select the target and click Properties...

For configuration of devices associated with a target, select the target and then click Devices...

Connect

Disconnect

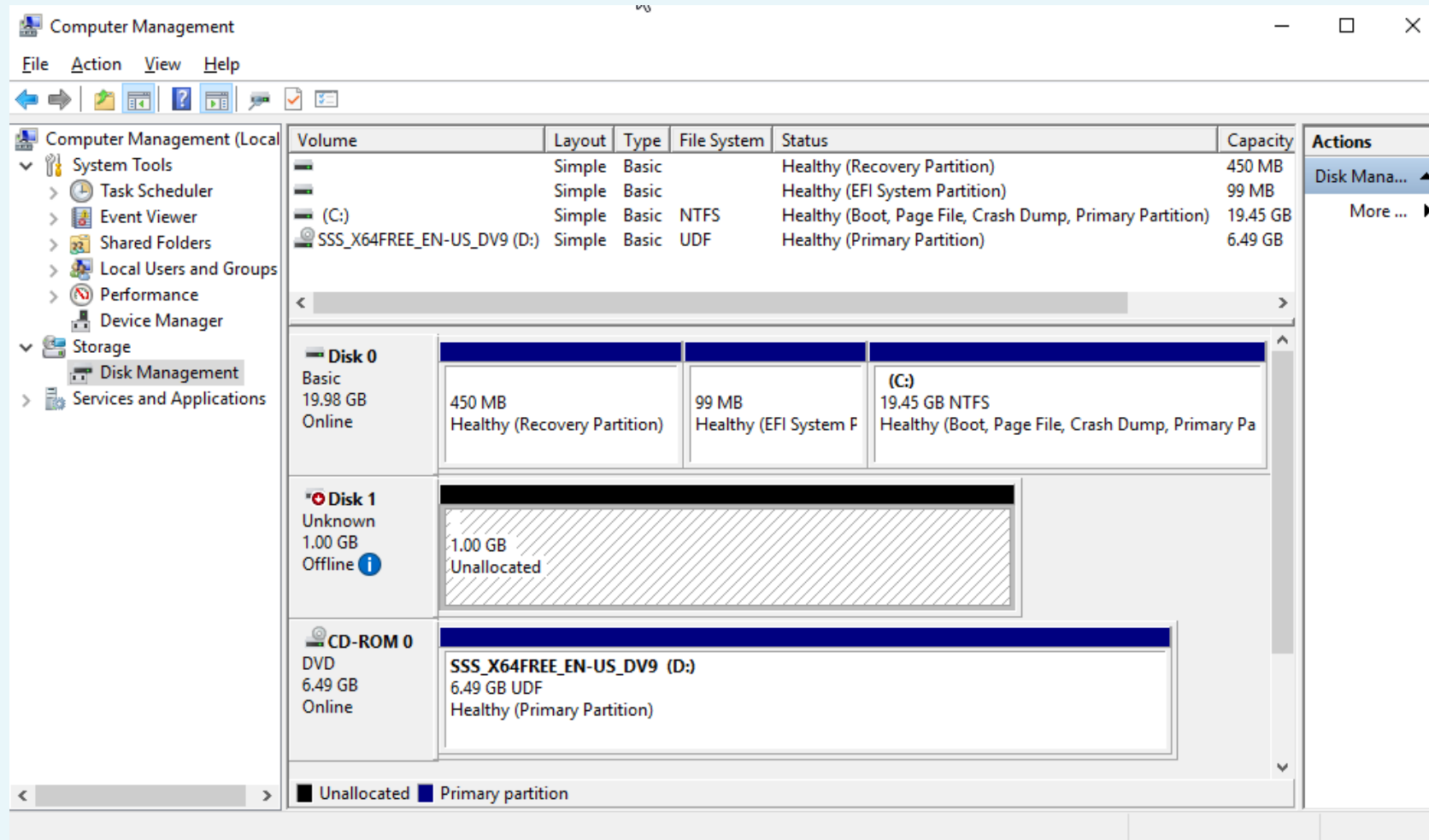
Properties...

Devices...



File Services

iSCSI Service: Configuring an iSCSI initiator connection

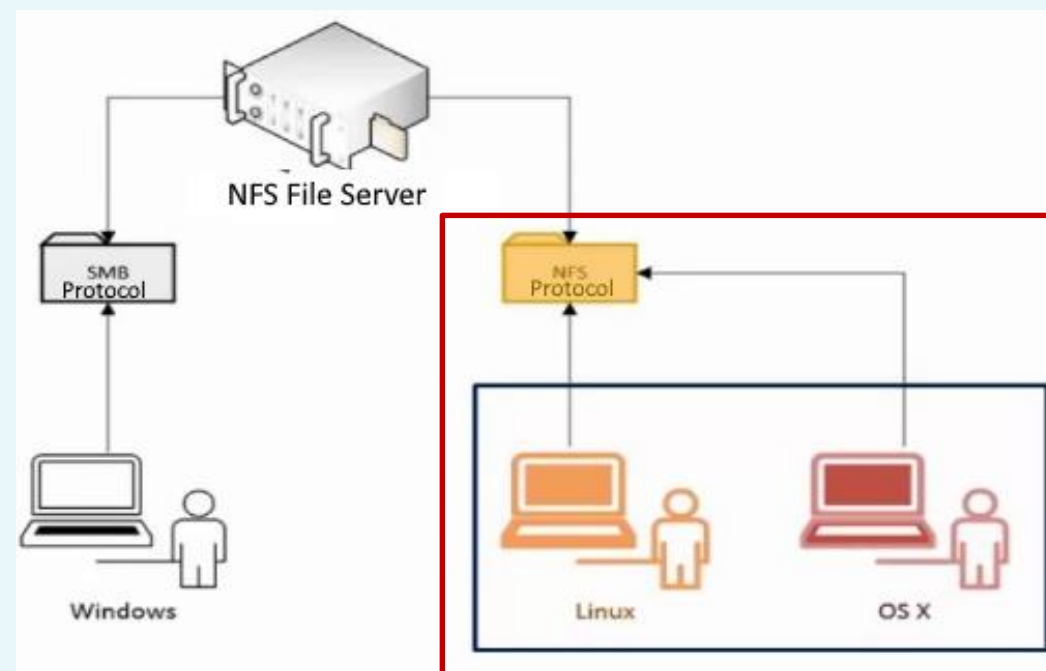
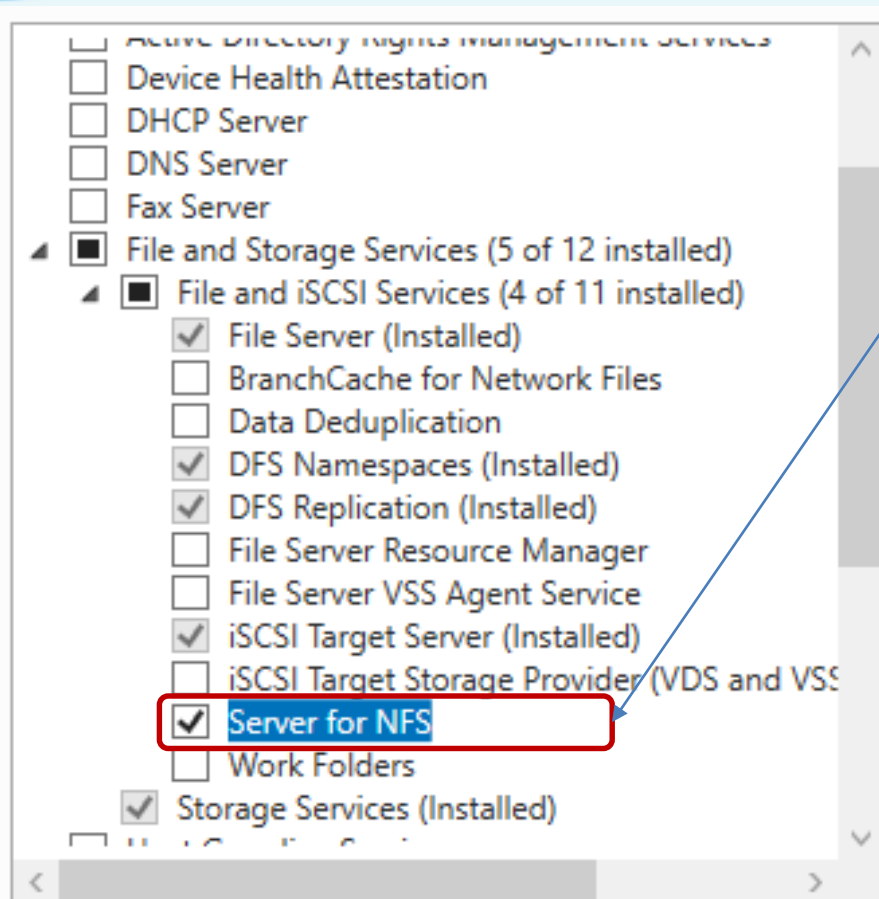




File Services

Server for NFS

Providing file sharing for clients that use NFS protocol, such as UNIX-based operating systems.





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File Services

Server for NFS: Configure NFS Shared Folder

The screenshot shows the Windows Server Manager interface. In the left-hand navigation pane, the path "File and Storage Services" > "Shares" is highlighted with a red circle. The main pane displays the "SHARES" section for "SRVR-DC1 (2)". A red circle highlights the "TASKS" dropdown menu, which is open, showing options "New Share..." and "Refresh". The "VOLUME" section on the right shows "NETLOGON on SRVR-DC1" with a storage usage bar indicating 52.8% used (10.3 GB) and 9.18 GB free space. The "QUOTA" section at the bottom shows "NETLOGON on SRVR-DC1".

Share	Local Path
NETLOGON	C:\Windows\SYSVOL\sysvol\clc.co...
SYSVOL	C:\Windows\SYSVOL\sysvol



File Services

Server for NFS: Configure NFS Shared Folder

New Share Wizard

Select the profile for this share

Select Profile

- Share Location
- Share Name
- Authentication
- Share Permissions
- Permissions
- Confirmation
- Results

File share profile:

- SMB Share - Quick
- SMB Share - Advanced
- SMB Share - Applications
- NFS Share - Quick**
- NFS Share - Advanced

Description:

This basic profile represents the fastest way to create a NFS file share, typically used to share files with UNIX-based computers.

- Suitable for general file sharing
- Advanced options can be configured later by using the Properties dialog

< Previous Next > Create Cancel

New Share Wizard

Select the server and path for this share

Select Profile

Share Location

Share Name

Authentication

Share Permissions

Permissions

Confirmation

Results

Server:

Server Name	Status	Cluster Role	Owner Node
IPAM	Online	Not Clustered	

i The list is filtered to show only servers that have Server for NFS installed.

Share location:

☒ Select by volume:

Volume	Free Space	Capacity	File System
C:	8.31 GB	19.5 GB	NTFS
E:	966 MB	990 MB	NTFS

The location of the file share will be a new folder in the \Shares directory on the selected volume.

☐ Type a custom path:

Browse...

< Previous

Next >

Create

Cancel



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File Services

Server for NFS: **Configure NFS Shared Folder**

New Share Wizard

Specify share name

Select Profile
Share Location
Share Name
Authentication
Share Permissions
Permissions
Confirmation
Results

Share name: CLC-nfs01

Local path to share:
E:\Shares\CLC-nfs01
i If the folder does not exist, the folder is created.

Remote path to share:
IPAM:/CLC-nfs01

< Previous Next > Create Cancel



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File Services

Server for NFS: Configure NFS Shared Folder

New Share Wizard

Specify authentication methods

Select Profile
Share Location
Share Name
Authentication
Share Permissions
Permissions
Confirmation
Results

Specify the authentication methods that you want to use for this NFS share.

Kerberos v5 authentication

- ☒ Kerberos v5 authentication(Krb5)
- ☒ Kerberos v5 authentication and integrity(Krb5i)
- ☒ Kerberos v5 authentication and privacy(Krb5p)

No server authentication

- ☒ No server authentication (AUTH_SYS)
 - ☒ Enable unmapped user access
 - ☒ Allow unmapped user access by UID/GID
 - ☐ Allow anonymous access

< Previous Next > Create Cancel



New Share Wizard

Specify the share permissions

Select Profile
Share Location
Share Name
Authentication
Share Permissions
Permissions
Confirmation
Results

The server evaluates the share permissions in the order they are shown below. The final access permissions on a file share are determined by taking into consideration both the share permission and the NTFS permission entries. The more restrictive permissions are then applied.

Name	Permissions	Root Access	Encoding
^ Host			
172.30.1.5	Read / Write	Disallowed	ANSI
172.30.1.6	Read / Write	Disallowed	ANSI
172.30.1.7	Read / Write	Disallowed	ANSI
172.30.1.8	Read / Write	Disallowed	ANSI
172.30.1.9	Read / Write	Disallowed	ANSI

Add... Edit... Remove

< Previous Next > Create Cancel



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File Services

Install NFS client

Add Roles and Features Wizard

Select features

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select one or more features to install on the selected server.

Features

- ☐ .NET Framework 3.5 Features
- ☒ .NET Framework 4.6 Features (5 of 7 installed)
- ☐ Background Intelligent Transfer Service (BITS)
- ☐ BitLocker Drive Encryption
- ☐ BitLocker Network Unlock
- ☐ BranchCache
- ☒ Client for NFS
- ☐ Containers
- ☐ Data Center Bridging
- ☐ Direct Play

Description

Client for NFS enables this computer to access files on UNIX-based NFS servers. When installed, you can configure a computer to connect to UNIX NFS shares that allow anonymous access.

DESTINATION SERVER
SVR-MBR-B.clc.com

< Previous

Next >

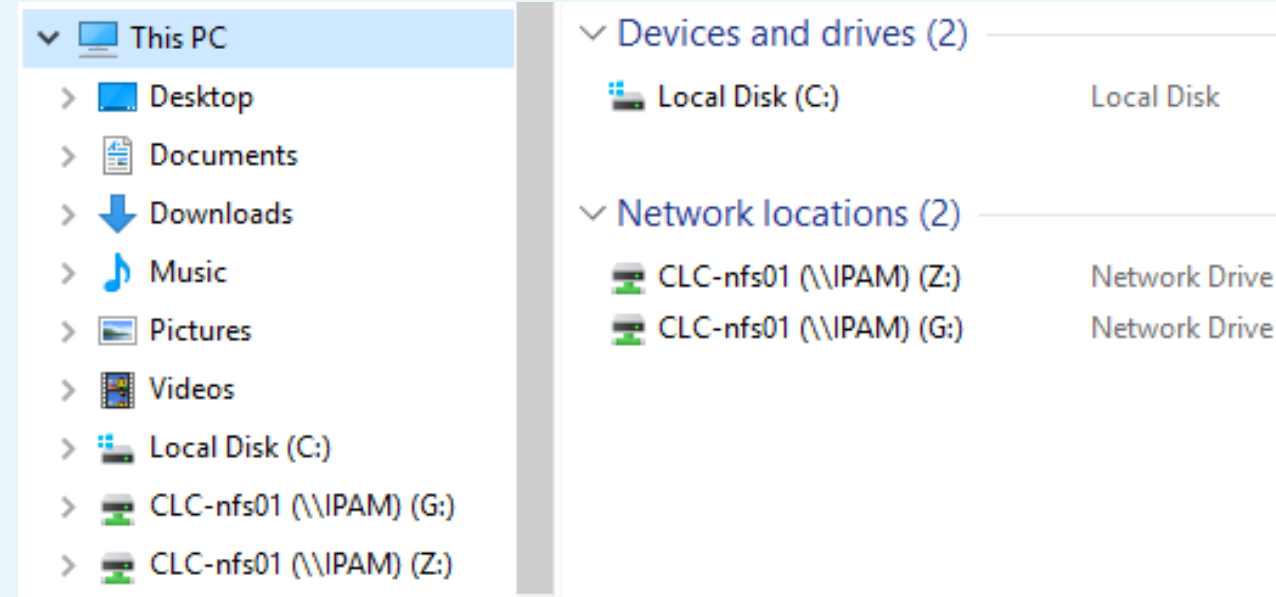
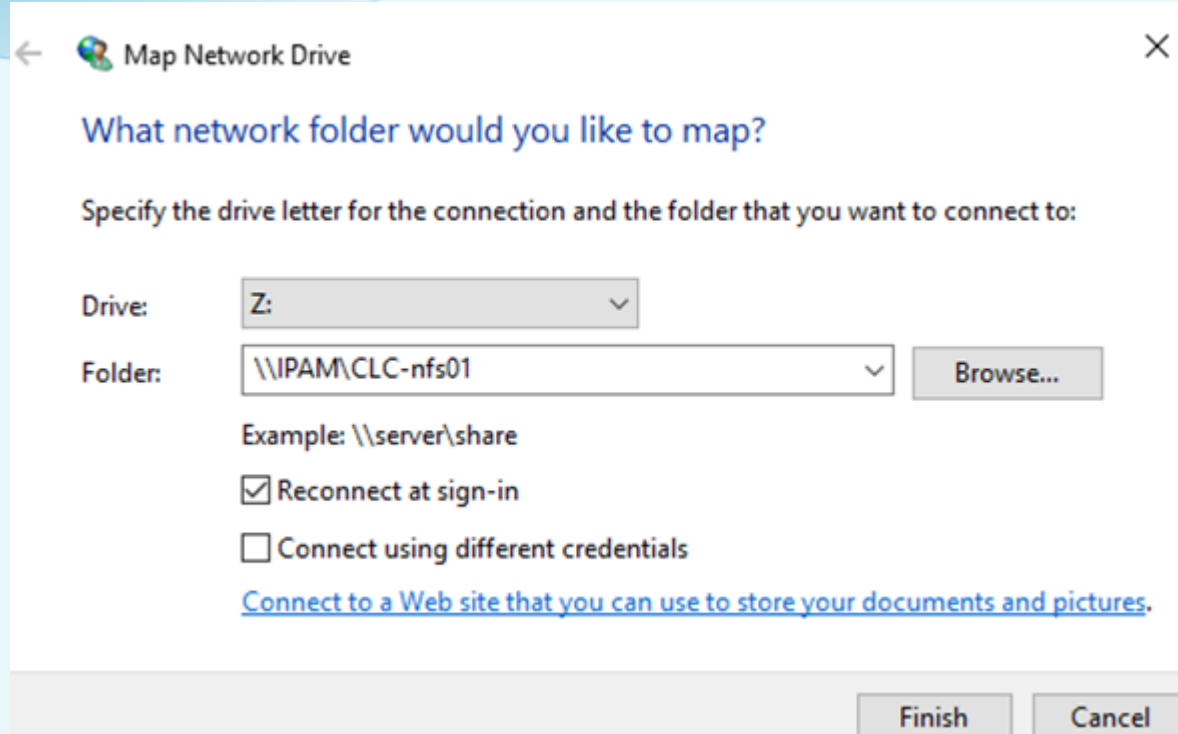
Install

Cancel



File Services

Map an NFS share



- Mount ipam:/clc-nfs01 g:\
- Umount g:\

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

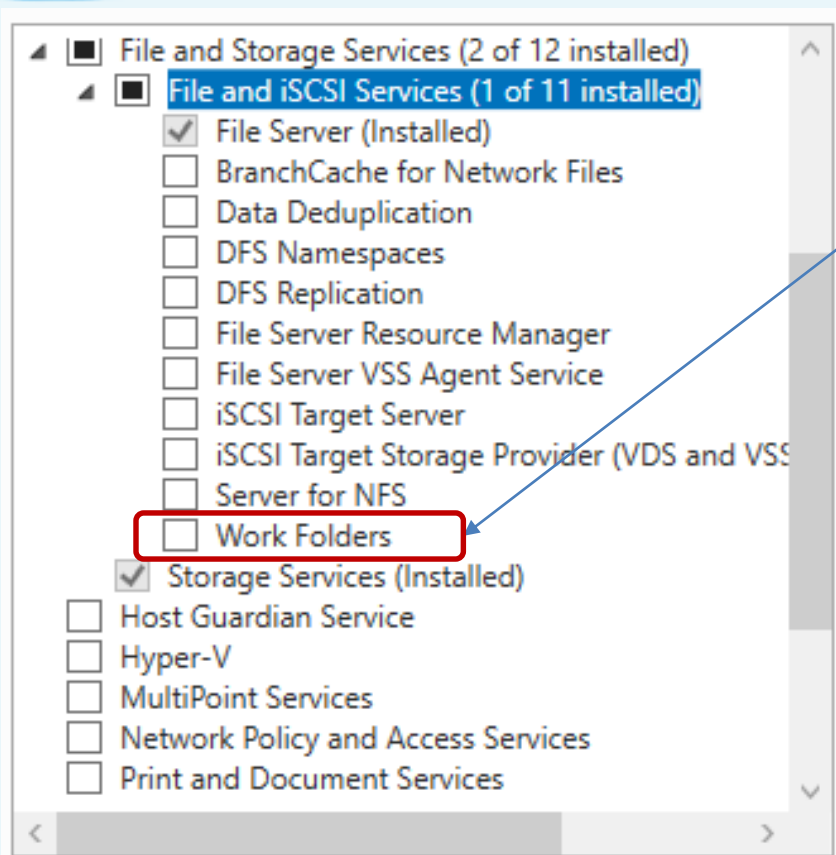
C:\Users\Administrator>mount ipam:/clc-nfs01 g:\
g: is now successfully connected to ipam:/clc-nfs01

The command completed successfully.
```



File Services

work folders



A technology provides access to folders on a server

- from inside or outside the corporate network
- from any type of work or personal device
- from both domain-joined and non-domain-joined systems

Use a synchronization protocol to synchronize corporate data to user devices from a centralized server. Similar to Google Drive, One Drive,...



File Services

Work folders: **Server Installation**

Add Roles and Features Wizard

Select server roles

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more roles to install on the selected server.

Roles

- ☒ **File and Storage Services (5 of 12 installed)**
 - ☒ **File and iSCSI Services (4 of 11 installed)**
 - ☒ File Server (Installed)
 - ☐ BranchCache for Network Files
 - ☐ Data Deduplication
 - ☒ DFS Namespaces (Installed)
 - ☒ DFS Replication (Installed)
 - ☐ File Server Resource Manager
 - ☐ File Server VSS Agent Service
 - ☒ iSCSI Target Server (Installed)
 - ☐ iSCSI Target Storage Provider (VDS and VSS)
 - ☐ Server for NFS
 - ☒ **Work Folders**
 - ☒ Storage Services (Installed)
- ☐ Host Guardian Service
- ☐ Hyper-V
- ☐ MultiPoint Services
- ☐ Network Policy and Access Services
- ☐ Print and Document Services

Add Roles and Features Wizard

Select features

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results

Select one or more features to install on the selected server.

Features

- ☐ **.NET Framework 3.5 Features**
- ☒ **.NET Framework 4.6 Features (5 of 7 installed)**
- ☐ Background Intelligent Transfer Service (BITS)
- ☐ BitLocker Drive Encryption
- ☐ BitLocker Network Unlock
- ☐ BranchCache
- ☐ Client for NFS
- ☐ Containers
- ☐ Data Center Bridging
- ☐ Direct Play
- ☐ Enhanced Storage
- ☐ Failover Clustering
- ☒ Group Policy Management (Installed)
- ☐ I/O Quality of Service
- ☒ IIS Hostable Web Core
- ☐ Internet Printing Client
- ☐ IP Address Management (IPAM) Server
- ☐ iSNS Server service
- ☐ LPR Port Monitor



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File Services

Work folders: Configuration

Server Manager

File and Storage Services ▸ Work Folders

Manage Tools View Help

WORK FOLDERS
All sync shares | 0 total

TASKS ▾

New Sync Share...
New Quota Template...
Refresh

There are no sync shares.

To create a sync share for Work Folders, start the New Sync Share Wizard.

Servers
Volumes
Disks
Storage Pools
Shares
iSCSI
Work Folders



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File Services

Work folders: Configuration

New Sync Share Wizard

Select the server and path

Before You Begin

Server and Path

User Folder Structure

Sync Share Name

Sync Access

PC Security Policies

Confirmation

Results

Server:

Server Name	Status	Cluster Role	Owner Node
IPAM	Online	Not Clustered	

i Only servers and clustered file server instances that have Work Folders installed are shown.

Location:

☐ Select by file share:

Name	Path
BT	C:\Shares\BT
CLC-01	C:\DFSRoots\CLC-01

☒ Enter a local path:

E:\shares\ipam-wf1

< Previous **Next >** Create Cancel



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File Services

Work folders: Configuration

New Sync Share Wizard

Specify the structure for user folders

Before You Begin
Server and Path
User Folder Structure
Sync Share Name
Sync Access
PC Security Policies
Confirmation
Results

Choose a folder-naming format based on whether you have to maintain user folder compatibility or want to support identical aliases across domains.

☐ User alias
Maintains compatibility with existing user folders that use aliases for their names

☒ User alias@domain
Eliminates conflicts between identical user aliases in different domains

Syncing a subfolder can be useful if you currently redirect multiple folders for users and want to use this sync share with only one of these, such as the Documents folder.

☐ Sync only the following subfolder:

If the subfolder doesn't exist, it will be created for every user assigned to this Work Folders instance.

< Previous Next > Create Cancel



File Services

Work folders: Configuration

New Sync Share Wizard

Grant sync access to groups

Before You Begin
Server and Path
User Folder Structure
Sync Share Name
Sync Access
PC Security Policies
Confirmation
Results

Domain	Principal	Description
CLC	Dien Tran	
CLC	Administrator	Built-in account for admin
CLC	Domain Admins	Designated administrators

define which users and groups have access to use this sync

Add... Remove

☒ Disable inherited permissions and grant users exclusive access to their files

< Previous Next > Create Cancel



File Services

Work folders: Add DNS record

DNS Manager

File Action View Help

← → ↻ ✖ 📄 ? 📄 📄 📄

DNS

- DC1.clc.com
 - Forward Lookup Zones
 - _msdcs.clc.com
 - clc.com
 - Reverse Lookup Zones
 - Trust Points
 - Conditional Forwarders

Name	Type	Data	Timestamp
_msdcs			
_sites			
_tcp			
_udp			
DomainDnsZones			
ForestDnsZones			
(same as parent folder)	Start of Authority (SOA)	[40], dc1.clc.com., h...	static
(same as parent folder)	Name Server (NS)	dc1.clc.com.	static
(same as parent folder)	Host (A)	172.30.1.5	9/17/2020 7:00:00 PM
dc1	Host (A)	172.30.1.5	static
IPAM	Host (A)	172.30.1.9	9/7/2020 9:00:00 PM
site2	Host (A)	172.30.1.9	static
Student1	Host (A)	172.30.1.100	8/27/2020 1:00:00 AM
workfolders	Host (A)	172.30.1.9	static
www	Host (A)	172.30.1.9	static



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File Services

Connect to Work folders

- By default, client always connect to the server using SSL
- For the purpose of lab testing, we allow Windows running on unsecure connection before testing Work Folders function
- Open CMD and type :

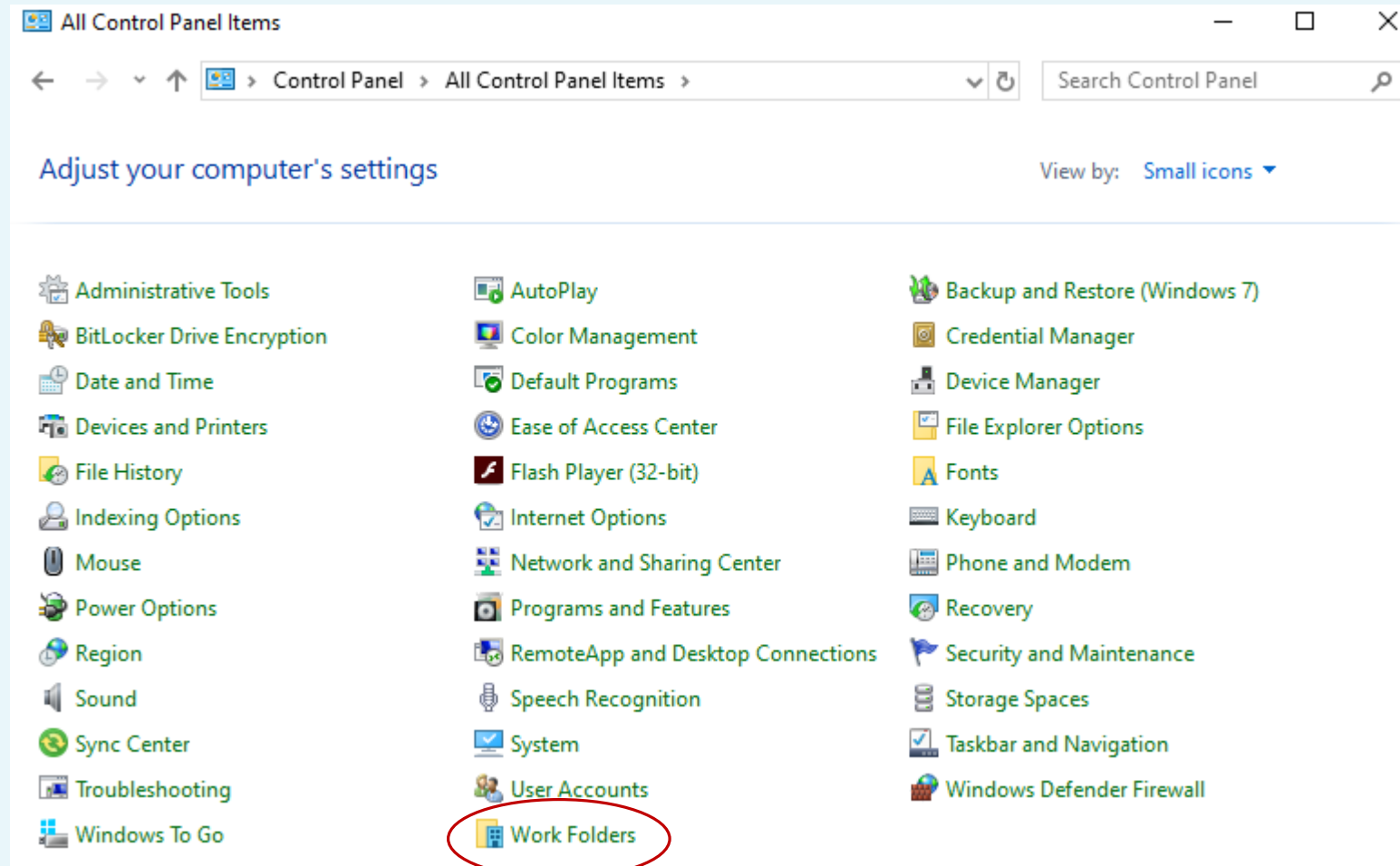
```
Reg add HKLM\SOFTWARE\Microsoft\Windows\  
CurrentVersion\WorkFolders  
/v AllowUnsecureConnection /t REG_DWORD /d 1
```



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File Services

Connect to Work folders










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File Services

Connect to Work folders

 Enter Work Folders URL

 << Work Folders > Enter Work Folders URL 

Search Control Panel 

Enter a Work Folders URL

If you don't have a Work Folders URL, contact your organization to find out if Work Folders is offered to you.

Work Folders URL:

Next

Cancel



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File Services

Connect to Work folders

A screenshot of a Windows 7 window titled "Confirm Work Folders location". The window has a standard Windows 7 interface with a taskbar at the top showing the Start button and a few icons. The window's title bar includes the title and standard minimize, maximize, and close buttons. Below the title bar is a navigation pane on the left with a folder icon and the text "<< Work Folders > Confirm Work Folders location". To the right of the navigation pane is a search bar labeled "Search Control Panel". The main content area of the window has a light blue header with the text "Introducing Work Folders". Below this header is a paragraph of text: "Work Folders will appear in the navigation pane in File Explorer and when opening or saving files." followed by another paragraph: "Normally the files you save in Work Folders are stored on your PC with the files and settings for your user account, but you can choose a different location below. This setting cannot be changed later." Below the text is a section titled "Work Folders location:" followed by the text "C:\Users\administrator\Work Folders". Below this text is a button labeled "Change...". Below the button is a checkbox that is checked, with the text "Enable on-demand file access on this PC (recommended)". Below the checkbox is a paragraph of text: "You can save storage space on your PC by enabling on-demand file access. When enabled, you control which files are available offline. The rest of your files are always visible and don't take up any space on your PC, but you need an Internet connection to access them." At the bottom right of the window are two buttons: "Next" and "Cancel".

Confirm Work Folders location

<< Work Folders > Confirm Work Folders location

Search Control Panel

Introducing Work Folders

Work Folders will appear in the navigation pane in File Explorer and when opening or saving files.

Normally the files you save in Work Folders are stored on your PC with the files and settings for your user account, but you can choose a different location below. This setting cannot be changed later.

Work Folders location:

C:\Users\administrator\Work Folders

Change...

☒ Enable on-demand file access on this PC (recommended)

You can save storage space on your PC by enabling on-demand file access. When enabled, you control which files are available offline. The rest of your files are always visible and don't take up any space on your PC, but you need an Internet connection to access them.

Next Cancel



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File Services

Connect to Work folders

The screenshot shows the Windows Control Panel window for Work Folders. The title bar reads "Work Folders". The breadcrumb navigation shows "Control Panel > All Control Panel Items > Work Folders". On the left, there are links: "Control Panel Home", "Stop using Work Folders", "Manage credentials", and "Sync now". The main content area is titled "Manage Work Folders" with the subtitle "Use Work Folders to make your work files available on all devices you use, even when offline." Below this, it displays "3.34 GB available on the server". A status bar indicates "Last synced: 9/11/2019 1:59 PM" with an expand/collapse arrow. Below this, a message states "Your work files were last synced at 9/11/2019 1:59 PM". There are three sections of settings: "On-demand file access:" with a checked checkbox "Enable on-demand file access"; "Sync over metered connections:" with two unchecked checkboxes "Sync files over metered connections" and "Sync even when I'm roaming"; and "Ask for help from your organization:" with a link "Email tech support". At the bottom, there is a link "Configure Work Folders on other devices:" with a link "Learn how". A "See also" section at the bottom left links to "Work Folders on devices". A final status bar at the bottom indicates "No file errors" with a collapse arrow.

Work Folders

Control Panel > All Control Panel Items > Work Folders

Control Panel Home

Stop using Work Folders

Manage credentials

Sync now

Manage Work Folders

Use Work Folders to make your work files available on all devices you use, even when offline.

3.34 GB
available on the server

Last synced: 9/11/2019 1:59 PM

Your work files were last synced at 9/11/2019 1:59 PM

On-demand file access: ☒ Enable on-demand file access

Sync over metered connections: ☐ Sync files over metered connections
☐ Sync even when I'm roaming

Ask for help from your organization: [Email tech support](#)

Configure Work Folders on other devices: [Learn how](#)

See also

Work Folders on devices

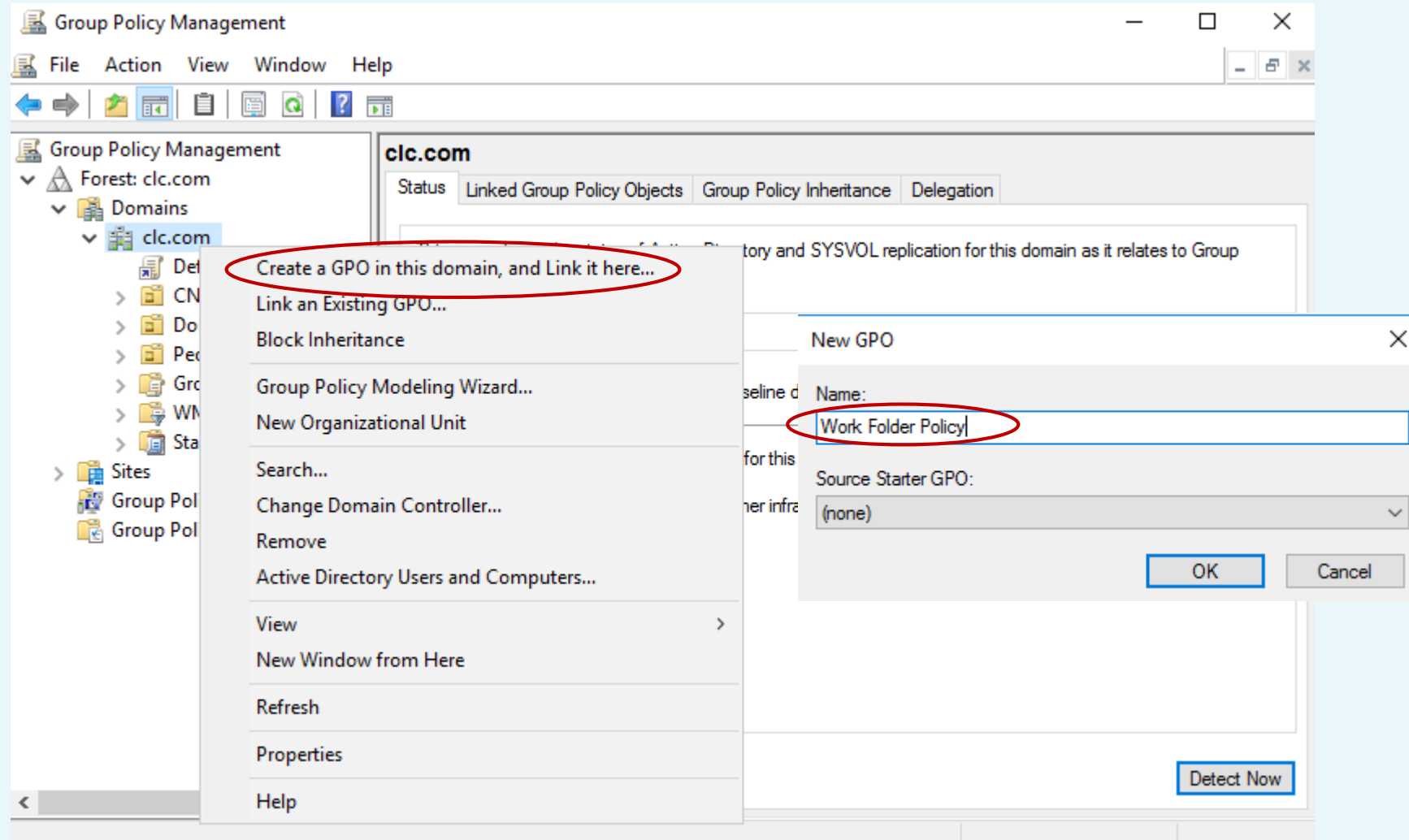
No file errors



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File Services

Work folders: automate settings for domain users

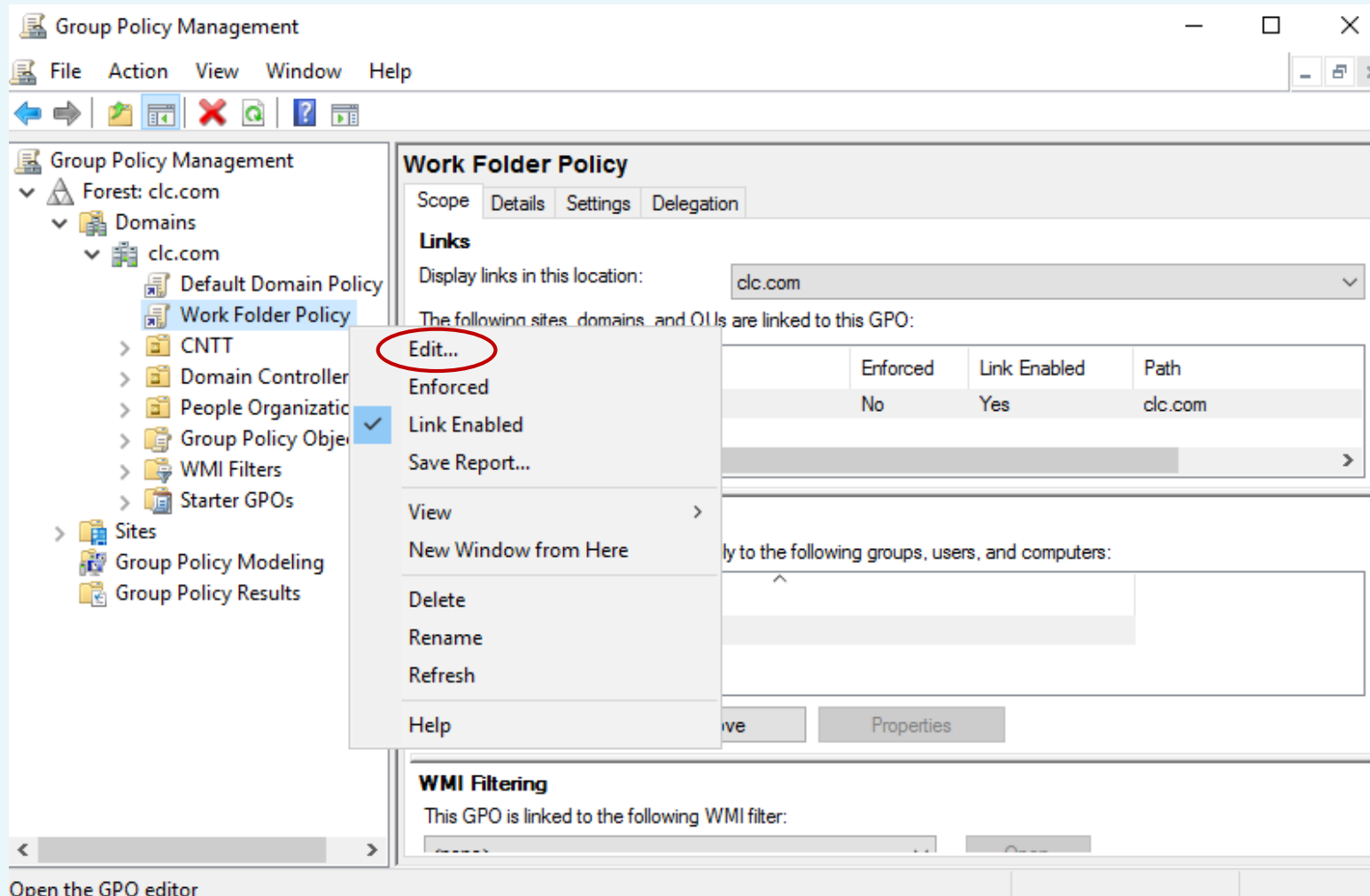




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File Services

Work folders: automate settings for domain users



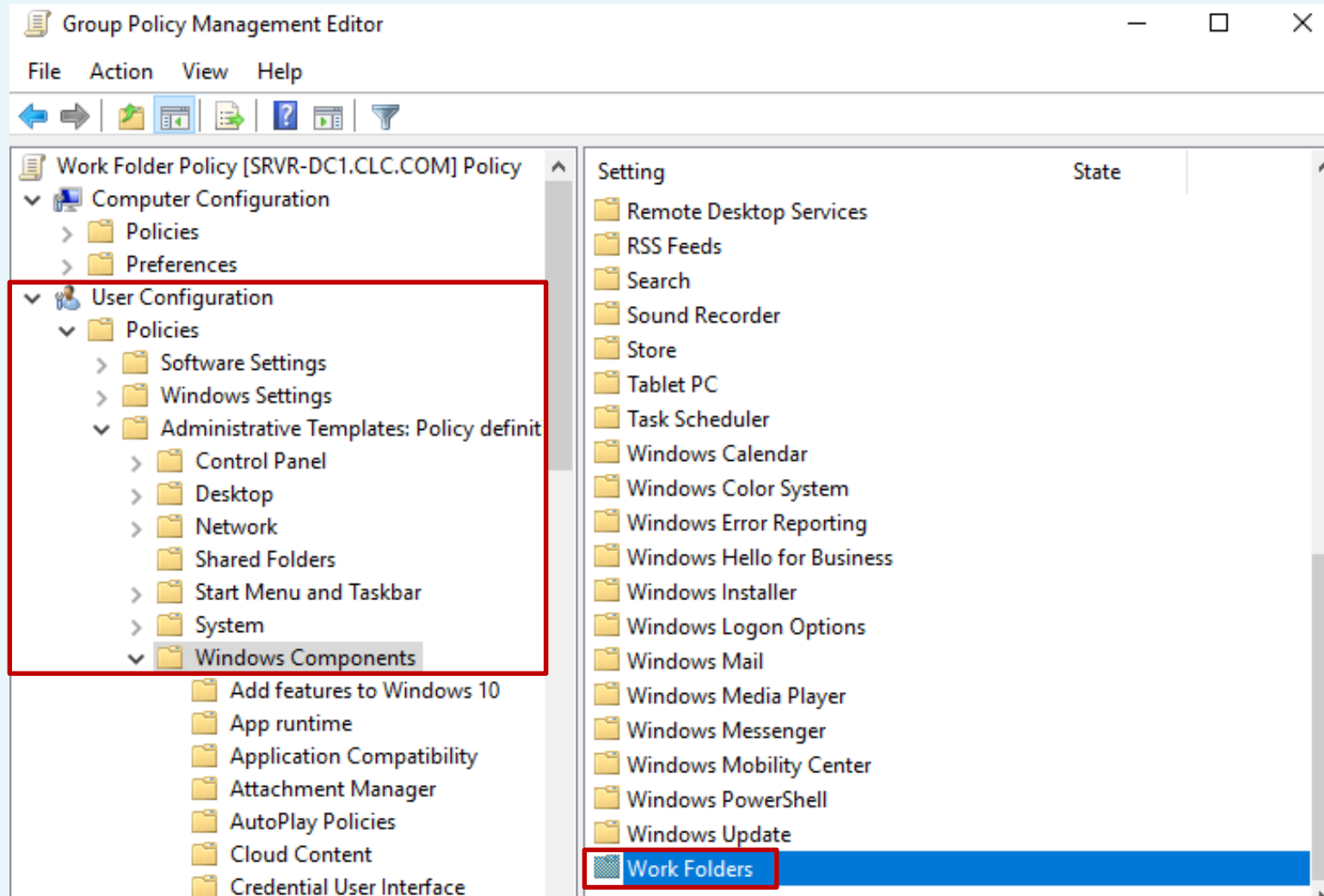
Open the GPO editor



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File Services

Work folders: automate settings for domain users





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File Services

Work folders: automate settings for domain users

The image shows a screenshot of the Group Policy Management Editor window. The title bar reads "Group Policy Management Editor". The menu bar includes "File", "Action", "View", and "Help". The toolbar contains icons for navigation and search. The left pane shows a tree view of policy categories, with "Work Folders" selected under "All Settings". The right pane displays a table of settings for "Work Folders". The table has three columns: "Setting", "State", and "Configuration". The first row is "Specify Work Folders settings", which is highlighted in blue and shows a state of "Not configured". At the bottom of the right pane, there are tabs for "Extended" and "Standard".

Setting	State	Configuration
Specify Work Folders settings	Not configured	



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File Services

Work folders: automate settings for domain users

Specify Work Folders settings

Specify Work Folders settings

Previous Setting Next Setting

☐ Not Configured Comment:

☒ Enabled

☐ Disabled

Supported on: At least Windows Server 2008 R2 or Windows 7

Options:

Work Folders URL:

☒ Force automatic setup

Help:

This policy setting specifies the Work Folders server for affected users, as well as whether or not users are allowed to change settings when setting up Work Folders on a domain-joined computer.

If you enable this policy setting, affected users user receive Work Folders settings when they sign in to a domain-joined PC.

The "Work Folders URL" can specify either the URL used by the organization for Work Folders discovery, or the specific URL of the file server that stores the affected users' data.

OK Cancel Apply

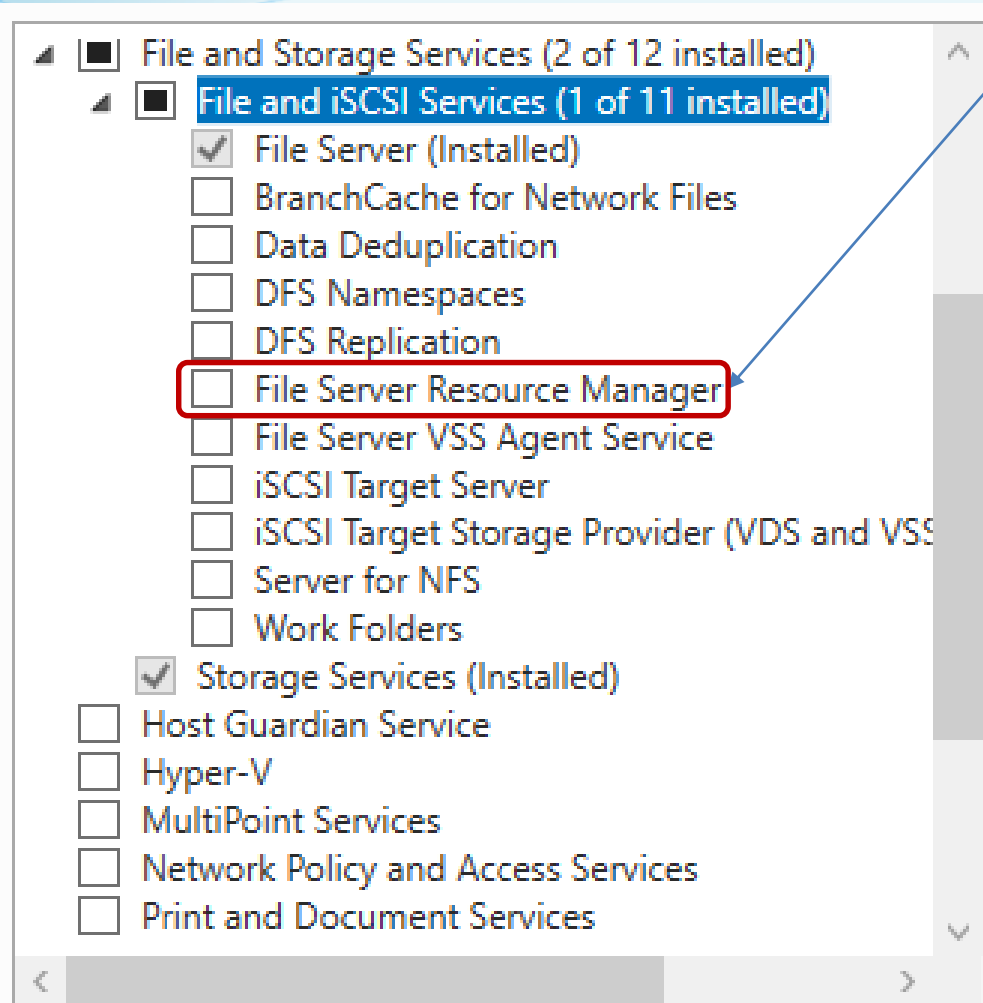


File Services

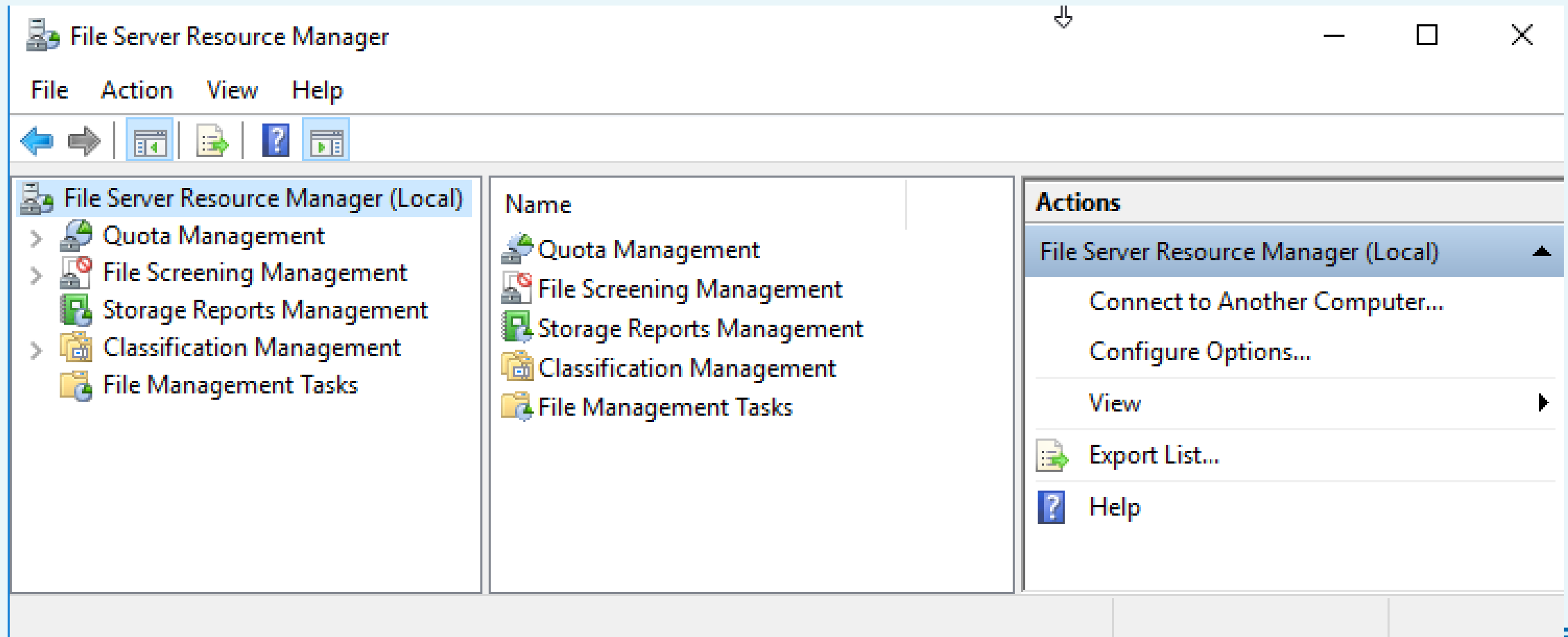
File Server Resource Manager (FSRM)

Control and manage the amount and type of data stored on your servers

- **Quota management:** limit the disk space a user can use on a file server (volume or folder)
- **File screening management:** control the types of files that user can store on a file server
- **Classification management :** classify files and apply policies based on this classification. E.g., policies include restricting access to files, file encryption, and file expiration



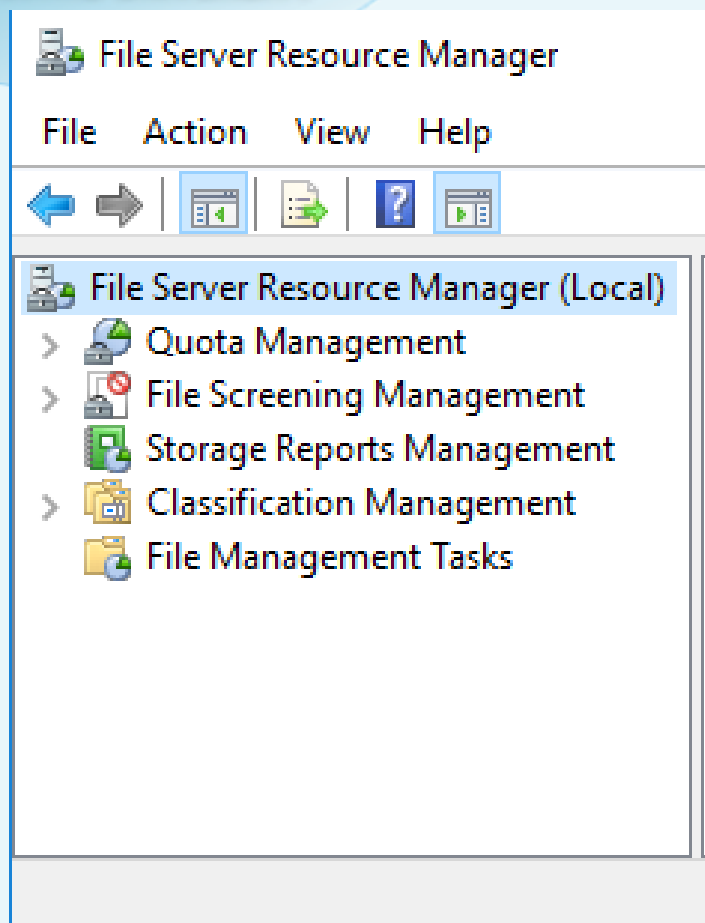
- Enables users to classify and manage data stored on file servers





File Services

File Server Resource Manager (FSRM)

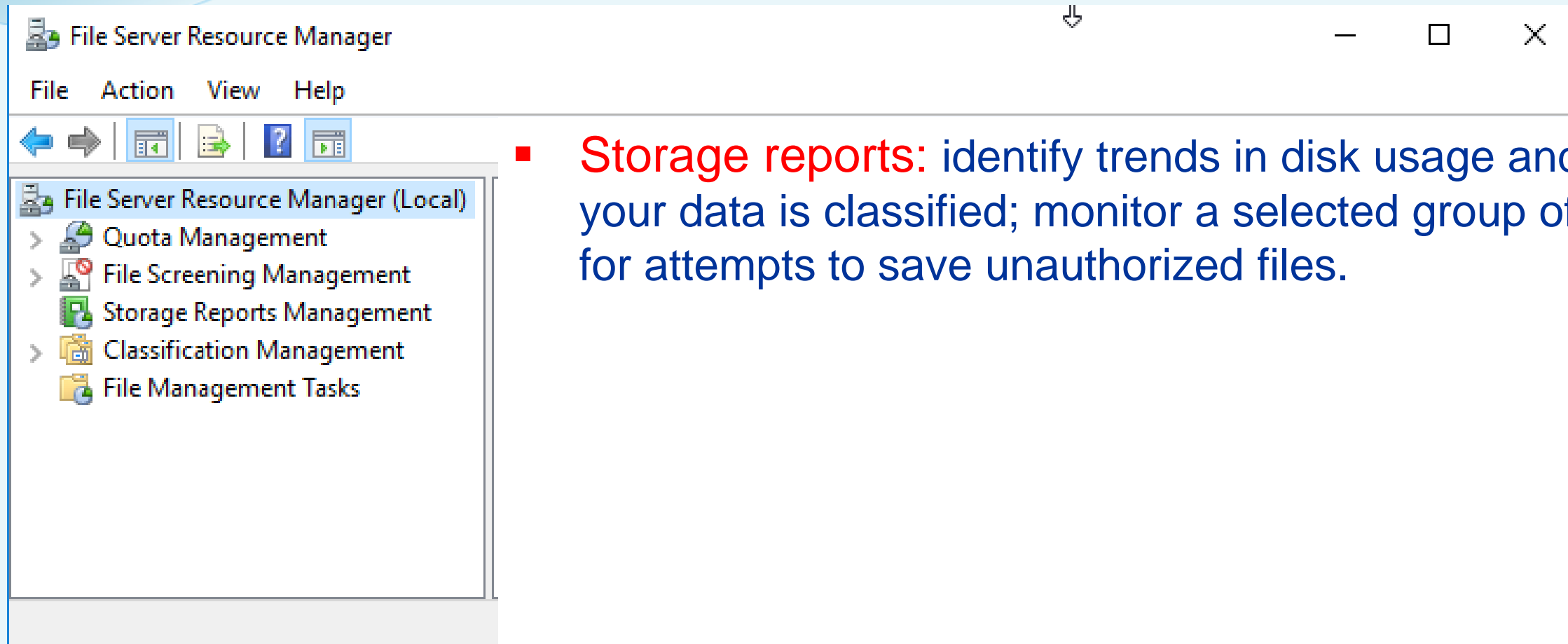


- **File Management Tasks:** enables to apply a *conditional policy* or *action* to files based on their classification
 - The condition includes: the file location, the classification properties, the date the file was created, the last modified date of the file, or the last time the file was accessed.
 - The actions include the ability to expire files, encrypt files, or run a custom command



File Services

File Server Resource Manager (FSRM)



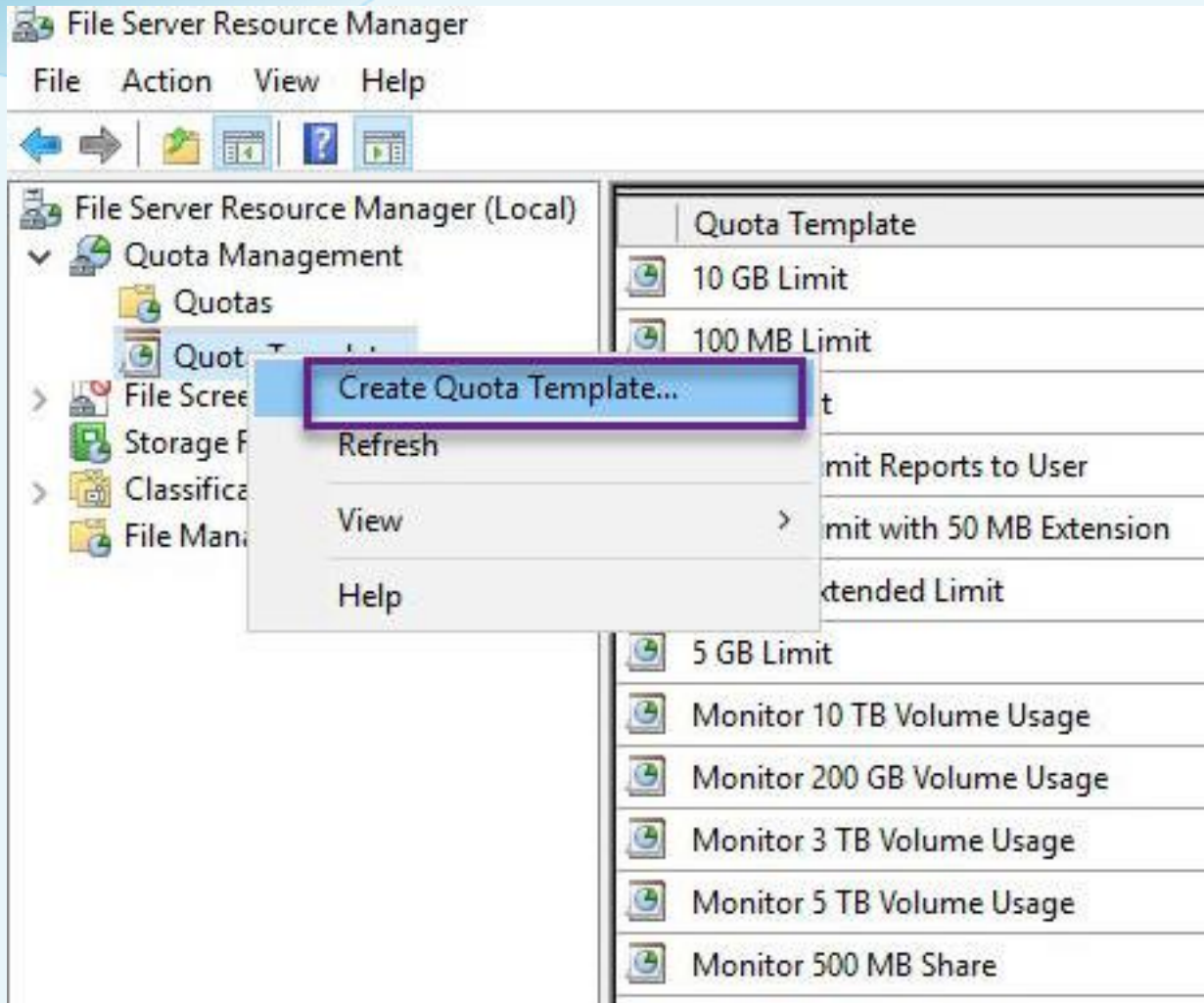
- **Storage reports:** identify trends in disk usage and how your data is classified; monitor a selected group of users for attempts to save unauthorized files.



File Services

FSRM: Create a Quota template

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Quota Template Properties for 2 GB Limit

Copy properties from quota template (optional):
2 GB Limit Copy

Settings

Template name:
2 GB Limit

Description (optional):

Space limit
Limit:
2.000 GB

☒ Hard quota: Do not allow users to exceed limit
☐ Soft quota: Allow users to exceed limit (use for monitoring)

Notification thresholds

Threshold	E-mail	Event Log	Command	Report
Warning (85%)	✓			
Warning (95%)	✓	✓		
Warning (100%)	✓	✓		

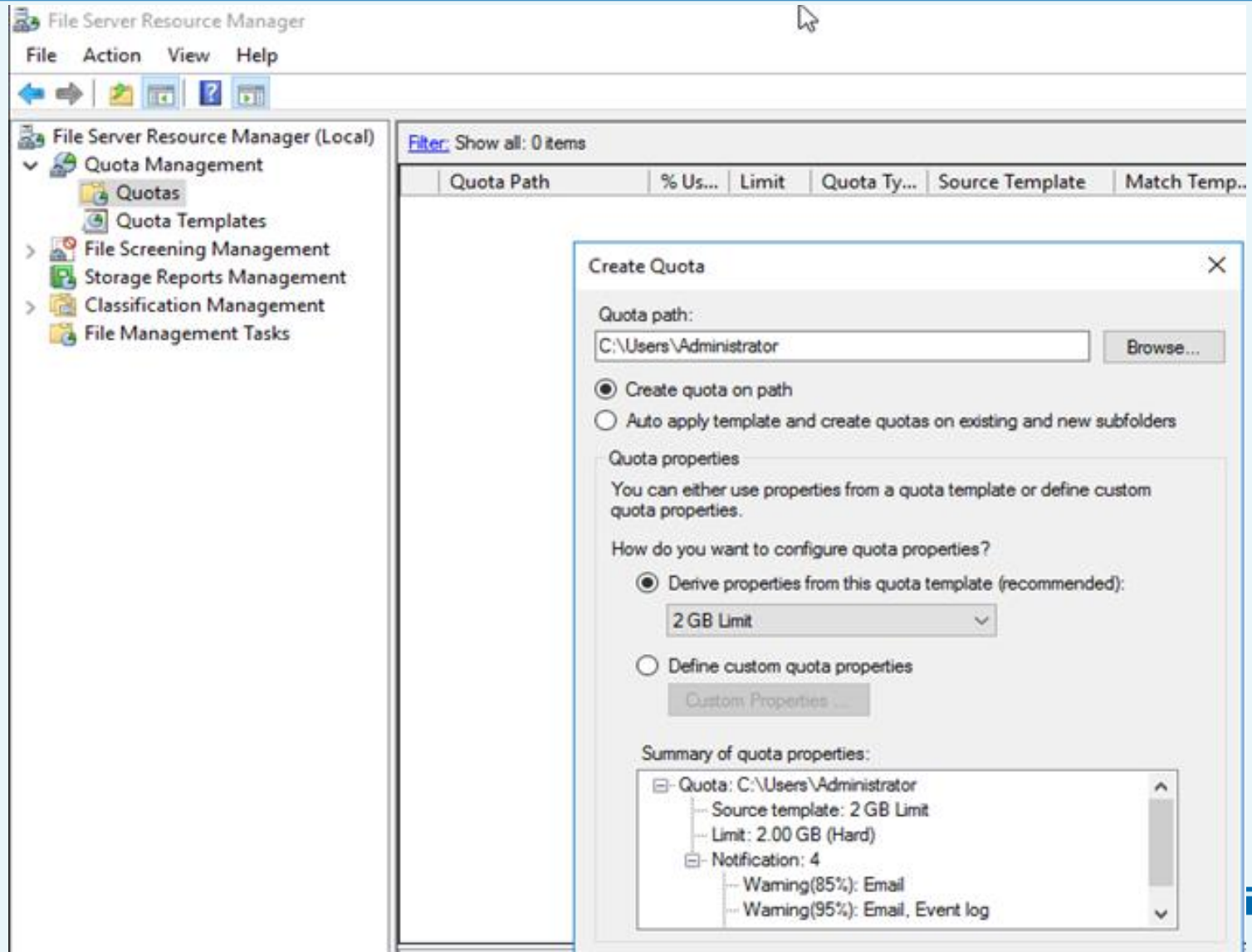
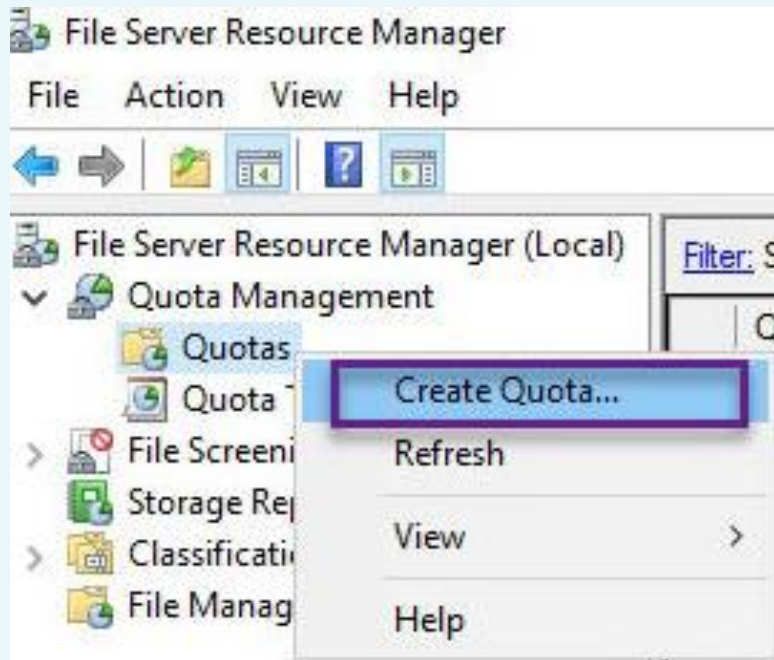
Add... Edit... Remove



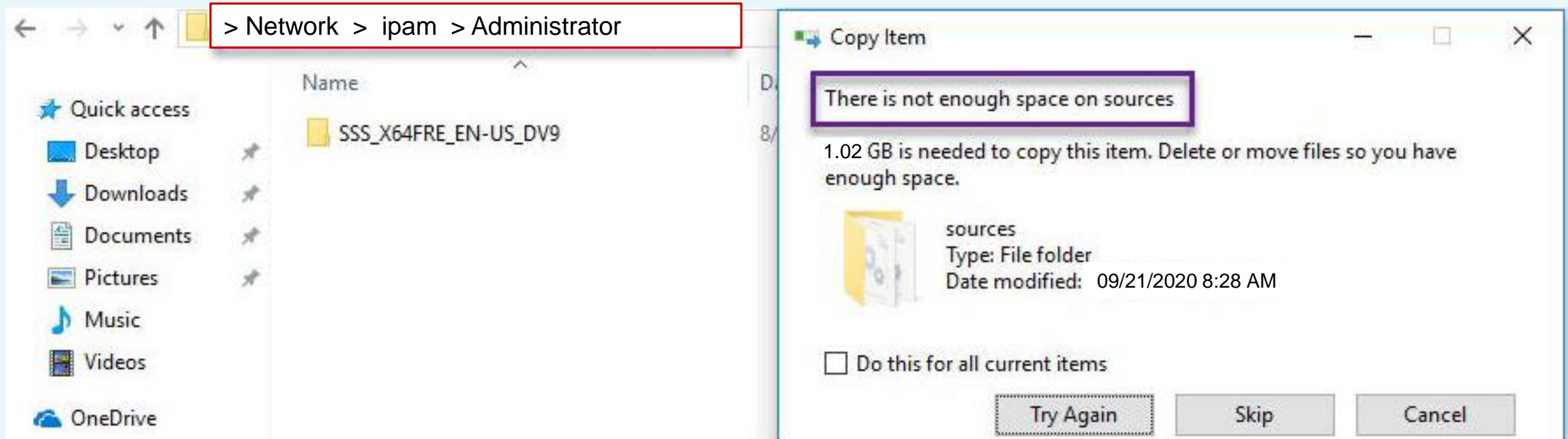
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File Services

FSRM: Configure a Quota



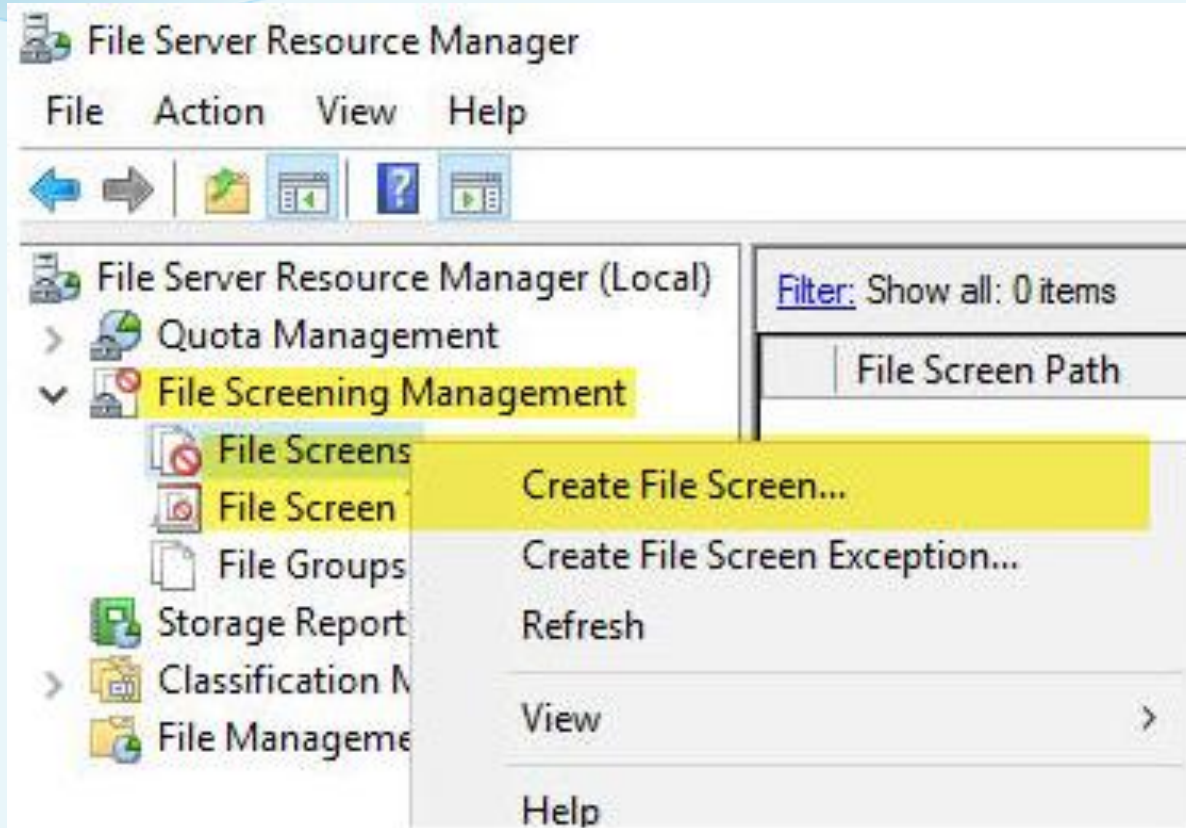
- Login a windows 10 client and access the file server ***\\ipam\Administrator***
- Copy the large files to shared folder (more than allowed quota 2GB)





File Services

FSRM: File screening

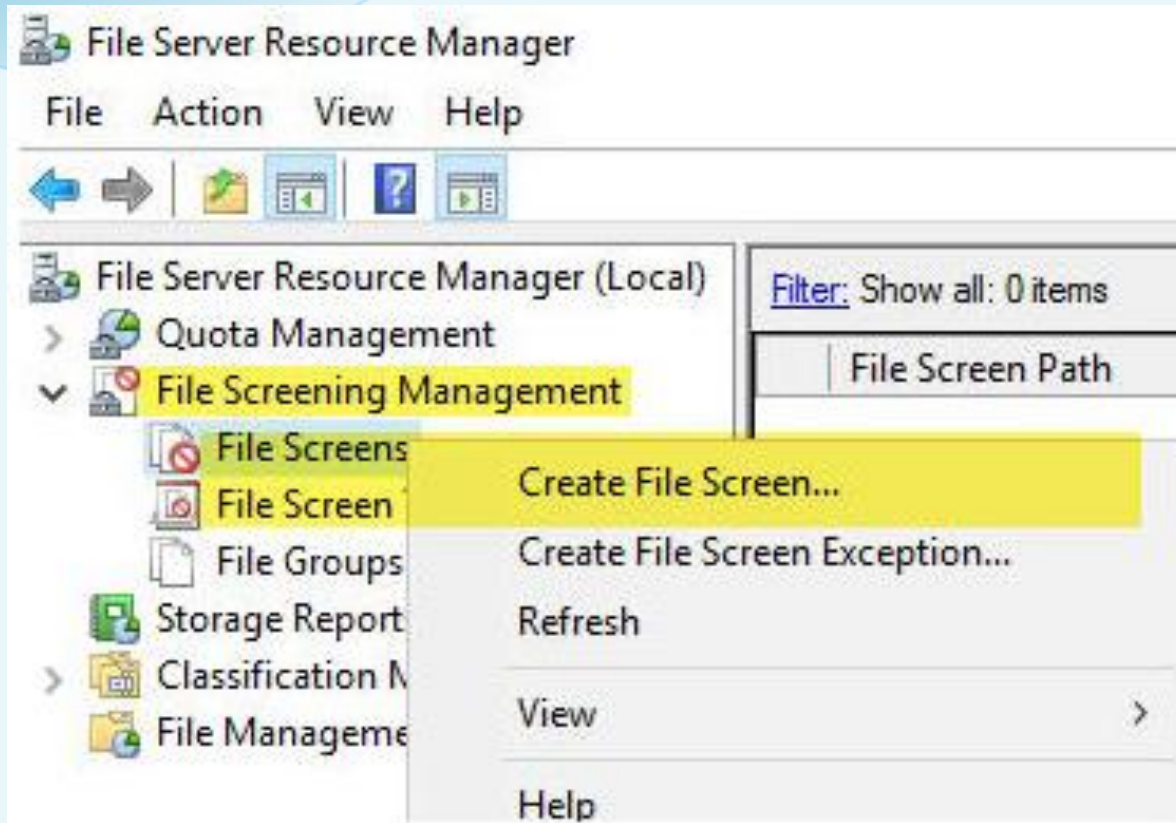


- Used to prevent users from storing files of a certain category within folders on an NTFS volume (called an active screening), or
- Log an event when this occurs (called passive screening).
- Each category called a file group, and consists of one or more filename extensions

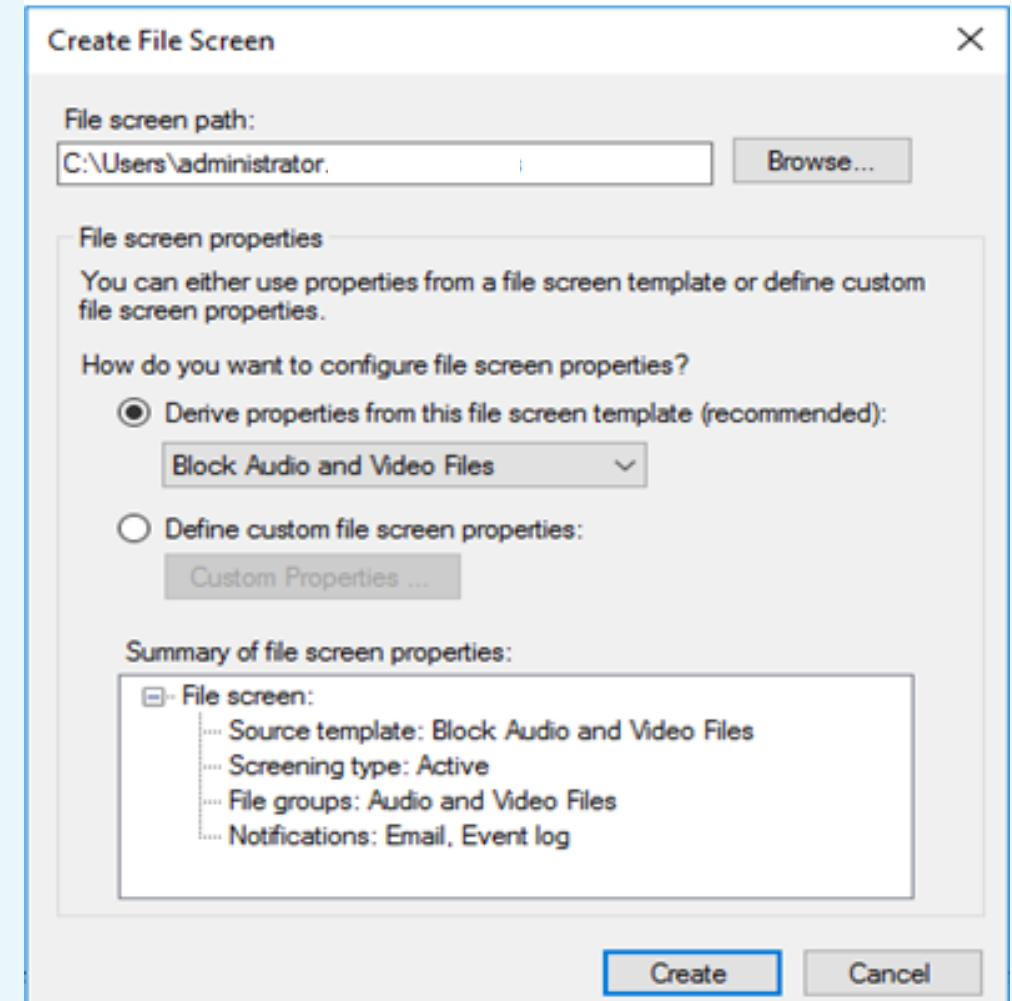


File Services

FSRM: Test that the file screen is functional



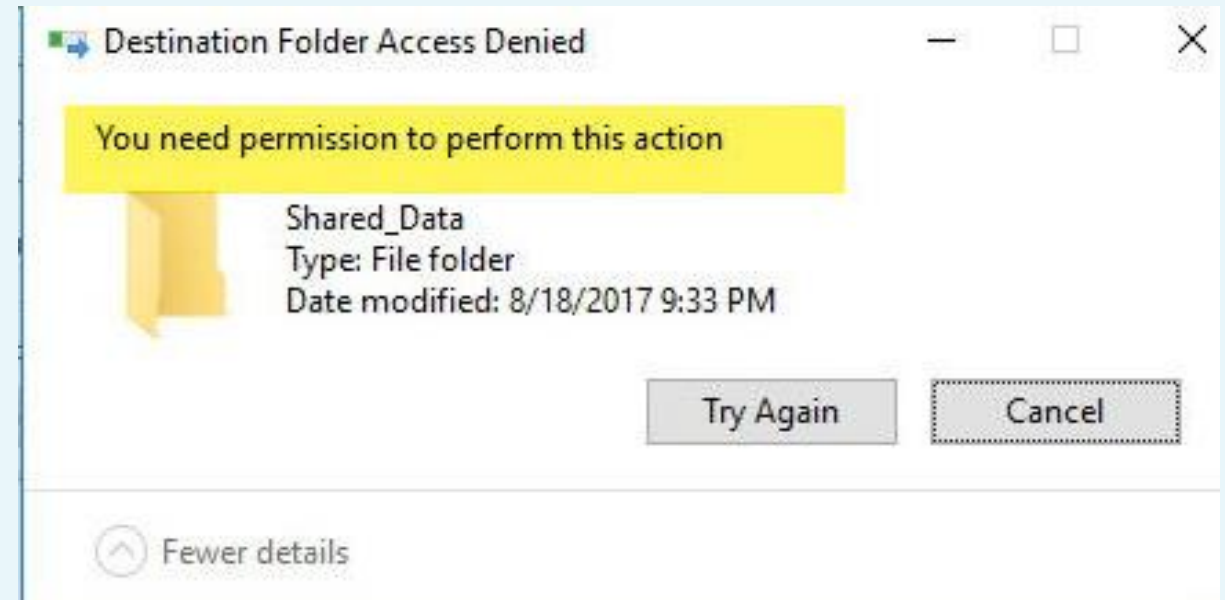
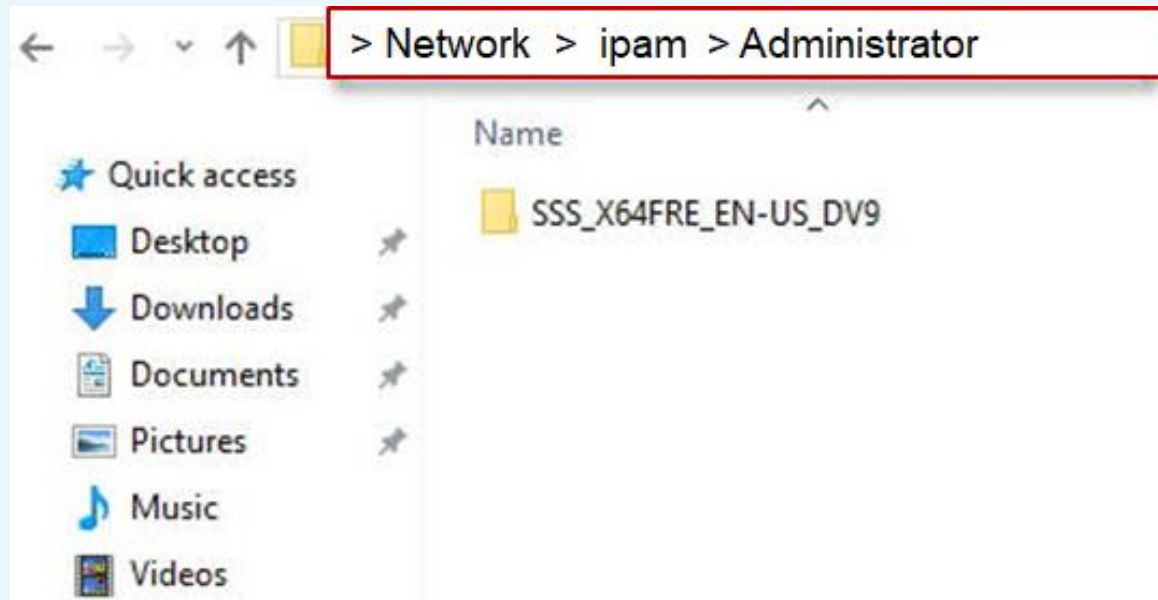
In this example, we will apply screening policy that prevent users to store any Audio and Video files on shared folder



File Services

FSRM: Test that the file screen is functional

- Login a windows 10 client and access the file server `\\ipam\Administrator`
- Try to copy nay audio or video file to the shared folder





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File Services

FSRM: File Screen Templates

File Server Resource Manager

File Action View Help

File Server Resource Manager (Local)

- Quota Management
- File Screening Management
 - File Screens
 - File Screen Templates**
 - File Groups
- Storage Reports Management
- Classification Management
- File Management Tasks

File screen Template	Screening Type	File Groups
Block Audio and Vi...	Active	Block: Audio and Video Files
Block E-mail Files	Active	Block: E-mail Files
Block Executable Files	Active	Block: Executable Files
Block Image Files	Active	Block: Image Files
Monitor Executable ...	Passive	Warn: Executable Files, System Files

File Server Resource Manager (Local)

- Quota Management
- File Screening Management
 - File Screens
 - File Screen Templates
 - File Groups**
- Storage Reports Management
- Classification Management
- File Management Tasks

File Groups	Include Files	Exclude Files
Audio and...	*.aac, *.aif, *.aiff, *.asf, *.asx, *.au...	
Backup Files	*.bak, *.bck, *.bkf, *.old	
Compress...	*.ace, *.arc, *.arj, *.bhx, *.bz2, *.c...	
E-mail Files	*.eml, *.idx, *.mbox, *.mbx, *.ms...	
Executable...	*.bat, *.cmd, *.com, *.cpl, *.exe, ...	
Image Files	*.bmp, *.dib, *.eps, *.gif, *.img, *...	
Office Files	*.accdb, *.accde, *.accdr, *.accdt...	
System Files	*.acm, *.dll, *.ocx, *.sys, *.vxd	
Temporary...	*.temp, *.tmp, ~*	
Text Files	*.asc, *.text, *.txt	
Web Page ...	*.asp, *.aspx, *.cgi, *.css, *.dhtml, ...	

Actions

- File Screen Tem... ▲
- Create File ...
- Refresh
- View ▶
- Help

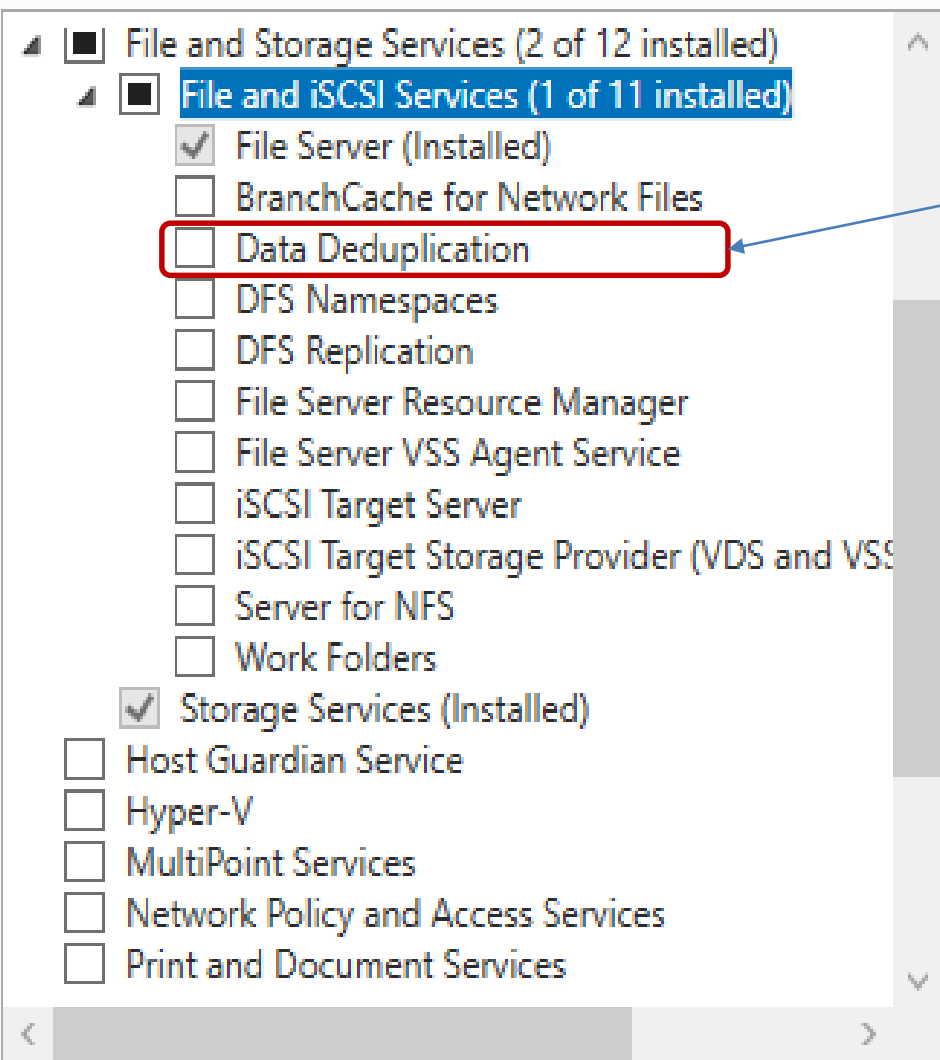
Actions

- File Groups ▲
- Create File ...
- Refresh
- View ▶
- Help

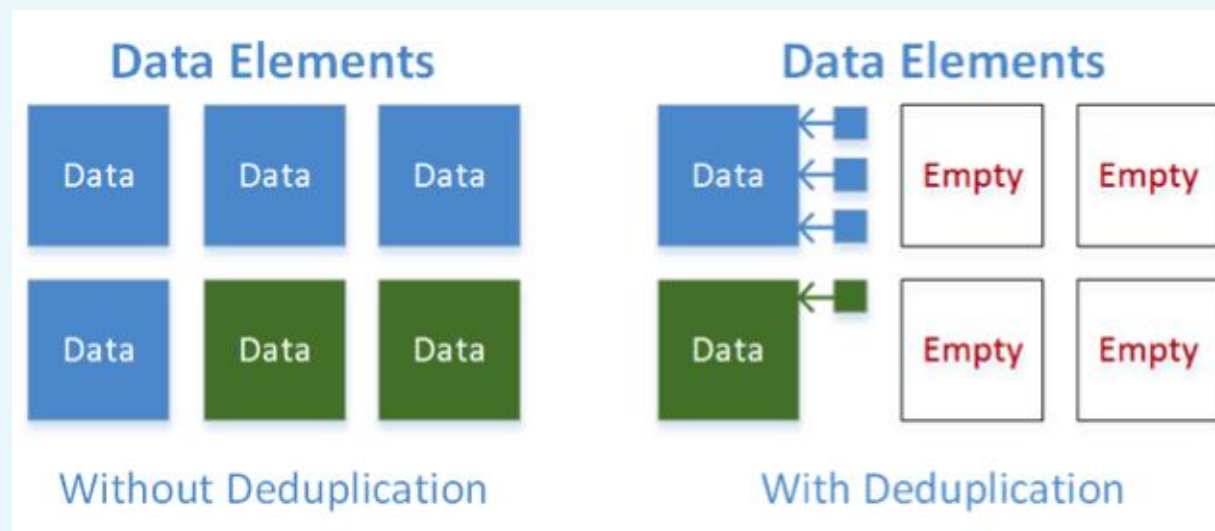


File Services

Data Deduplication

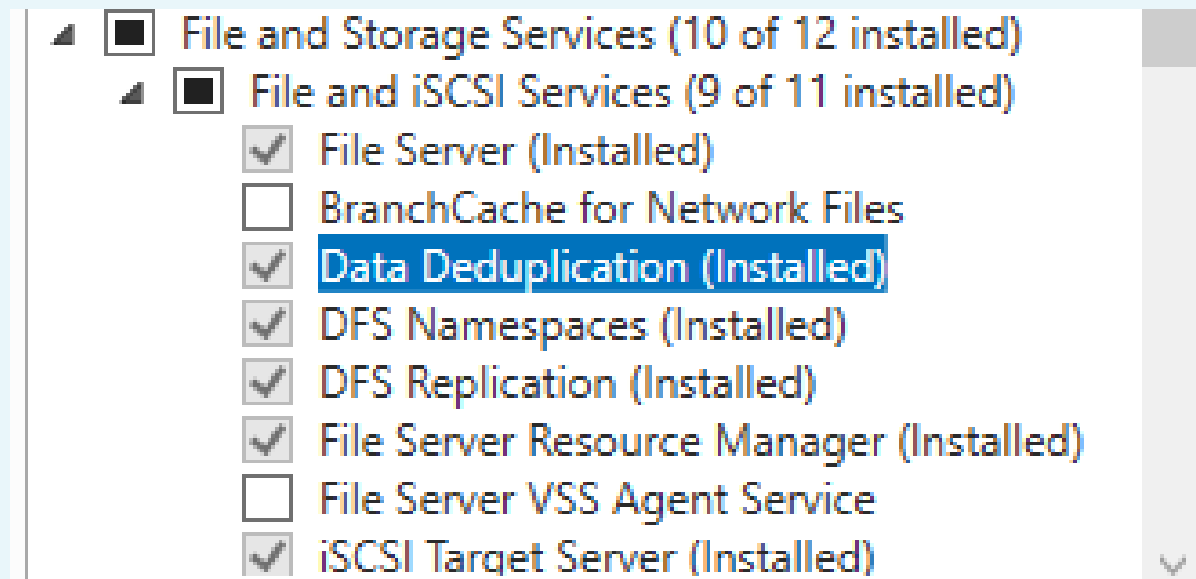


A technology that optimizes free space on a volume by storing only one copy of duplicated portions of a volume





- If you have two copies of the same file, stored in two different locations, all that is doing is consuming extra hard disk space.
- When enabled, Windows runs scheduled optimization jobs that search for duplicate files and data, and consolidates them.
- Data deduplication removes the secondary copy and utilizes the primary whenever that file is called for from either location on the disk.





File Services

Data Deduplication

Server Manager

Navigation: Volumes (selected), Disks, Storage Pools, Shares, iSCSI, Work Folders

VOLUMES

All volumes | 3 total

Volume	Status	File System Label	Provisioning	Capacity	Free Space
SVR-MBR-B (3)					
C:	Fixed			13.5 GB	2.54 GB
\\?\Volume{dc...}	Recovery		Fixed	450 MB	136 MB
E:	New Volume		Fixed	478 MB	462 MB

Context menu for E: drive:

- New Share...
- New iSCSI Virtual Disk...
- Scan File System for Errors
- Repair File System Errors
- Manage Drive Letter and Access Paths...
- Format...
- Extend Volume...
- Delete Volume
- Configure Data Deduplication...**
- Properties



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File Services

Data Deduplication

New Volume (E:\) Deduplication Settings

New Volume (E:\)

Data deduplication: General purpose file server

Deduplicate files older than (in days): 3

Type the file extensions that you want to exclude from data deduplication, separating extensions with a comma. For example: doc,txt,png

Default file extensions to exclude: edb,jrs

Custom file extensions to exclude:

To exclude selected folders (and any files contained in them) from data deduplication, click Add.

Add...

Remove

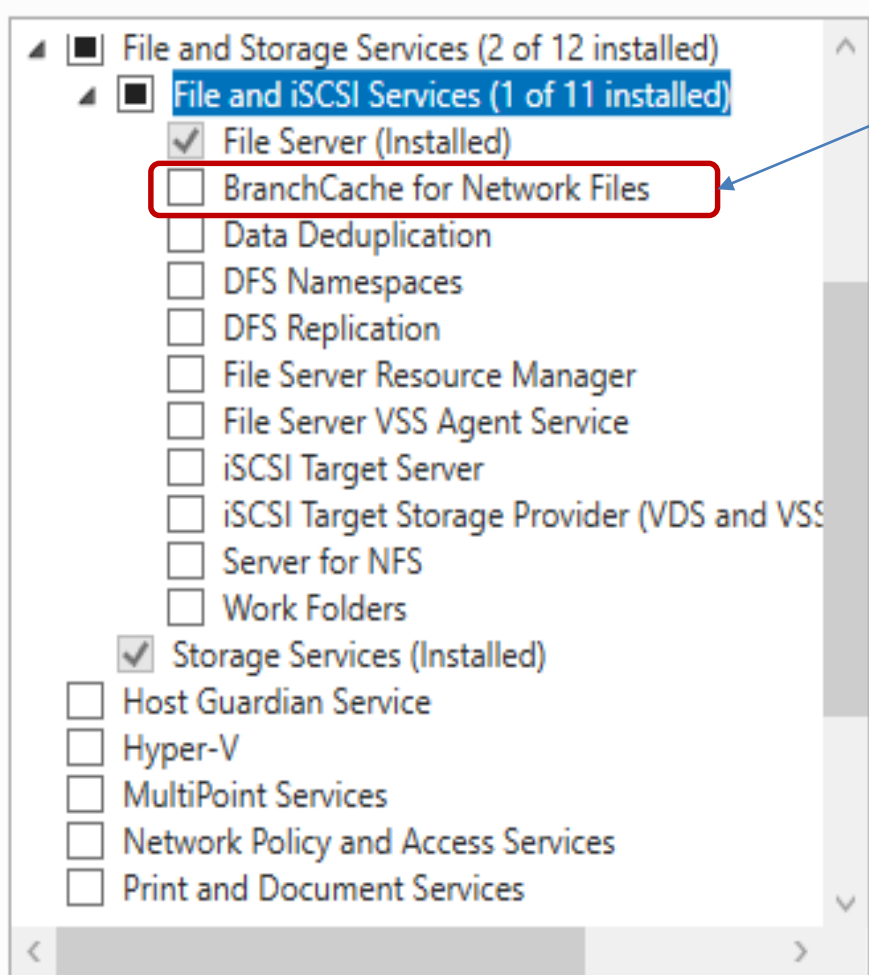
Set Deduplication Schedule...

OK Cancel Apply

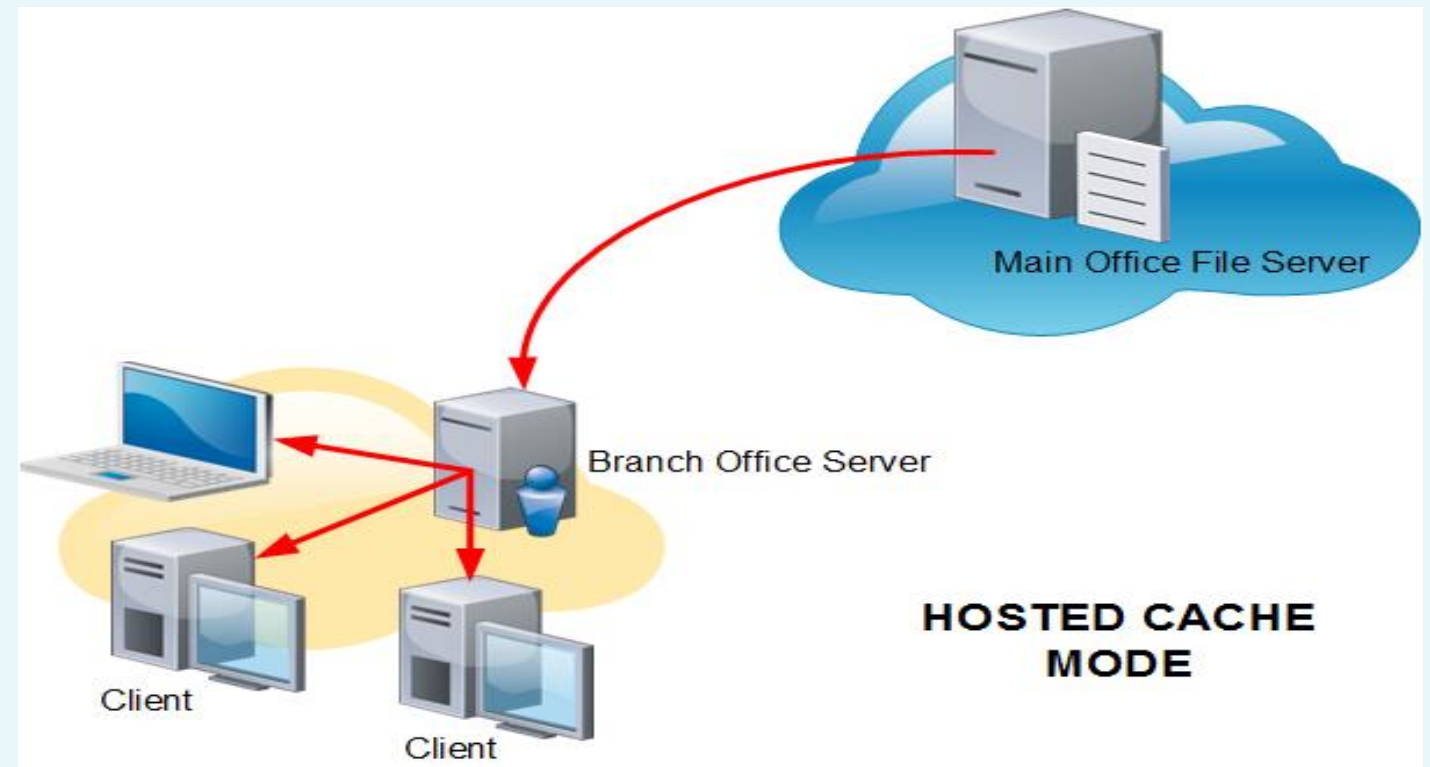


File Services

BranchCache for Network Files



A WAN network optimization technology used for caching files on computers located in local branch offices





CANTHO UNIVERSITY

Summary

- Web Service generates and transmits responses to client requests for web resources
- FTP Service exchange files and folders between two computers
- File Service provide users the ability to access corporate files from various locations