EuroSkills Test Project

IT Network Systems Administration (39)

Module B – Microsoft Environment

Submitted by:

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INTRODUCTION

The competition has a fixed start and finish time. You must decide how to best divide your time.

Please **carefully read** the following instructions!

This Test Project consists of the following documentation/files:

1. ES2025_TP39_ModuleB.docx
2. ES2025_TP39_ModuleB_Users_Skillsnet.csv
3. ES2025_TP39_ModuleB_Users_Skillsdev.json
4. ES2025_TP39_ModuleB_Shares.yaml
5. ES2025_TP39_ModuleB_SSO_App.zip

When the competition time ends, please leave your station in a running state. The assessment will be done in the state as it is. No reboot will be initiated as well as powered off machines will not be powered on!

LOGIN

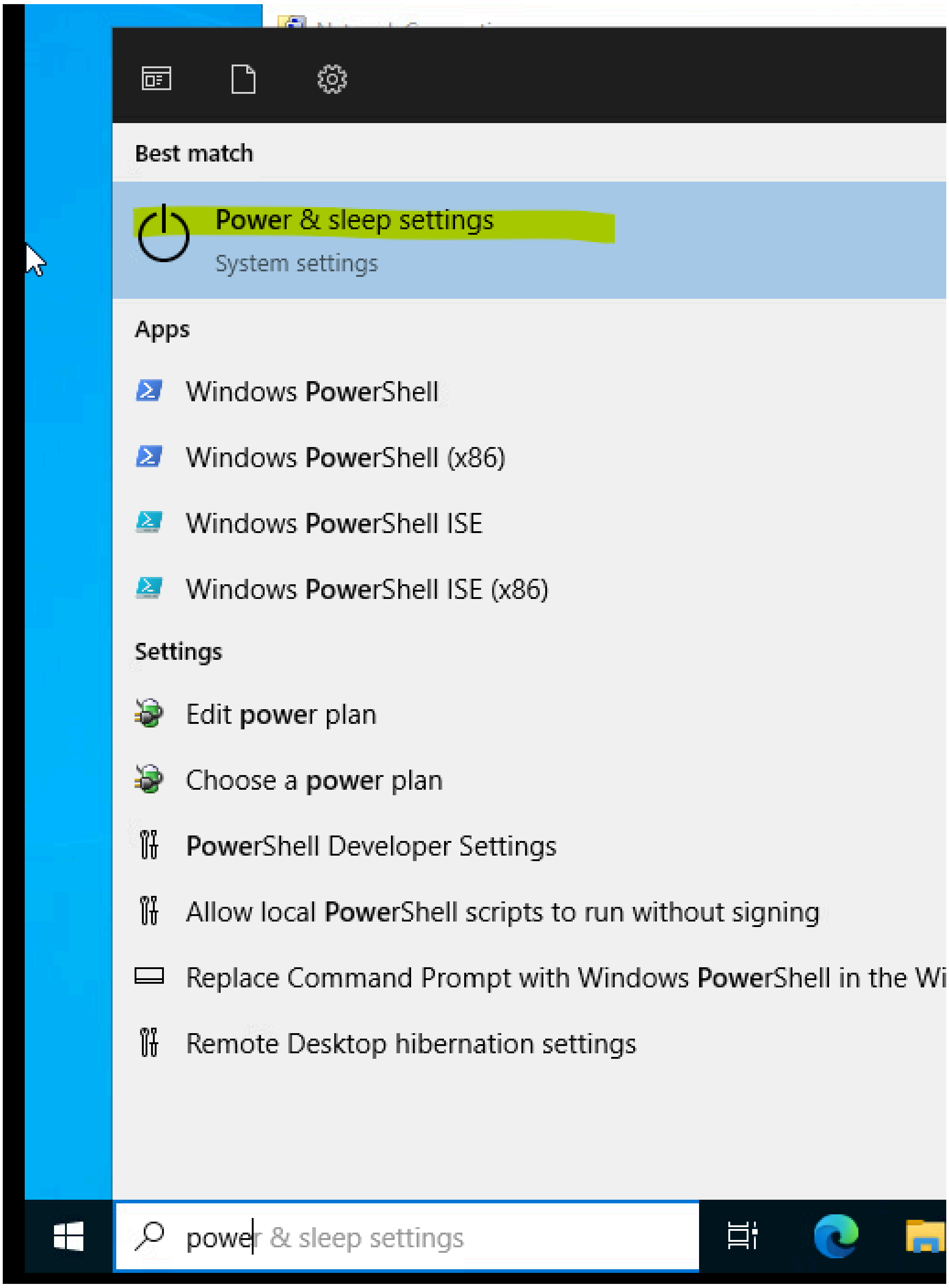
Username:	Administrator
Password:	Passw0rd!

SYSTEM CONFIGURATION

Language:	English US
Time zone:	Europe/Copenhagen
Key Map:	English US

GENERAL CONFIGURATIONS

AVOID SCREEN LOCKING



Best match

Power & sleep settings

System settings

Apps

Windows PowerShell

Windows PowerShell (x86)

Windows PowerShell ISE

Windows PowerShell ISE (x86)

Settings

Edit power plan

Choose a power plan

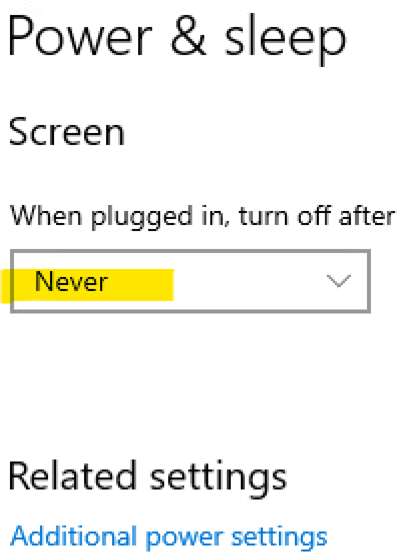
PowerShell Developer Settings

Allow local PowerShell scripts to run without signing

Replace Command Prompt with Windows PowerShell in the Wi

Remote Desktop hibernation settings

power & sleep settings



Power & sleep

Screen

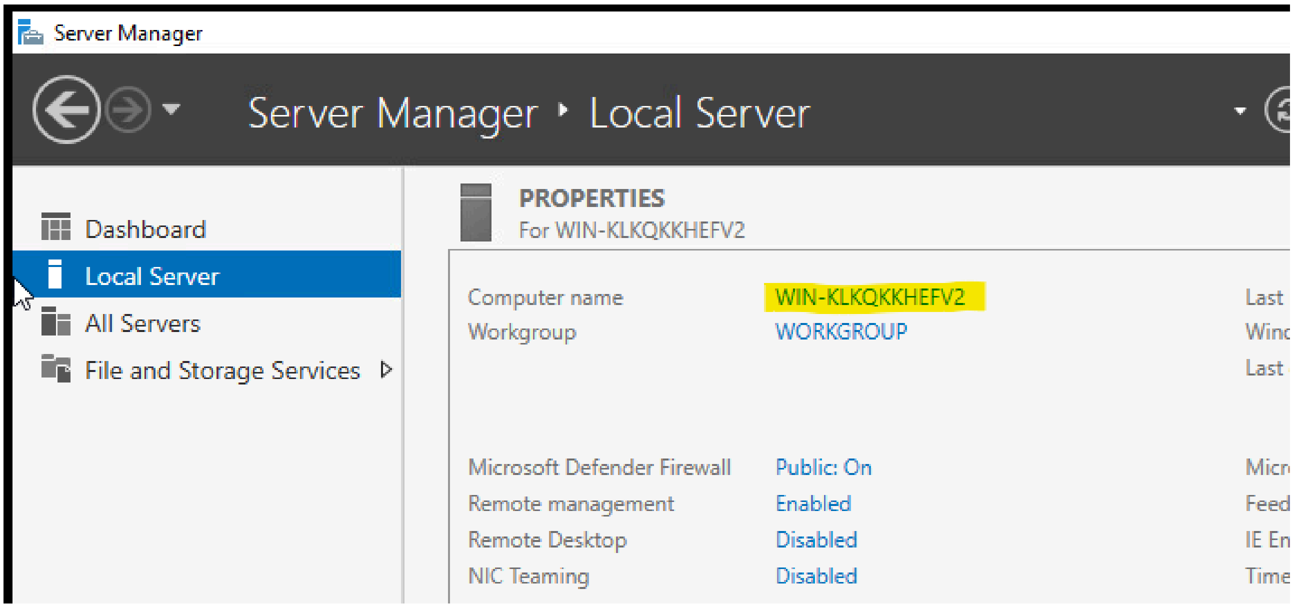
When plugged in, turn off after

Never

Related settings

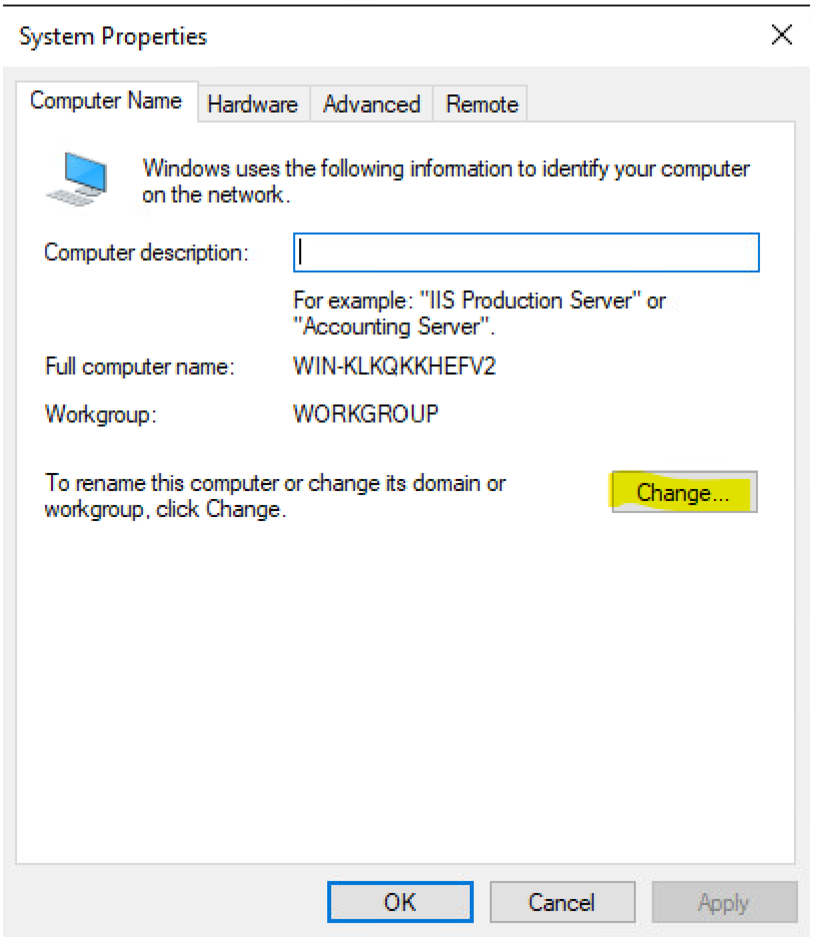
Additional power settings

HOSTNAME:



PROPERTIES
For WIN-KLKQKKHEFV2

Computer name	WIN-KLKQKKHEFV2
Workgroup	WORKGROUP
Microsoft Defender Firewall	Public: On
Remote management	Enabled
Remote Desktop	Disabled
NIC Teaming	Disabled



System Properties

Windows uses the following information to identify your computer on the network.

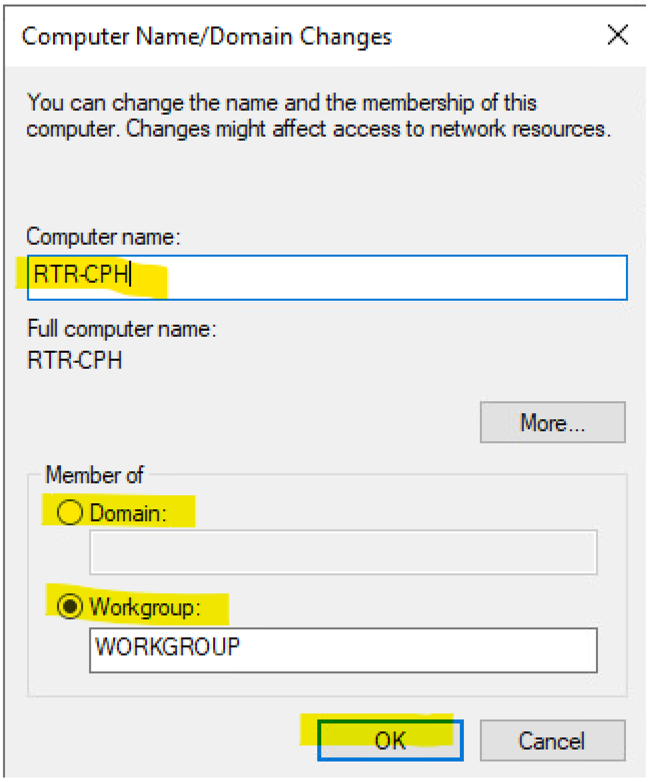
Computer description:

For example: "IIS Production Server" or "Accounting Server".

Full computer name: WIN-KLKQKKHEFV2

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.



Computer Name/Domain Changes

You can change the name and the membership of this computer. Changes might affect access to network resources.

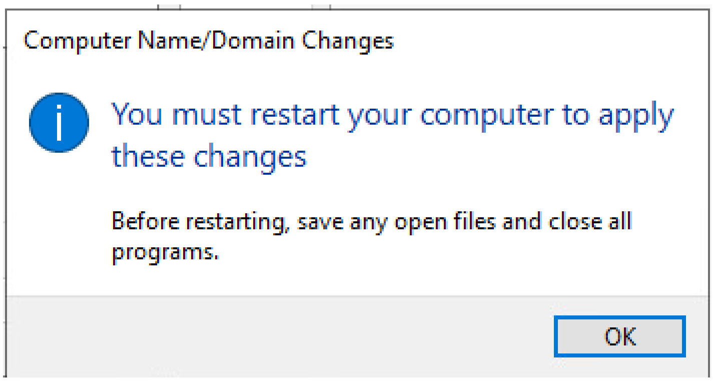
Computer name: RTR-CPH

Full computer name:
RTR-CPH

Member of

○ Domain:

● Workgroup: WORKGROUP

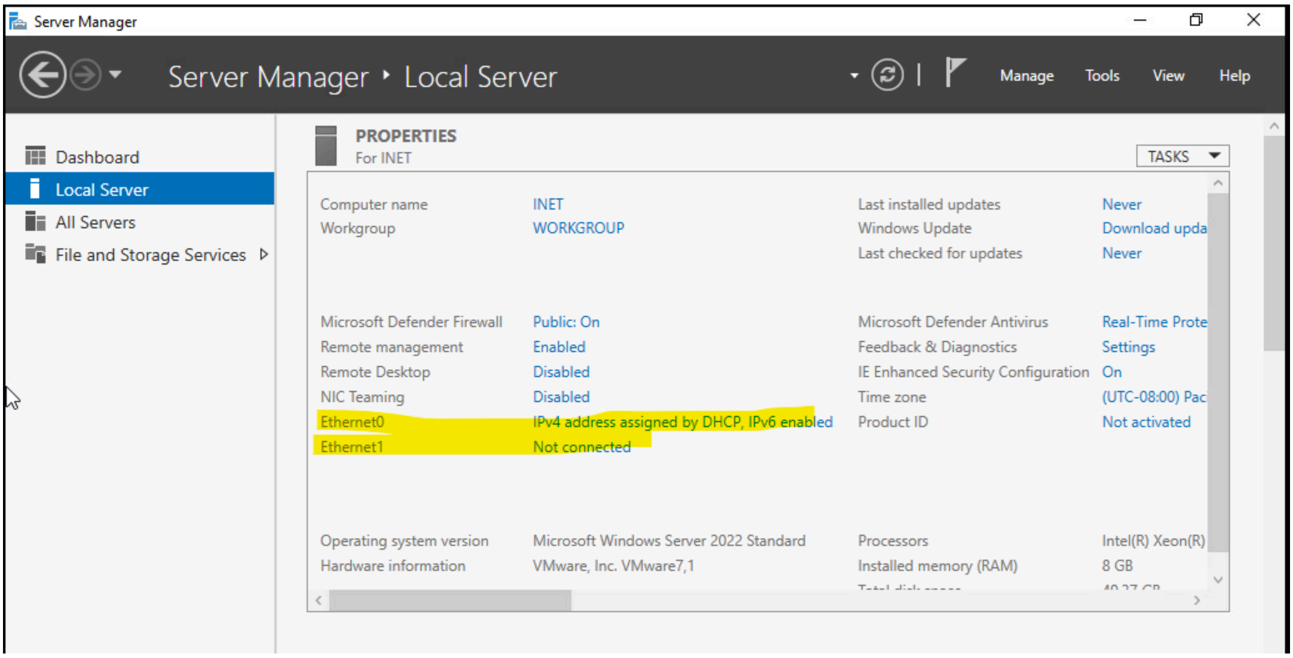


Computer Name/Domain Changes

You must restart your computer to apply these changes

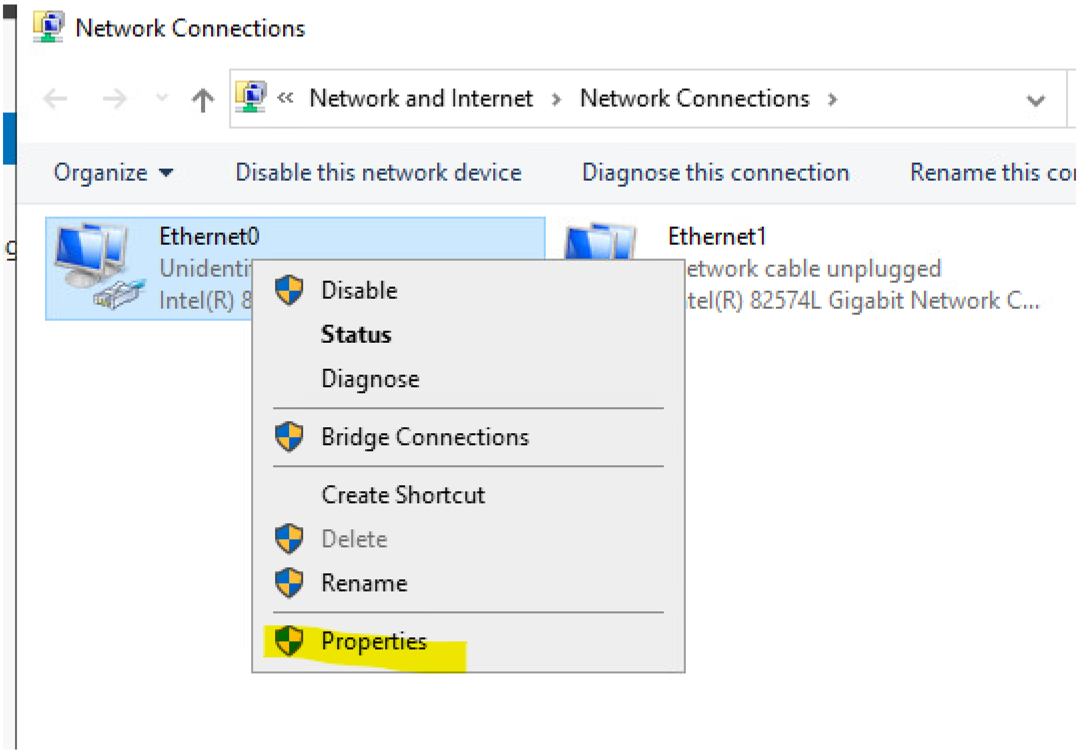
Before restarting, save any open files and close all programs.

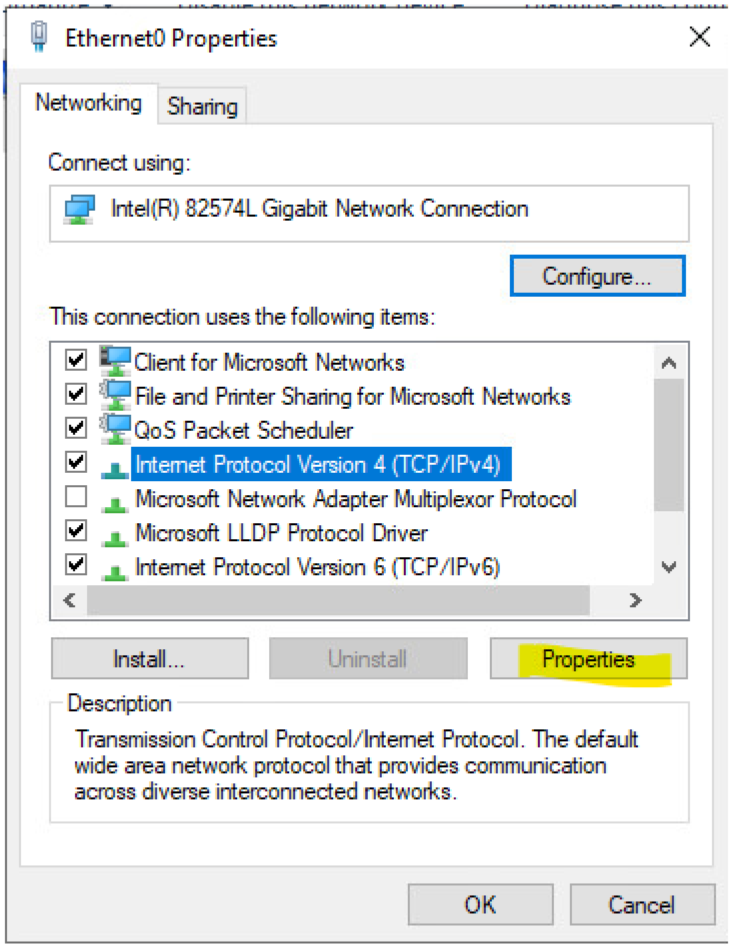
NETWORK CONFIGURATION - GUI



PROPERTIES
For INET

Computer name	INET	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Download upda
		Last checked for updates	Never
Microsoft Defender Firewall	Public: On	Microsoft Defender Antivirus	Real-Time Prote
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC-08:00) Pac
Ethernet0	IPv4 address assigned by DHCP, IPv6 enabled	Product ID	Not activated
Ethernet1	Not connected		
Operating system version	Microsoft Windows Server 2022 Standard	Processors	Intel(R) Xeon(R)
Hardware information	VMware, Inc. VMware7,1	Installed memory (RAM)	8 GB





Connect using:

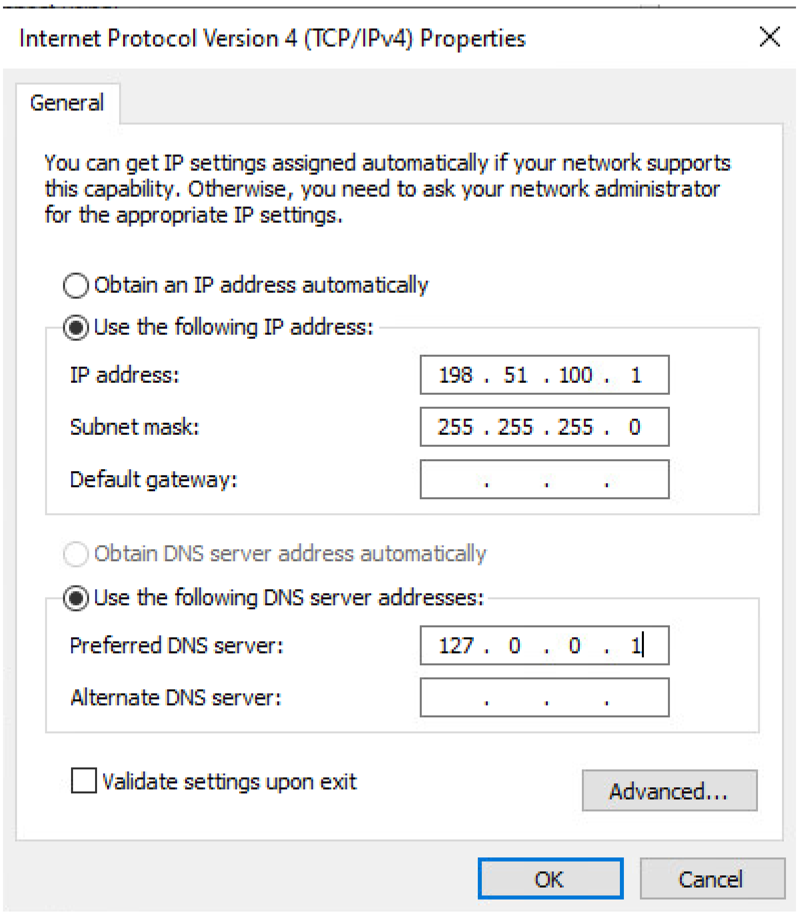
Intel(R) 82574L Gigabit Network Connection

This connection uses the following items:

- ☑ Client for Microsoft Networks
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- □ Microsoft Network Adapter Multiplexor Protocol
- ☑ Microsoft LLDP Protocol Driver
- ☑ Internet Protocol Version 6 (TCP/IPv6)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.



Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 198 . 51 . 100 . 1

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

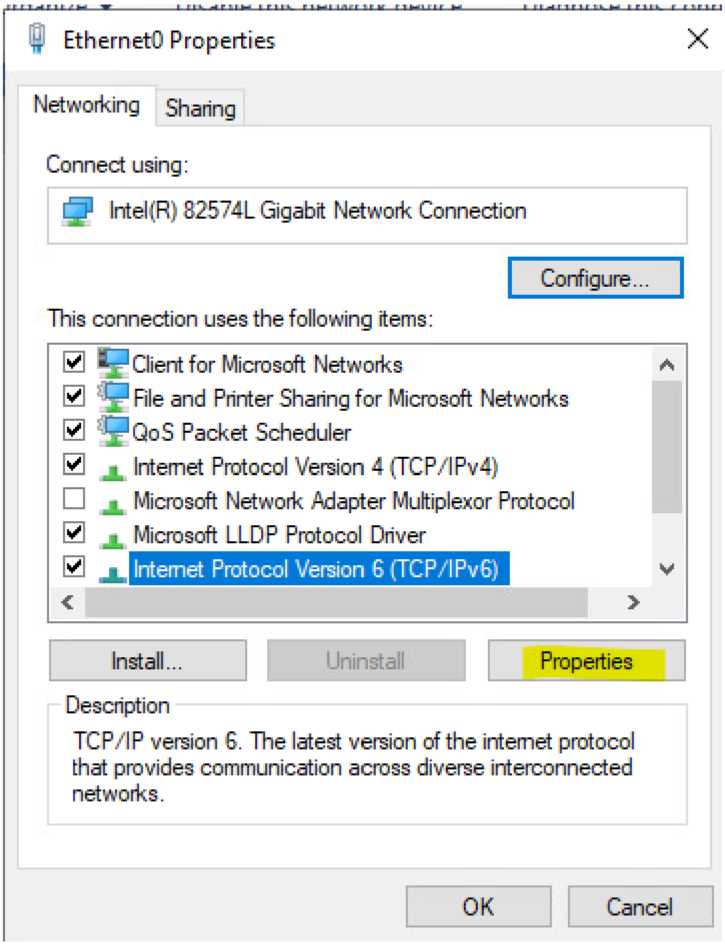
○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: 127 . 0 . 0 . 1

Alternate DNS server: . . .

□ Validate settings upon exit



Ethernet0 Properties

Networking | Sharing

Connect using:

Intel(R) 82574L Gigabit Network Connection

Configure...

This connection uses the following items:

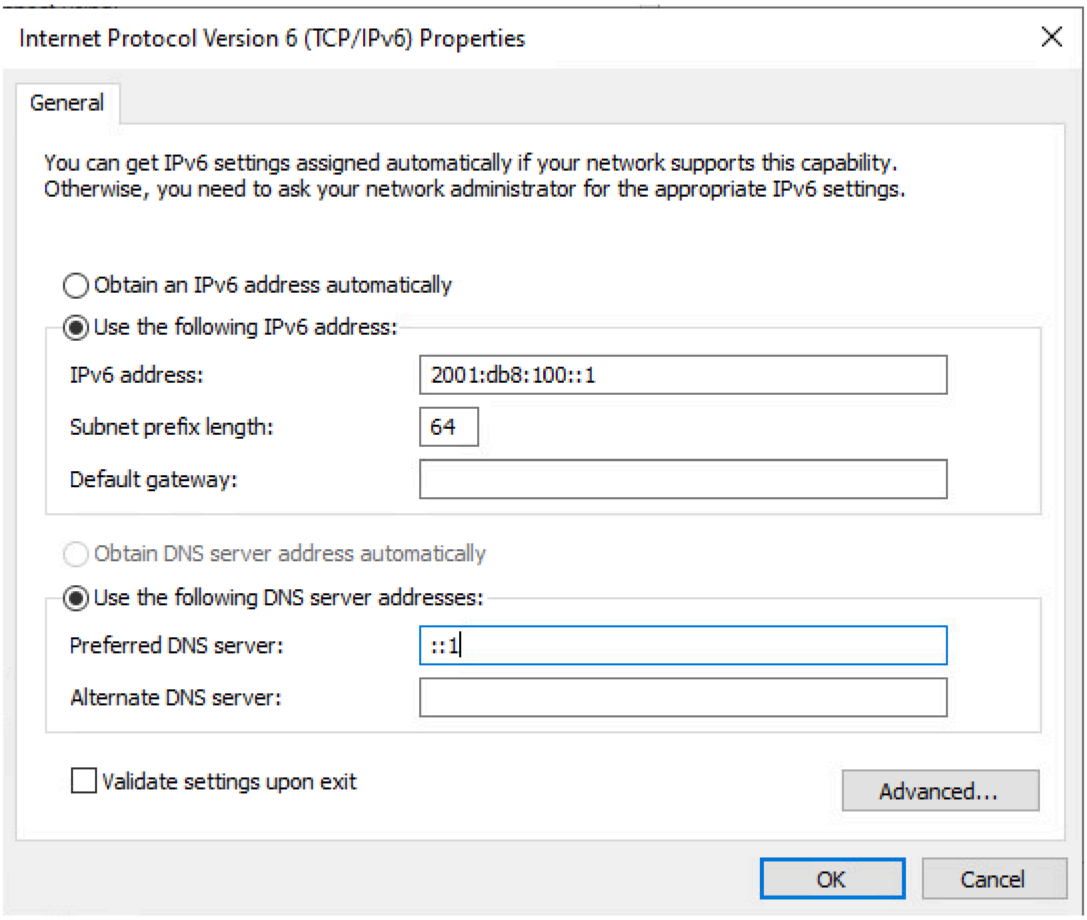
- ☑ Client for Microsoft Networks
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☐ Microsoft Network Adapter Multiplexor Protocol
- ☑ Microsoft LLDP Protocol Driver
- ☑ Internet Protocol Version 6 (TCP/IPv6)

Install... | Uninstall | Properties

Description

TCP/IP version 6. The latest version of the internet protocol that provides communication across diverse interconnected networks.

OK | Cancel



Internet Protocol Version 6 (TCP/IPv6) Properties

General

You can get IPv6 settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IPv6 settings.

○ Obtain an IPv6 address automatically

● Use the following IPv6 address:

IPv6 address: 2001:db8:100::1

Subnet prefix length: 64

Default gateway:

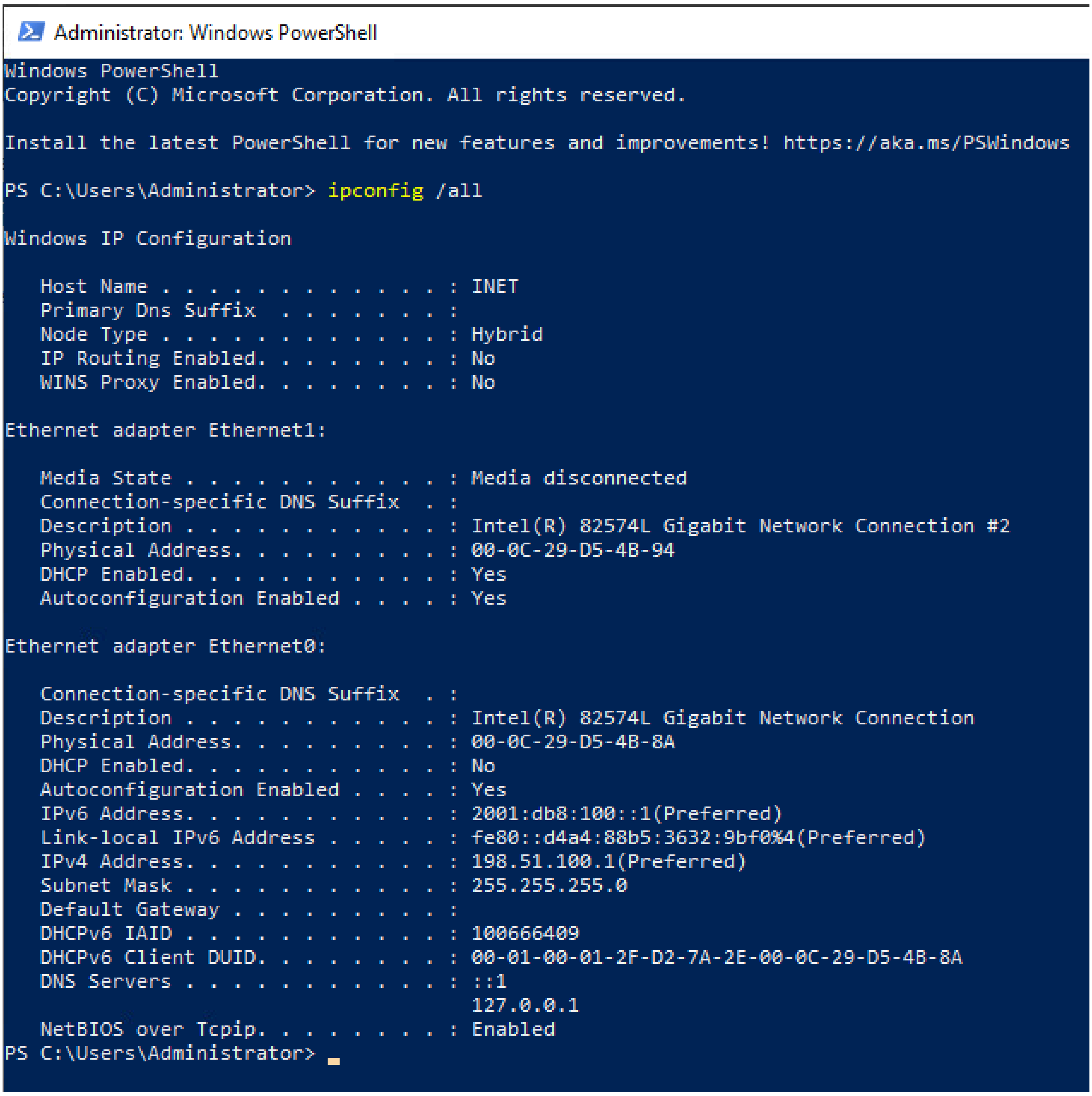
○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: ::1

Alternate DNS server:

□ Validate settings upon exit

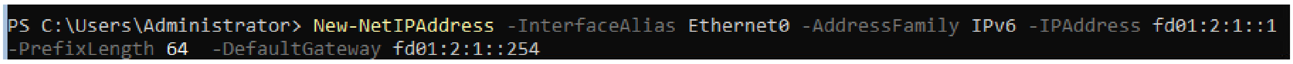


```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Administrator> ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : INET
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) 82574L Gigabit Network Connection #2
   Physical Address. . . . . . . . . : 00-0C-29-D5-4B-94
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) 82574L Gigabit Network Connection
   Physical Address. . . . . . . . . : 00-0C-29-D5-4B-8A
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   IPv6 Address. . . . . . . . . . . : 2001:db8:100::1(Preferred)
   Link-local IPv6 Address . . . . . : fe80::d4a4:88b5:3632:9bf0%4(Preferred)
   IPv4 Address. . . . . . . . . . . : 198.51.100.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 100666409
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2F-D2-7A-2E-00-0C-29-D5-4B-8A
   DNS Servers . . . . . . . . . . . : ::1
                                       127.0.0.1
   NetBIOS over Tcpip. . . . . . . . : Enabled
PS C:\Users\Administrator> _
```

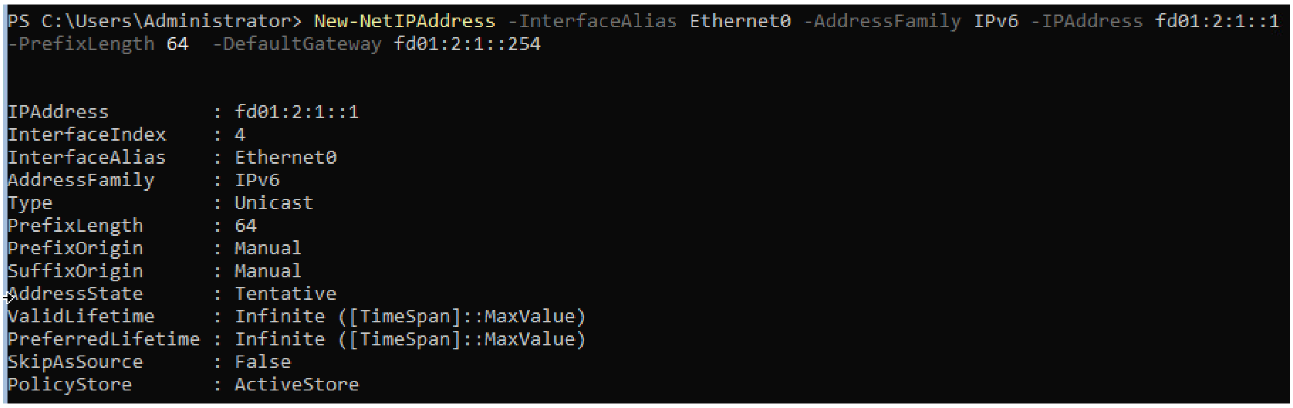
NETWORK CONFIGURATION - CORE

IPv4 via menu
IPv6 via Powershell

New-NetIPAddress -InterfaceAlias Ethernet0 -AddressFamily IPv6 -IPAddress fd01:2:1::1 -PrefixLength 64 -DefaultGateway fd01:2:1::254

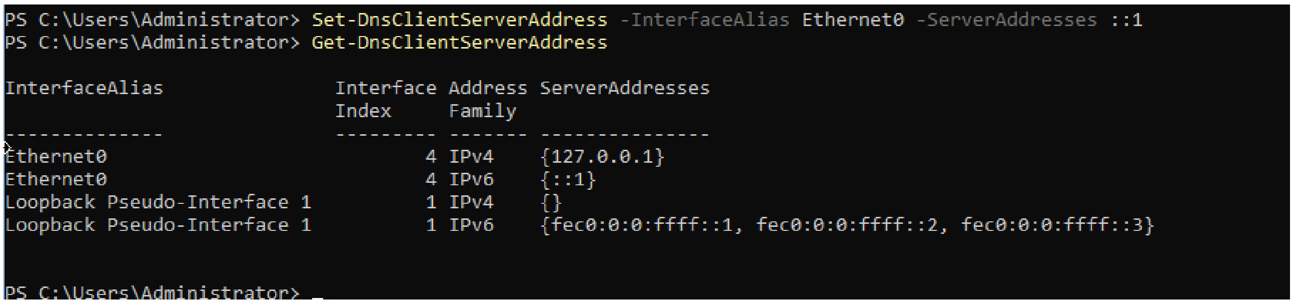


```
PS C:\Users\Administrator> New-NetIPAddress -InterfaceAlias Ethernet0 -AddressFamily IPv6 -IPAddress fd01:2:1::1
-PrefixLength 64  -DefaultGateway fd01:2:1::254
```



```
PS C:\Users\Administrator> New-NetIPAddress -InterfaceAlias Ethernet0 -AddressFamily IPv6 -IPAddress fd01:2:1::1
-PrefixLength 64  -DefaultGateway fd01:2:1::254


IPAddress         : fd01:2:1::1
InterfaceIndex    : 4
InterfaceAlias    : Ethernet0
AddressFamily     : IPv6
Type              : Unicast
PrefixLength      : 64
PrefixOrigin      : Manual
SuffixOrigin      : Manual
AddressState      : Tentative
ValidLifetime     : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
SkipAsSource      : False
PolicyStore       : ActiveStore
```

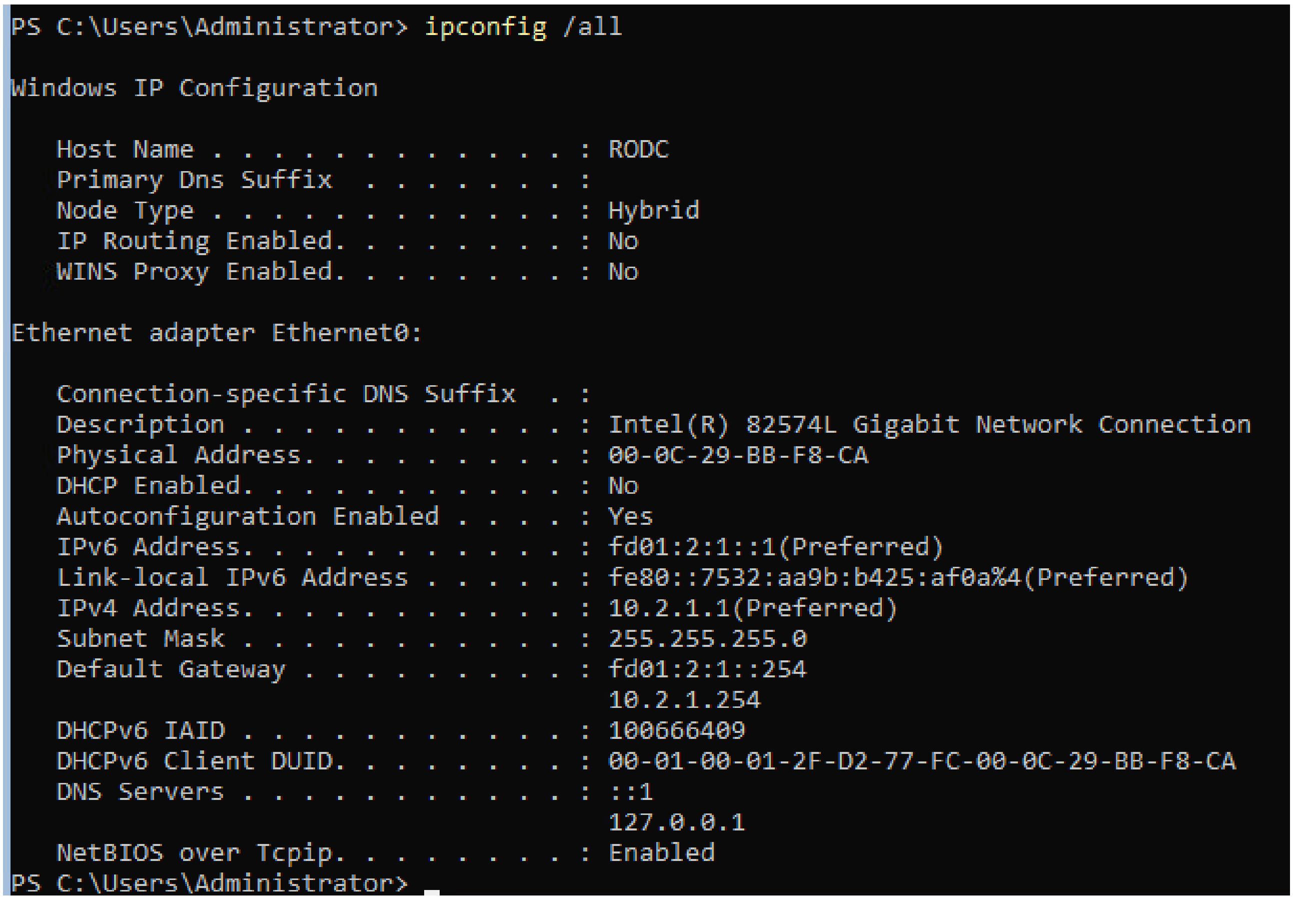
Set-DnsClientServerAddress -InterfaceAlias Ethernet0 -ServerAddresses ::1



```
PS C:\Users\Administrator> Set-DnsClientServerAddress -InterfaceAlias Ethernet0 -ServerAddresses ::1
PS C:\Users\Administrator> Get-DnsClientServerAddress

InterfaceAlias               Interface Address ServerAddresses
                             Index     Family
--------------               --------- ------- ---------------
Ethernet0                            4 IPv4    {127.0.0.1}
Ethernet0                            4 IPv6    {::1}
Loopback Pseudo-Interface 1          1 IPv4    {}
Loopback Pseudo-Interface 1          1 IPv6    {fec0:0:0:ffff::1, fec0:0:0:ffff::2, fec0:0:0:ffff::3}


PS C:\Users\Administrator> _
```

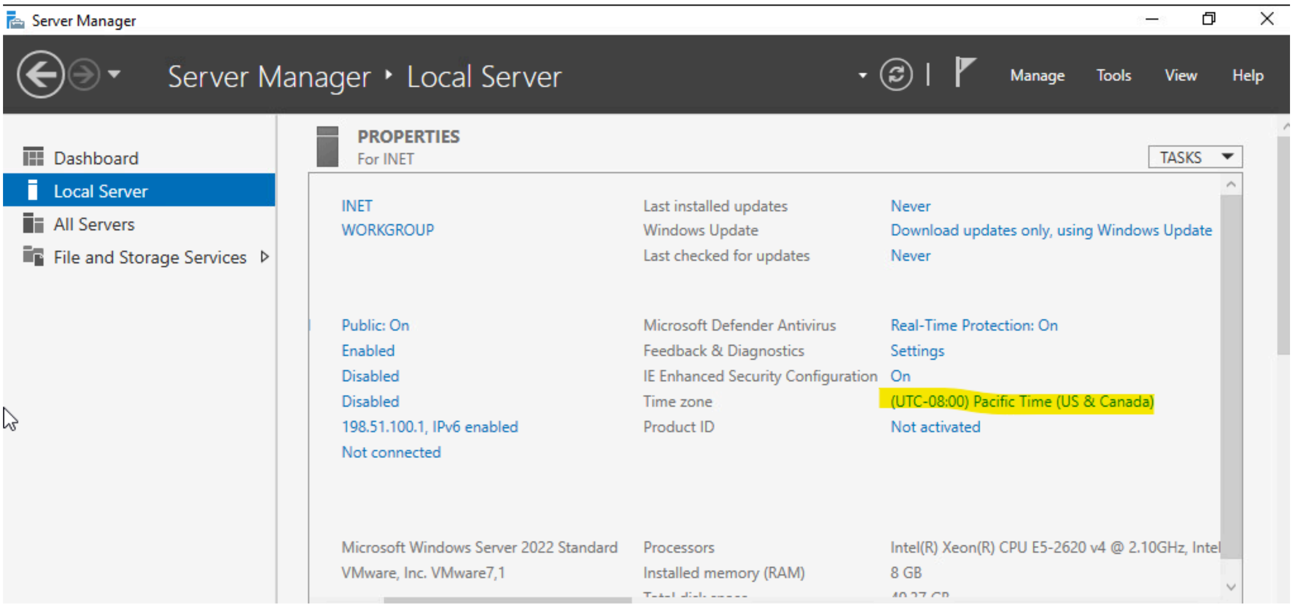
checking

ipconfig /all



```
PS C:\Users\Administrator> ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : RODC
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) 82574L Gigabit Network Connection
   Physical Address. . . . . . . . . : 00-0C-29-BB-F8-CA
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   IPv6 Address. . . . . . . . . . . : fd01:2:1::1(Preferred)
   Link-local IPv6 Address . . . . . : fe80::7532:aa9b:b425:af0a%4(Preferred)
   IPv4 Address. . . . . . . . . . . : 10.2.1.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fd01:2:1::254
                                       10.2.1.254
   DHCPv6 IAID . . . . . . . . . . . : 100666409
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-2F-D2-77-FC-00-0C-29-BB-F8-CA
   DNS Servers . . . . . . . . . . . : ::1
                                       127.0.0.1
   NetBIOS over Tcpip. . . . . . . . : Enabled
PS C:\Users\Administrator>
```

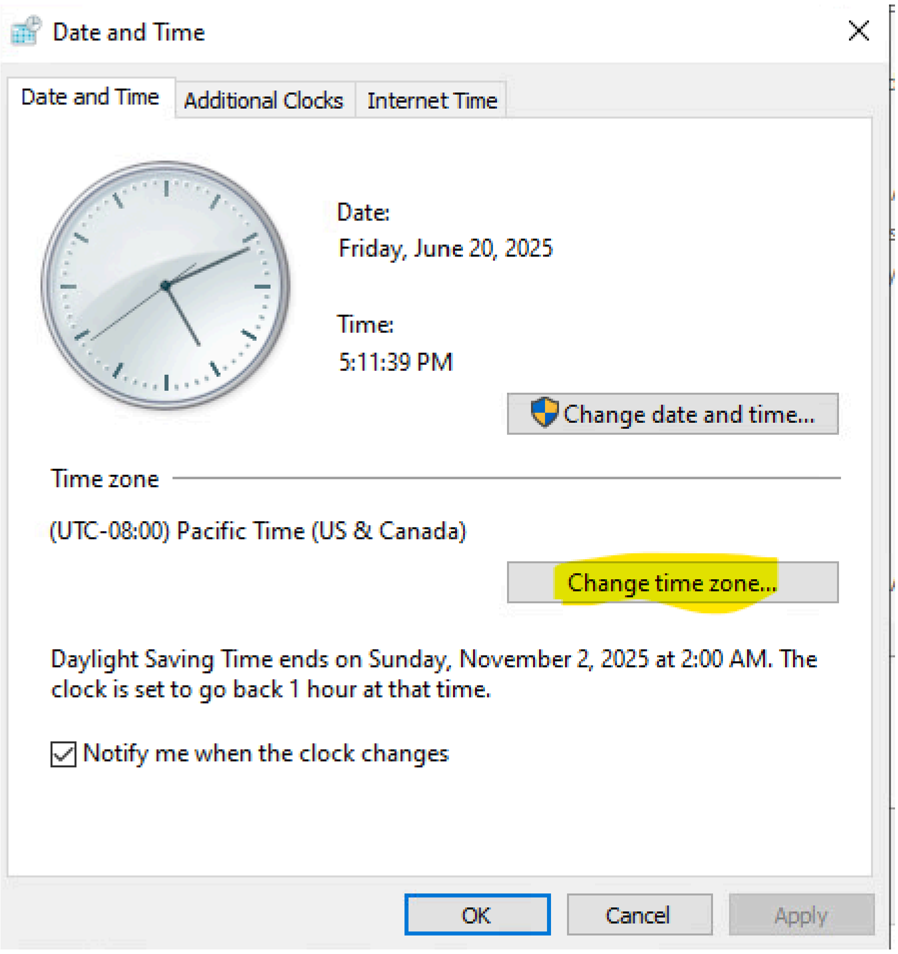
TIMEZONE



PROPERTIES
For INET

INET
WORKGROUP

	Last installed updates	Never
	Windows Update	Download updates only, using Windows Update
	Last checked for updates	Never
Public: On	Microsoft Defender Antivirus	Real-Time Protection: On
Enabled	Feedback & Diagnostics	Settings
Disabled	IE Enhanced Security Configuration	On
Disabled	Time zone	(UTC-08:00) Pacific Time (US & Canada)
198.51.100.1, IPv6 enabled	Product ID	Not activated
Not connected		
Microsoft Windows Server 2022 Standard	Processors	Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz, Intel
VMware, Inc. VMware7,1	Installed memory (RAM)	8 GB



Date:
Friday, June 20, 2025

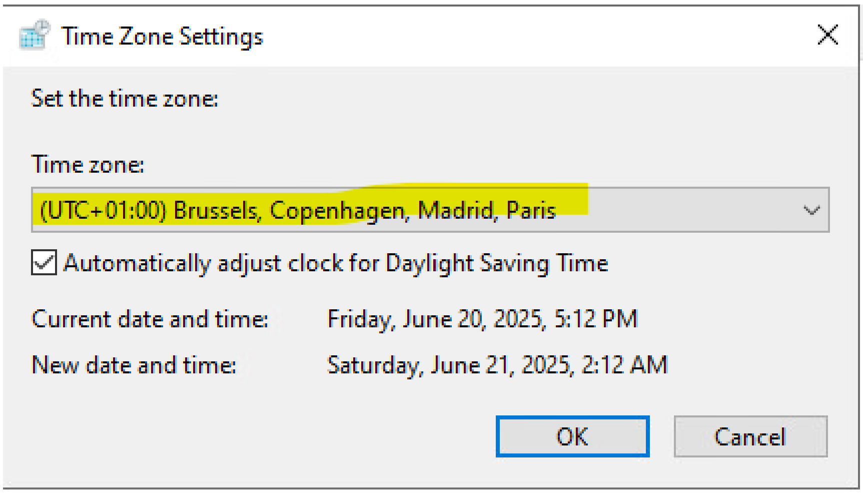
Time:
5:11:39 PM

Time zone

(UTC-08:00) Pacific Time (US & Canada)

Daylight Saving Time ends on Sunday, November 2, 2025 at 2:00 AM. The clock is set to go back 1 hour at that time.

☑ Notify me when the clock changes



Set the time zone:

Time zone:
(UTC+01:00) Brussels, Copenhagen, Madrid, Paris

☑ Automatically adjust clock for Daylight Saving Time

Current date and time: Friday, June 20, 2025, 5:12 PM

New date and time: Saturday, June 21, 2025, 2:12 AM

DESCRIPTION OF PROJECT AND TASKS

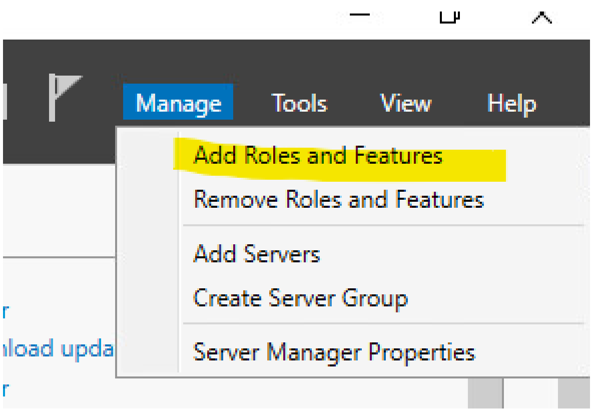
This project simulates a Microsoft-based enterprise network with two independent domains. You are tasked with deploying services such as Active Directory, DNS, certificate services, Group Policies, backups, automation via Ansible, and secure connectivity between sites. The environment must follow best practices and reflect real-world enterprise infrastructure.

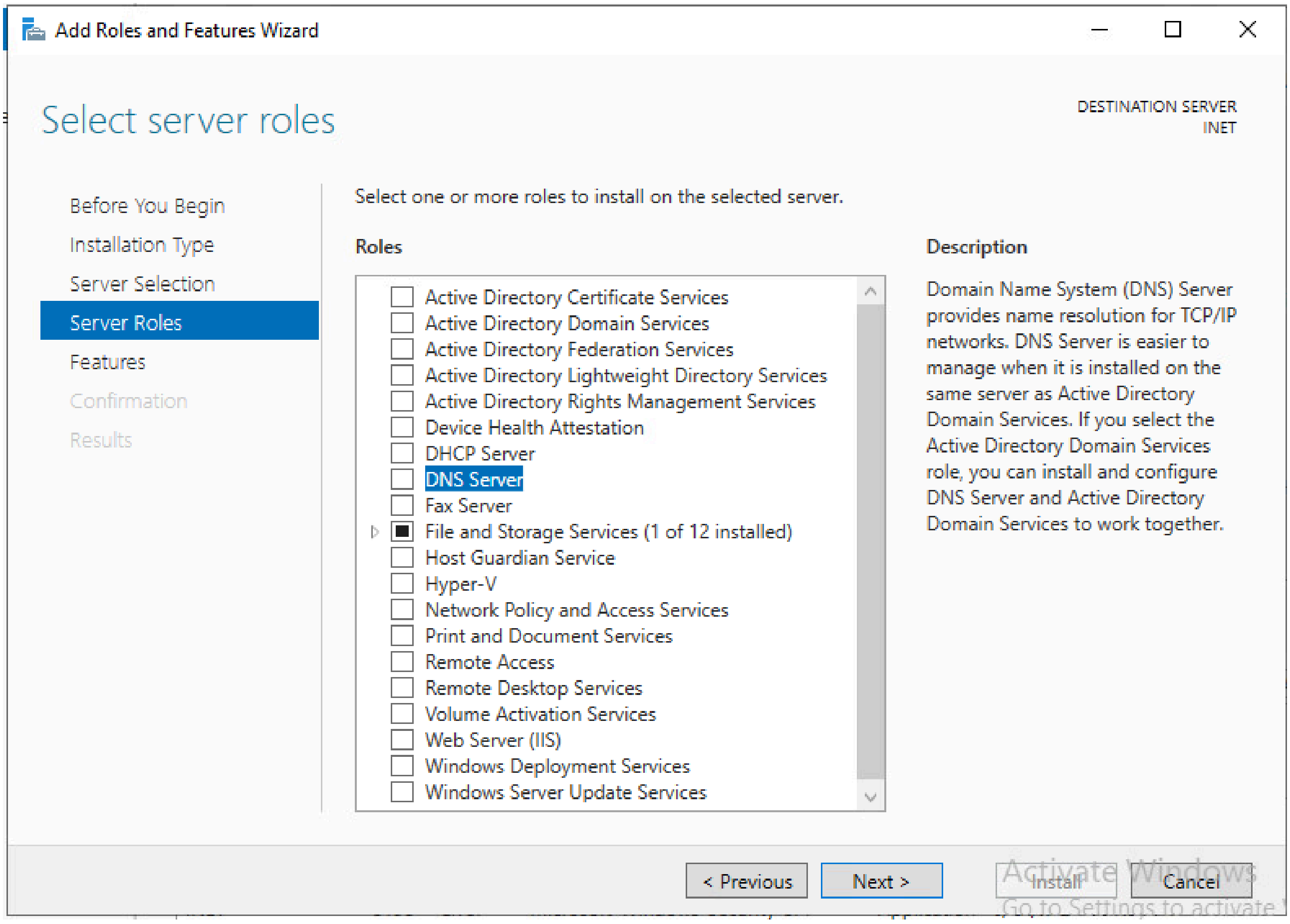
INET

Role: Acts as external ISP – provides DNS, SMTP.
Server is preconfigured:

INET - Task1: DNS server

1. Authoritative Nameserver for **nordicbackup.net** and **skillspublic.dk** domain with records according to **Appendix E**





Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
INET

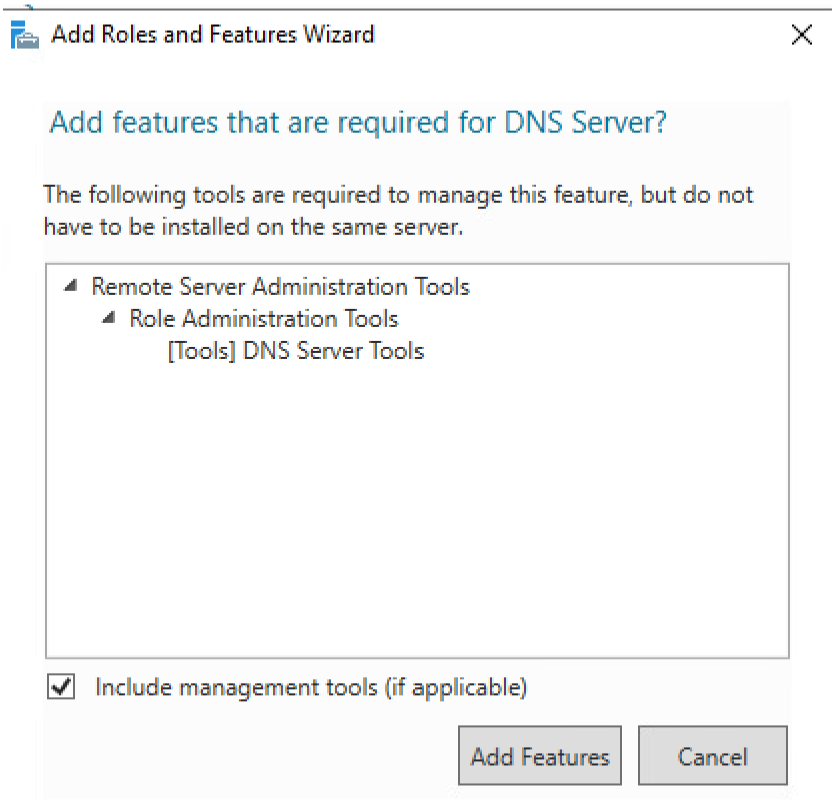
Select one or more roles to install on the selected server.

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)
- □ 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)
- □ Windows Deployment Services
- □ Windows Server Update Services

Description

Domain Name System (DNS) Server provides name resolution for TCP/IP networks. DNS Server is easier to manage when it is installed on the same server as Active Directory Domain Services. If you select the Active Directory Domain Services role, you can install and configure DNS Server and Active Directory Domain Services to work together.



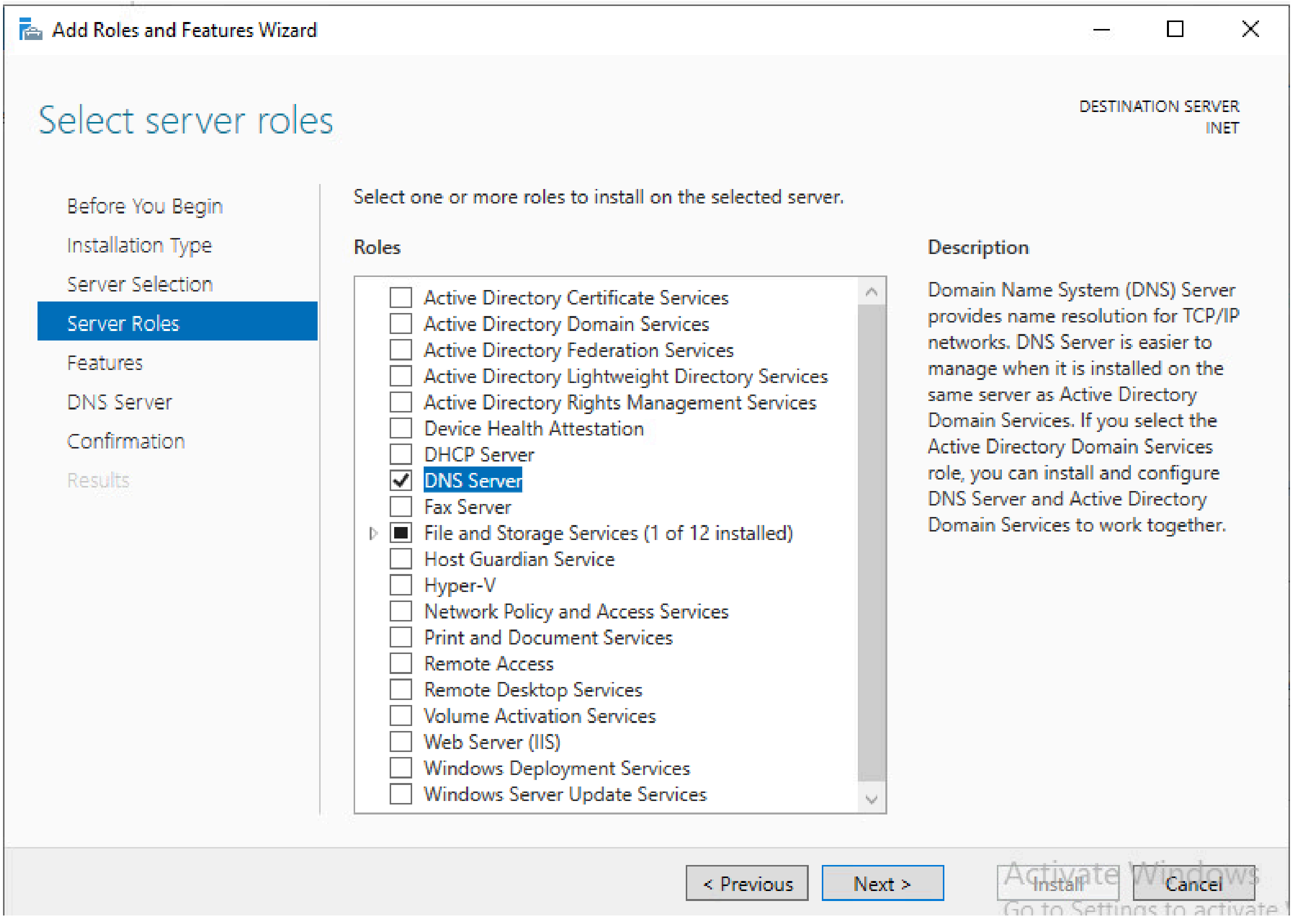
Add Roles and Features Wizard

Add features that are required for DNS Server?

The following tools are required to manage this feature, but do not have to be installed on the same server.

- Remote Server Administration Tools
  - Role Administration Tools
    - [Tools] DNS Server Tools

☑ Include management tools (if applicable)



Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
INET

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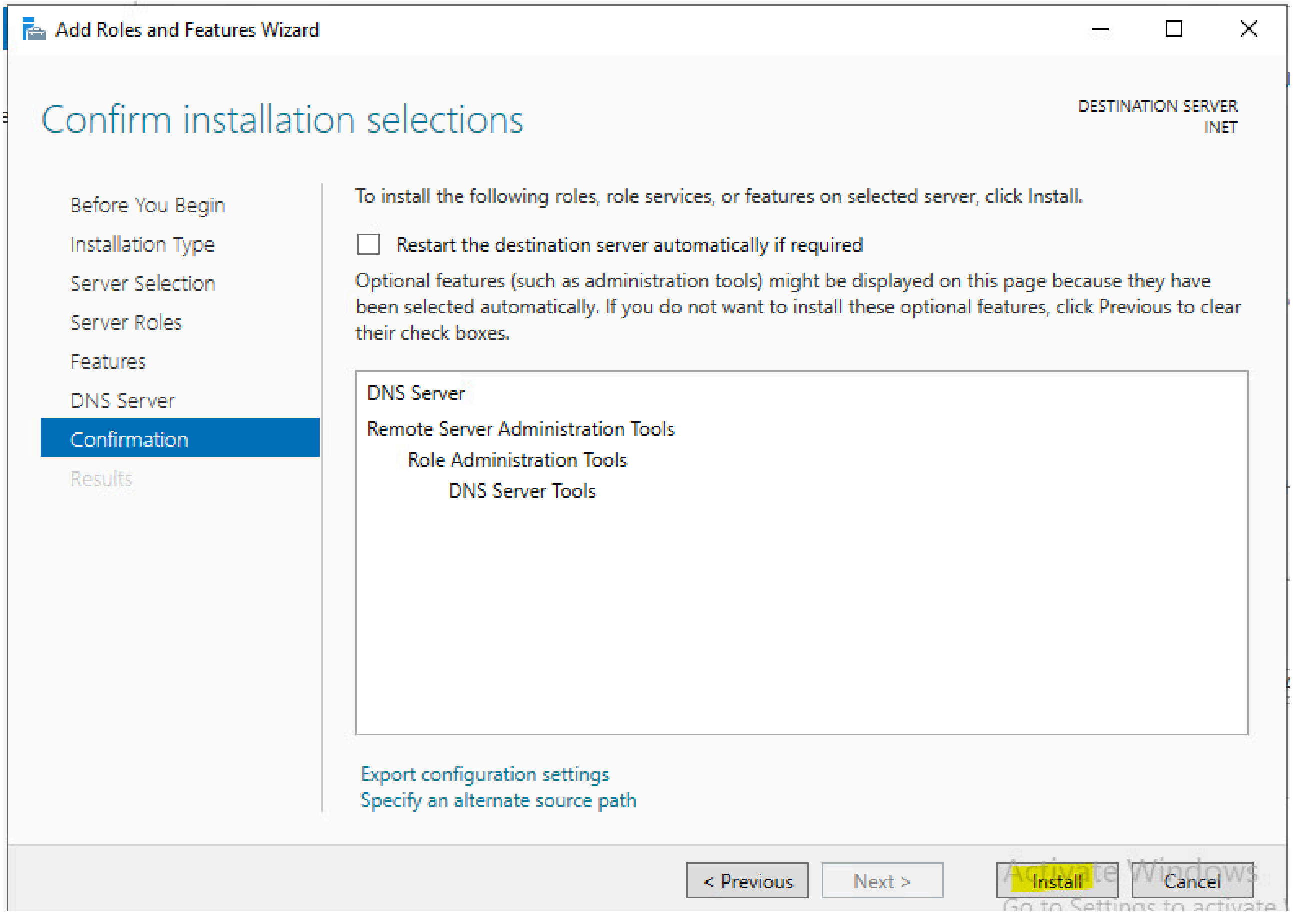
https://extratrucos.com/informatica-tecla-suprimir



Confirm installation selections

DESTINATION SERVER
INET

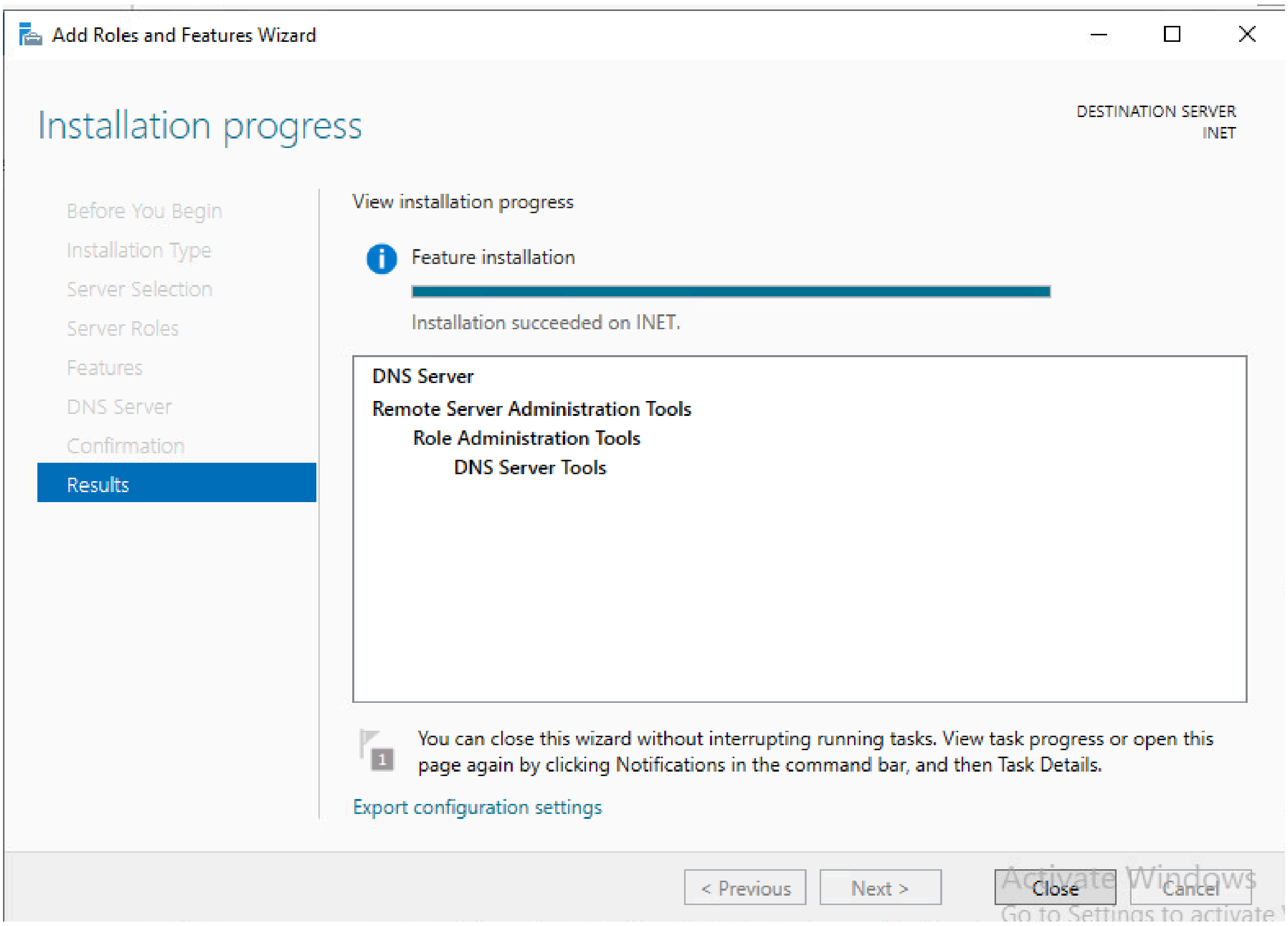
To install the following roles, role services, or features on selected server, click Install.

□ Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

DNS Server
Remote Server Administration Tools
Role Administration Tools
DNS Server Tools

Export configuration settings
Specify an alternate source path
< Previous
Next >
Install
Cancel
Activate Windows
Go to Settings to activate

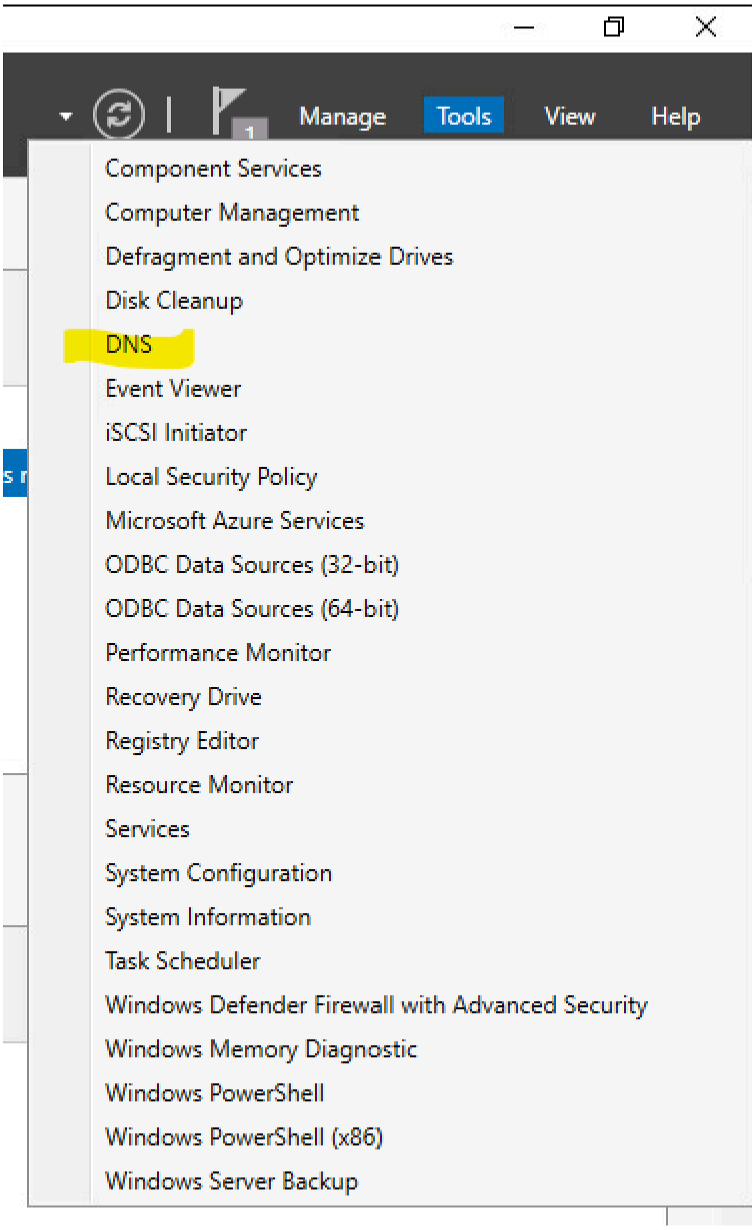


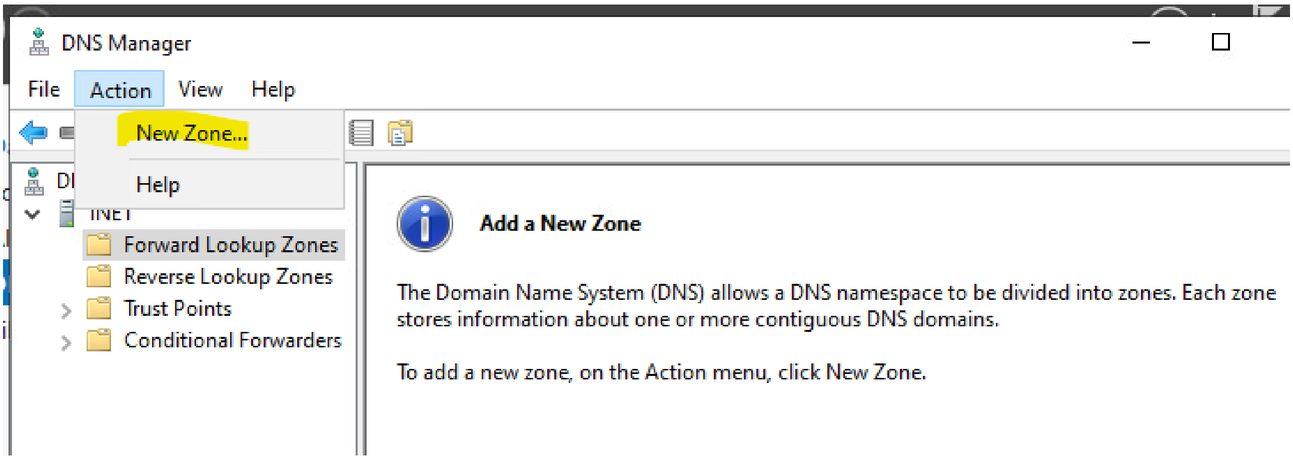
Installation succeeded on INET.

DNS Server
Remote Server Administration Tools
Role Administration Tools
DNS Server Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings



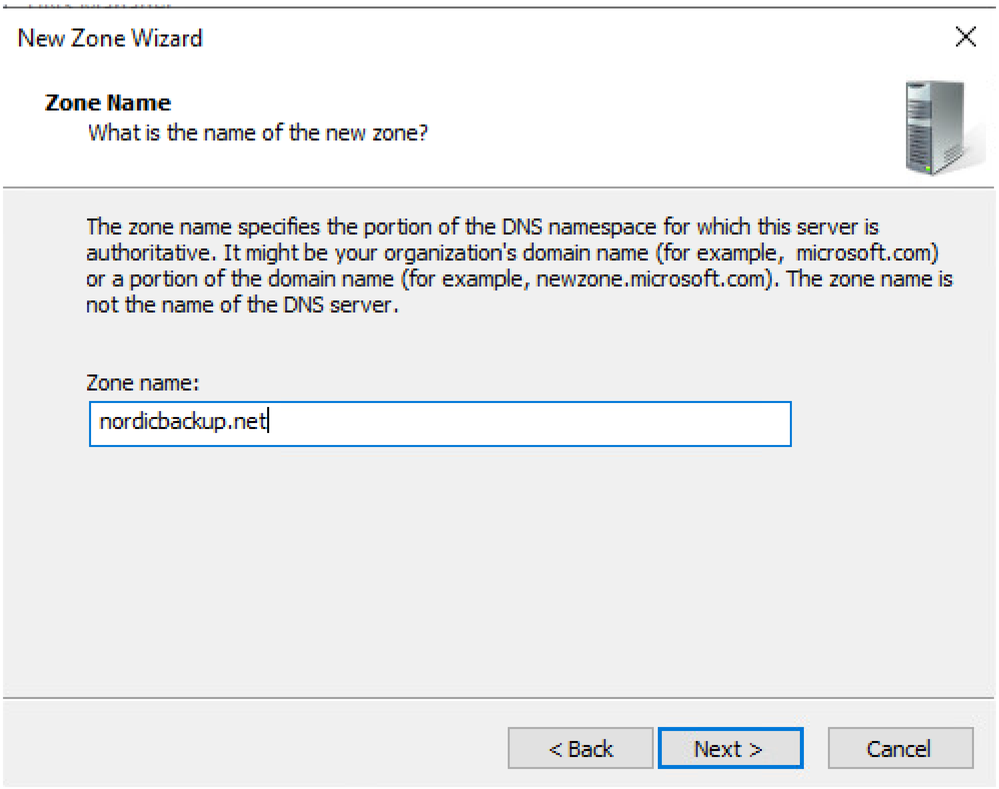


Add a New Zone

The Domain Name System (DNS) allows a DNS namespace to be divided into zones. Each zone stores information about one or more contiguous DNS domains.

To add a new zone, on the Action menu, click New Zone.

https://extratrucos.com/informatica-tecla-suprimir



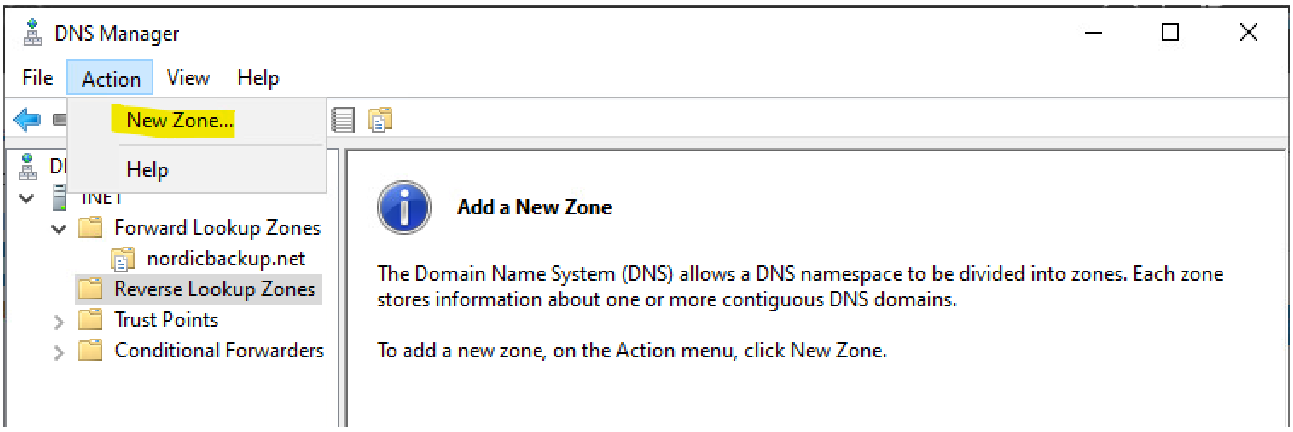
New Zone Wizard

Zone Name

What is the name of the new zone?

The zone name specifies the portion of the DNS namespace for which this server is authoritative. It might be your organization's domain name (for example, microsoft.com) or a portion of the domain name (for example, newzone.microsoft.com). The zone name is not the name of the DNS server.

Zone name: nordicbackup.net

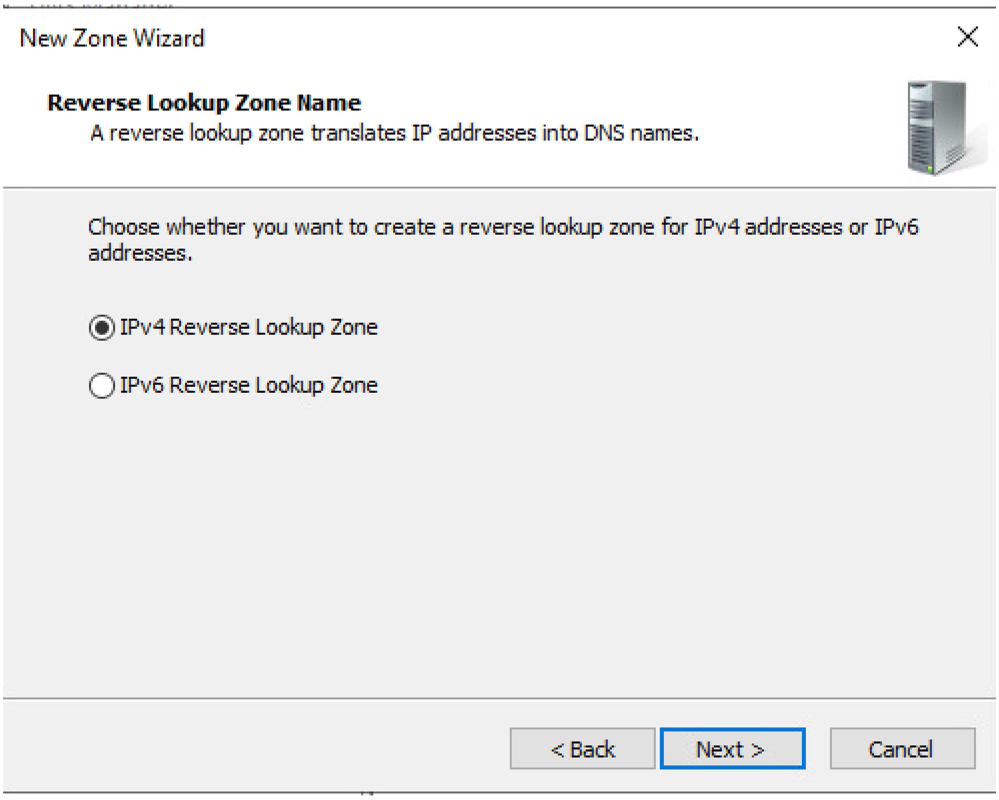


DNS Manager

Add a New Zone

The Domain Name System (DNS) allows a DNS namespace to be divided into zones. Each zone stores information about one or more contiguous DNS domains.

To add a new zone, on the Action menu, click New Zone.



New Zone Wizard

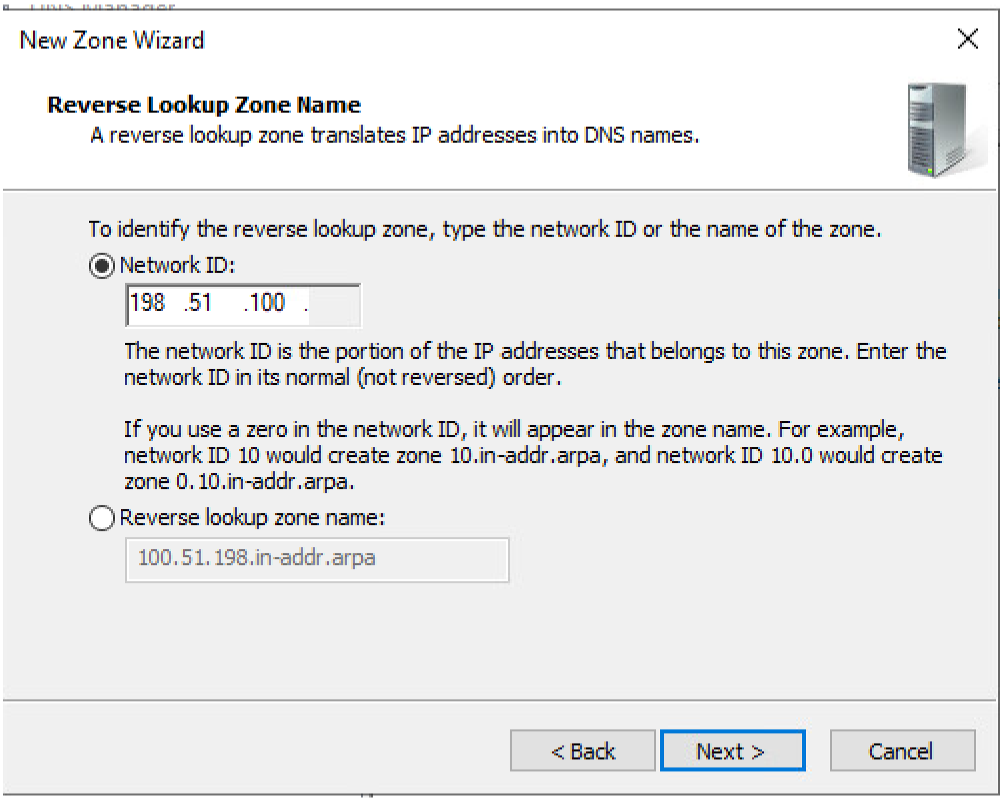
Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.

Choose whether you want to create a reverse lookup zone for IPv4 addresses or IPv6 addresses.

● IPv4 Reverse Lookup Zone

○ IPv6 Reverse Lookup Zone



New Zone Wizard

Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.

To identify the reverse lookup zone, type the network ID or the name of the zone.

● Network ID:

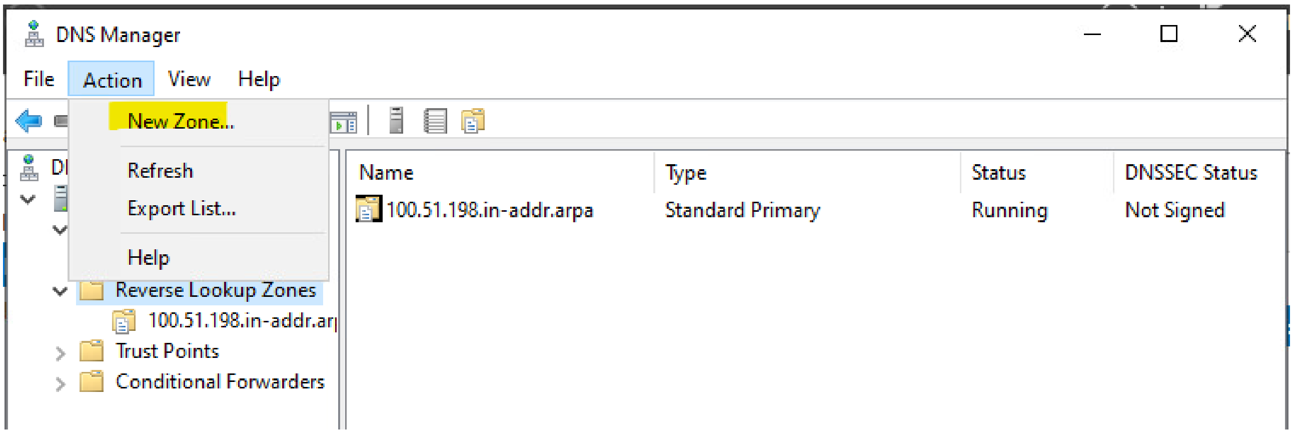
198 .51 .100 .

The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order.

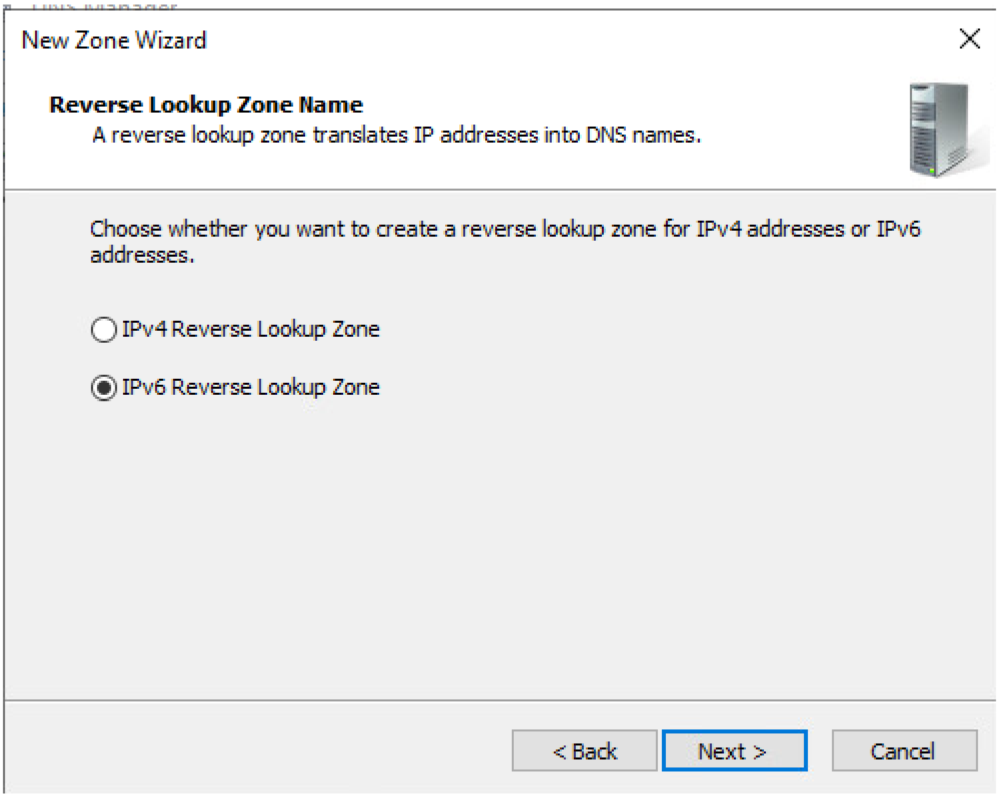
If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create zone 0.10.in-addr.arpa.

○ Reverse lookup zone name:

100.51.198.in-addr.arpa



Name	Type	Status	DNSSEC Status
100.51.198.in-addr.arpa	Standard Primary	Running	Not Signed



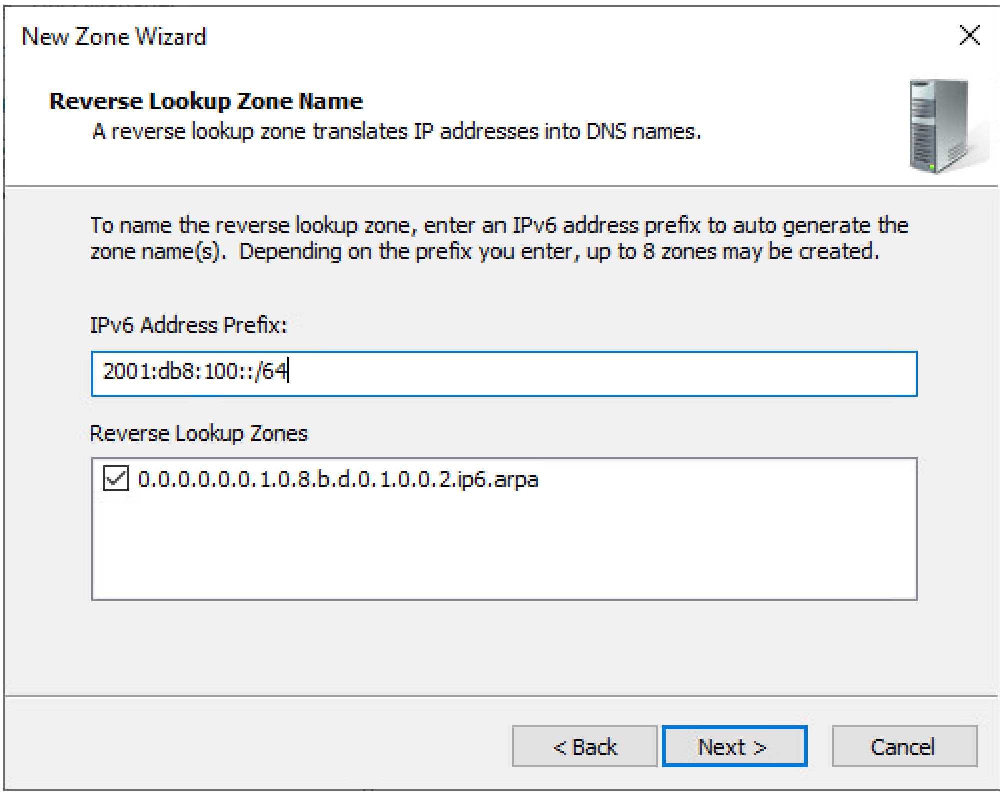
Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.

Choose whether you want to create a reverse lookup zone for IPv4 addresses or IPv6 addresses.

○ IPv4 Reverse Lookup Zone

● IPv6 Reverse Lookup Zone



New Zone Wizard

Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.

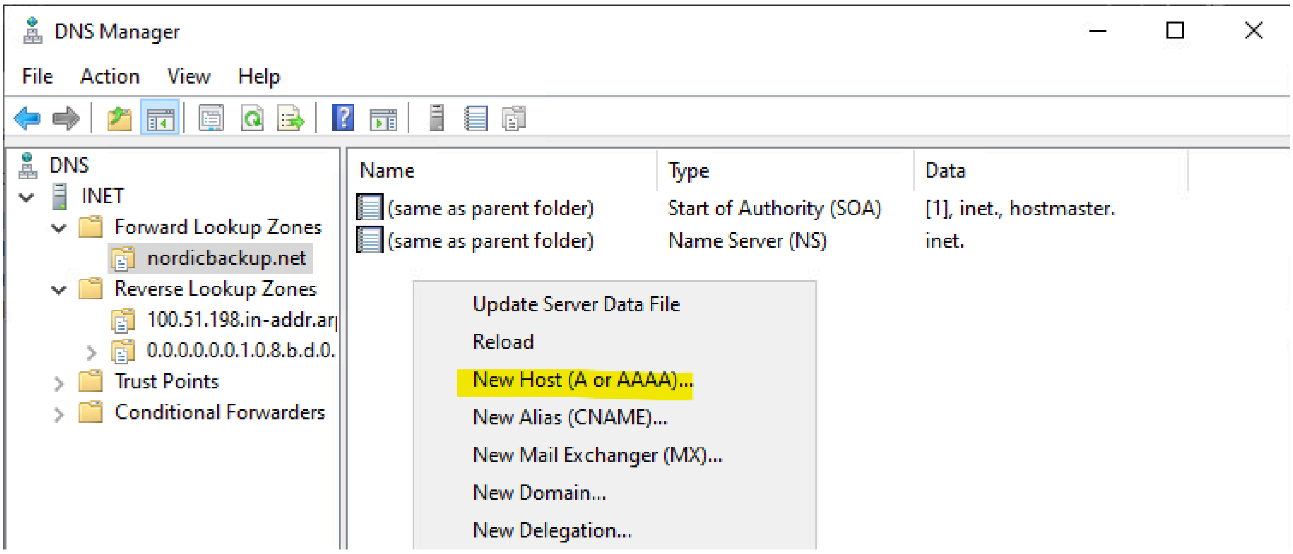
To name the reverse lookup zone, enter an IPv6 address prefix to auto generate the zone name(s). Depending on the prefix you enter, up to 8 zones may be created.

IPv6 Address Prefix:

2001:db8:100::/64

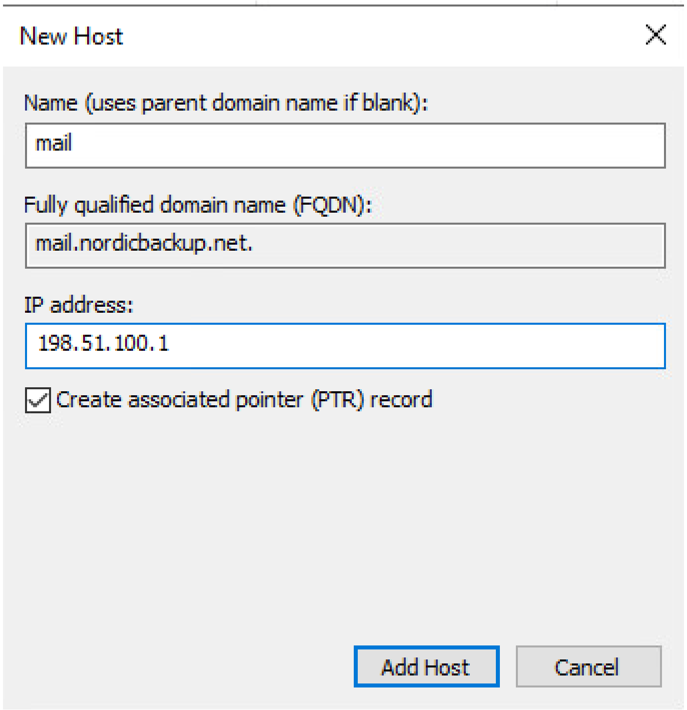
Reverse Lookup Zones

☑ 0.0.0.0.0.0.1.0.8.b.d.0.1.0.0.2.ip6.arpa



DNS Manager

Name	Type	Data
(same as parent folder)	Start of Authority (SOA)	[1], inet., hostmaster.
(same as parent folder)	Name Server (NS)	inet.



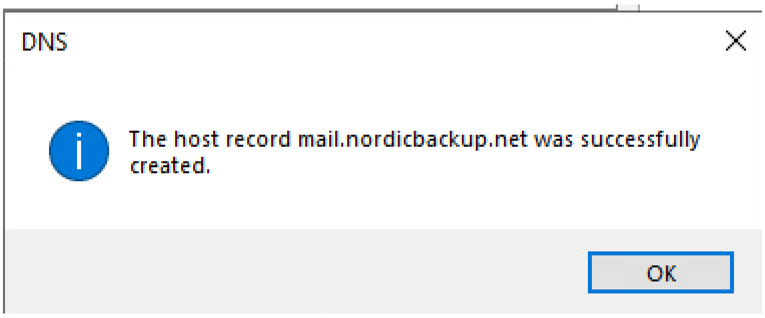
New Host

Name (uses parent domain name if blank): mail

Fully qualified domain name (FQDN): mail.nordicbackup.net.

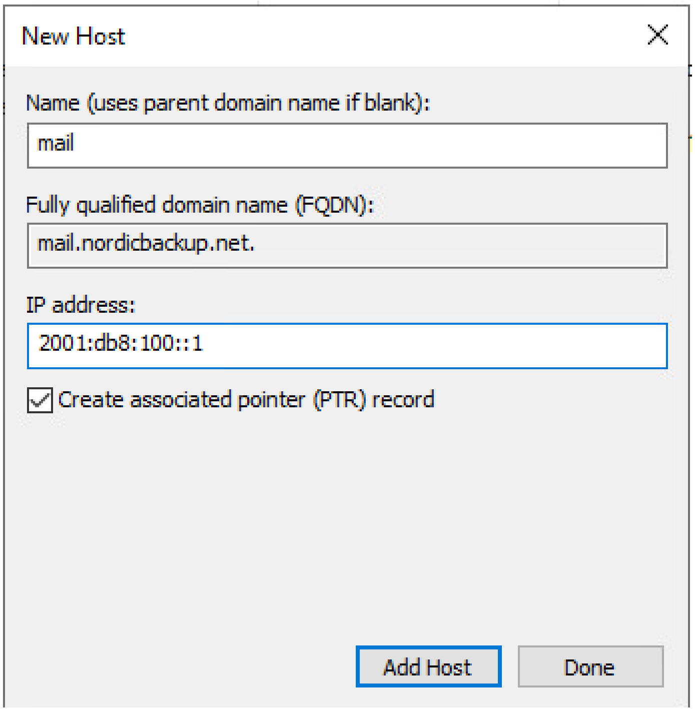
IP address: 198.51.100.1

☑ Create associated pointer (PTR) record



DNS

The host record mail.nordicbackup.net was successfully created.



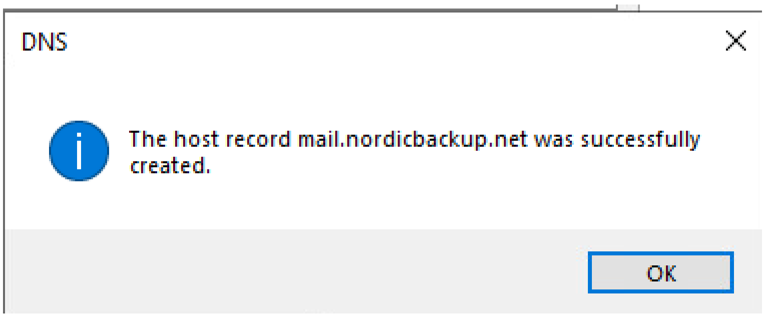
New Host

Name (uses parent domain name if blank): mail

Fully qualified domain name (FQDN): mail.nordicbackup.net.

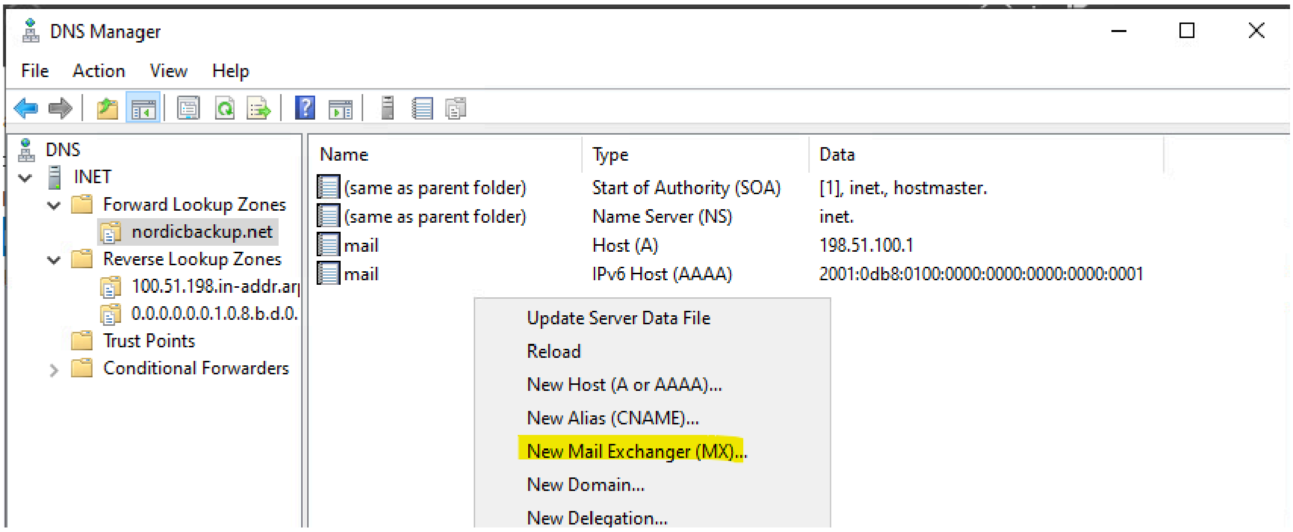
IP address: 2001:db8:100::1

☑ Create associated pointer (PTR) record



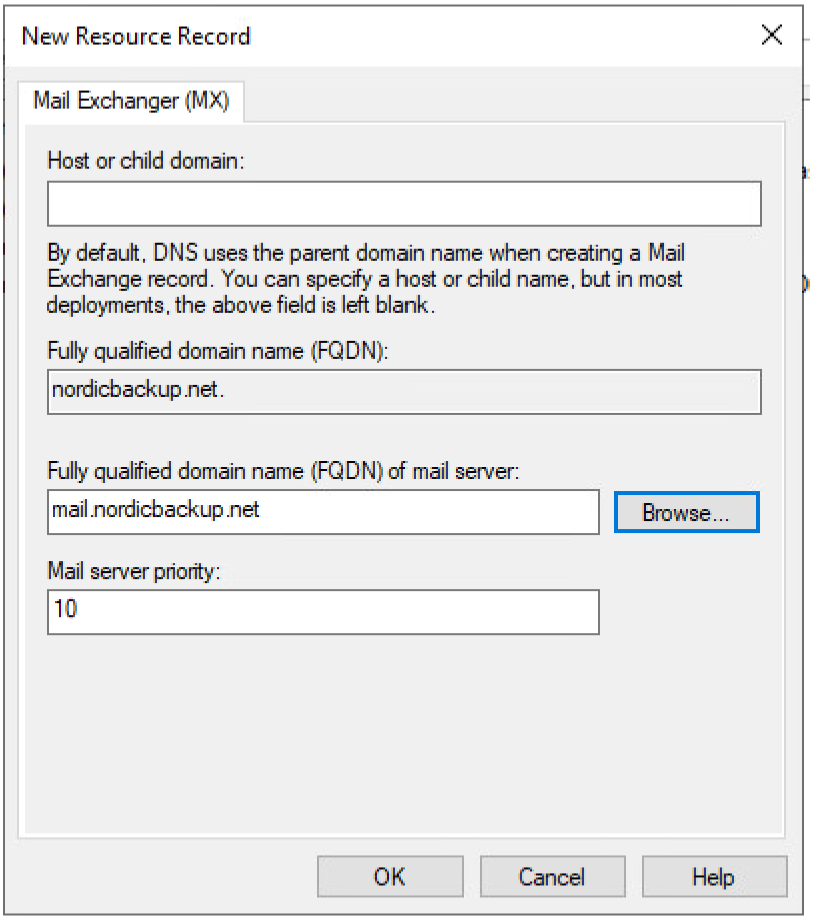
DNS

The host record mail.nordicbackup.net was successfully created.



DNS Manager

Name	Type	Data
(same as parent folder)	Start of Authority (SOA)	[1], inet., hostmaster.
(same as parent folder)	Name Server (NS)	inet.
mail	Host (A)	198.51.100.1
mail	IPv6 Host (AAAA)	2001:0db8:0100:0000:0000:0000:0000:0001



New Resource Record

Mail Exchanger (MX)

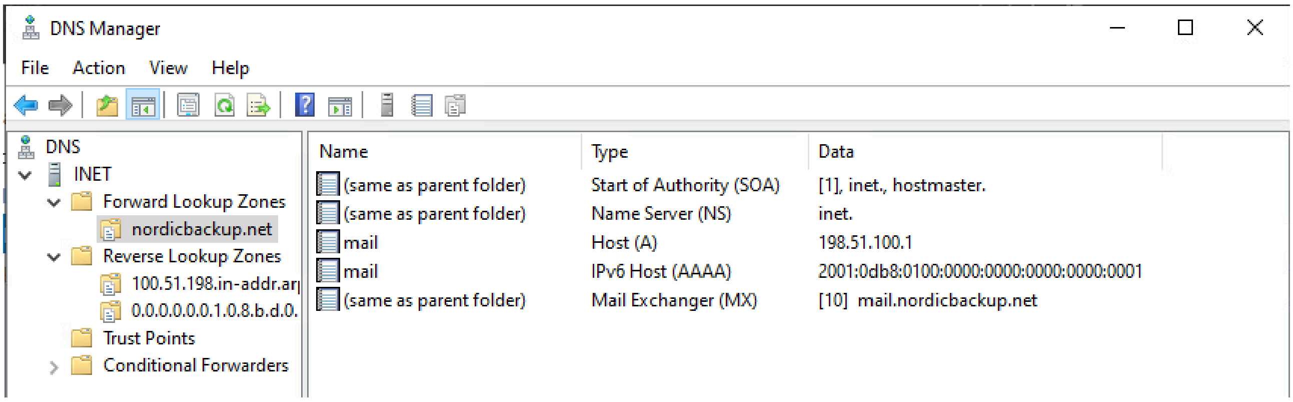
Host or child domain:

By default, DNS uses the parent domain name when creating a Mail Exchange record. You can specify a host or child name, but in most deployments, the above field is left blank.

Fully qualified domain name (FQDN): nordicbackup.net.

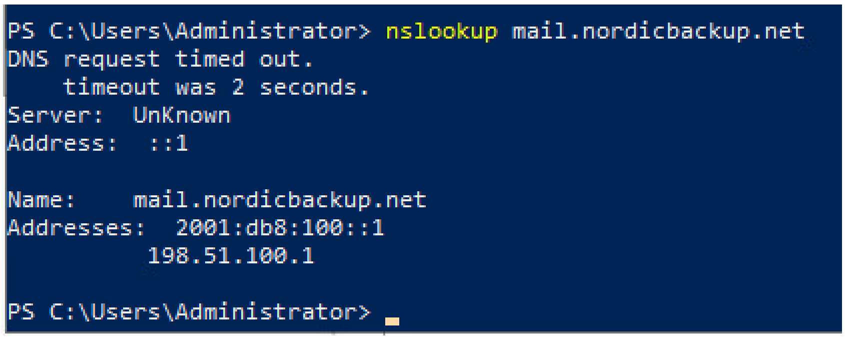
Fully qualified domain name (FQDN) of mail server: mail.nordicbackup.net

Mail server priority: 10



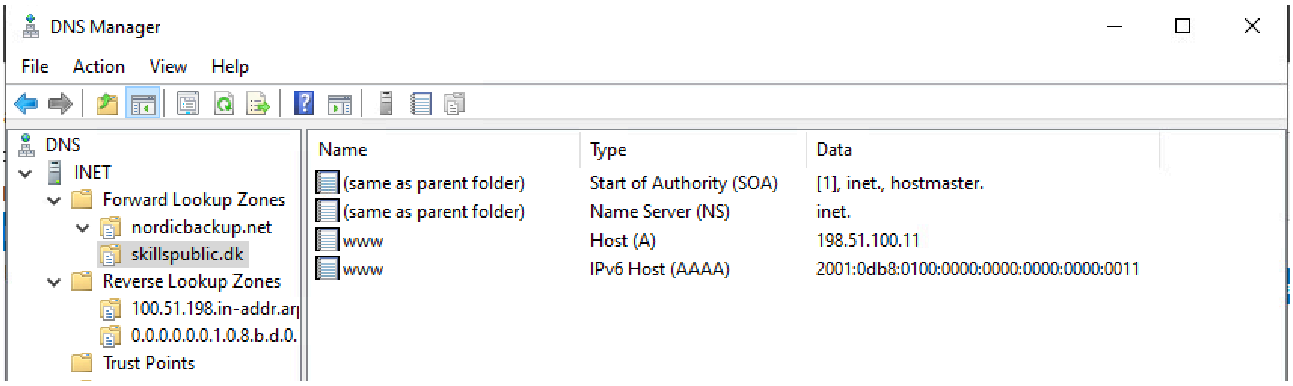
DNS Manager

Name	Type	Data
(same as parent folder)	Start of Authority (SOA)	[1], inet., hostmaster.
(same as parent folder)	Name Server (NS)	inet.
mail	Host (A)	198.51.100.1
mail	IPv6 Host (AAAA)	2001:0db8:0100:0000:0000:0000:0000:0001
(same as parent folder)	Mail Exchanger (MX)	[10] mail.nordicbackup.net

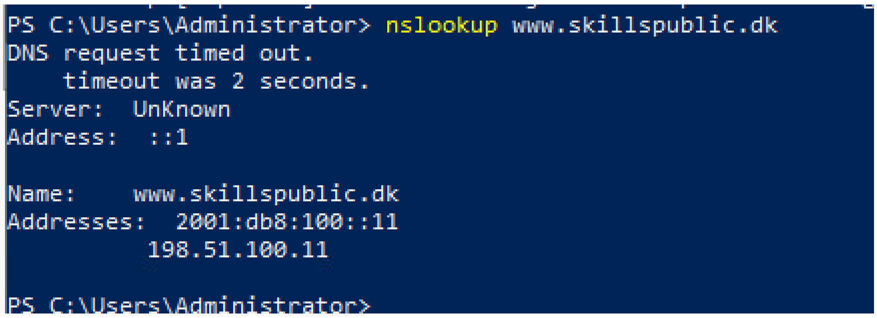


```
PS C:\Users\Administrator> nslookup mail.nordicbackup.net
DNS request timed out.
    timeout was 2 seconds.
Server:  UnKnown
Address:  ::1

Name:    mail.nordicbackup.net
Addresses:  2001:db8:100::1
          198.51.100.1

PS C:\Users\Administrator> _
```

REPEAT THE PROCESS WITH skillspublic.dk domain - Here is the result:



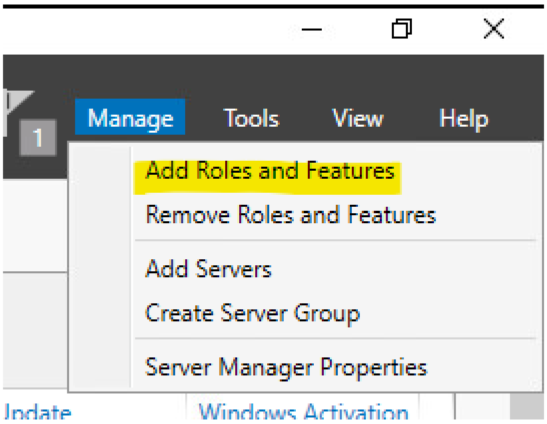
Name	Type	Data
(same as parent folder)	Start of Authority (SOA)	[1], inet., hostmaster.
(same as parent folder)	Name Server (NS)	inet.
www	Host (A)	198.51.100.11
www	IPv6 Host (AAAA)	2001:0db8:0100:0000:0000:0000:0000:0011



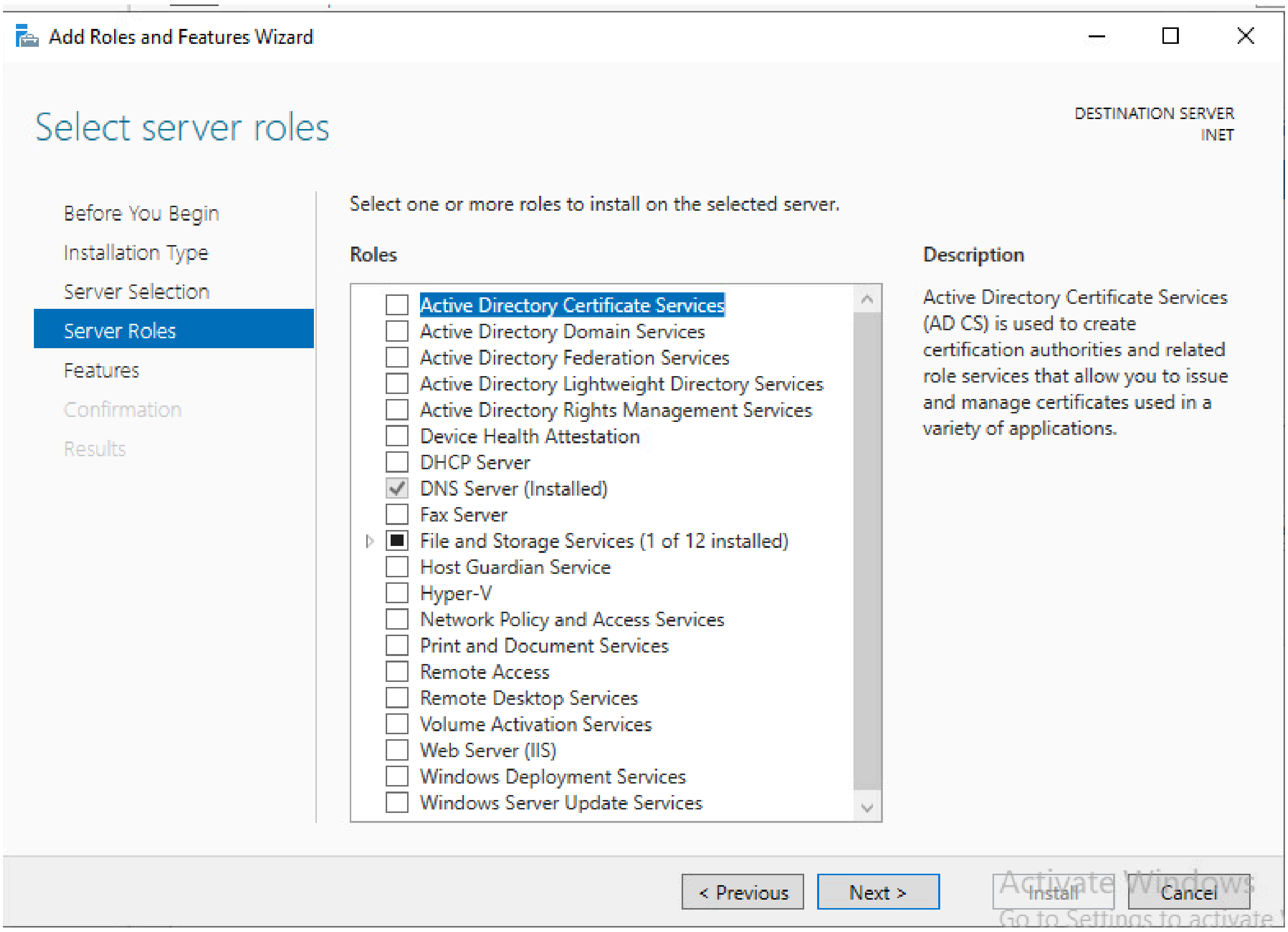
```
PS C:\Users\Administrator> nslookup www.skillspublic.dk
DNS request timed out.
    timeout was 2 seconds.
Server:  UnKnown
Address:  ::1

Name:    www.skillspublic.dk
Addresses:  2001:db8:100::11
          198.51.100.11

PS C:\Users\Administrator>
```

INET - Task2: SMTP server

2. SMTP server for notifications



Let “Select server roles” selection as it is, DO NOT CHOOSE ANYTHING



Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
INET

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

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

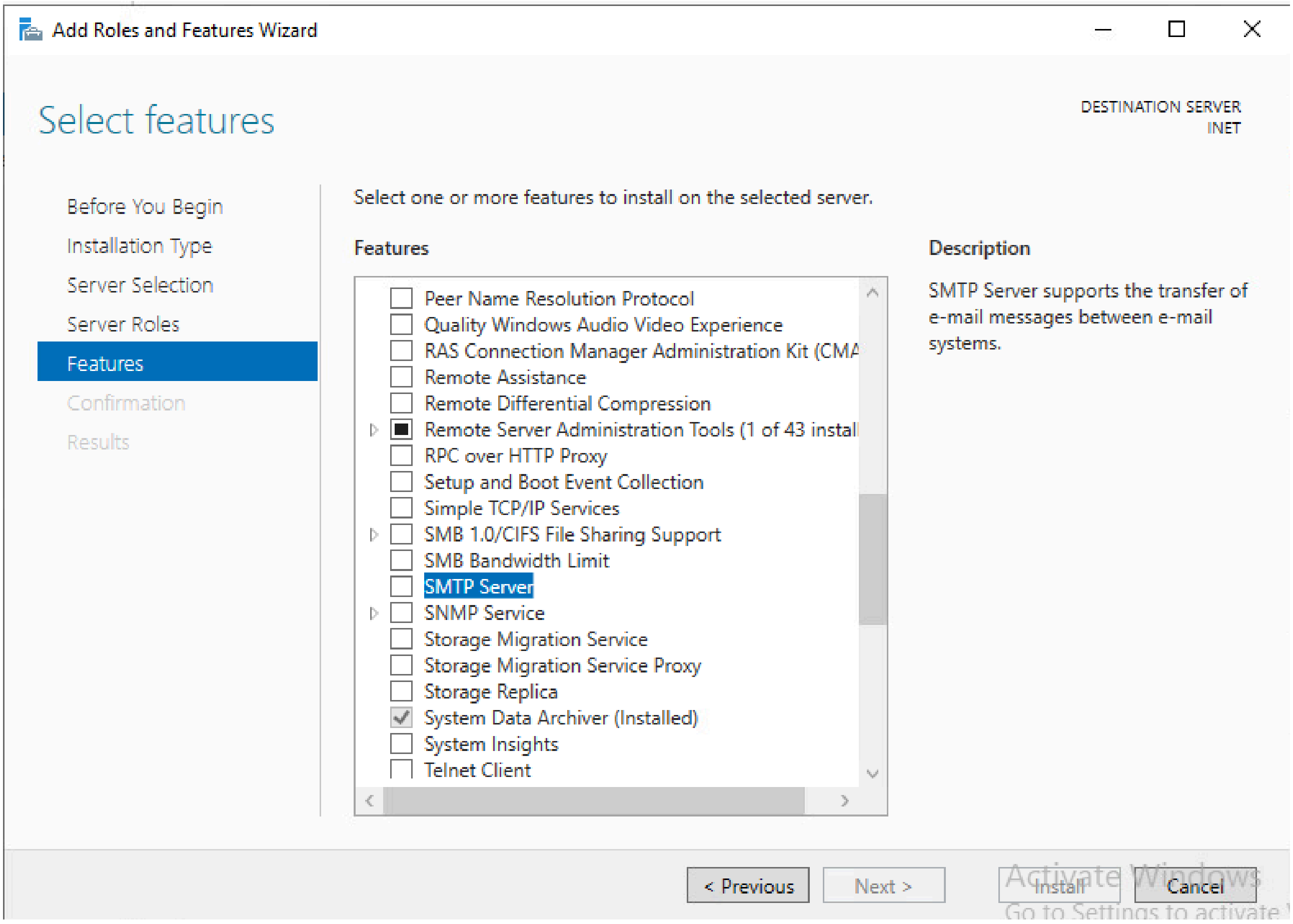
Roles

- □ 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 (Installed)
- □ Fax Server
- ■ File and Storage Services (1 of 12 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)
- □ Windows Deployment Services
- □ Windows Server Update Services

Description

Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.

In “Features”, choose “SMTP Server”:



Add Roles and Features Wizard

Select features

DESTINATION SERVER
INET

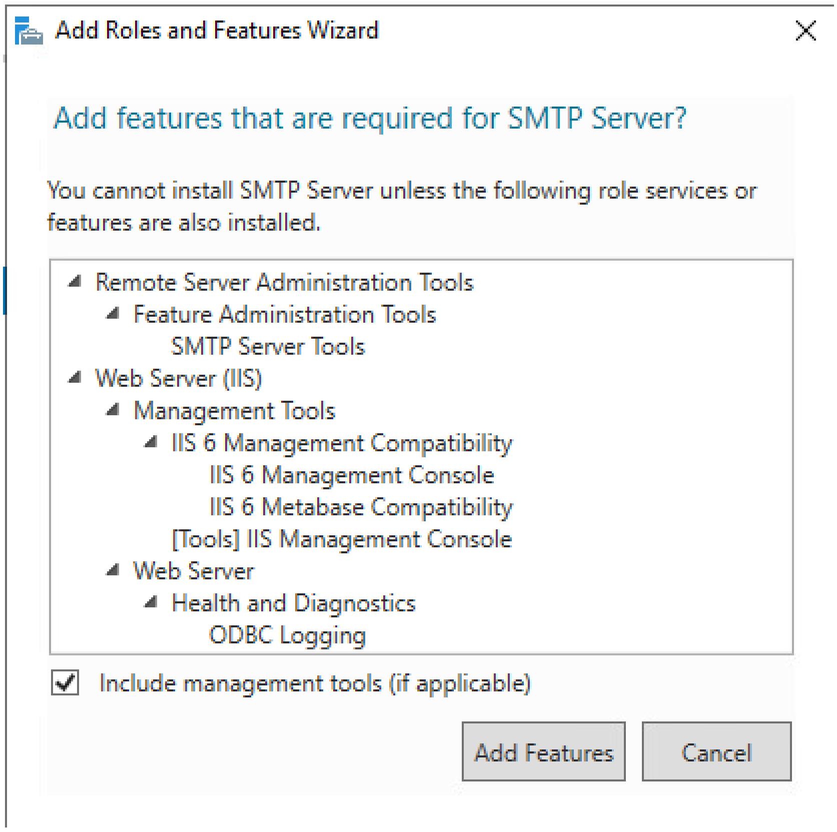
Select one or more features to install on the selected server.

Features

- □ Peer Name Resolution Protocol
- □ Quality Windows Audio Video Experience
- □ RAS Connection Manager Administration Kit (CMA
- □ Remote Assistance
- □ Remote Differential Compression
- ■ Remote Server Administration Tools (1 of 43 instal
- □ RPC over HTTP Proxy
- □ Setup and Boot Event Collection
- □ Simple TCP/IP Services
- □ SMB 1.0/CIFS File Sharing Support
- □ SMB Bandwidth Limit
- □ SMTP Server
- □ SNMP Service
- □ Storage Migration Service
- □ Storage Migration Service Proxy
- □ Storage Replica
- ☑ System Data Archiver (Installed)
- □ System Insights
- □ Telnet Client

Description

SMTP Server supports the transfer of e-mail messages between e-mail systems.



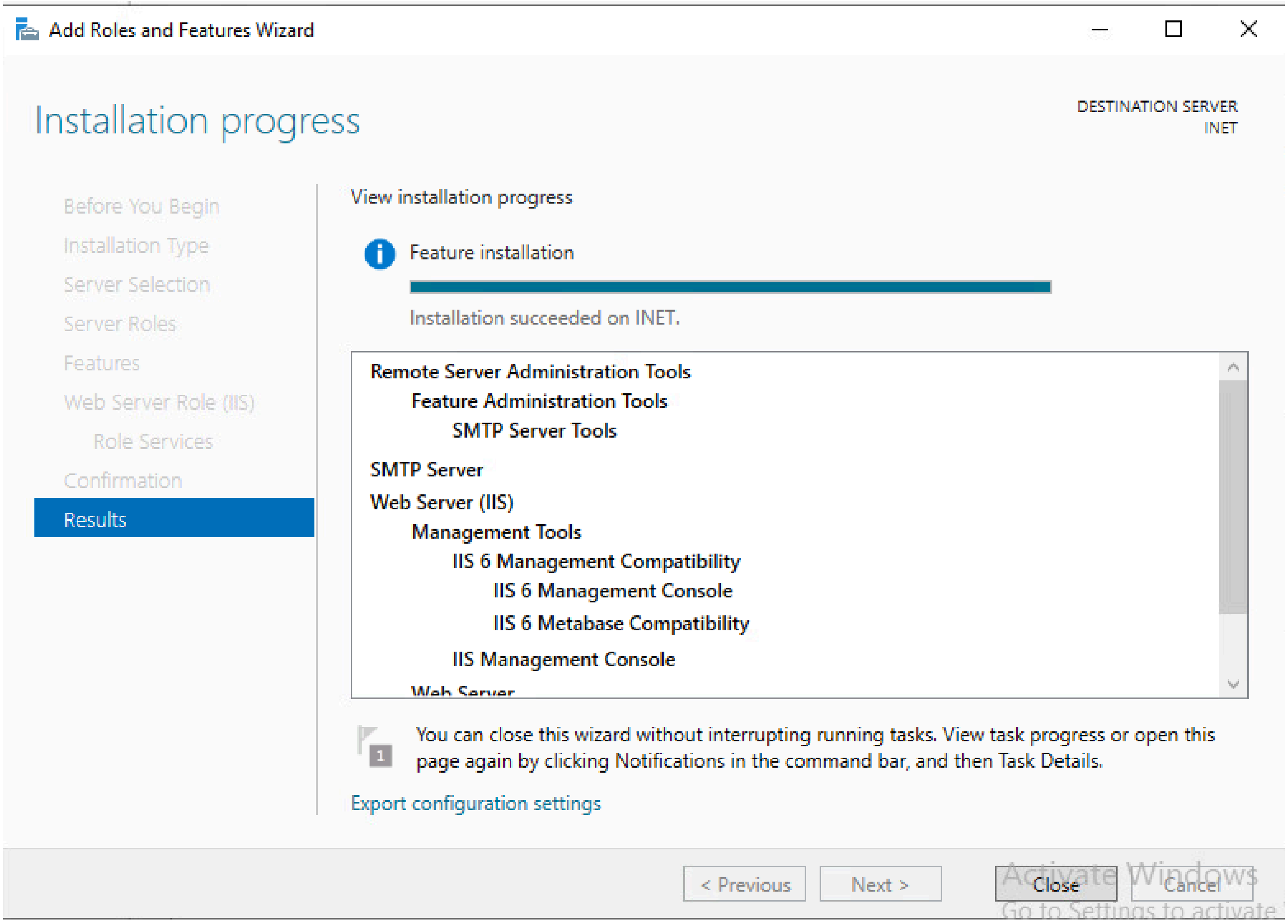
Add Roles and Features Wizard

Add features that are required for SMTP Server?

You cannot install SMTP Server unless the following role services or features are also installed.

- Remote Server Administration Tools
  - Feature Administration Tools
    - SMTP Server Tools
- Web Server (IIS)
  - Management Tools
    - IIS 6 Management Compatibility
      - IIS 6 Management Console
      - IIS 6 Metabase Compatibility
    - [Tools] IIS Management Console
  - Web Server
    - Health and Diagnostics
      - ODBC Logging

☑ Include management tools (if applicable)



Add Roles and Features Wizard

Installation progress

DESTINATION SERVER
INET

View installation progress

Feature installation

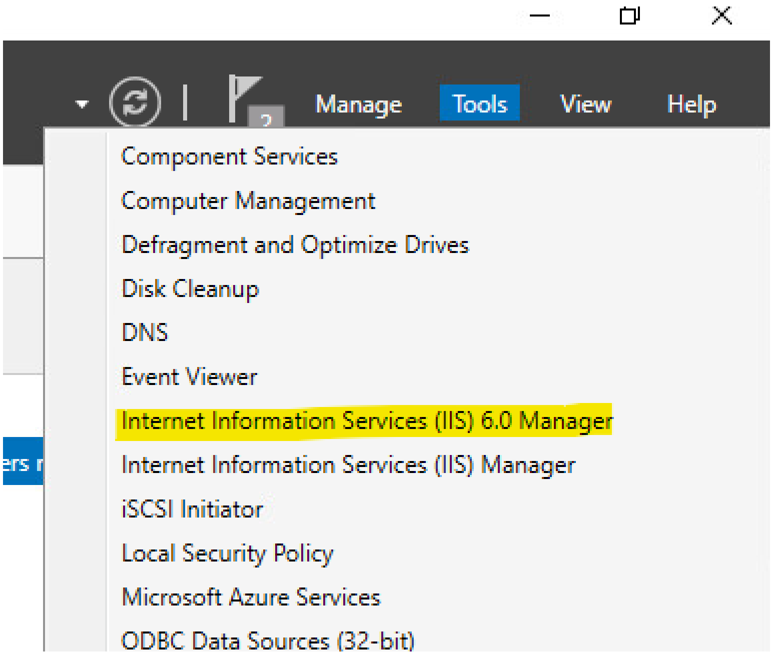
Installation succeeded on INET.

Remote Server Administration Tools
    Feature Administration Tools
        SMTP Server Tools
SMTP Server
Web Server (IIS)
    Management Tools
        IIS 6 Management Compatibility
            IIS 6 Management Console
            IIS 6 Metabase Compatibility
        IIS Management Console
    Web Server

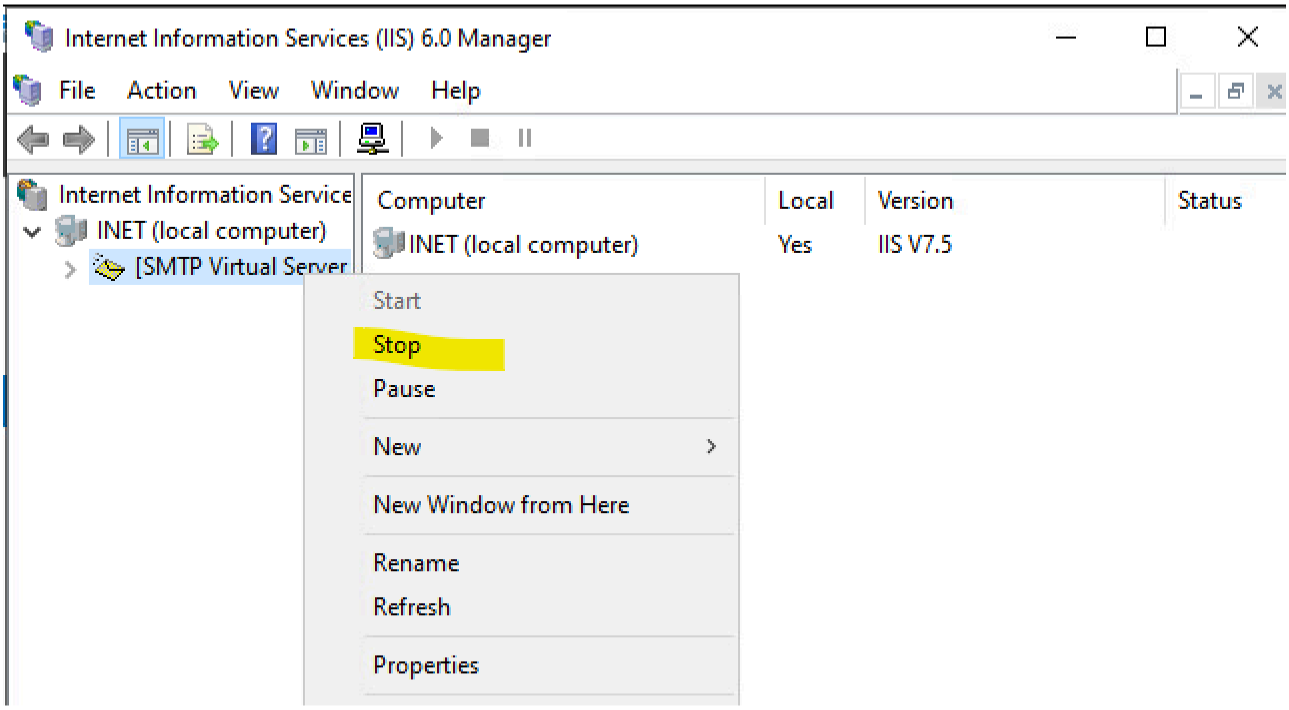
You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

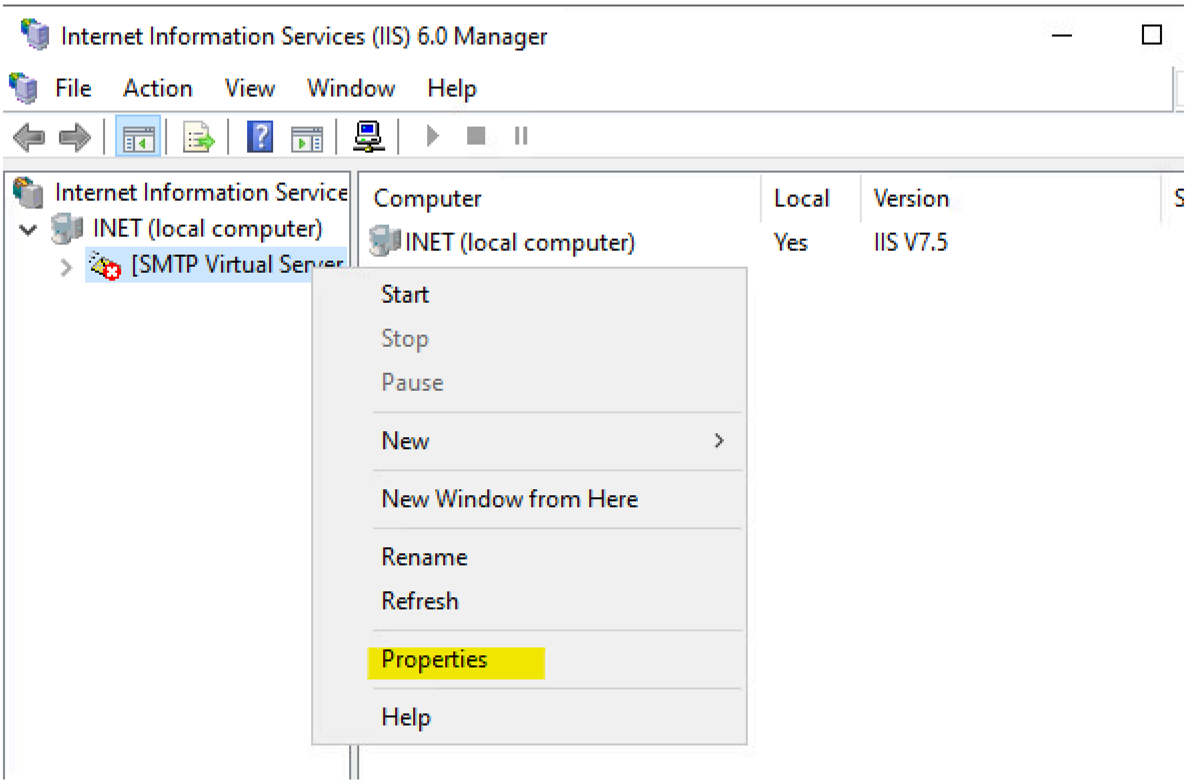
Export configuration settings

CONFIGURE



Manage
Tools
View
Help
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer
Internet Information Services (IIS) 6.0 Manager
Internet Information Services (IIS) Manager
iSCSI Initiator
Local Security Policy
Microsoft Azure Services
ODBC Data Sources (32-bit)



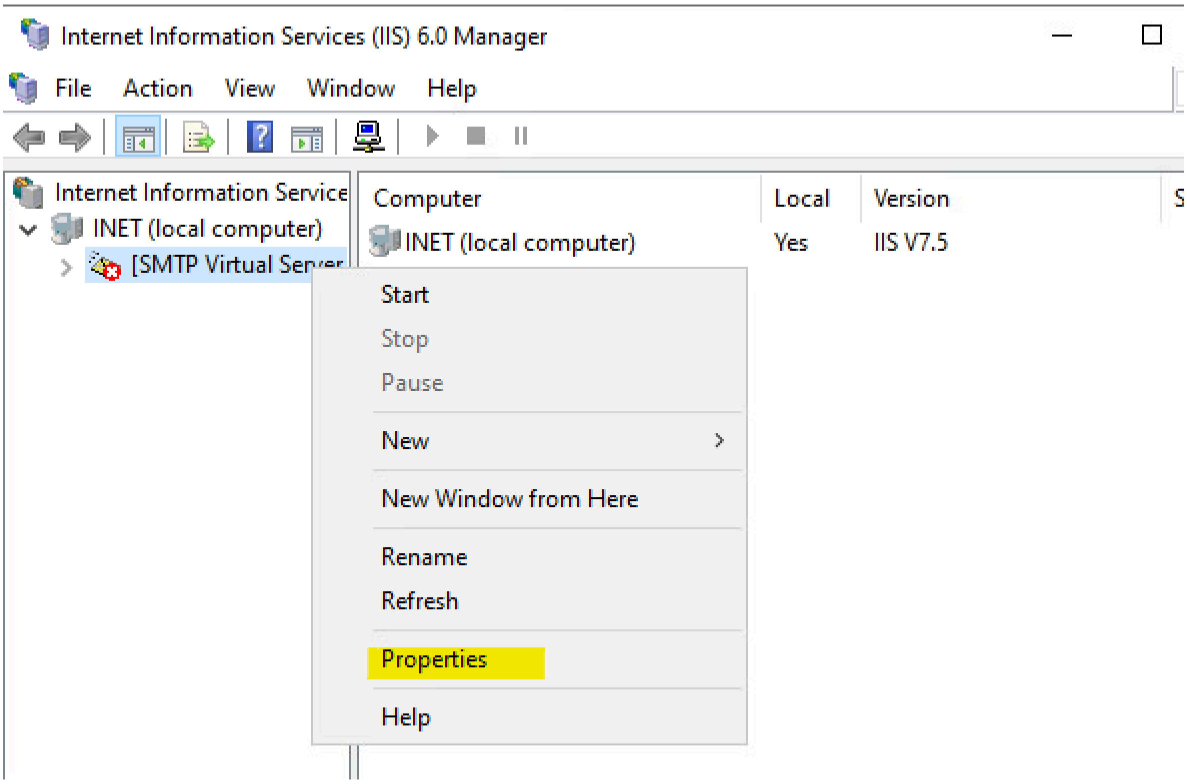


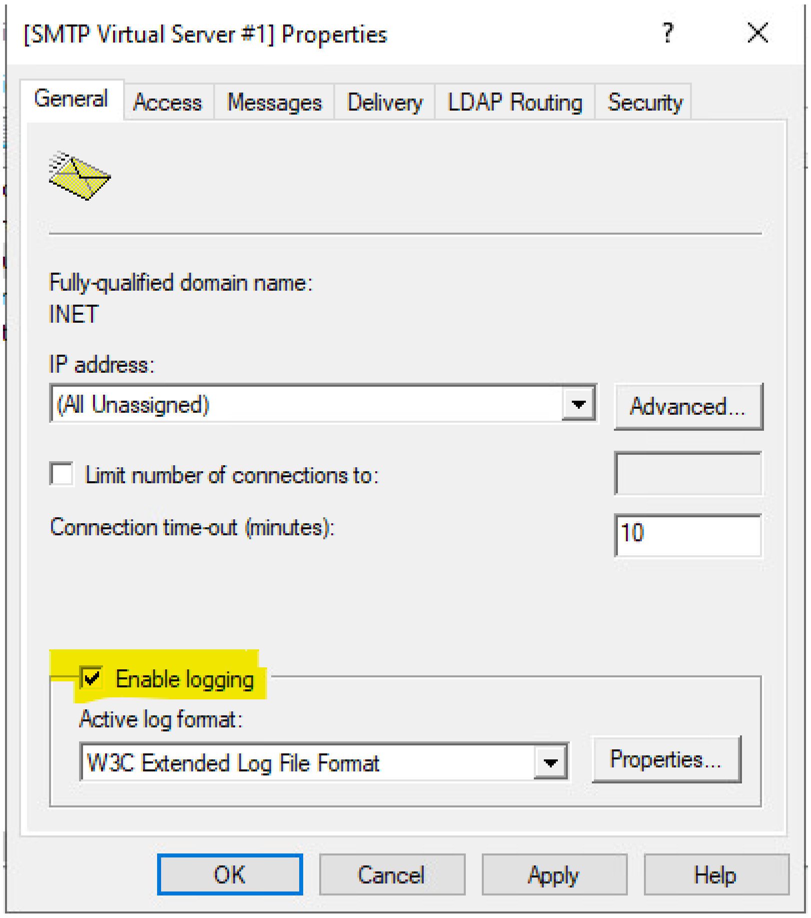
If it gives a MMC error, do this:

Open services.msc
Stop SMTPSVC service [Display Name: Simple Mail Transfer Protocol (SMTP)]
Stop IISADMIN service [Display name: IIS Admin Service]
Edit "C:\Windows\System32\inetsrv\MetaBase.xml"
Find: <IIsSmtpServer Location ="/LM/SmtpSvc/1"

Add (Settings are alphabetical): RelayIpList=""
Save file
Start IISAdmin Service
Start SMTPSVC service

Try again:





Fully-qualified domain name:
INET

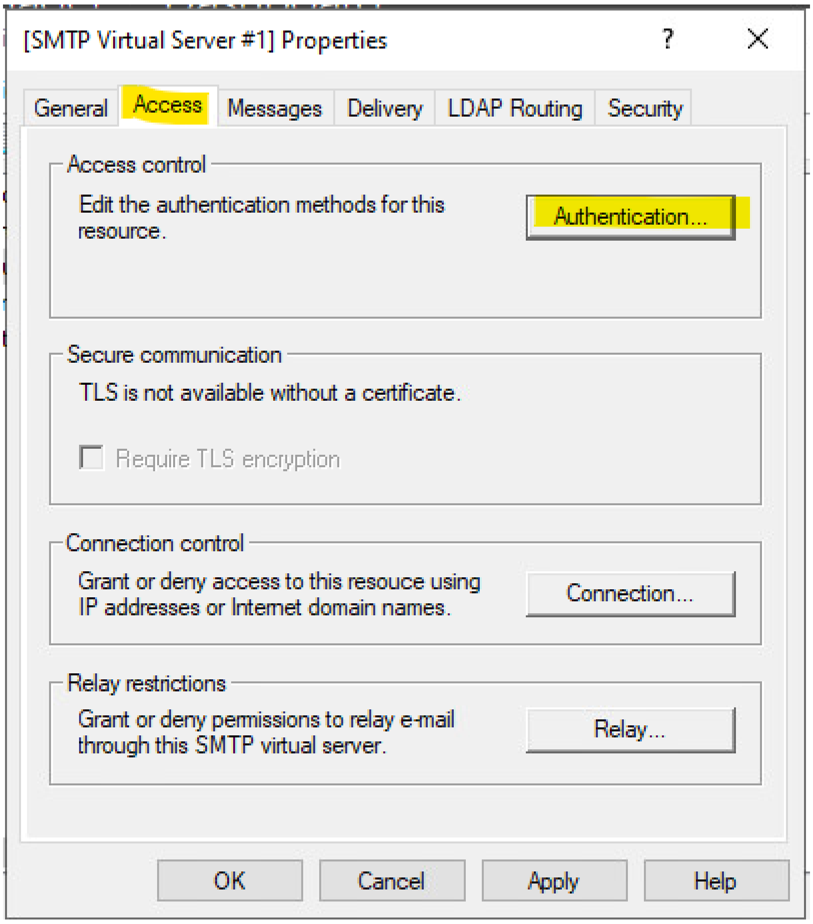
IP address: (All Unassigned)

□ Limit number of connections to:

Connection time-out (minutes): 10

☑ Enable logging

Active log format: W3C Extended Log File Format



[SMTP Virtual Server #1] Properties

Access control

Edit the authentication methods for this resource.

Secure communication

TLS is not available without a certificate.

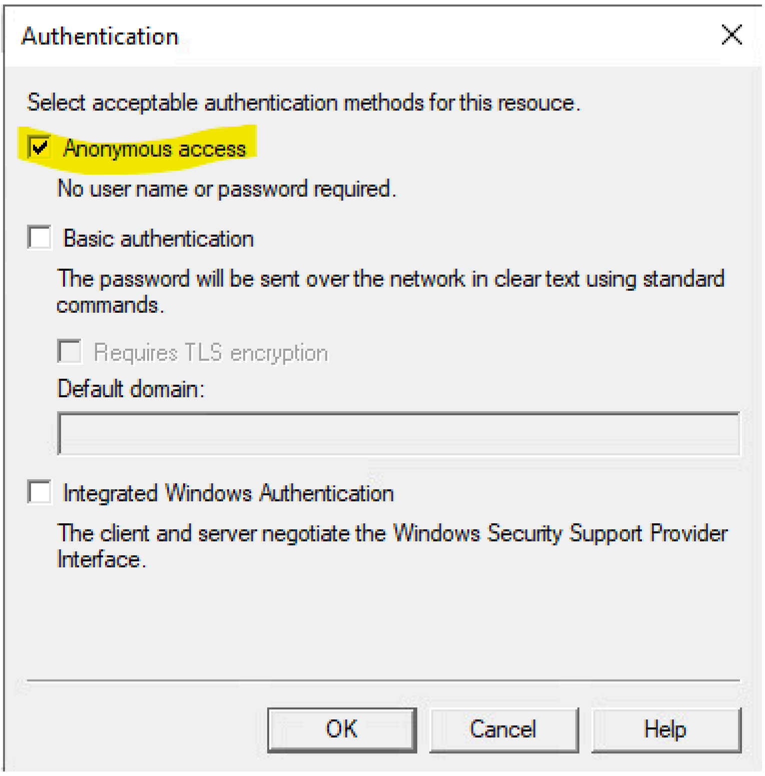
□ Require TLS encryption

Connection control

Grant or deny access to this resouce using IP addresses or Internet domain names.

Relay restrictions

Grant or deny permissions to relay e-mail through this SMTP virtual server.



Authentication

Select acceptable authentication methods for this resouce.

☑ Anonymous access

No user name or password required.

□ Basic authentication

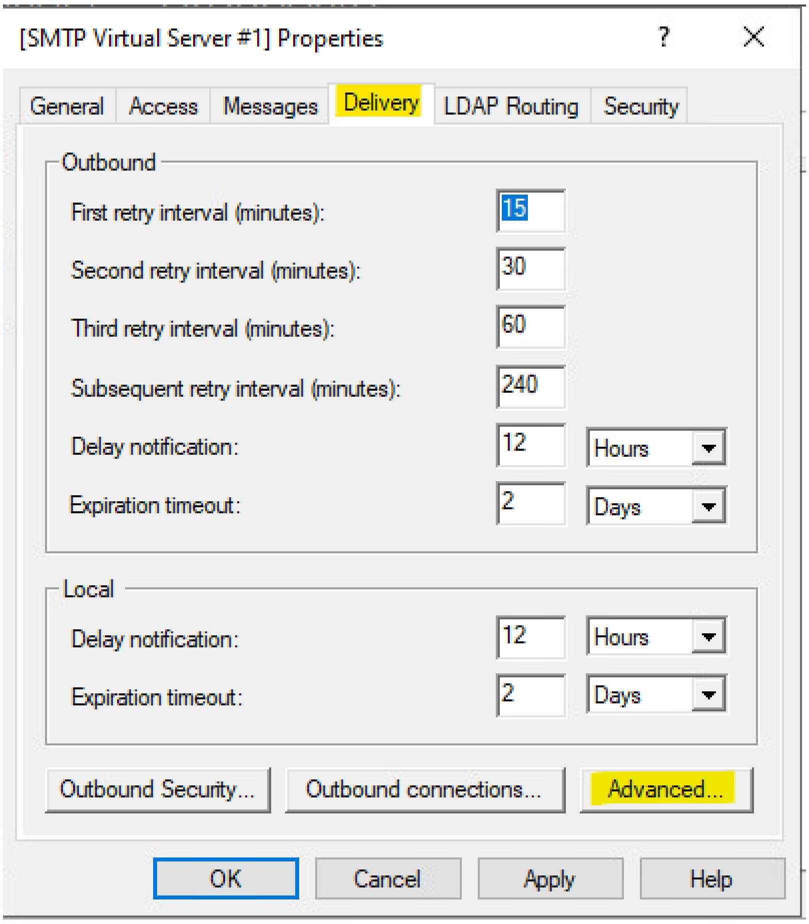
The password will be sent over the network in clear text using standard commands.

□ Requires TLS encryption

Default domain:

□ Integrated Windows Authentication

The client and server negotiate the Windows Security Support Provider Interface.



[SMTP Virtual Server #1] Properties

Outbound

First retry interval (minutes): 15

Second retry interval (minutes): 30

Third retry interval (minutes): 60

Subsequent retry interval (minutes): 240

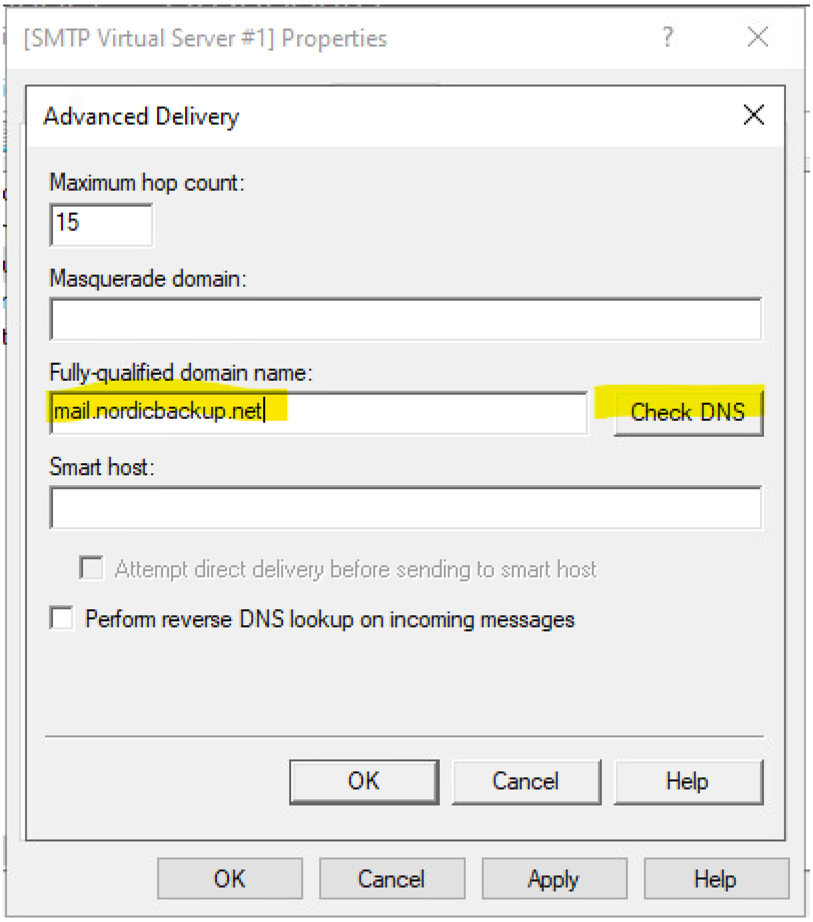
Delay notification: 12 Hours

Expiration timeout: 2 Days

Local

Delay notification: 12 Hours

Expiration timeout: 2 Days



[SMTP Virtual Server #1] Properties

Advanced Delivery

Maximum hop count: 15

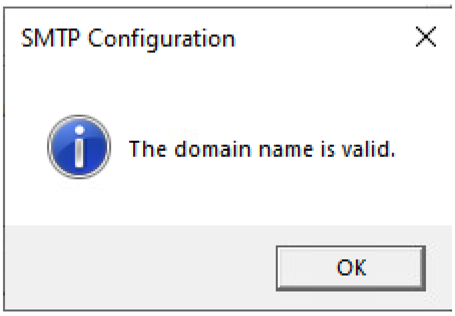
Masquerade domain:

Fully-qualified domain name: mail.nordicbackup.net

Smart host:

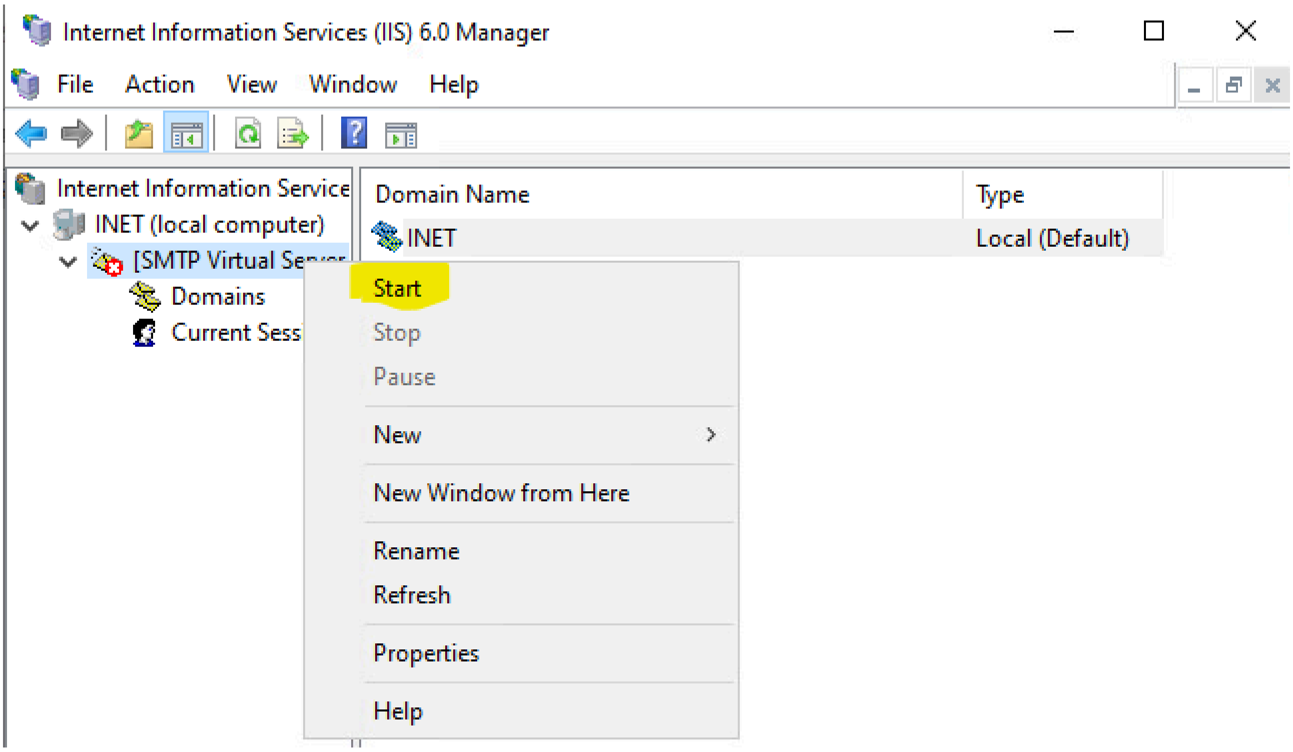
□ Attempt direct delivery before sending to smart host

□ Perform reverse DNS lookup on incoming messages



SMTP Configuration

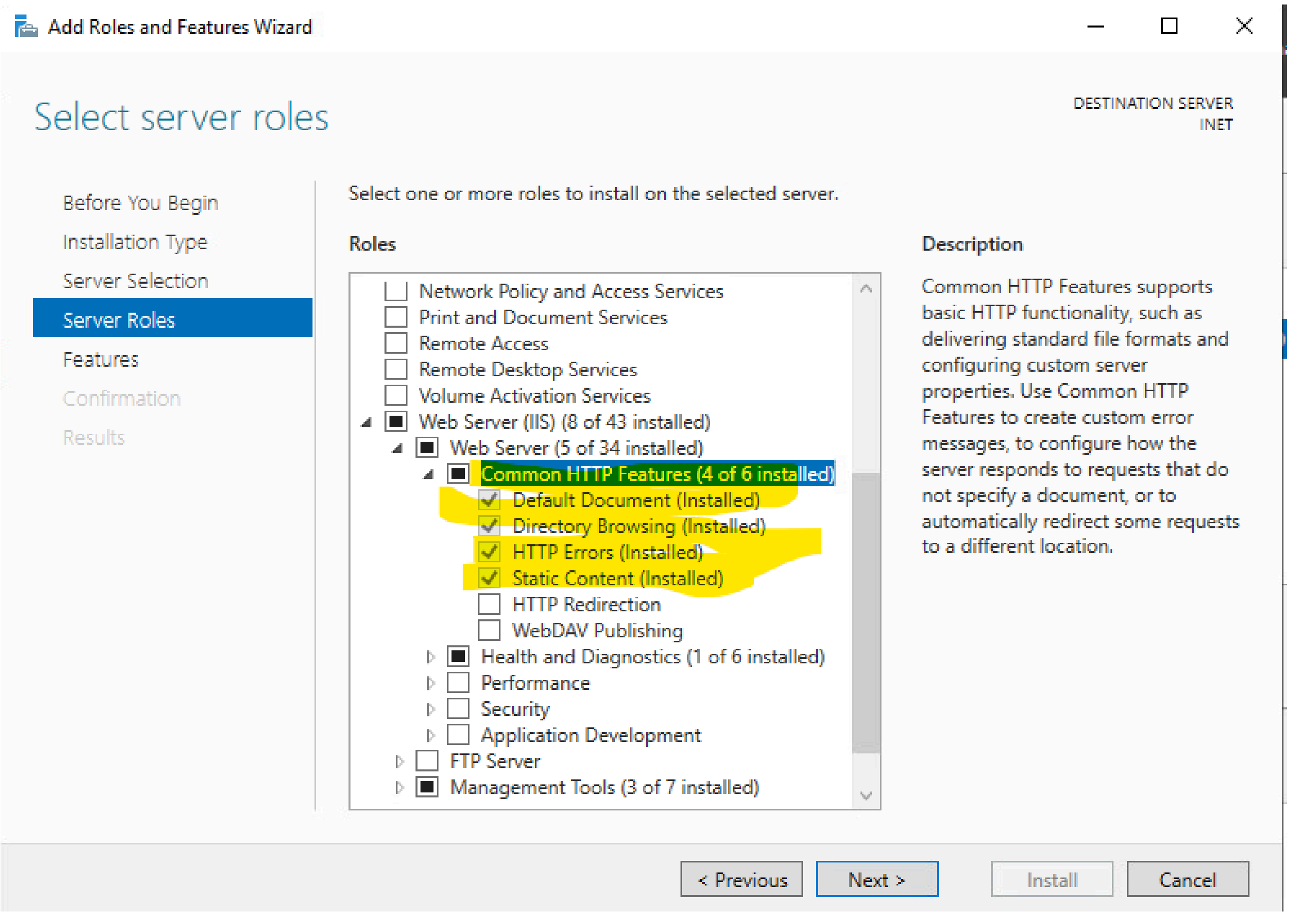
The domain name is valid.



INET - Task3: web server

3. Web server running on ports 80 and 8080

Main Server Role already installed with SMTP. But you must install some Common HTTP Features for the IIS to work:



Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
INET

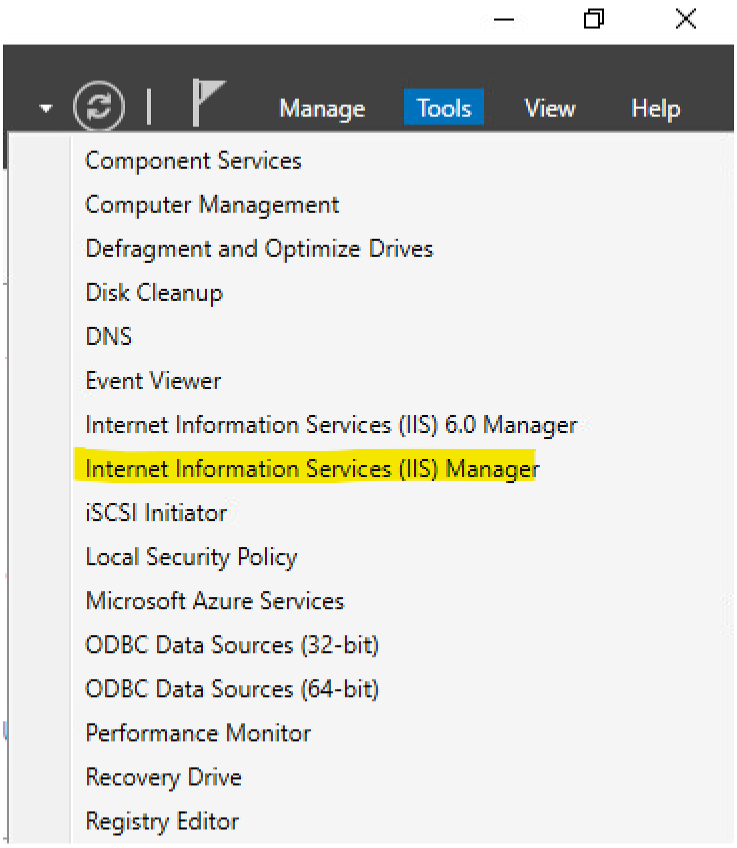
Select one or more roles to install on the selected server.

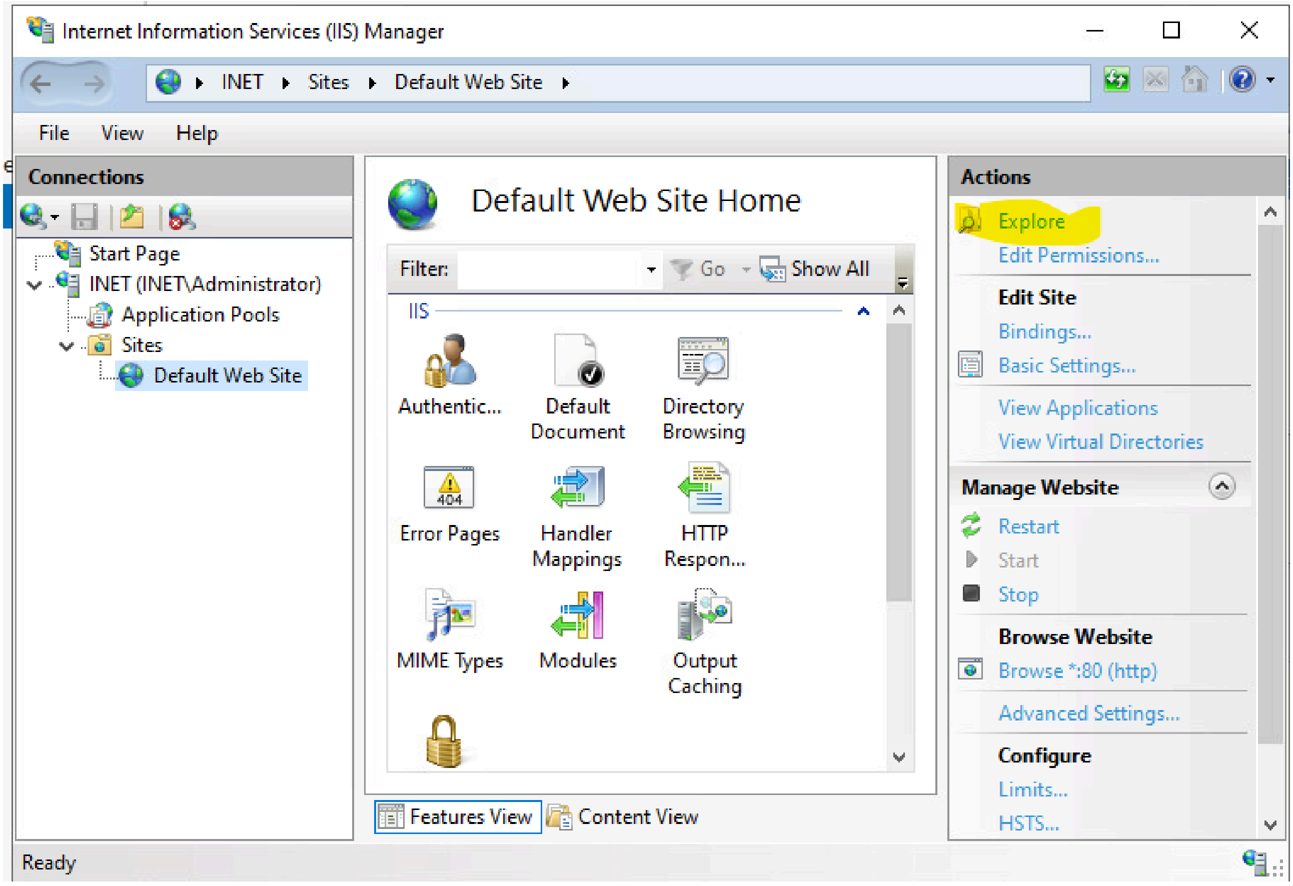
Roles

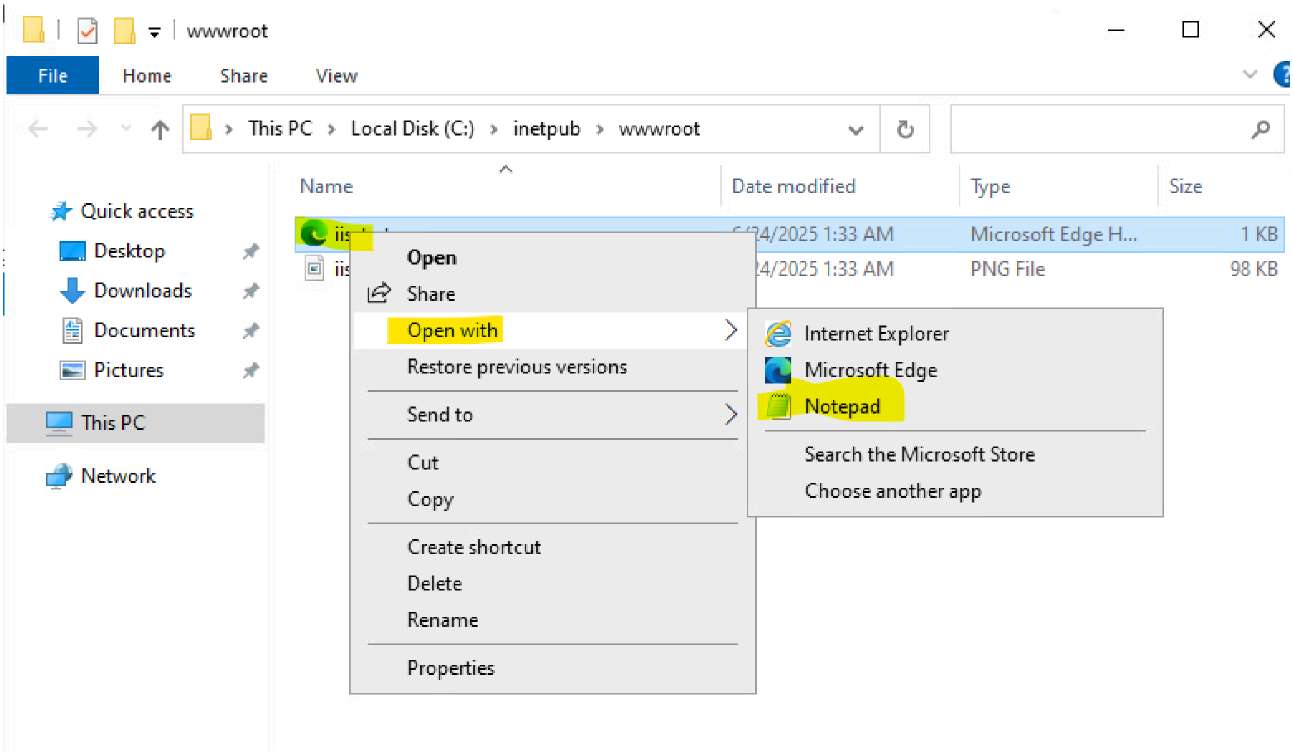
- □ Network Policy and Access Services
- □ Print and Document Services
- □ Remote Access
- □ Remote Desktop Services
- □ Volume Activation Services
- ■ Web Server (IIS) (8 of 43 installed)
  - ■ Web Server (5 of 34 installed)
    - ■ Common HTTP Features (4 of 6 installed)
      - ☑ Default Document (Installed)
      - ☑ Directory Browsing (Installed)
      - ☑ HTTP Errors (Installed)
      - ☑ Static Content (Installed)
      - □ HTTP Redirection
      - □ WebDAV Publishing
    - ■ Health and Diagnostics (1 of 6 installed)
    - □ Performance
    - □ Security
    - □ Application Development
  - □ FTP Server
  - ■ Management Tools (3 of 7 installed)

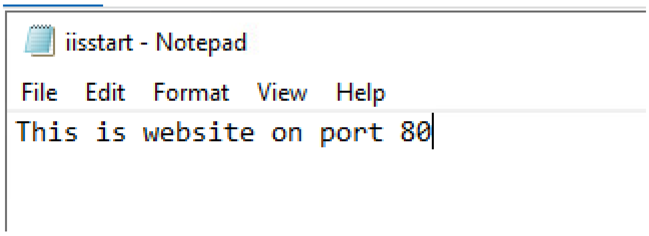
Description

Common HTTP Features supports basic HTTP functionality, such as delivering standard file formats and configuring custom server properties. Use Common HTTP Features to create custom error messages, to configure how the server responds to requests that do not specify a document, or to automatically redirect some requests to a different location.



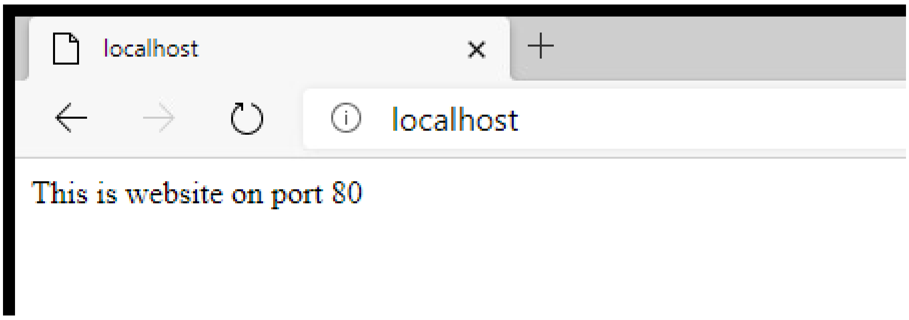

Internet Information Services (IIS) Manager
INET ▸ Sites ▸ Default Web Site ▸
File View Help
Connections
Start Page
INET (INET\Administrator)
Application Pools
Sites
Default Web Site
Default Web Site Home
Filter: Go Show All
IIS
Authentic...
Default Document
Directory Browsing
Error Pages
Handler Mappings
HTTP Respon...
MIME Types
Modules
Output Caching
Features View
Content View
Actions
Explore
Edit Permissions...
Edit Site
Bindings...
Basic Settings...
View Applications
View Virtual Directories
Manage Website
Restart
Start
Stop
Browse Website
Browse *:80 (http)
Advanced Settings...
Configure
Limits...
HSTS...
Ready


wwwroot
File Home Share View
This PC › Local Disk (C:) › inetpub › wwwroot
Quick access
Desktop
Downloads
Documents
Pictures
This PC
Network
Name
Date modified
Type
Size
iis
/24/2025 1:33 AM
Microsoft Edge H...
1 KB
iis
/24/2025 1:33 AM
PNG File
98 KB
Open
Share
Open with
Restore previous versions
Send to
Cut
Copy
Create shortcut
Delete
Rename
Properties
Internet Explorer
Microsoft Edge
Notepad
Search the Microsoft Store
Choose another app



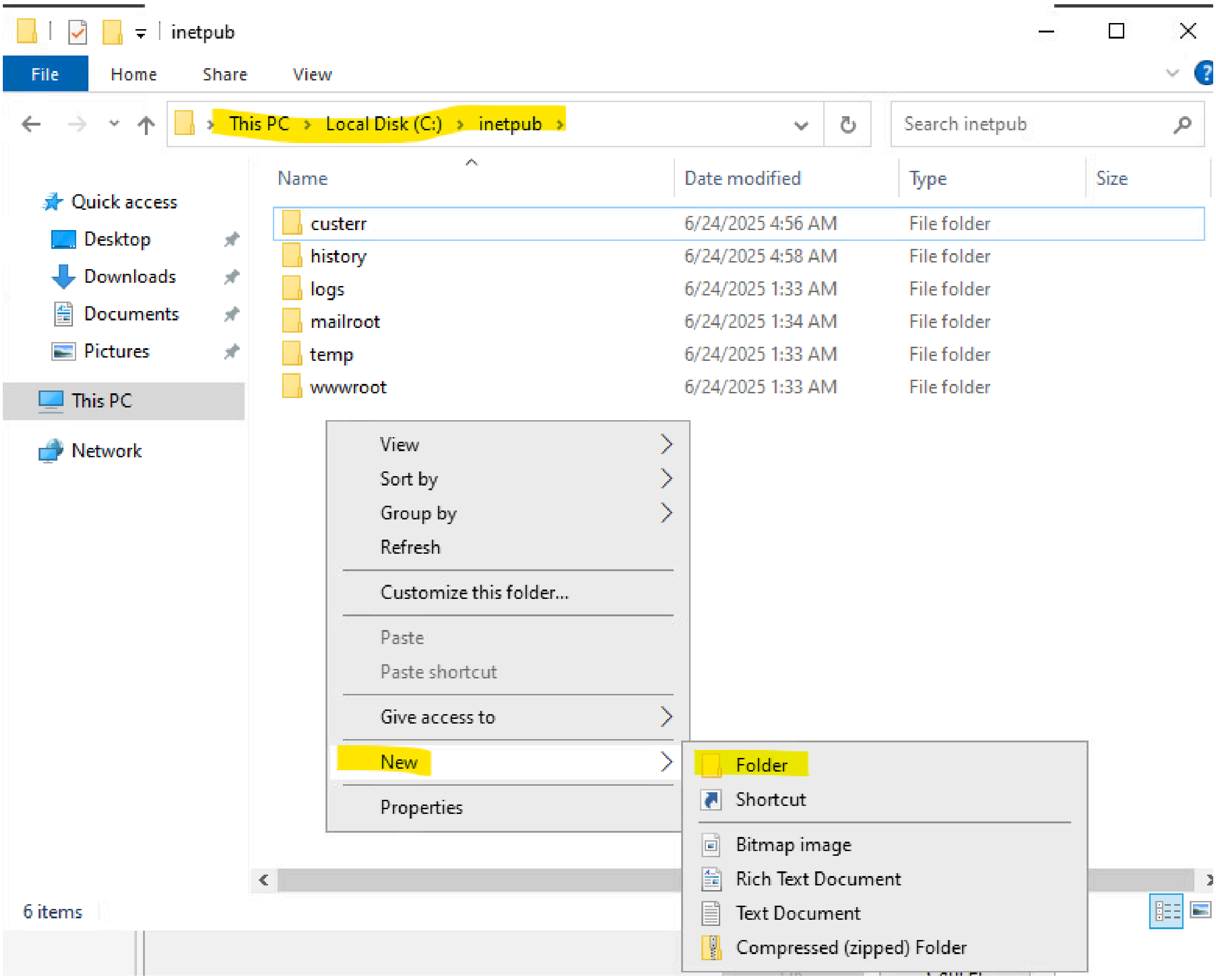
```
This is website on port 80
```

Web browser:



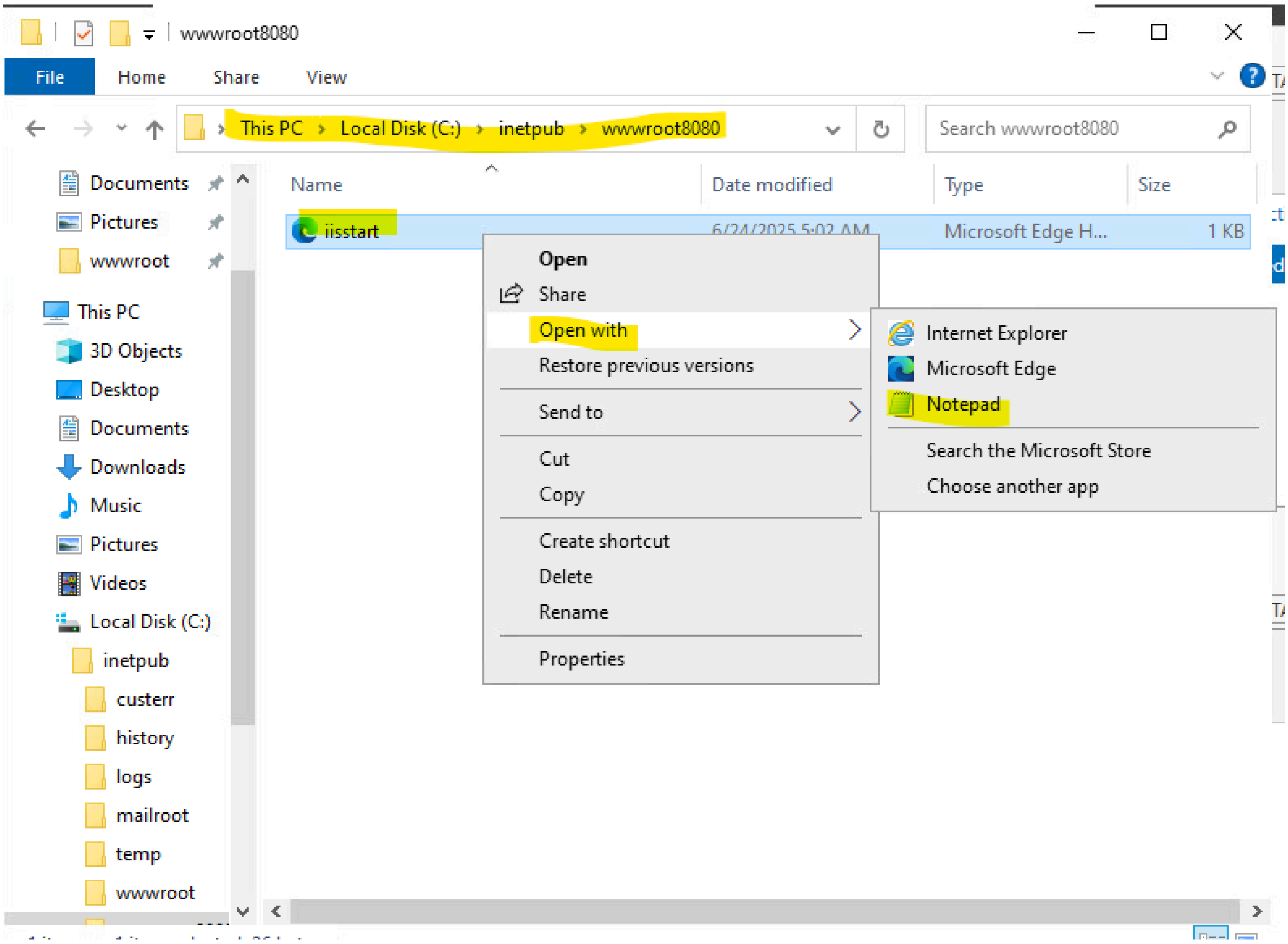
This is website on port 80

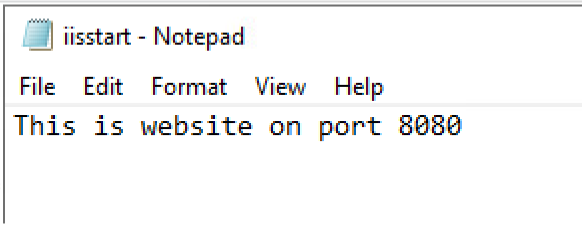
ADD website on port 8080



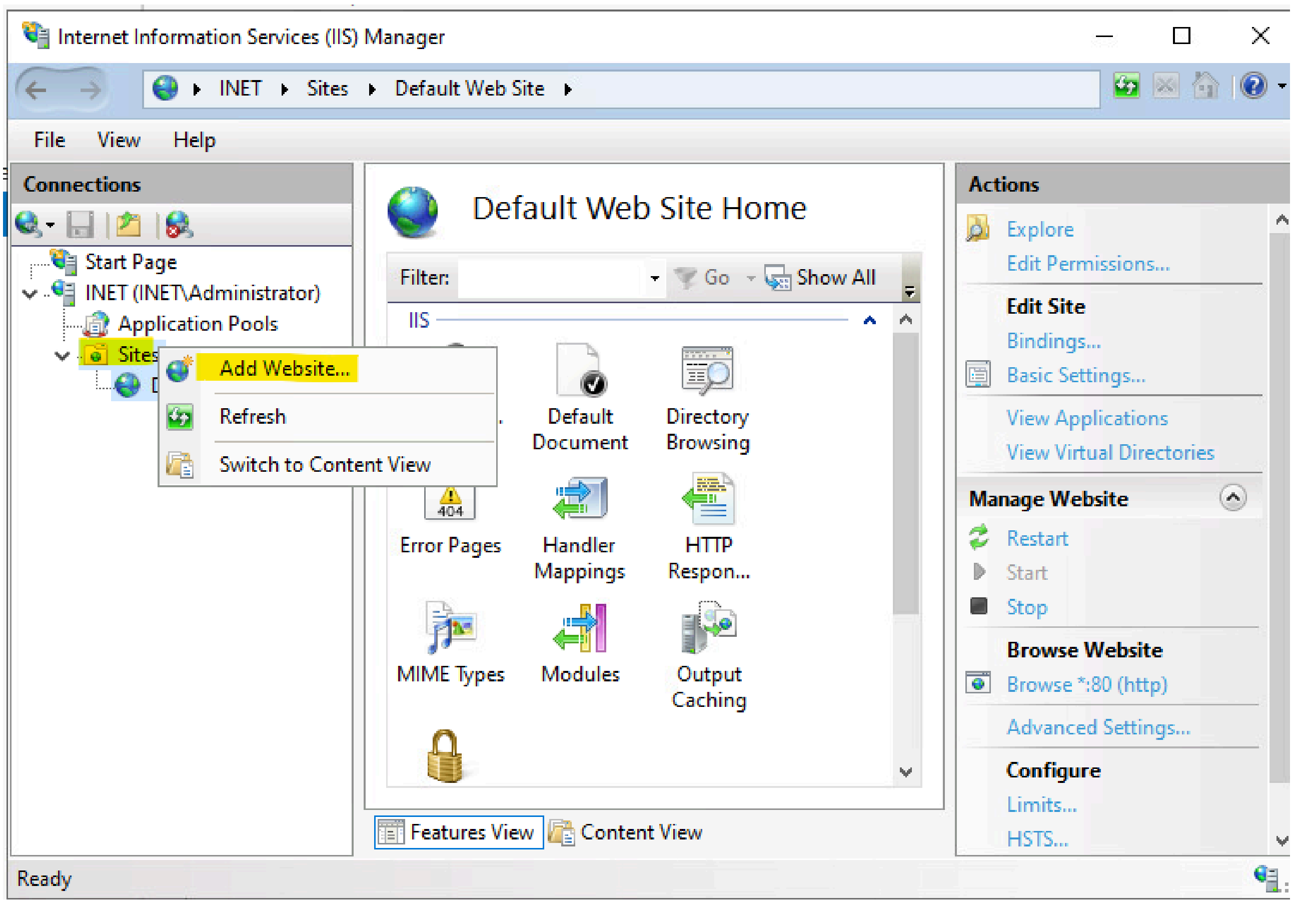
Name	Date modified	Type	Size
custerr	6/24/2025 4:56 AM	File folder	
history	6/24/2025 4:58 AM	File folder	
logs	6/24/2025 1:33 AM	File folder	
mailroot	6/24/2025 1:34 AM	File folder	
temp	6/24/2025 1:33 AM	File folder	
wwwroot	6/24/2025 1:33 AM	File folder	

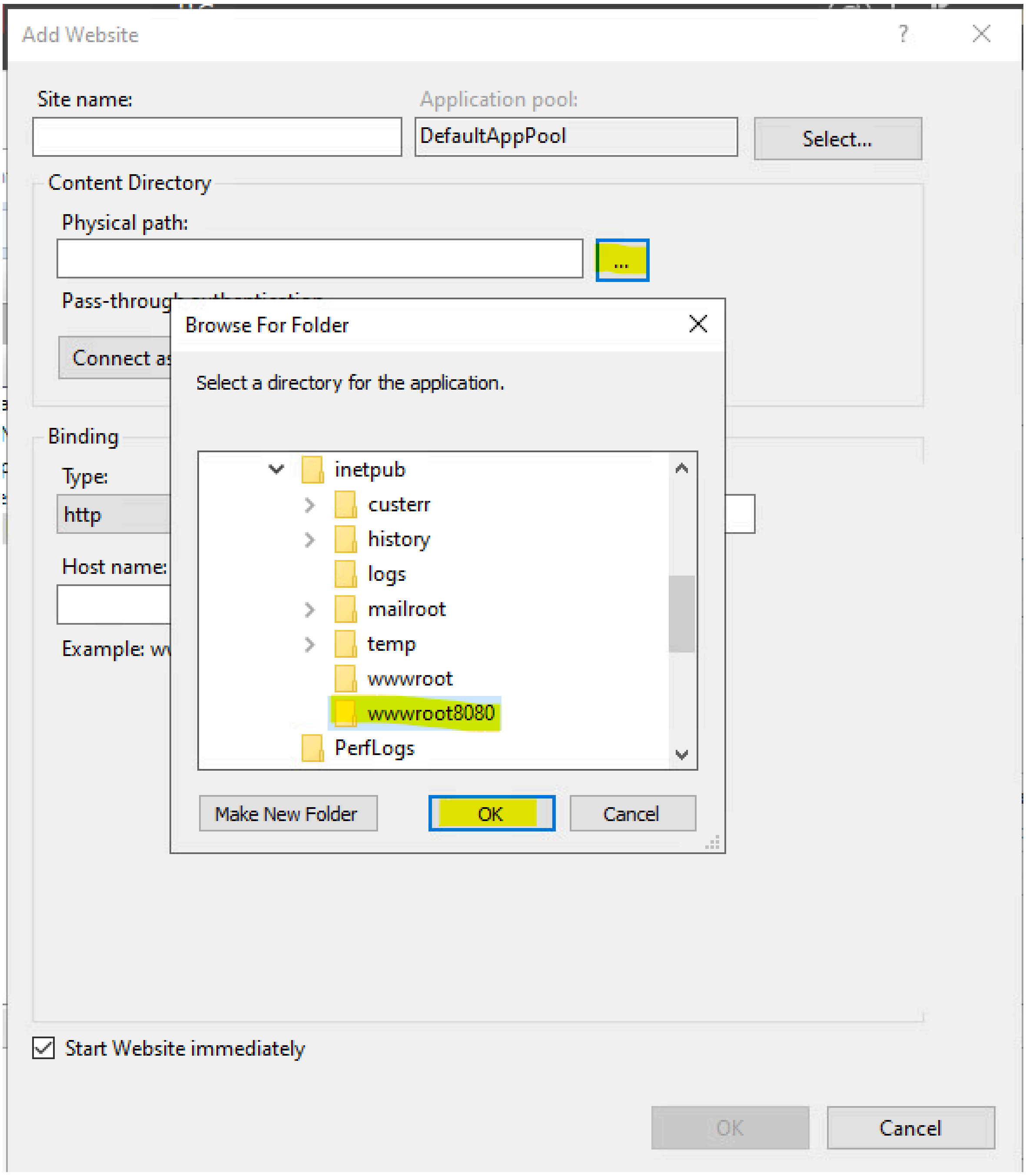
https://extratrucos.com/informatica-tecla-suprimir





```
This is website on port 8080
```


Internet Information Services (IIS) Manager
INET ▸ Sites ▸ Default Web Site ▸
File View Help
Connections
Start Page
INET (INET\Administrator)
Application Pools
Sites
Add Website...
Refresh
Switch to Content View
Default Web Site Home
Filter:
Go
Show All
IIS
Default Document
Directory Browsing
Error Pages
Handler Mappings
HTTP Respon...
MIME Types
Modules
Output Caching
Features View
Content View
Actions
Explore
Edit Permissions...
Edit Site
Bindings...
Basic Settings...
View Applications
View Virtual Directories
Manage Website
Restart
Start
Stop
Browse Website
Browse *:80 (http)
Advanced Settings...
Configure
Limits...
HSTS...
Ready



Add Website

Site name:

Application pool: DefaultAppPool

Content Directory

Physical path:

Pass-throug

Connect a

Binding

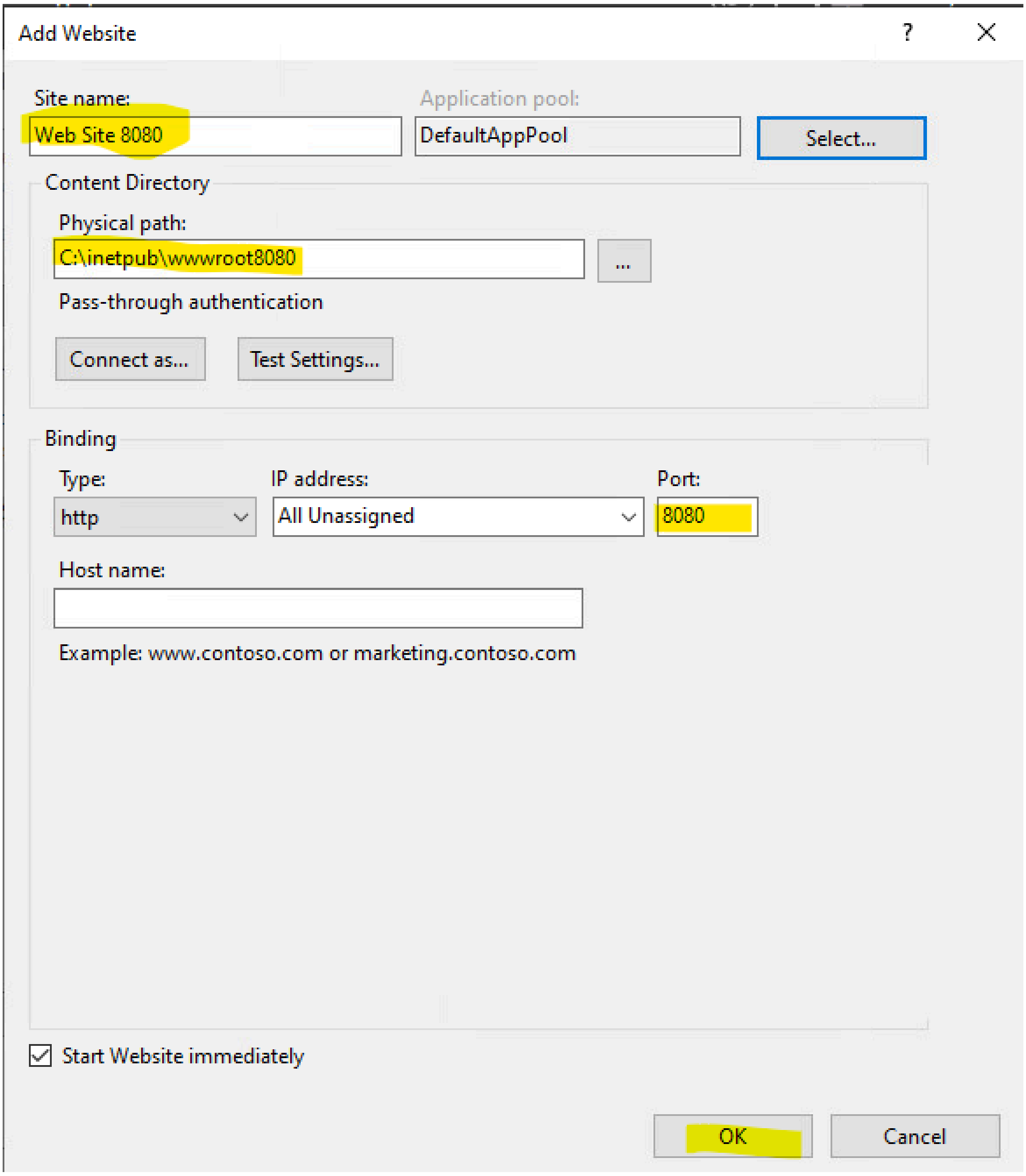
Type: http

Host name:

Example: w

Browse For Folder

Select a directory for the application.



Add Website

Site name: Web Site 8080

Application pool: DefaultAppPool

Content Directory

Physical path: C:\inetpub\wwwroot8080

Pass-through authentication

Binding

Type: http

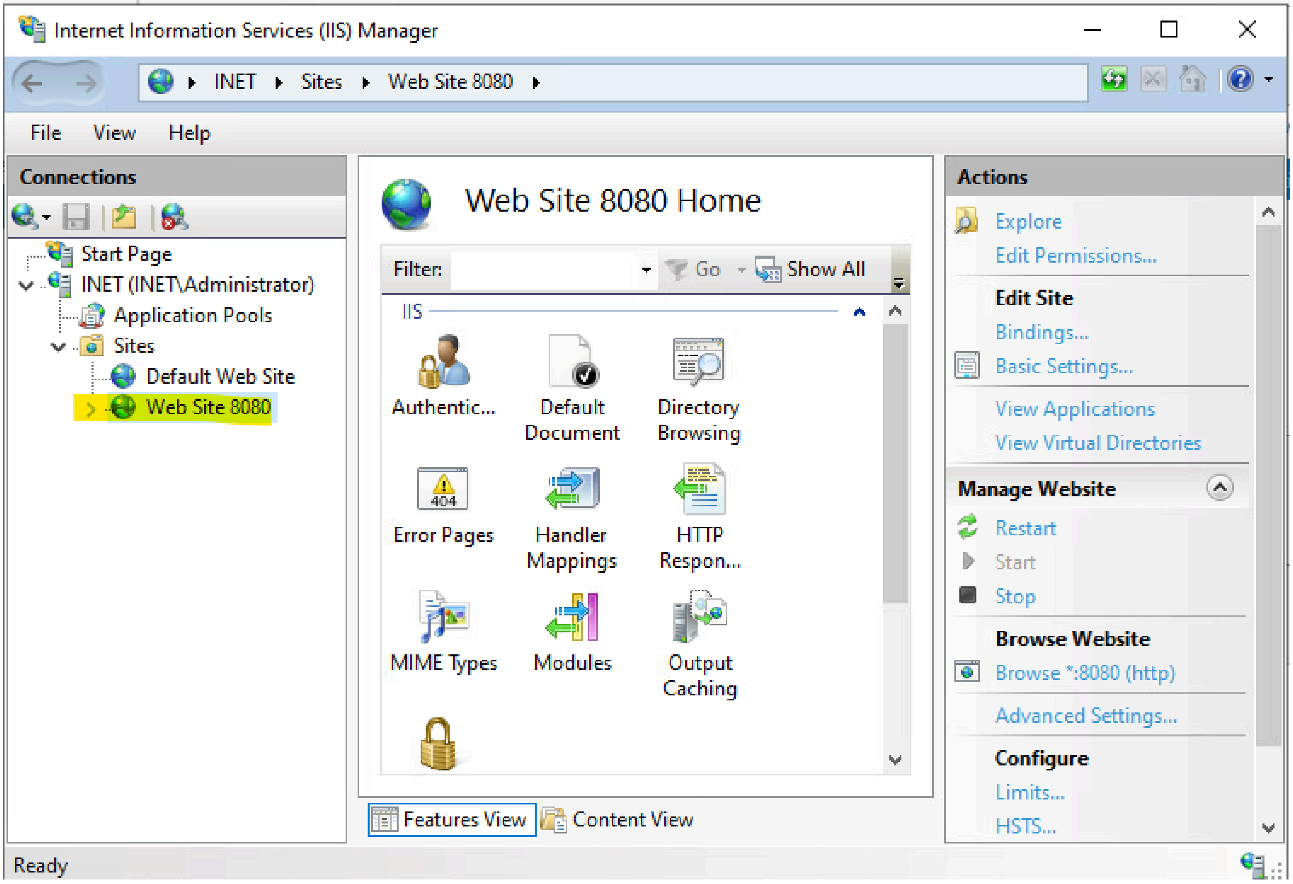
IP address: All Unassigned

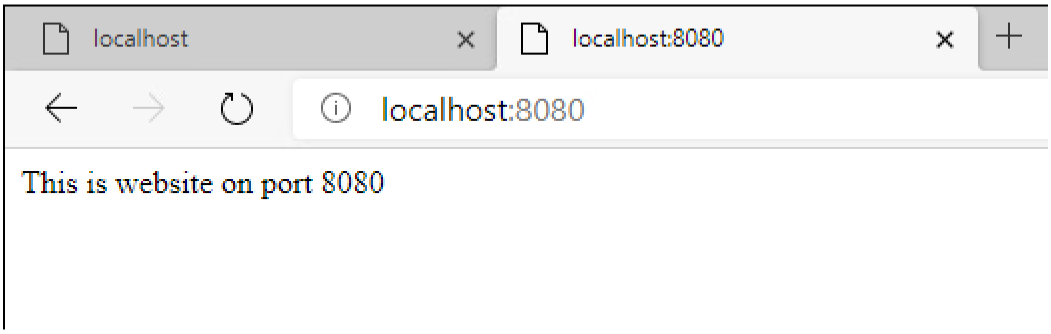
Port: 8080

Host name:

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

☑ Start Website immediately





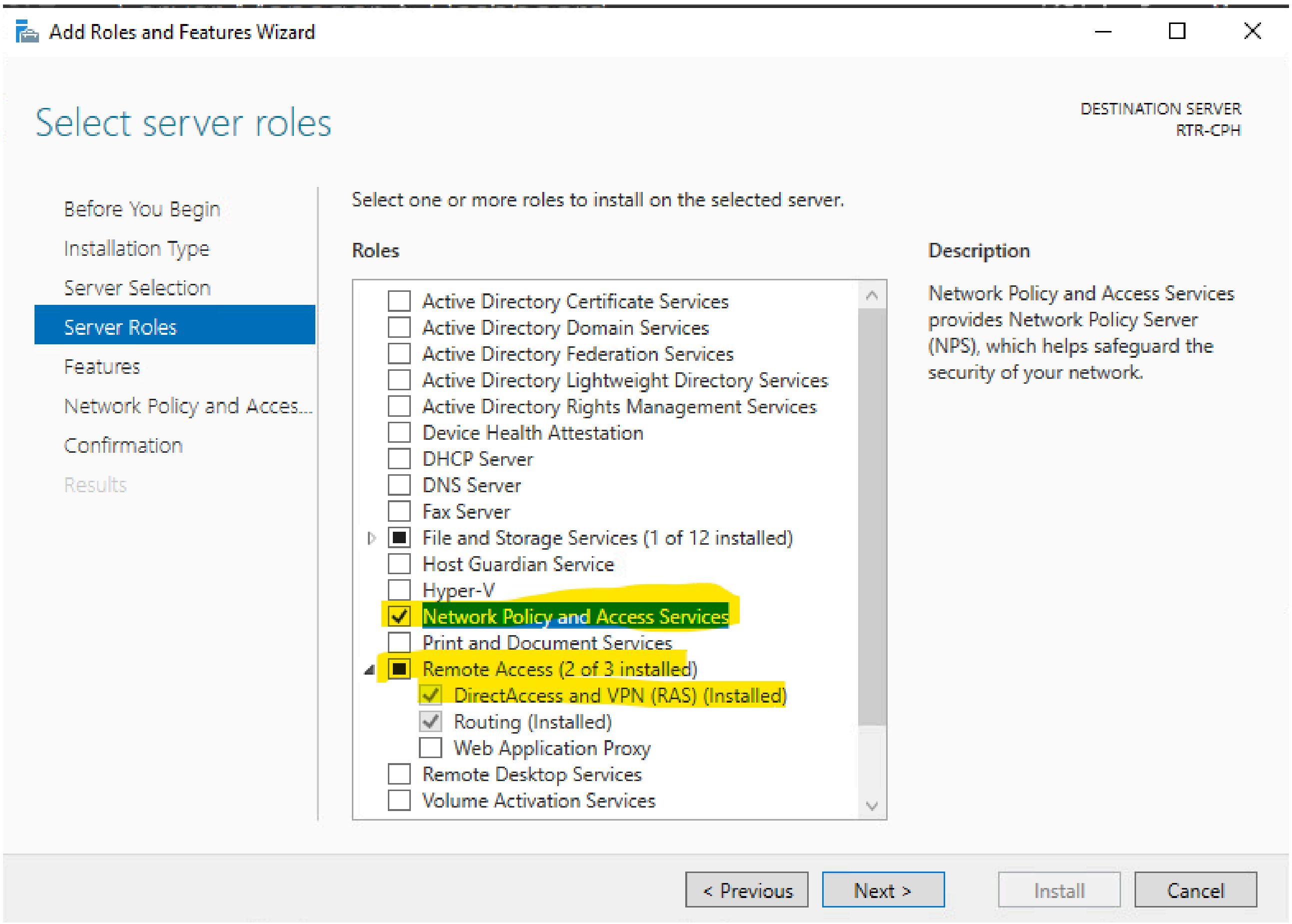
This is website on port 8080

RTR-CPH

Role: HQ Router
Tasks:

RTR-CPH - Task1: Site-to-site VPN

1. Configure IKEv2 Site-to-Site VPN with RTR-AAL



Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
RTR-CPH

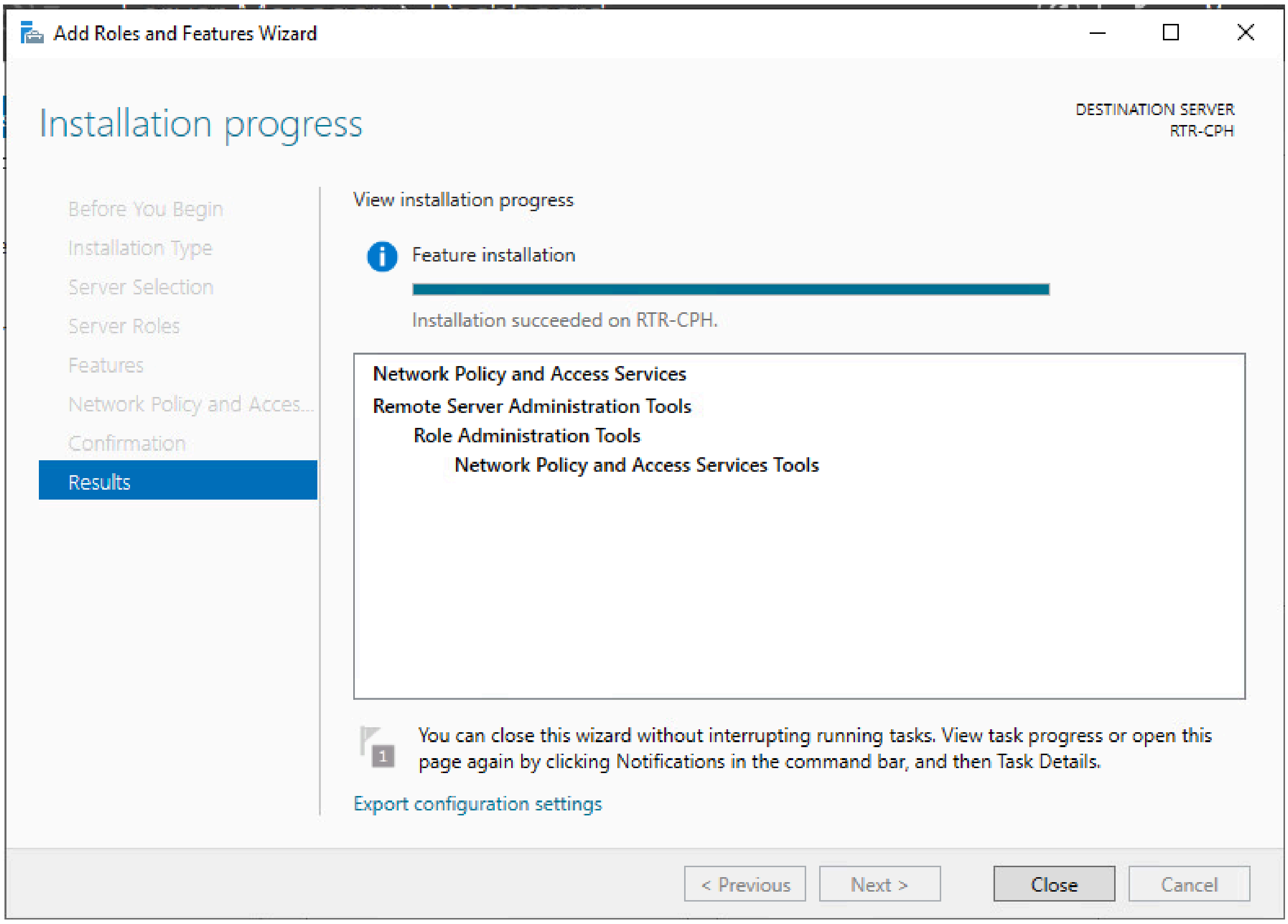
Select one or more roles to install on the selected server.

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)
- □ Host Guardian Service
- □ Hyper-V
- ☑ Network Policy and Access Services
- □ Print and Document Services
- ■ Remote Access (2 of 3 installed)
  - ☑ DirectAccess and VPN (RAS) (Installed)
  - ☑ Routing (Installed)
  - □ Web Application Proxy
- □ Remote Desktop Services
- □ Volume Activation Services

Description

Network Policy and Access Services provides Network Policy Server (NPS), which helps safeguard the security of your network.


Add Roles and Features Wizard

Installation progress

DESTINATION SERVER
RTR-CPH

View installation progress

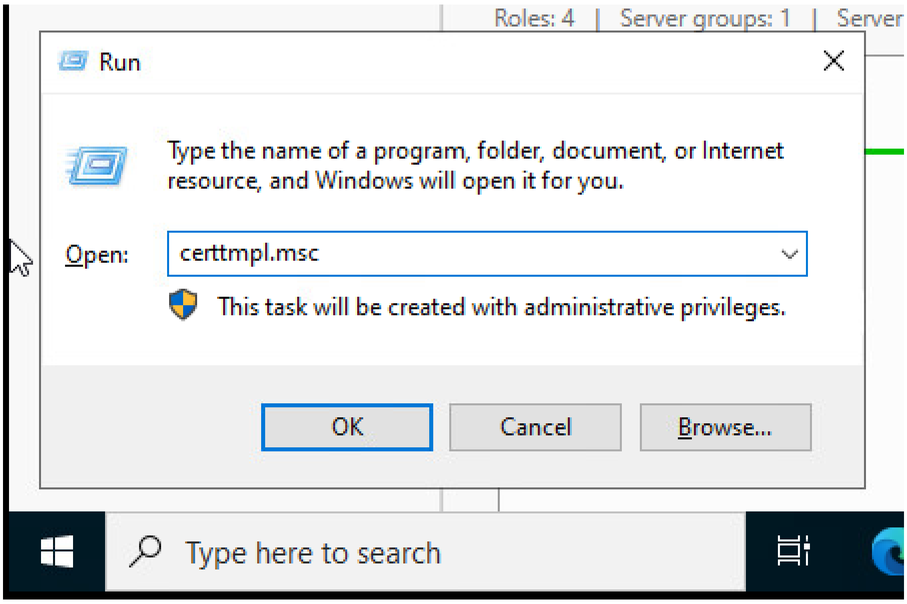
Feature installation

Installation succeeded on RTR-CPH.

Network Policy and Access Services
Remote Server Administration Tools
Role Administration Tools
Network Policy and Access Services Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

- Go to DC machine (CA) to create certs

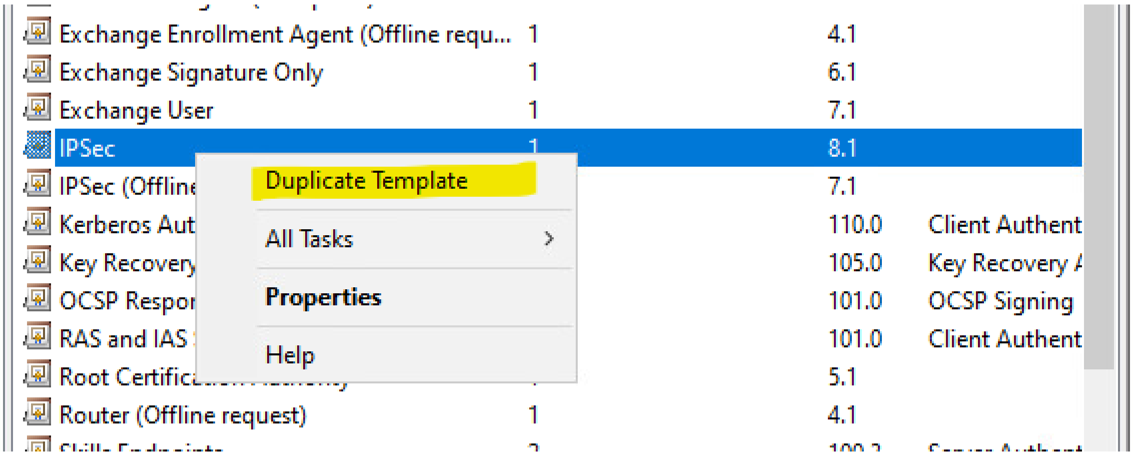


Run

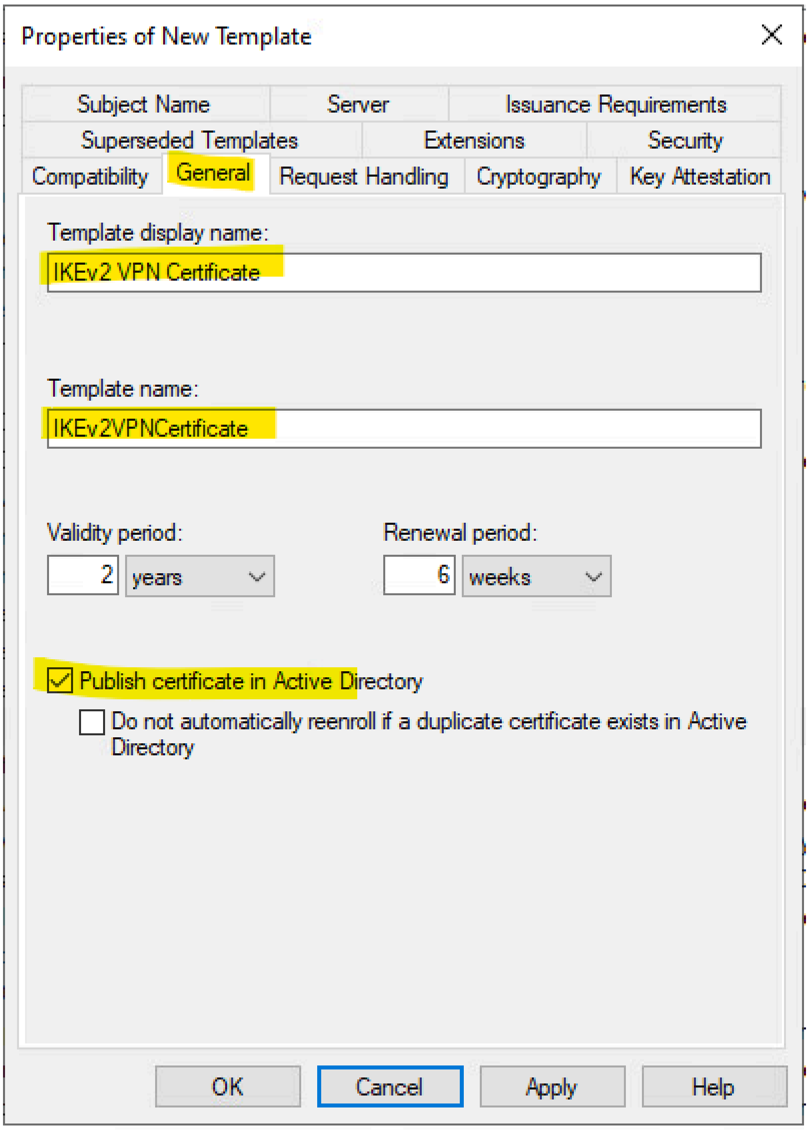
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: certtmpl.msc

This task will be created with administrative privileges.



Exchange Enrollment Agent (Offline requ...	1	4.1	
Exchange Signature Only	1	6.1	
Exchange User	1	7.1	
IPSec	1	8.1	
IPSec (Offline		7.1	
Kerberos Aut		110.0	Client Authent
Key Recovery		105.0	Key Recovery A
OCSP Respor		101.0	OCSP Signing
RAS and IAS		101.0	Client Authent
Root Certific		5.1	
Router (Offline request)	1	4.1	



Properties of New Template

Template display name: IKEv2 VPN Certificate

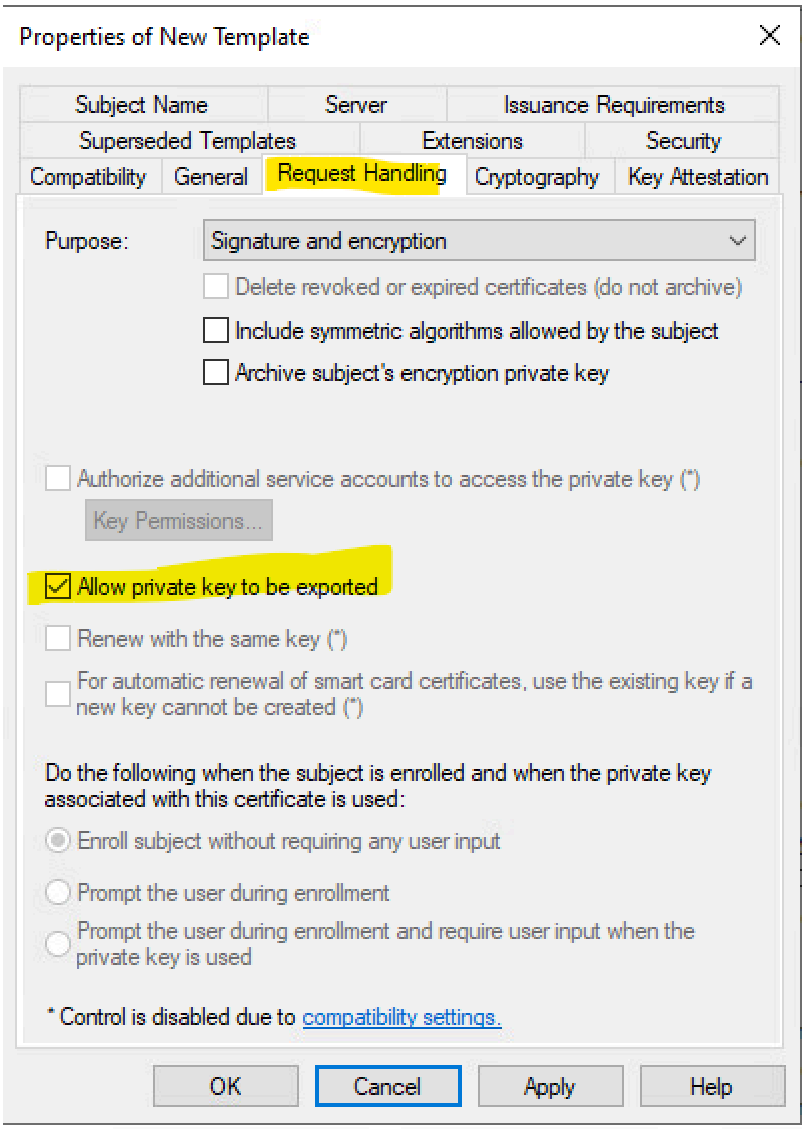
Template name: IKEv2VPNCertificate

Validity period: 2 years

Renewal period: 6 weeks

☑ Publish certificate in Active Directory

□ Do not automatically reenroll if a duplicate certificate exists in Active Directory



Properties of New Template

Purpose: Signature and encryption

□ Delete revoked or expired certificates (do not archive)

□ Include symmetric algorithms allowed by the subject

□ Archive subject's encryption private key

□ Authorize additional service accounts to access the private key (*)

☑ Allow private key to be exported

□ Renew with the same key (*)

□ For automatic renewal of smart card certificates, use the existing key if a new key cannot be created (*)

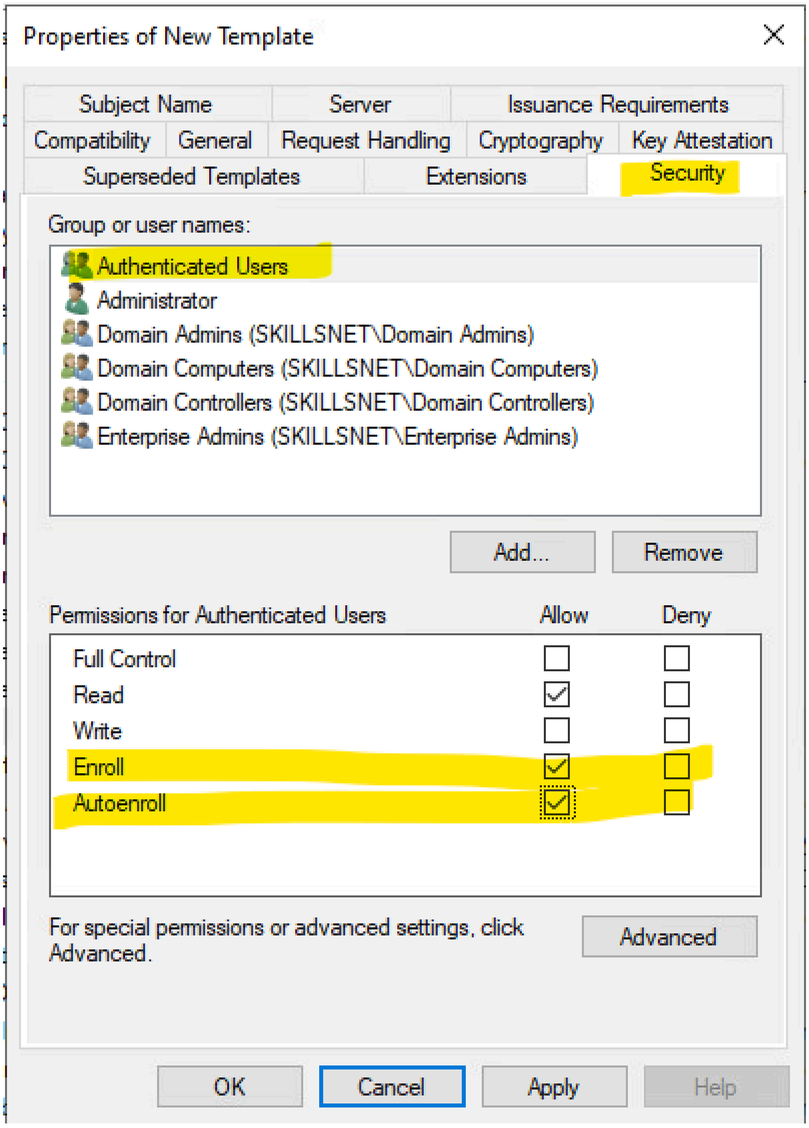
Do the following when the subject is enrolled and when the private key associated with this certificate is used:

● Enroll subject without requiring any user input

○ Prompt the user during enrollment

○ Prompt the user during enrollment and require user input when the private key is used

* Control is disabled due to compatibility settings.



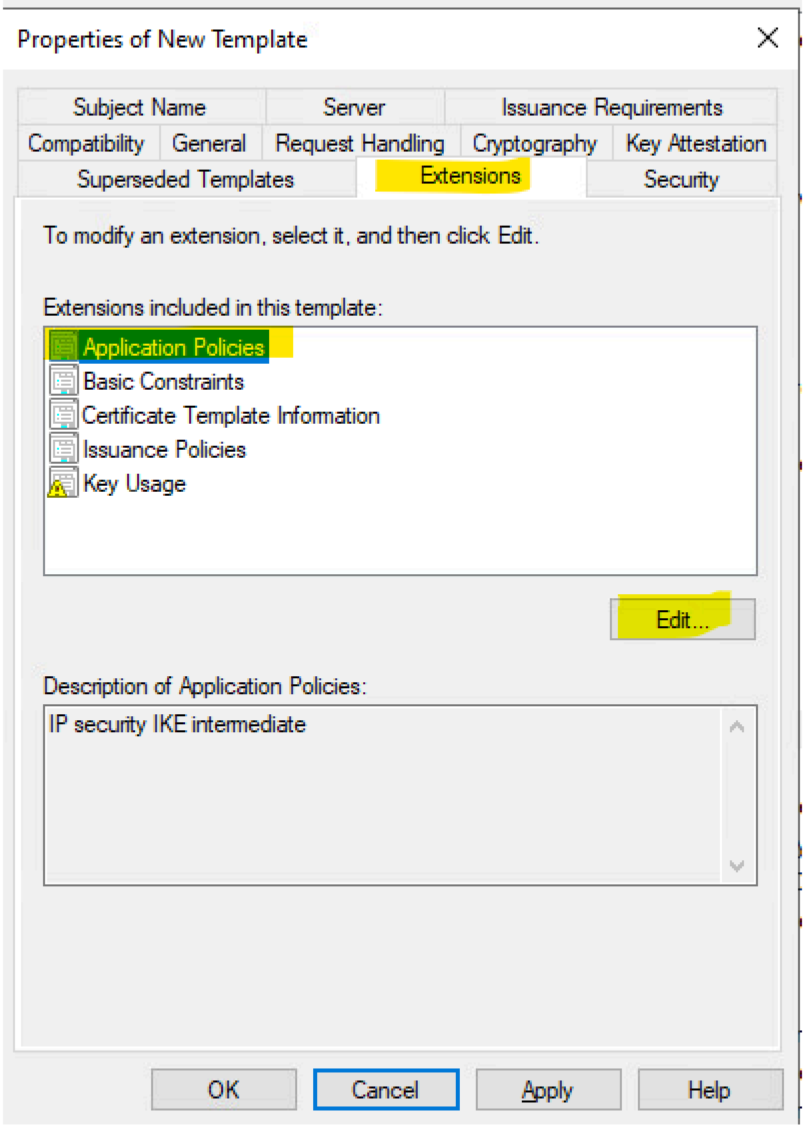
Properties of New Template

Group or user names:

- Authenticated Users
- Administrator
- Domain Admins (SKILLSNET\Domain Admins)
- Domain Computers (SKILLSNET\Domain Computers)
- Domain Controllers (SKILLSNET\Domain Controllers)
- Enterprise Admins (SKILLSNET\Enterprise Admins)

Permissions for Authenticated Users	Allow	Deny
Full Control	□	□
Read	☑	□
Write	□	□
Enroll	☑	□
Autoenroll	☑	□

For special permissions or advanced settings, click Advanced.



Properties of New Template

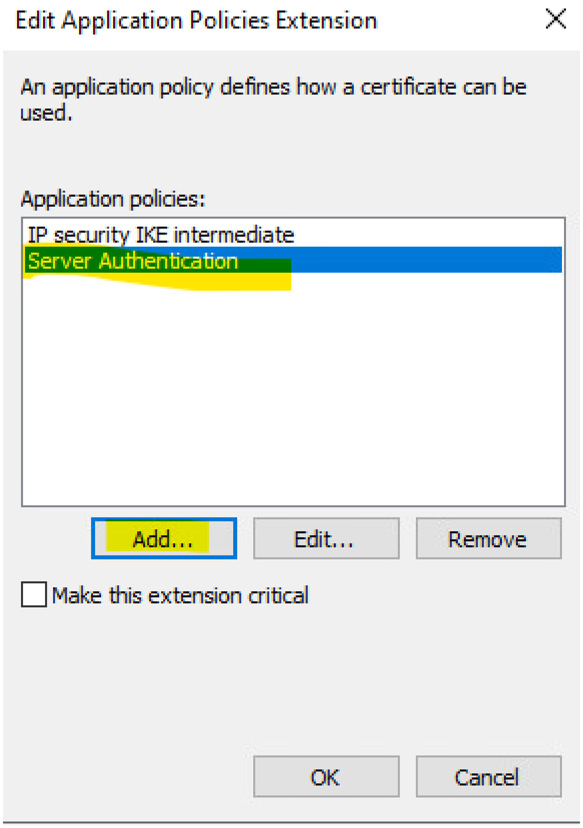
To modify an extension, select it, and then click Edit.

Extensions included in this template:

- Application Policies
- Basic Constraints
- Certificate Template Information
- Issuance Policies
- Key Usage

Description of Application Policies:

IP security IKE intermediate



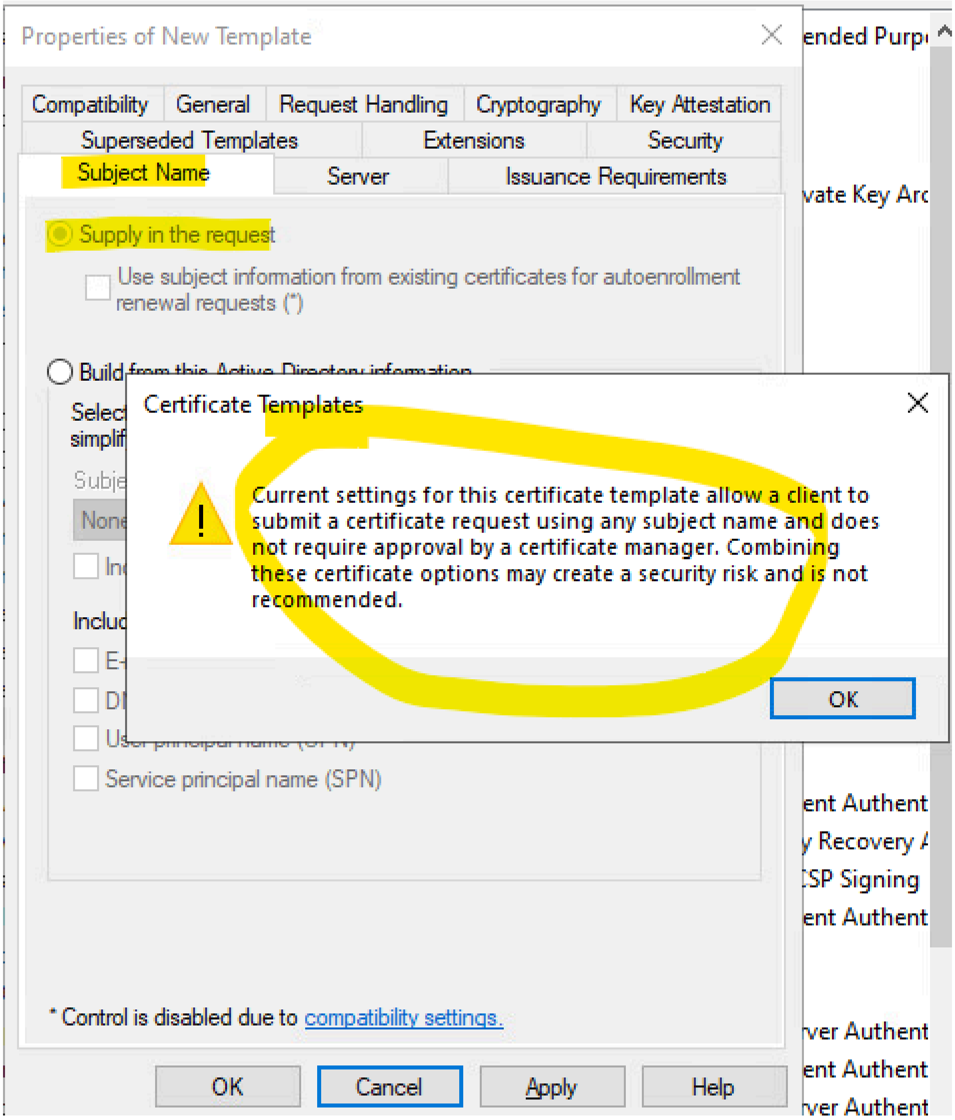
Edit Application Policies Extension

An application policy defines how a certificate can be used.

Application policies:

- IP security IKE intermediate
- Server Authentication

□ Make this extension critical



Properties of New Template

● Supply in the request

□ Use subject information from existing certificates for autoenrollment renewal requests (*)

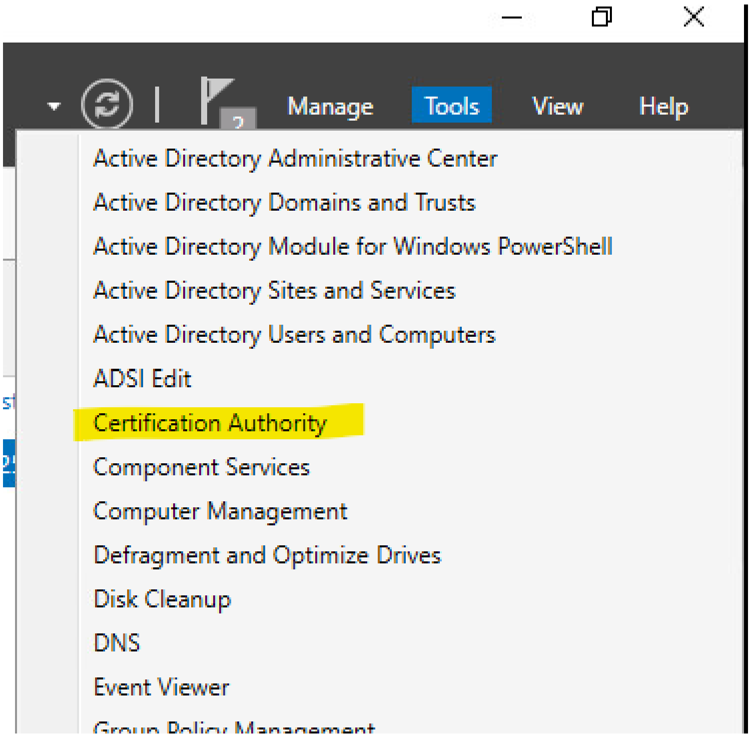
○ Build from this Active Directory information

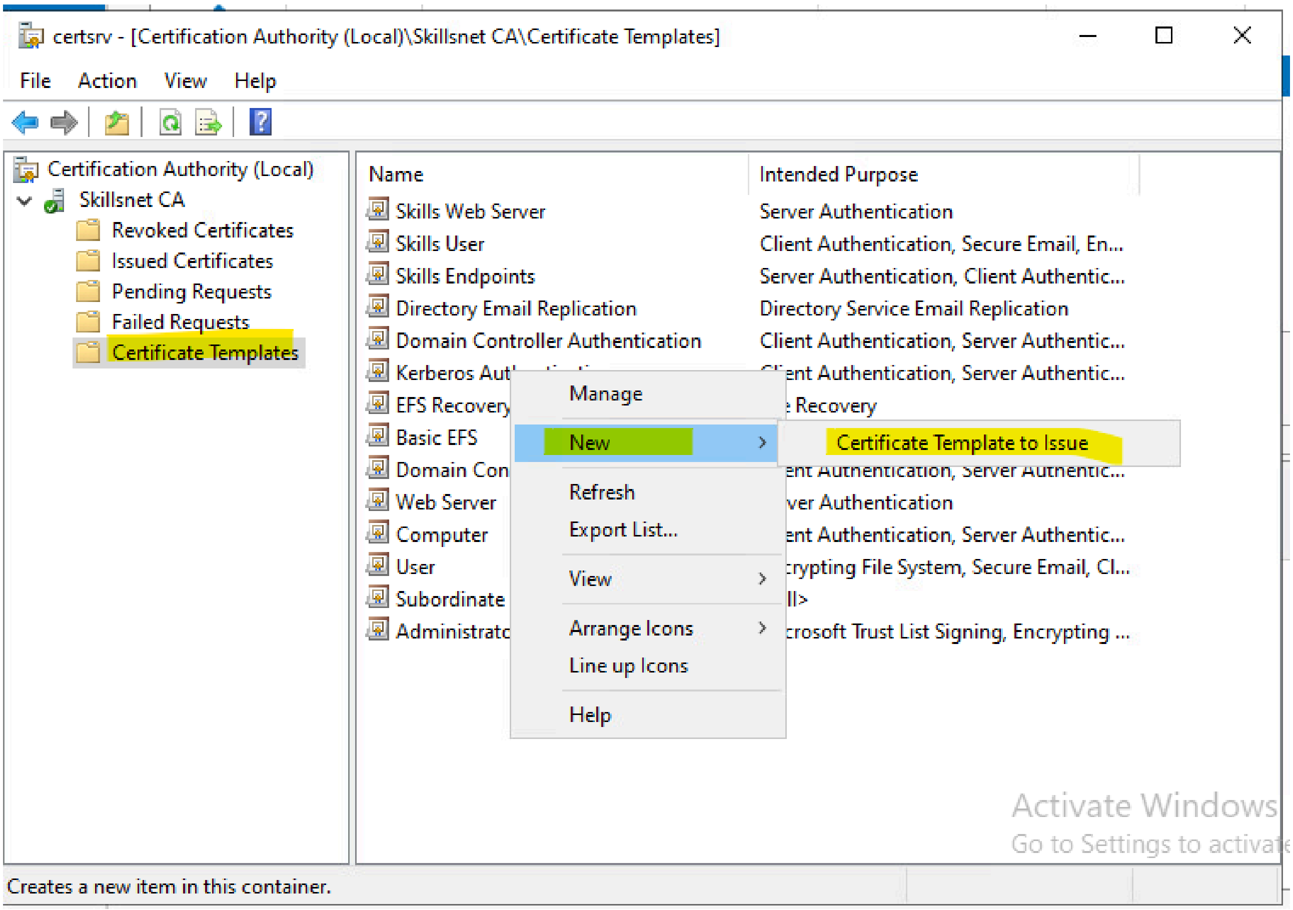
Service principal name (SPN)

* Control is disabled due to compatibility settings.

Certificate Templates

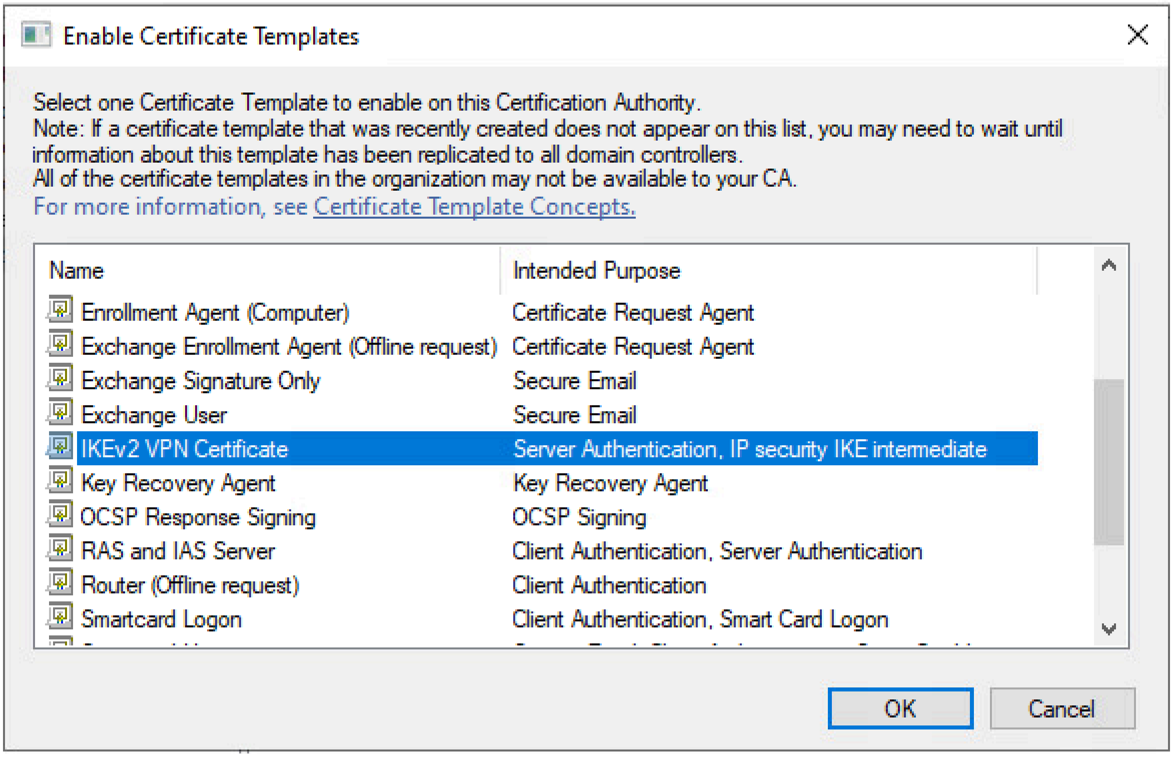
Current settings for this certificate template allow a client to submit a certificate request using any subject name and does not require approval by a certificate manager. Combining these certificate options may create a security risk and is not recommended.


Manage
Tools
View
Help
Active Directory Administrative Center
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Certification Authority
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer
Group Policy Management



Name	Intended Purpose
Skills Web Server	Server Authentication
Skills User	Client Authentication, Secure Email, En...
Skills Endpoints	Server Authentication, Client Authentic...
Directory Email Replication	Directory Service Email Replication
Domain Controller Authentication	Client Authentication, Server Authentic...
Kerberos Aut	ent Authentication, Server Authentic...
EFS Recovery	Recovery
Basic EFS	
Domain Con	ent Authentication, Server Authentic...
Web Server	ver Authentication
Computer	ent Authentication, Server Authentic...
User	rypting File System, Secure Email, Cl...
Subordinate	ll>
Administrato	rosoft Trust List Signing, Encrypting ...

Creates a new item in this container.

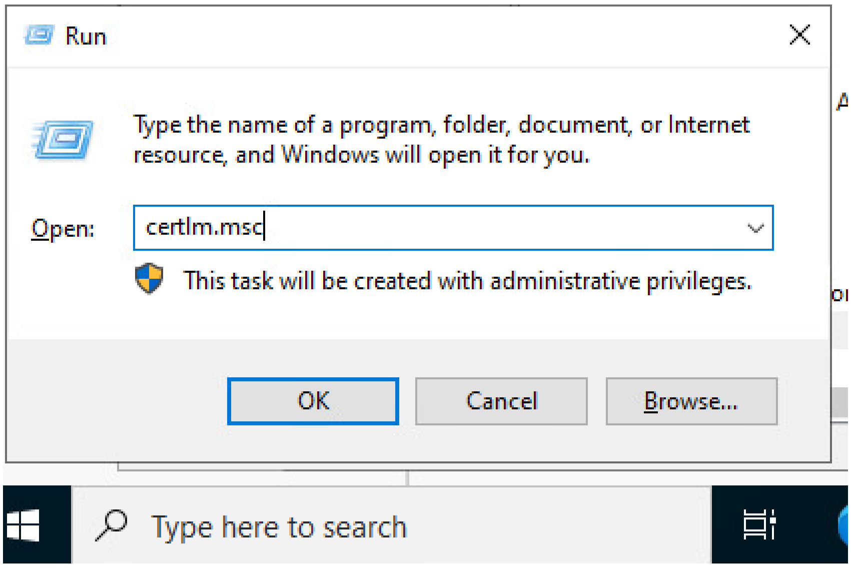


Enable Certificate Templates

Select one Certificate Template to enable on this Certification Authority.
Note: If a certificate template that was recently created does not appear on this list, you may need to wait until information about this template has been replicated to all domain controllers.
All of the certificate templates in the organization may not be available to your CA.
For more information, see Certificate Template Concepts.

Name	Intended Purpose
Enrollment Agent (Computer)	Certificate Request Agent
Exchange Enrollment Agent (Offline request)	Certificate Request Agent
Exchange Signature Only	Secure Email
Exchange User	Secure Email
IKEv2 VPN Certificate	Server Authentication, IP security IKE intermediate
Key Recovery Agent	Key Recovery Agent
OCSP Response Signing	OCSP Signing
RAS and IAS Server	Client Authentication, Server Authentication
Router (Offline request)	Client Authentication
Smartcard Logon	Client Authentication, Smart Card Logon

- Create certificates for RTR-CPH and RTR-AAL

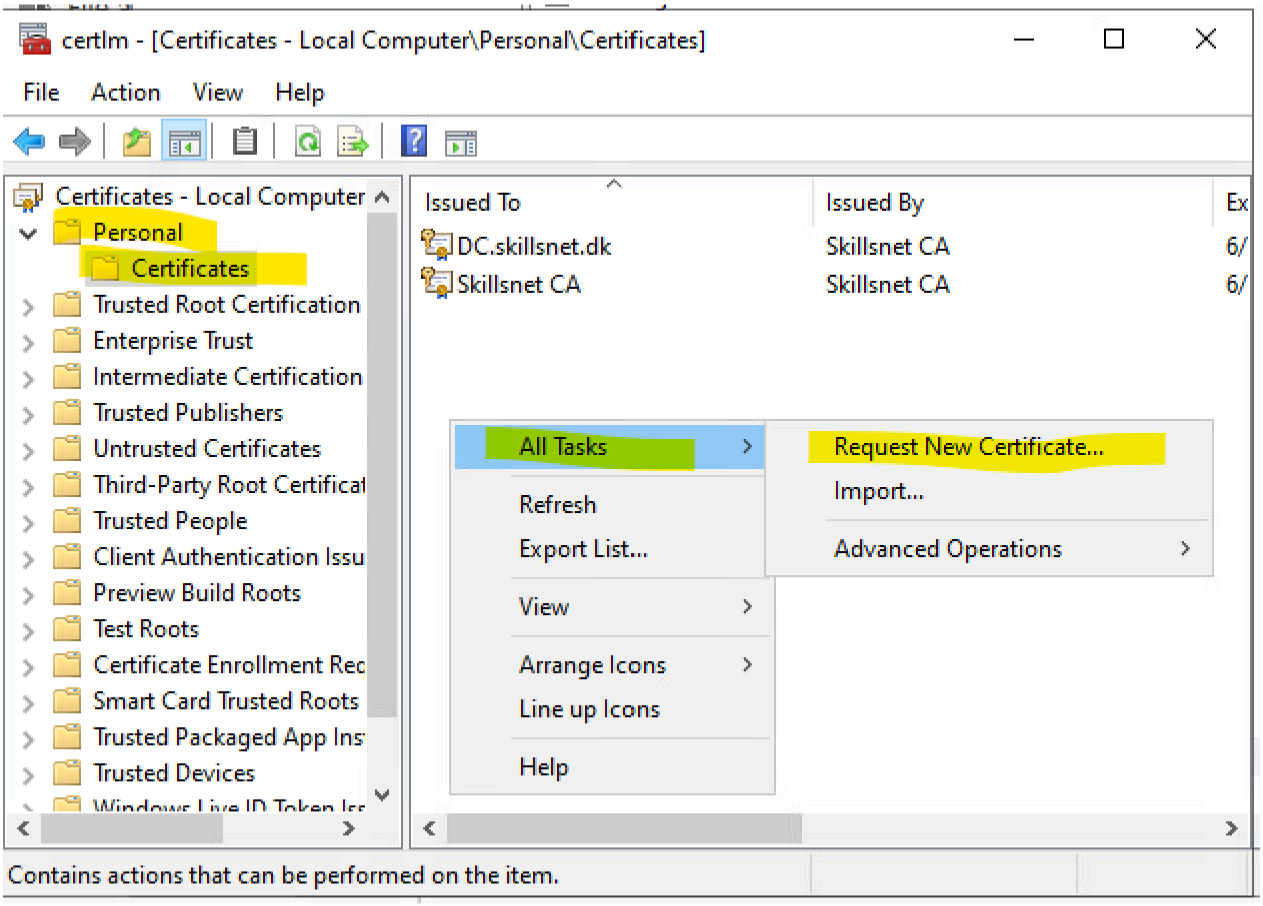


Run

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

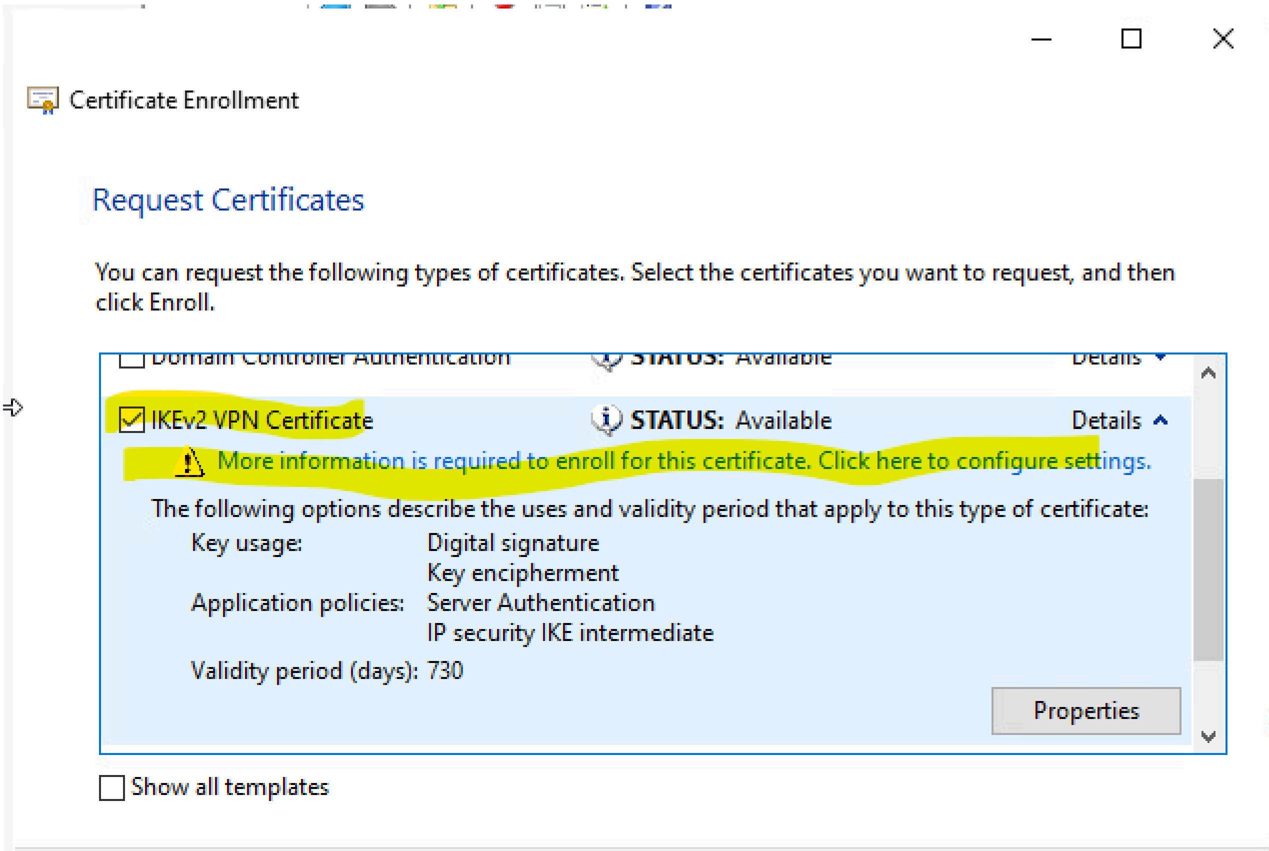
Open: certlm.msc

This task will be created with administrative privileges.


certlm - [Certificates - Local Computer\Personal\Certificates]

Issued To	Issued By	Ex
DC.skillsnet.dk	Skillsnet CA	6/
Skillsnet CA	Skillsnet CA	6/

Contains actions that can be performed on the item.


Certificate Enrollment

Request Certificates

You can request the following types of certificates. Select the certificates you want to request, and then click Enroll.

□ Domain Controller Authentication STATUS: Available Details

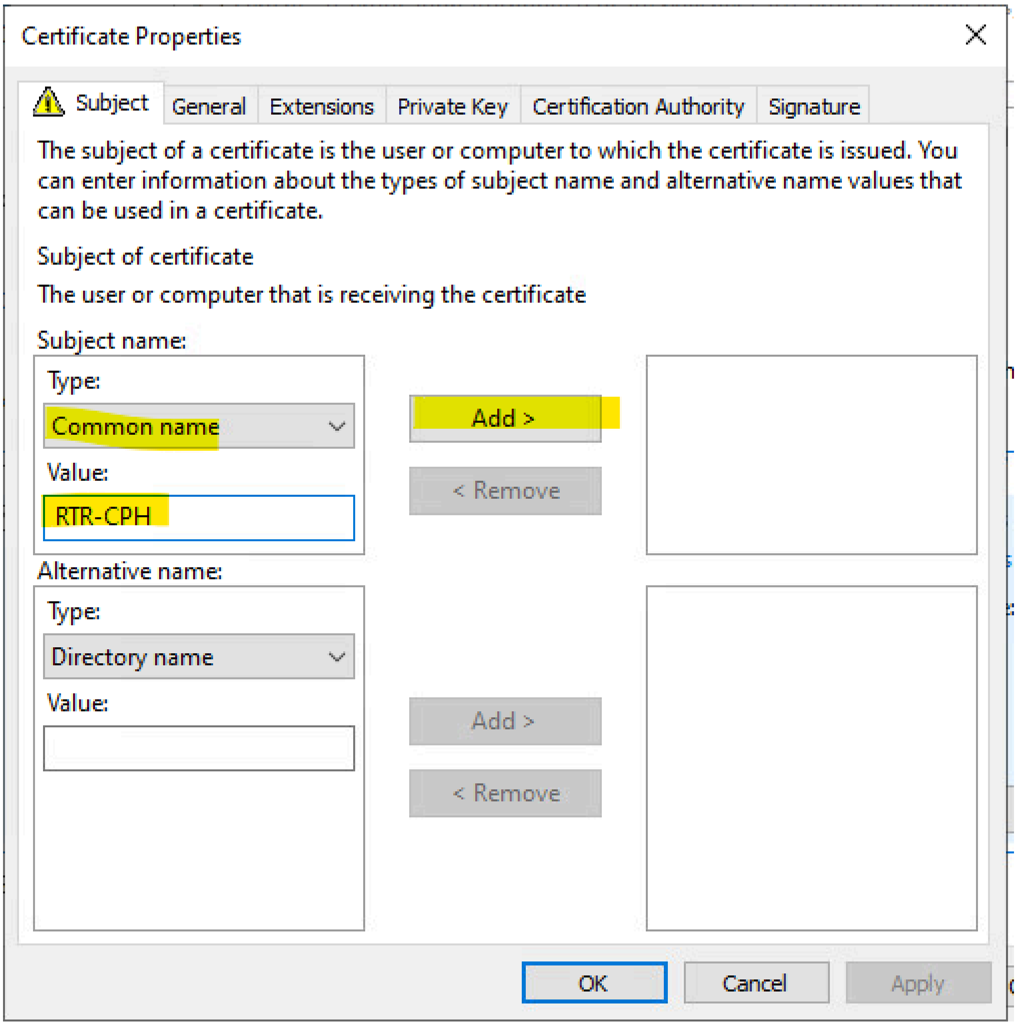
☑ IKEv2 VPN Certificate STATUS: Available Details

More information is required to enroll for this certificate. Click here to configure settings.

The following options describe the uses and validity period that apply to this type of certificate:

Key usage: Digital signature
Key encipherment
Application policies: Server Authentication
IP security IKE intermediate
Validity period (days): 730

□ Show all templates



The subject of a certificate is the user or computer to which the certificate is issued. You can enter information about the types of subject name and alternative name values that can be used in a certificate.

Subject of certificate

The user or computer that is receiving the certificate

Subject name:

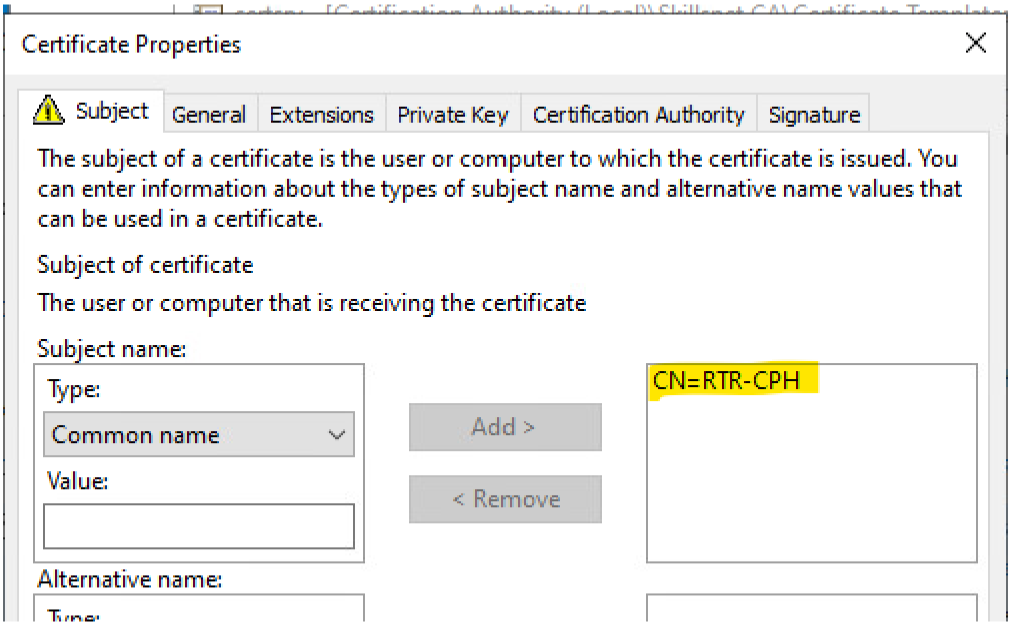
Type: Common name

Value: RTR-CPH

Alternative name:

Type: Directory name

Value:



The subject of a certificate is the user or computer to which the certificate is issued. You can enter information about the types of subject name and alternative name values that can be used in a certificate.

Subject of certificate

The user or computer that is receiving the certificate

Subject name:

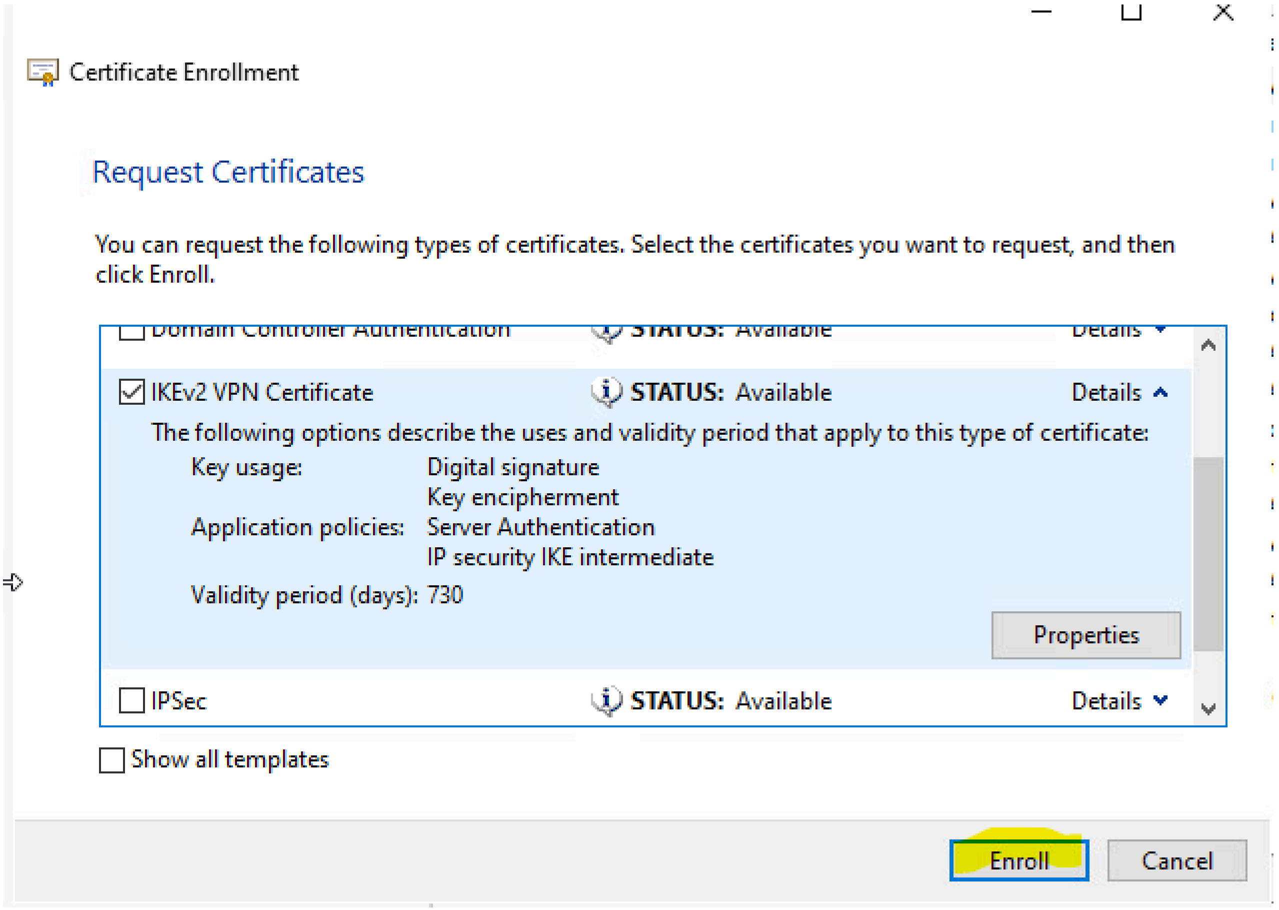
Type: Common name

Value:

CN=RTR-CPH

Alternative name:

Type:



Certificate Enrollment

Request Certificates

You can request the following types of certificates. Select the certificates you want to request, and then click Enroll.

□ Domain Controller Authentication STATUS: Available Details

☑ IKEv2 VPN Certificate STATUS: Available Details

The following options describe the uses and validity period that apply to this type of certificate:

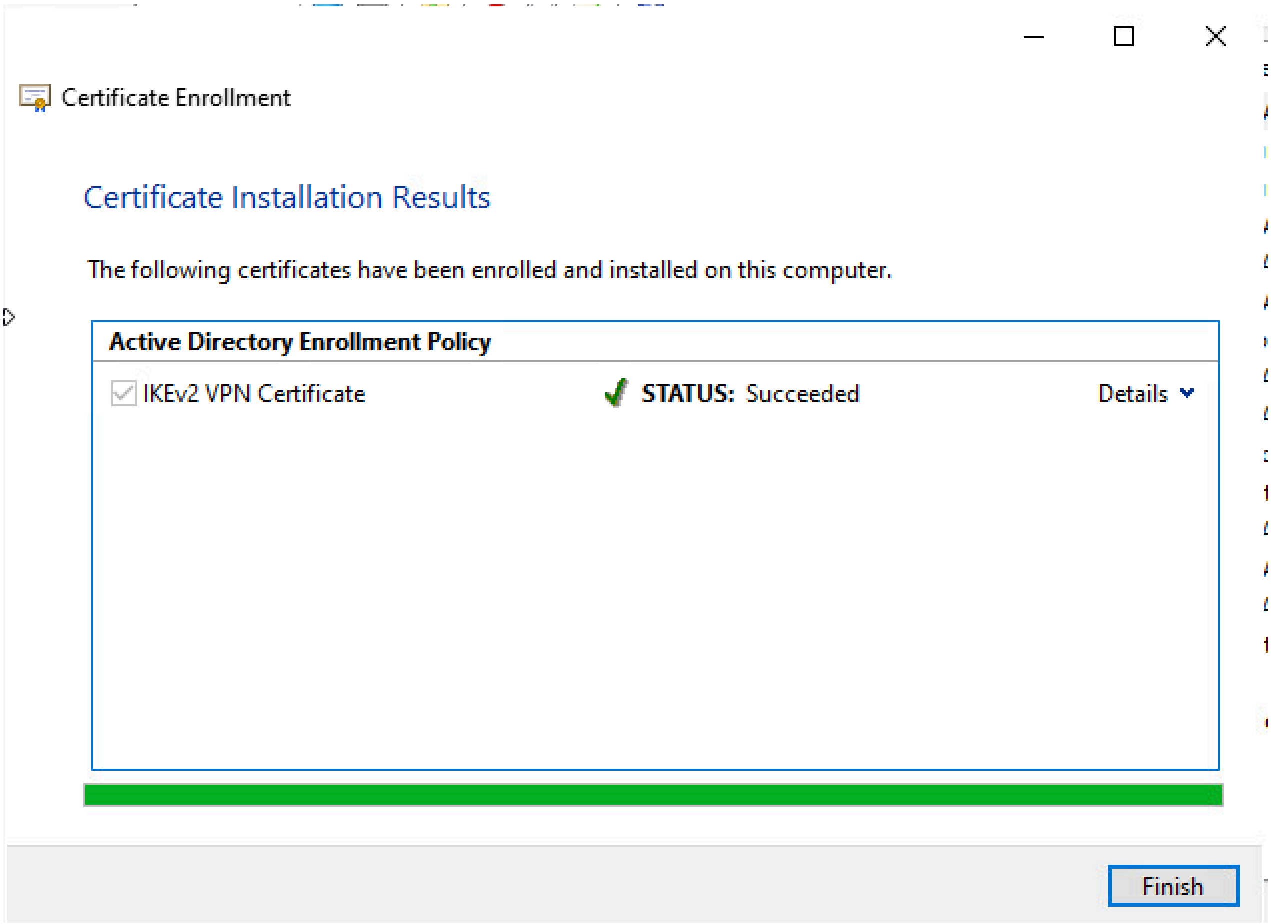
Key usage: Digital signature
Key encipherment

Application policies: Server Authentication
IP security IKE intermediate

Validity period (days): 730

□ IPSec STATUS: Available Details

□ Show all templates



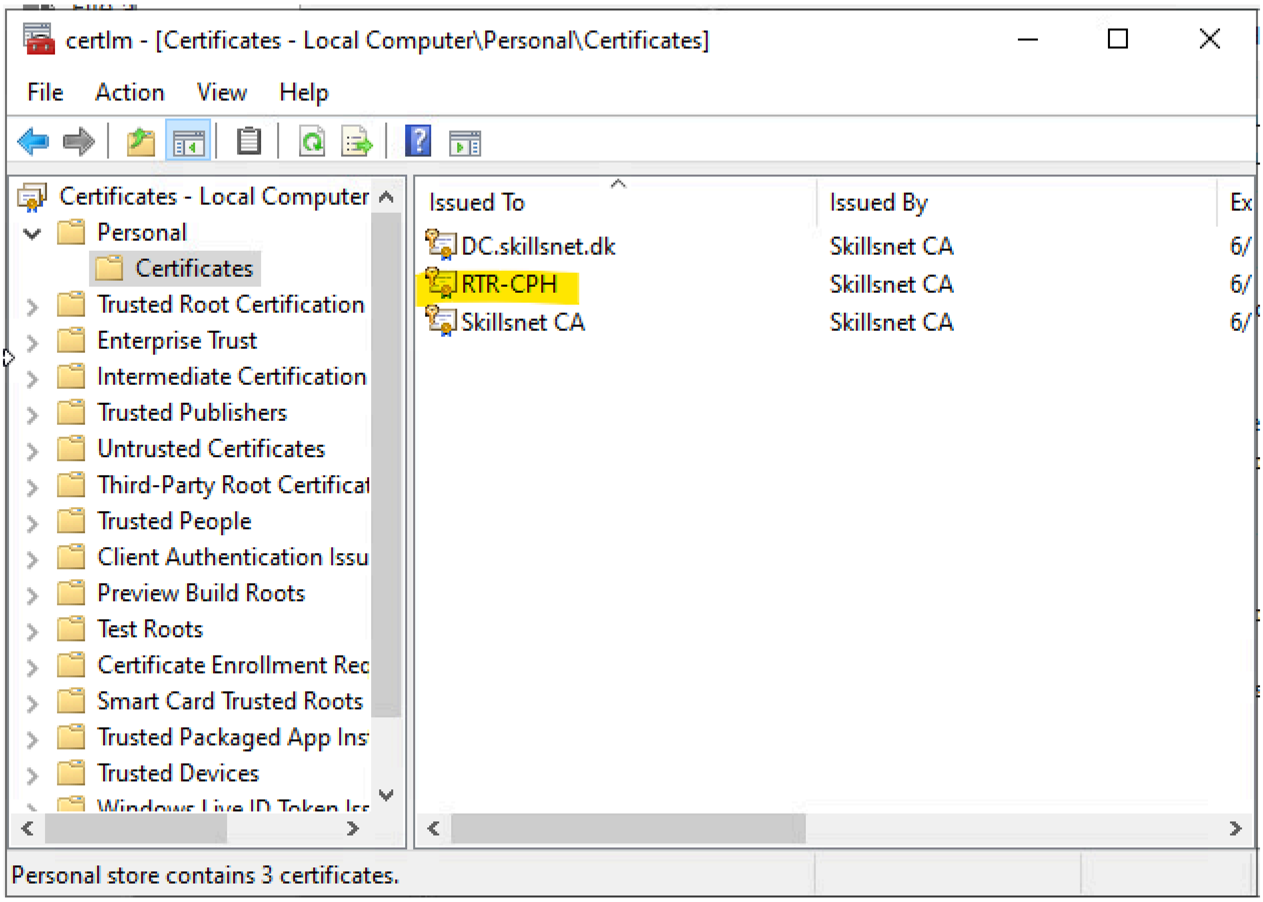
Certificate Enrollment

Certificate Installation Results

The following certificates have been enrolled and installed on this computer.

Active Directory Enrollment Policy

☑ IKEv2 VPN Certificate ✓ **STATUS:** Succeeded

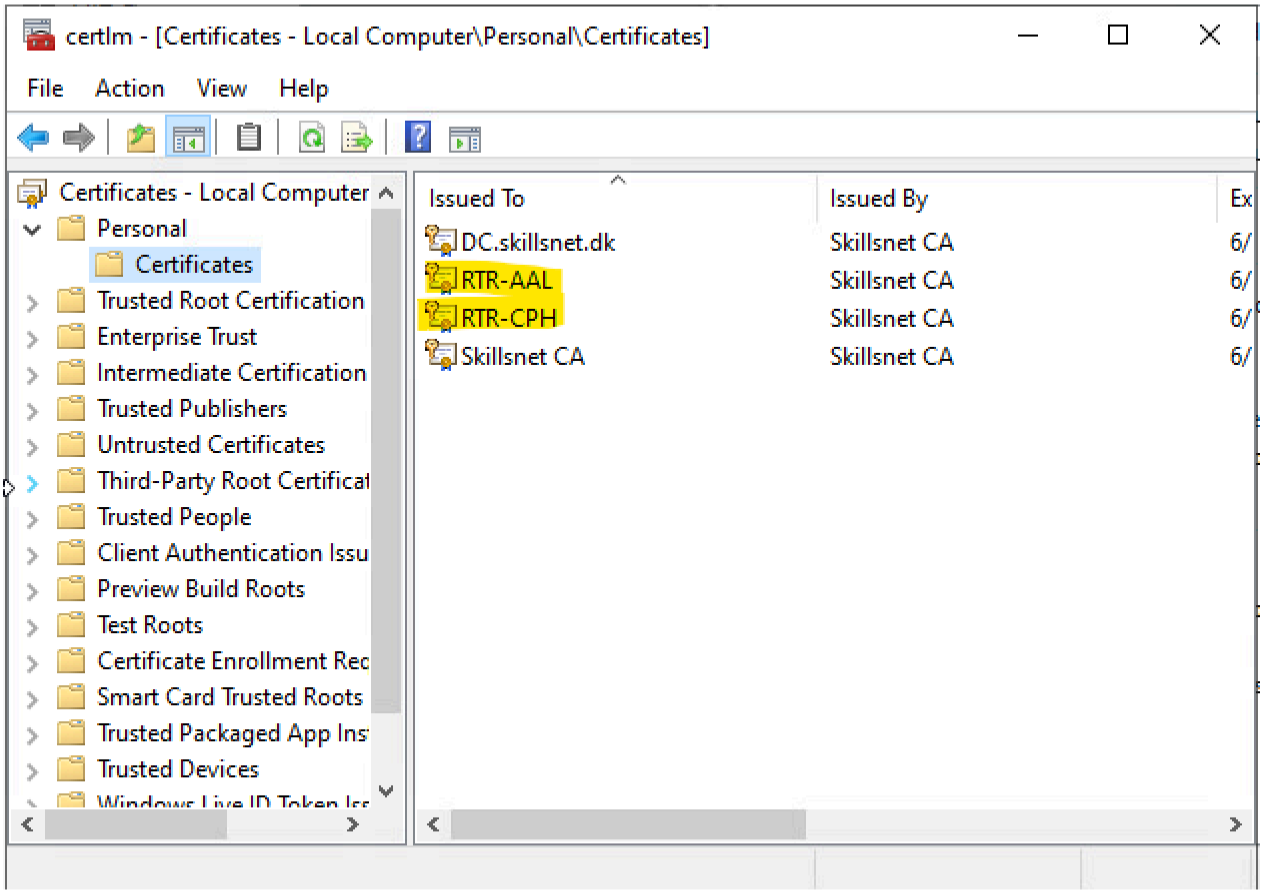


certlm - [Certificates - Local Computer\Personal\Certificates]

Issued To	Issued By	Ex
DC.skillsnet.dk	Skillsnet CA	6/
RTR-CPH	Skillsnet CA	6/
Skillsnet CA	Skillsnet CA	6/

Personal store contains 3 certificates.

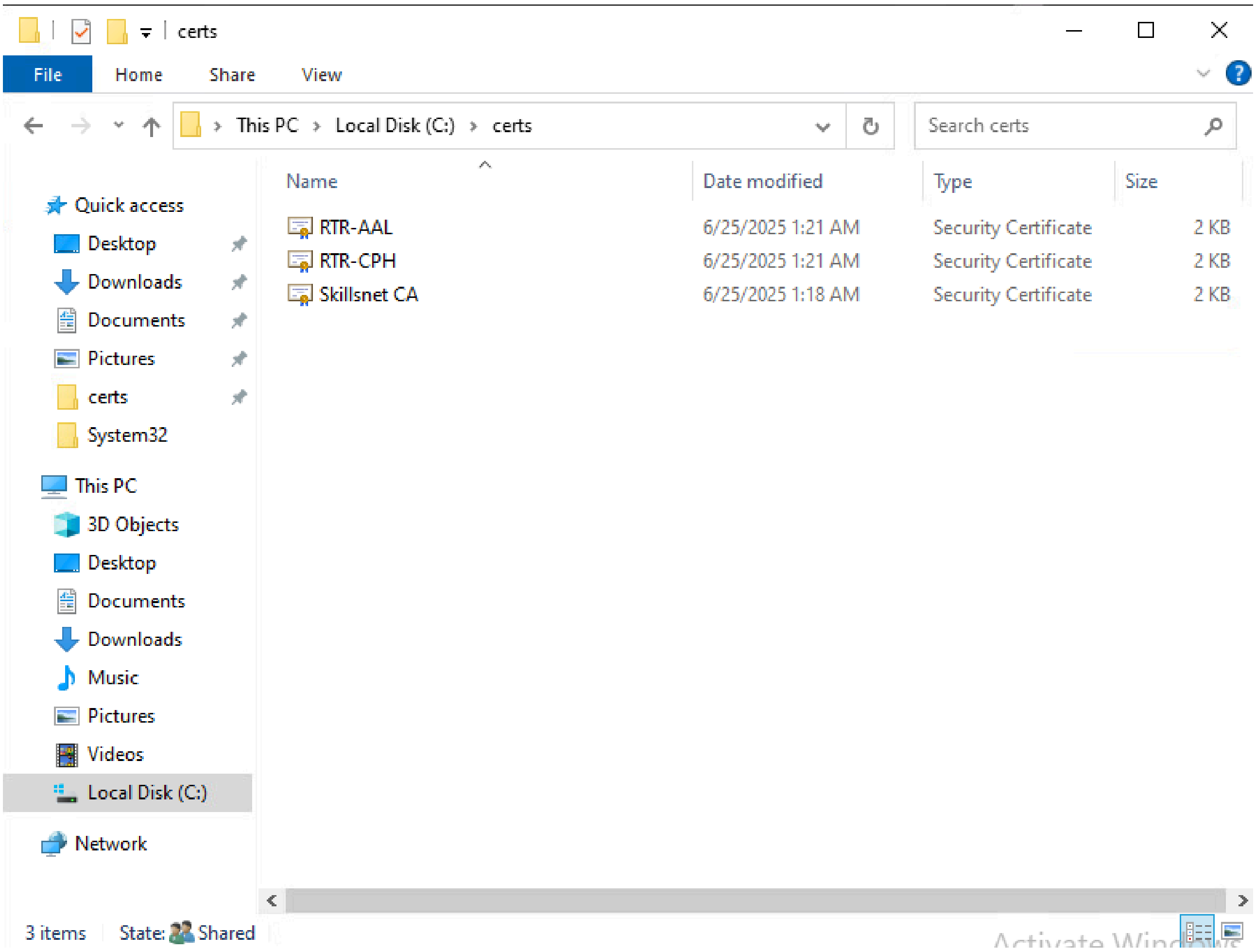
Repeat the process for RTR-AAL



certlm - [Certificates - Local Computer\Personal\Certificates]

Issued To	Issued By	Ex
DC.skillsnet.dk	Skillsnet CA	6/
RTR-AAL	Skillsnet CA	6/
RTR-CPH	Skillsnet CA	6/
Skillsnet CA	Skillsnet CA	6/

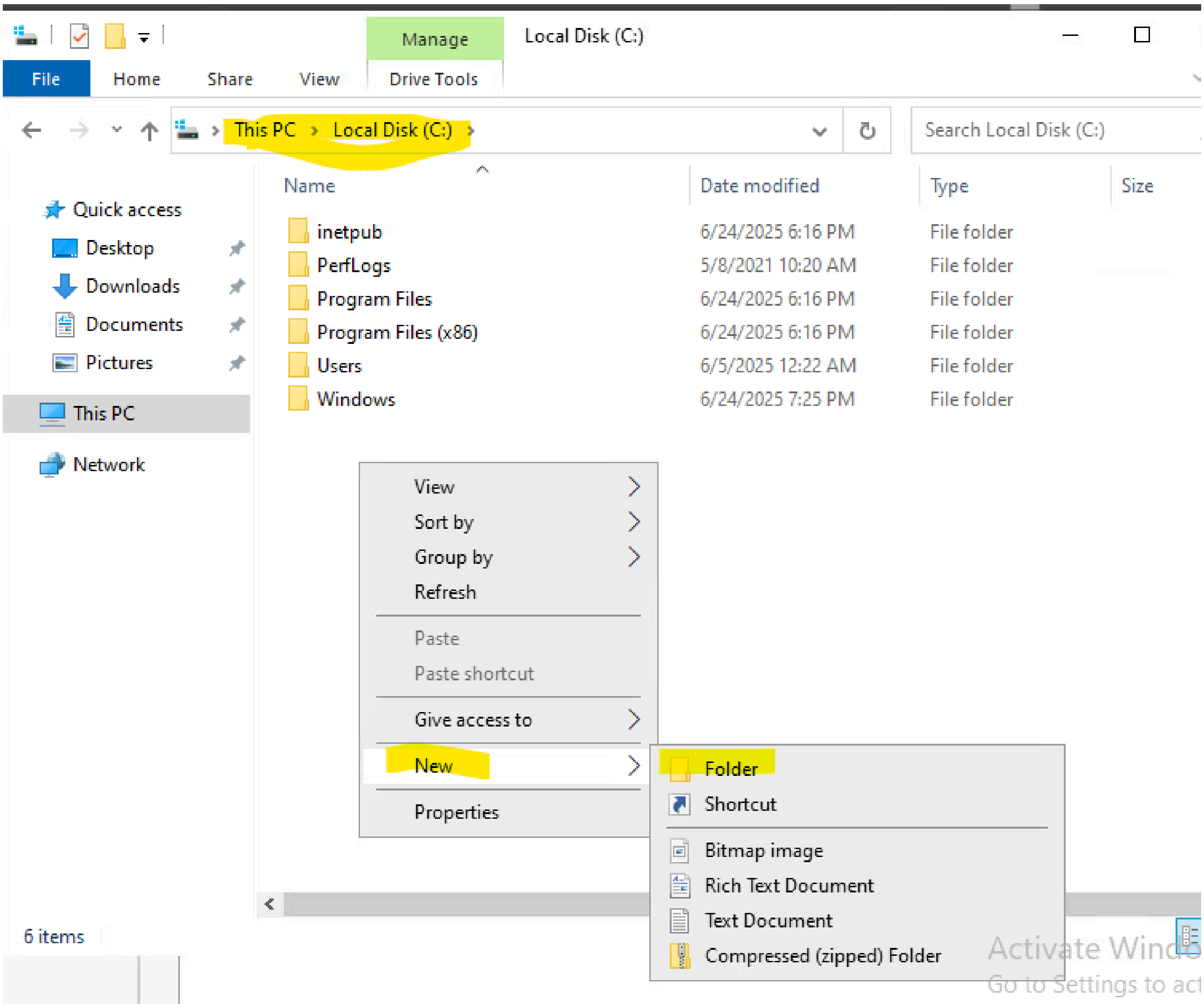
- Export certificates to shared folder (see how to in DC)



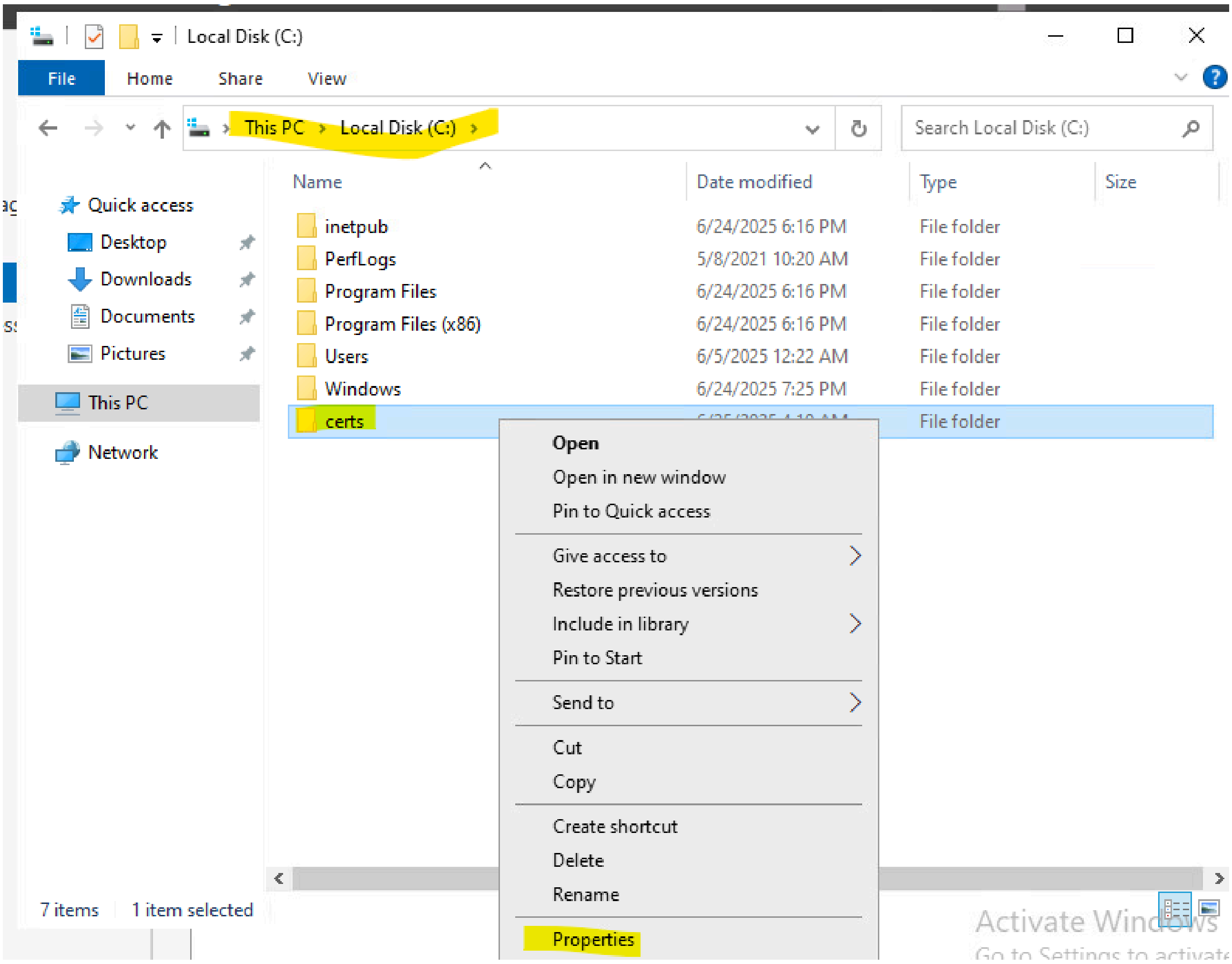
Name	Date modified	Type	Size
RTR-AAL	6/25/2025 1:21 AM	Security Certificate	2 KB
RTR-CPH	6/25/2025 1:21 AM	Security Certificate	2 KB
Skillsnet CA	6/25/2025 1:18 AM	Security Certificate	2 KB

- Back to RTR-CPH

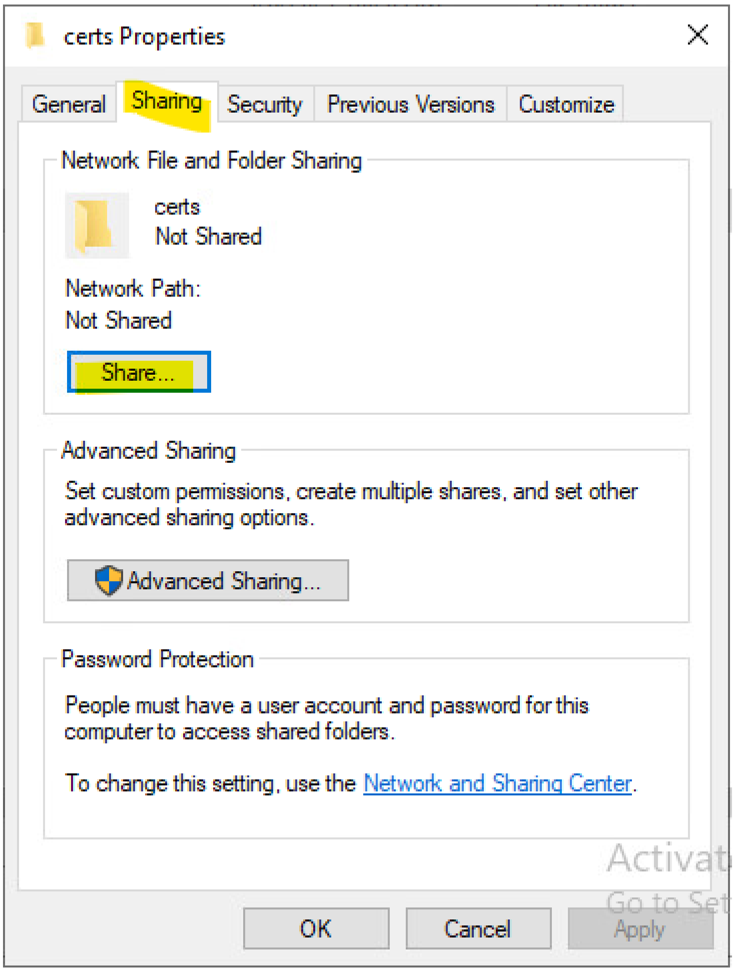
Create a shared folder to transfer certs and other things to Branch:



Name	Date modified	Type	Size
inetpub	6/24/2025 6:16 PM	File folder	
PerfLogs	5/8/2021 10:20 AM	File folder	
Program Files	6/24/2025 6:16 PM	File folder	
Program Files (x86)	6/24/2025 6:16 PM	File folder	
Users	6/5/2025 12:22 AM	File folder	
Windows	6/24/2025 7:25 PM	File folder	



Name	Date modified	Type	Size
inetpub	6/24/2025 6:16 PM	File folder	
PerfLogs	5/8/2021 10:20 AM	File folder	
Program Files	6/24/2025 6:16 PM	File folder	
Program Files (x86)	6/24/2025 6:16 PM	File folder	
Users	6/5/2025 12:22 AM	File folder	
Windows	6/24/2025 7:25 PM	File folder	
certs		File folder	



certs Properties

Network File and Folder Sharing

certs
Not Shared

Network Path:
Not Shared

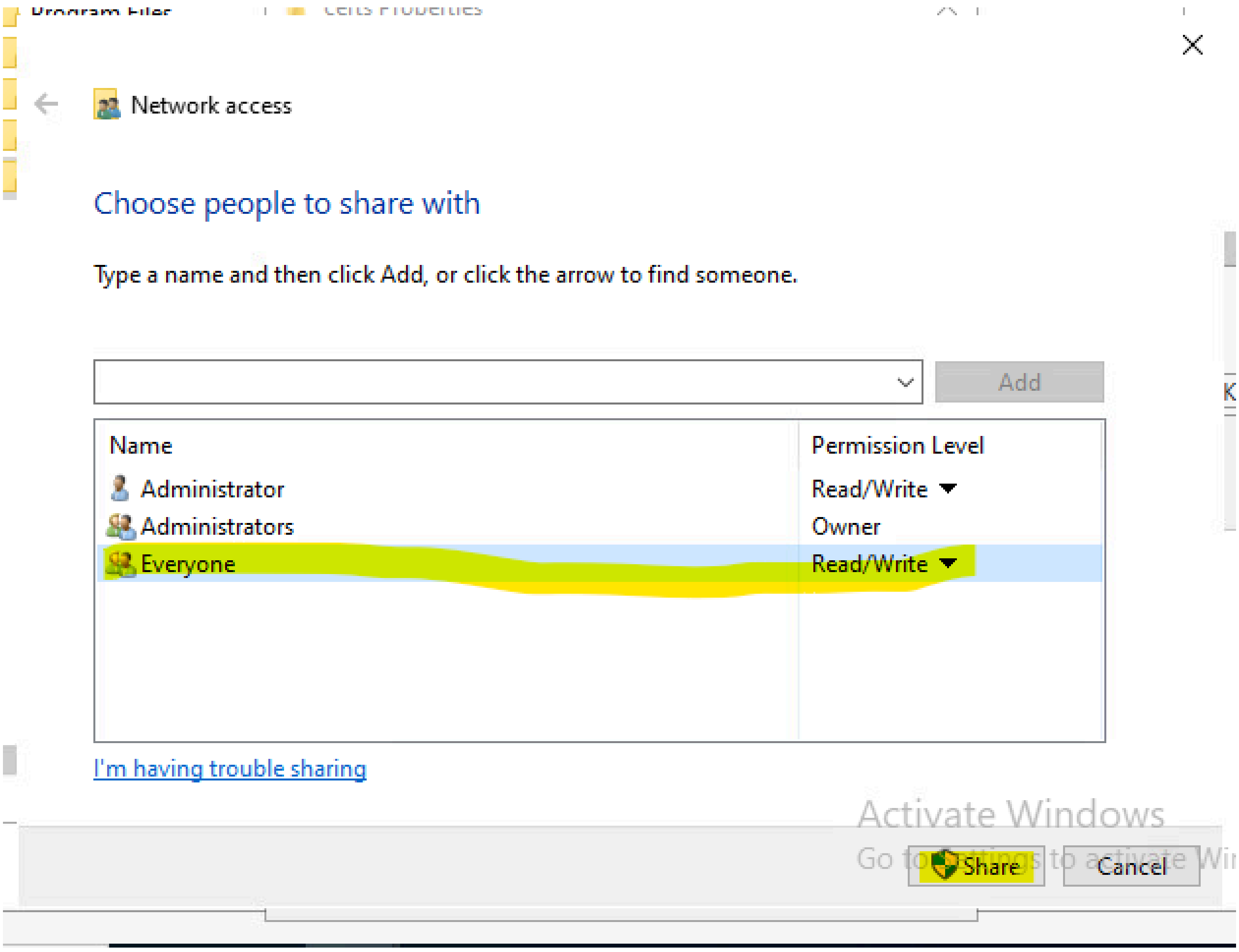
Advanced Sharing

Set custom permissions, create multiple shares, and set other advanced sharing options.

Password Protection

People must have a user account and password for this computer to access shared folders.

To change this setting, use the Network and Sharing Center.



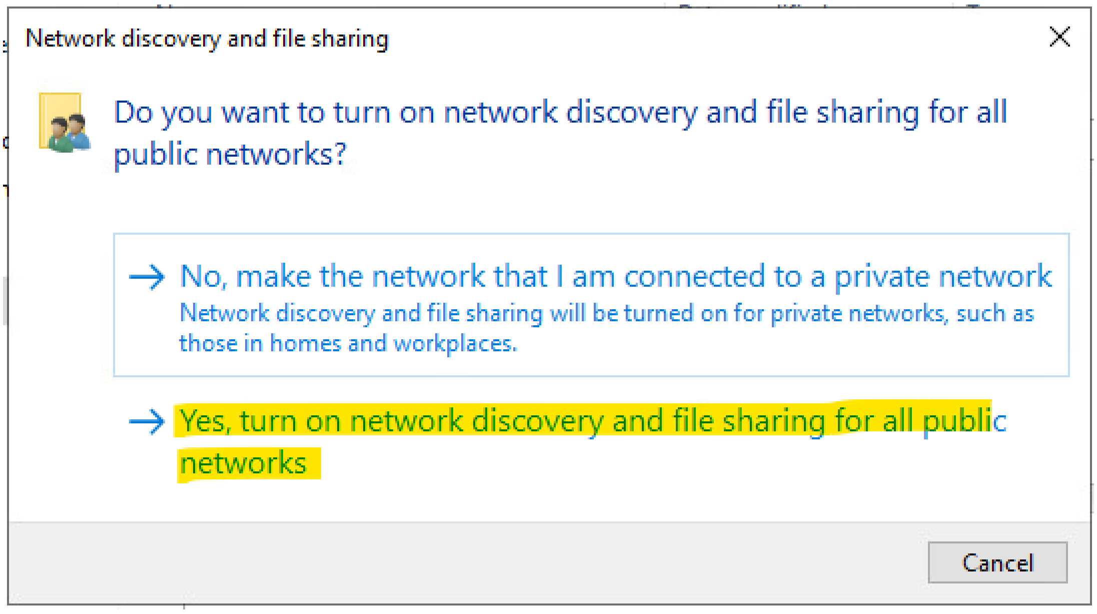
Network access

Choose people to share with

Type a name and then click Add, or click the arrow to find someone.

Name	Permission Level
Administrator	Read/Write
Administrators	Owner
Everyone	Read/Write

Add
I'm having trouble sharing
Share
Cancel
Activate Windows
Go to Settings to activate Windows

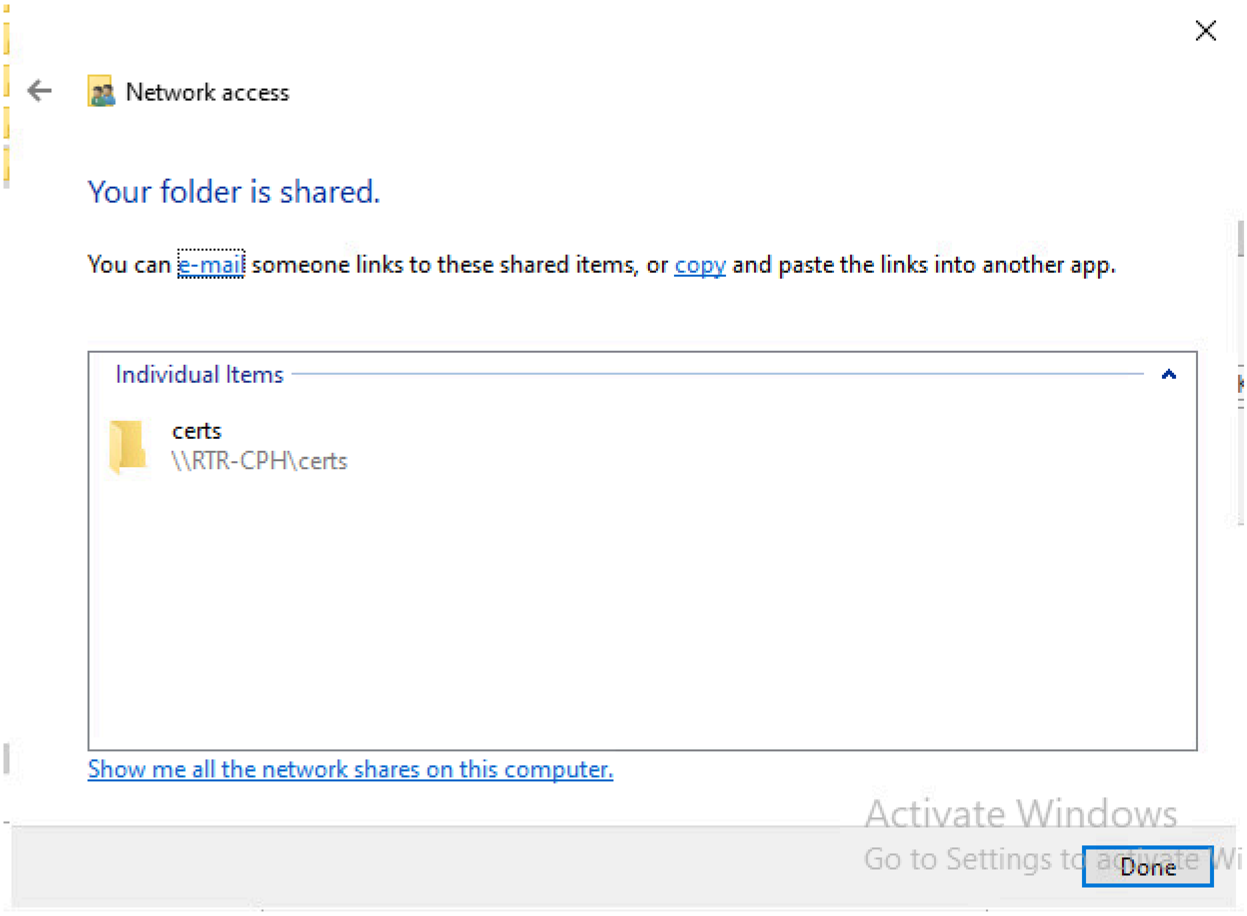


Network discovery and file sharing

Do you want to turn on network discovery and file sharing for all public networks?

→ No, make the network that I am connected to a private network
Network discovery and file sharing will be turned on for private networks, such as those in homes and workplaces.

→ Yes, turn on network discovery and file sharing for all public networks



Your folder is shared.

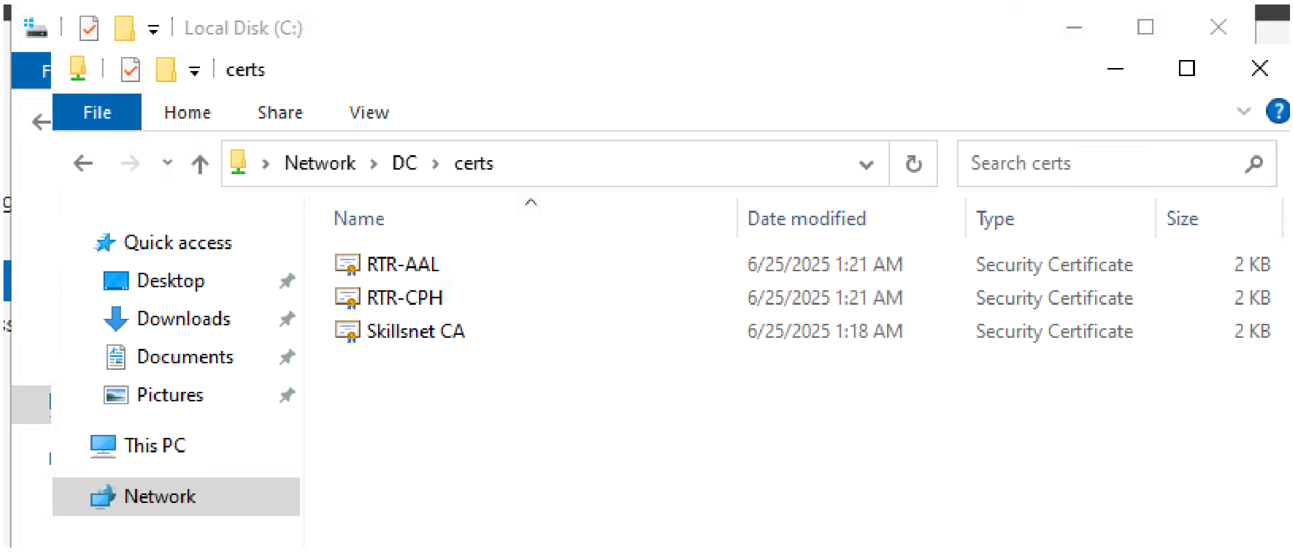
You can e-mail someone links to these shared items, or copy and paste the links into another app.

Individual Items

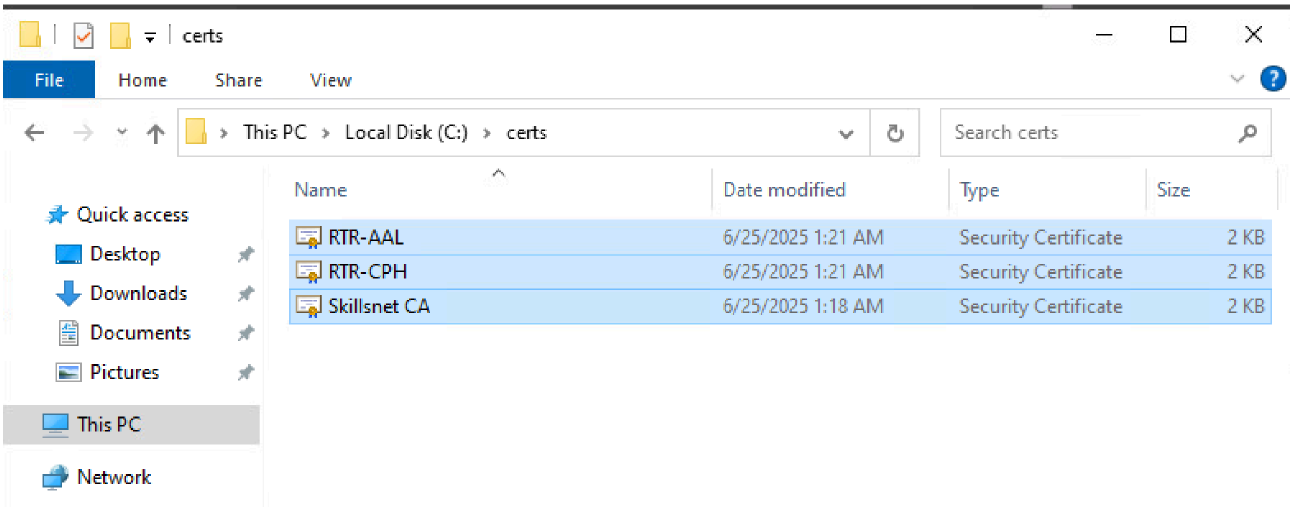
certs
\\RTR-CPH\certs

Show me all the network shares on this computer.

Access to the shared folder in DC and copy here RTR-CPH.cer, RTR-AAL.cer and Skillsnet CA.cer:

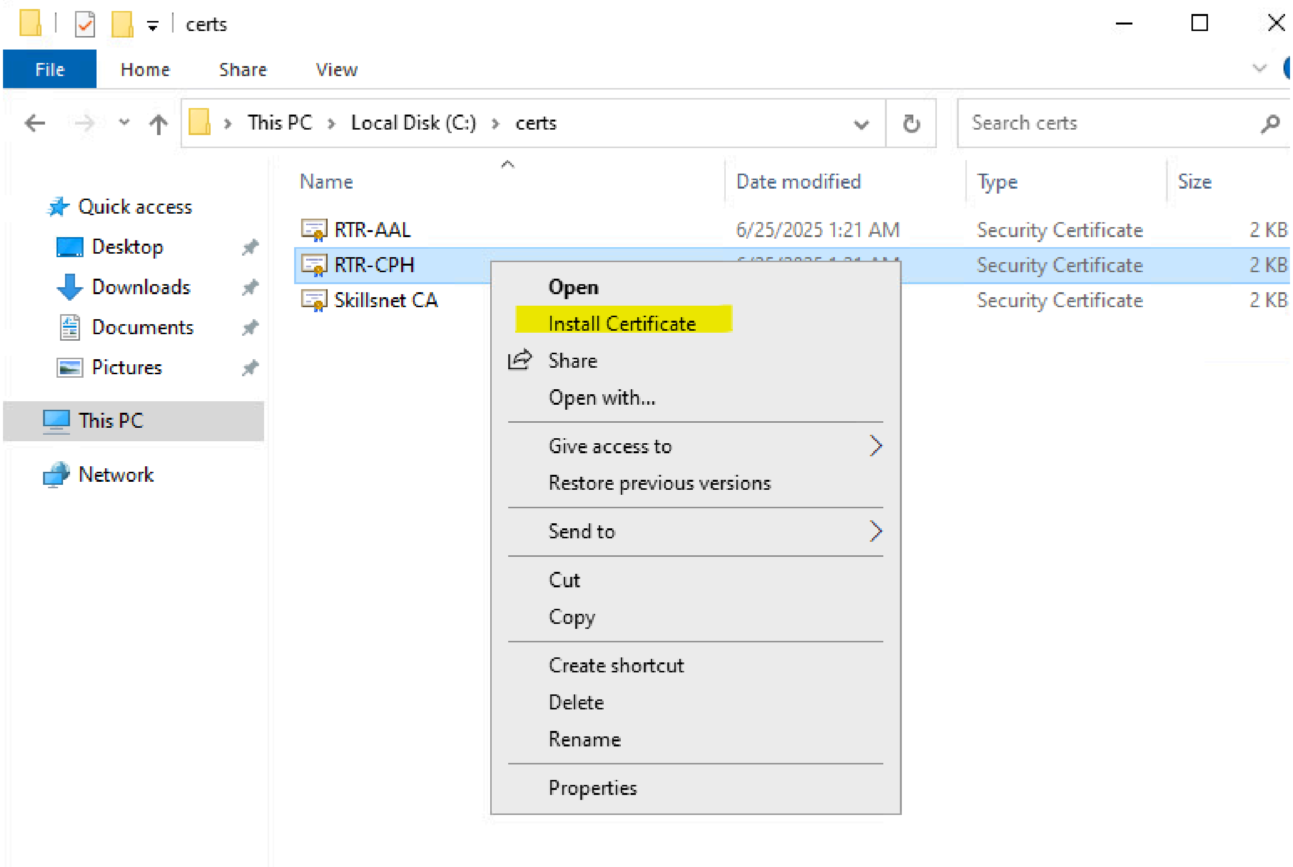


Name	Date modified	Type	Size
RTR-AAL	6/25/2025 1:21 AM	Security Certificate	2 KB
RTR-CPH	6/25/2025 1:21 AM	Security Certificate	2 KB
Skillsnet CA	6/25/2025 1:18 AM	Security Certificate	2 KB

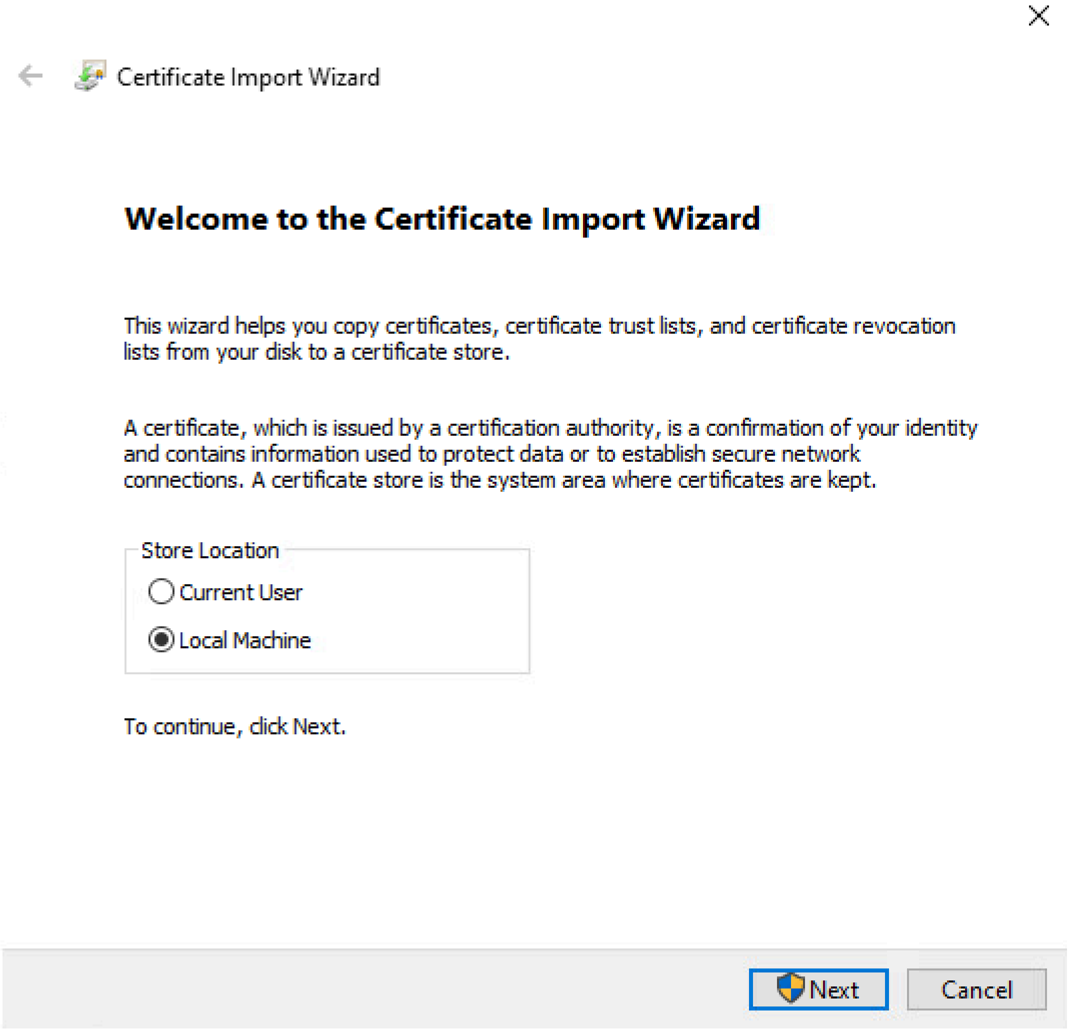


Name	Date modified	Type	Size
RTR-AAL	6/25/2025 1:21 AM	Security Certificate	2 KB
RTR-CPH	6/25/2025 1:21 AM	Security Certificate	2 KB
Skillsnet CA	6/25/2025 1:18 AM	Security Certificate	2 KB

Install RTR-CPH certificate:



Name	Date modified	Type	Size
RTR-AAL	6/25/2025 1:21 AM	Security Certificate	2 KB
RTR-CPH	6/25/2025 1:21 AM	Security Certificate	2 KB
Skillsnet CA		Security Certificate	2 KB



Certificate Import Wizard

Welcome to the Certificate Import Wizard

This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.

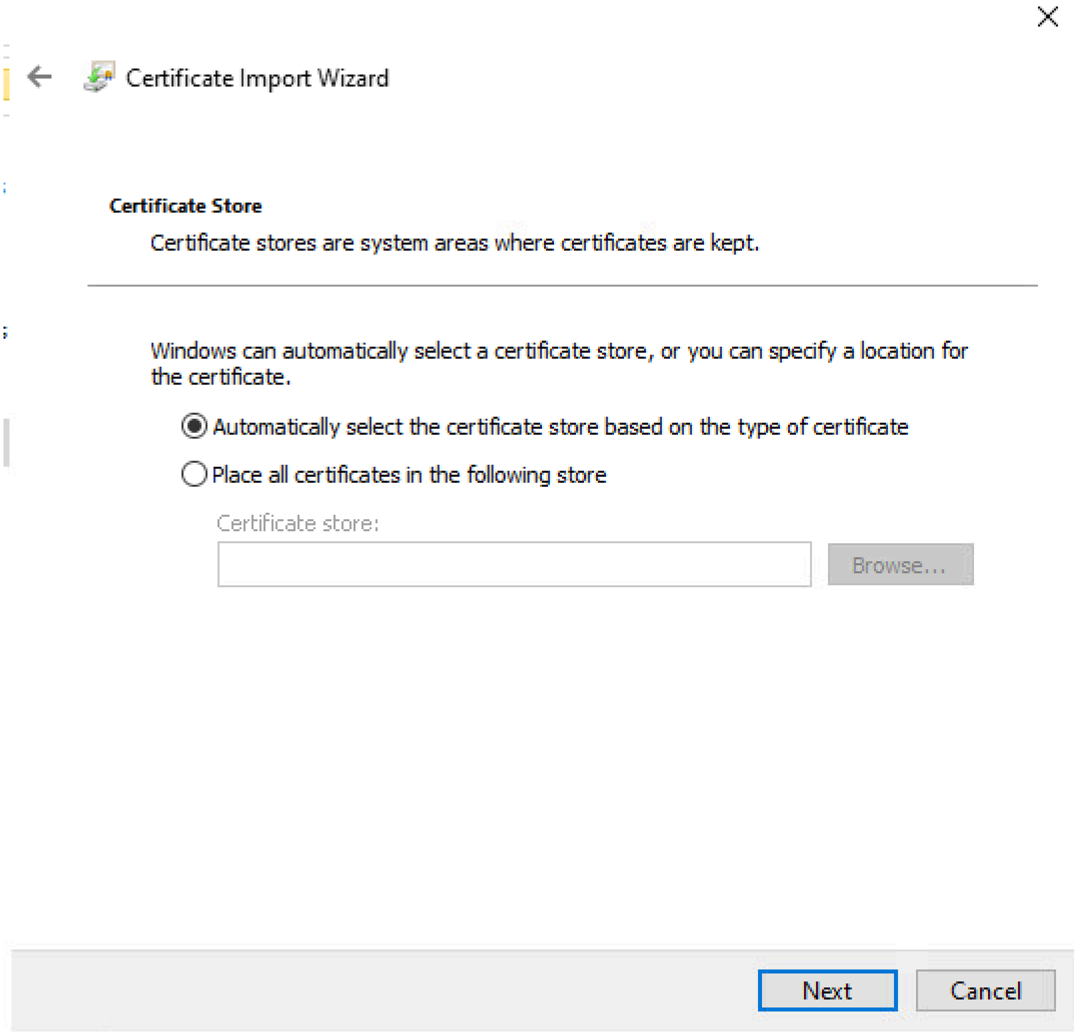
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.

Store Location

○ Current User

● Local Machine

To continue, click Next.



Certificate Import Wizard

Certificate Store

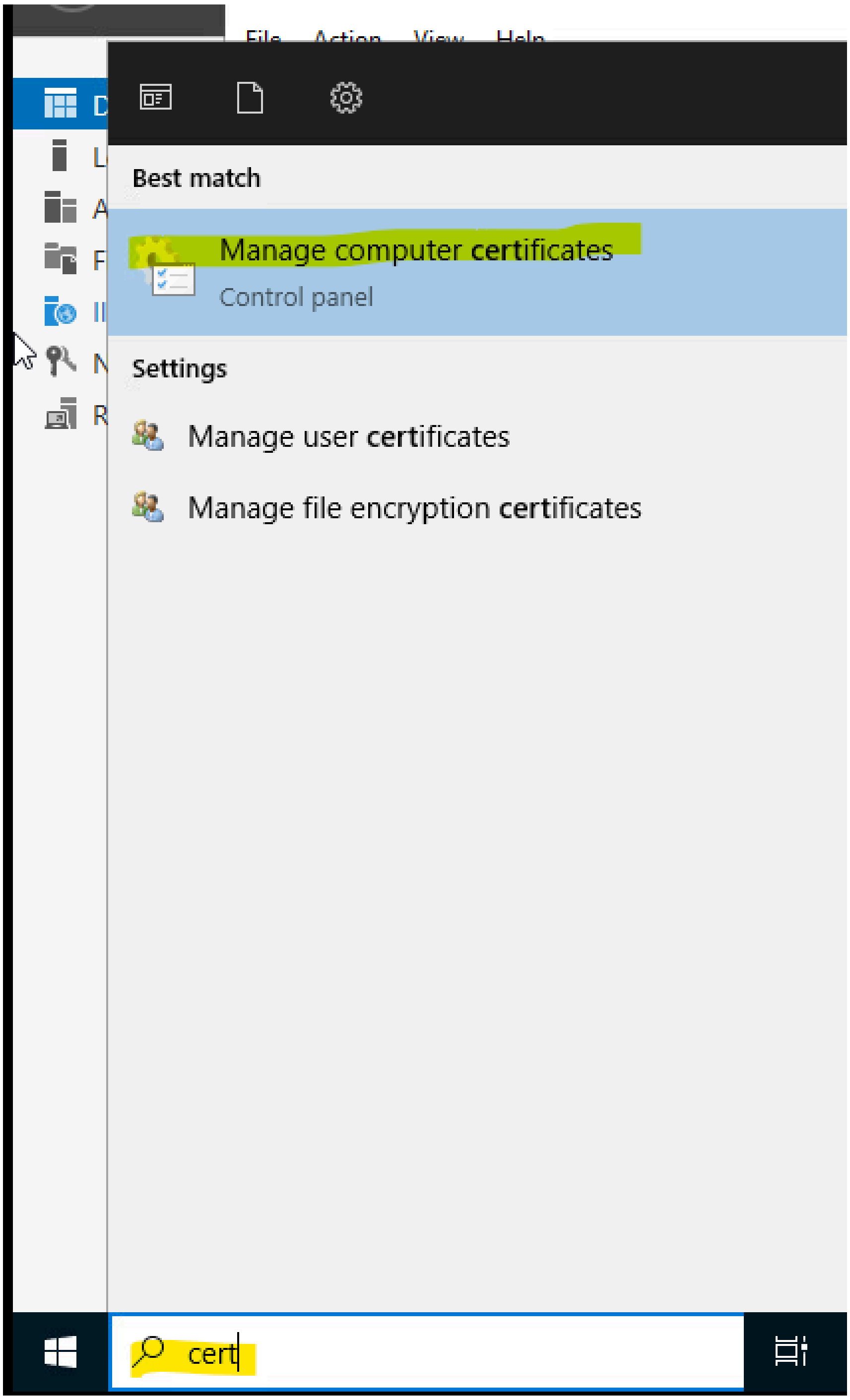
Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

● Automatically select the certificate store based on the type of certificate

○ Place all certificates in the following store

Certificate store:



Best match

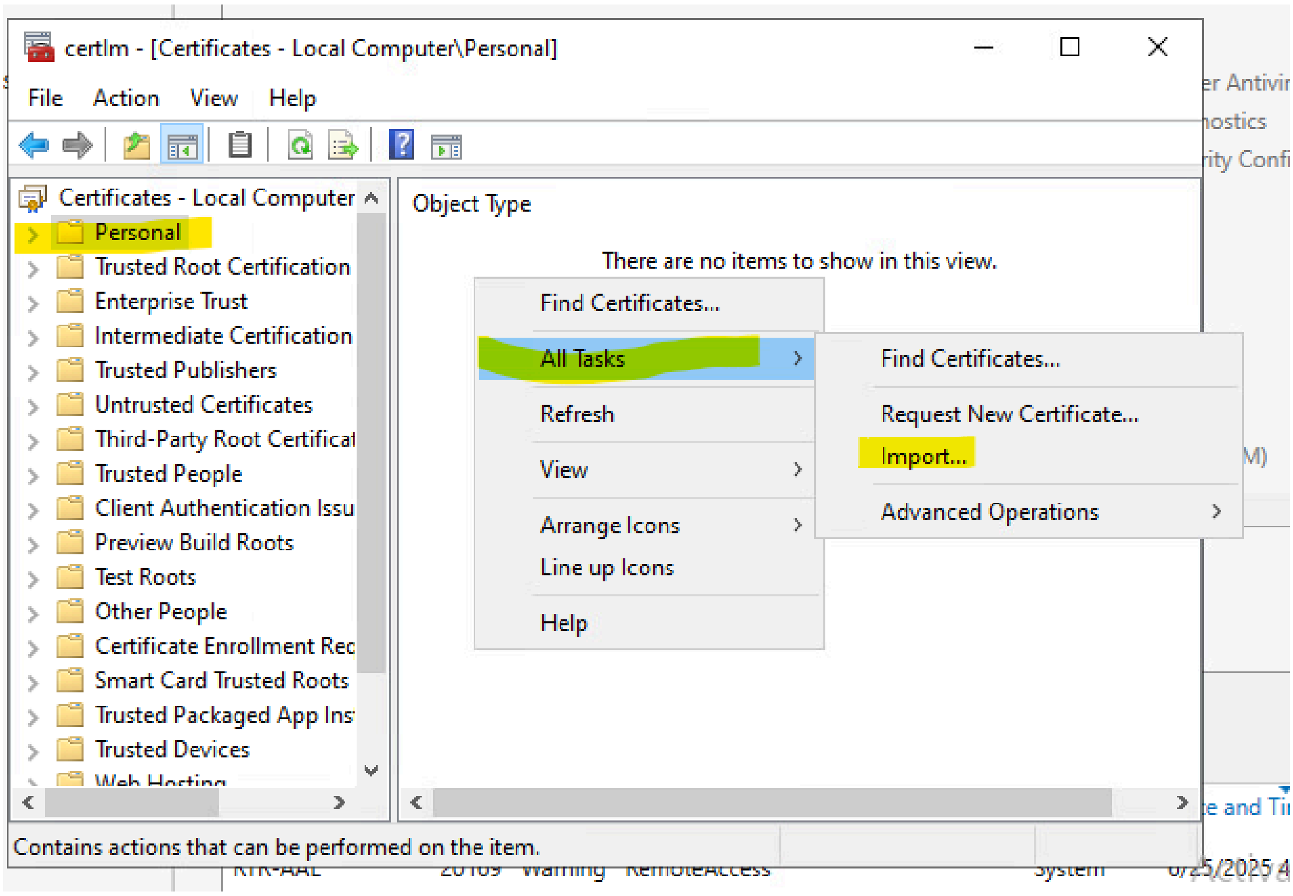
Manage computer certificates
Control panel

Settings

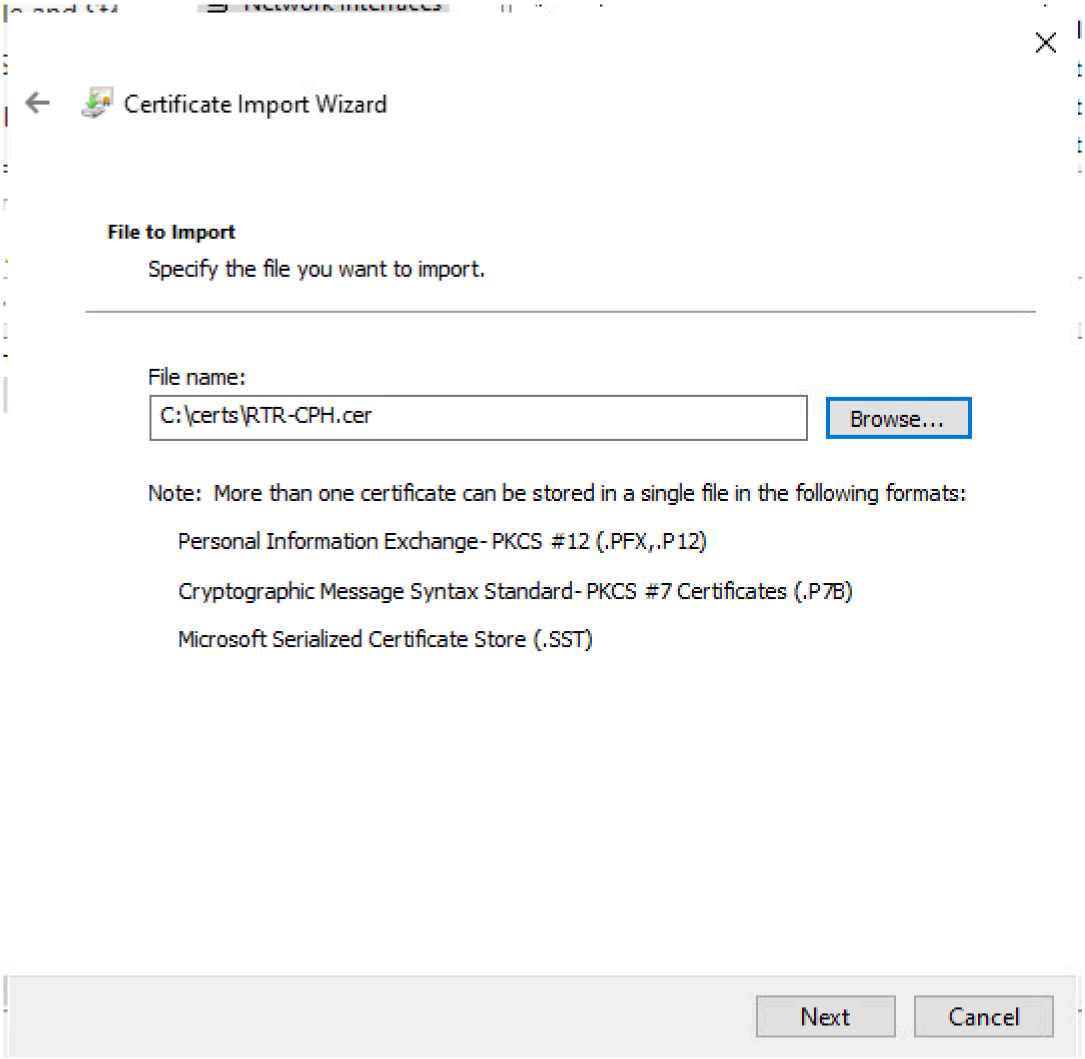
Manage user certificates

Manage file encryption certificates

cert



certlm - [Certificates - Local Computer\Personal]
File
Action
View
Help
Certificates - Local Computer
Personal
Trusted Root Certification
Enterprise Trust
Intermediate Certification
Trusted Publishers
Untrusted Certificates
Third-Party Root Certificat
Trusted People
Client Authentication Issu
Preview Build Roots
Test Roots
Other People
Certificate Enrollment Rec
Smart Card Trusted Roots
Trusted Packaged App Ins
Trusted Devices
Web Hosting
Object Type
There are no items to show in this view.
Find Certificates...
All Tasks
Refresh
View
Arrange Icons
Line up Icons
Help
Find Certificates...
Request New Certificate...
Import...
Advanced Operations
Contains actions that can be performed on the item.



Certificate Import Wizard

File to Import

Specify the file you want to import.

File name:

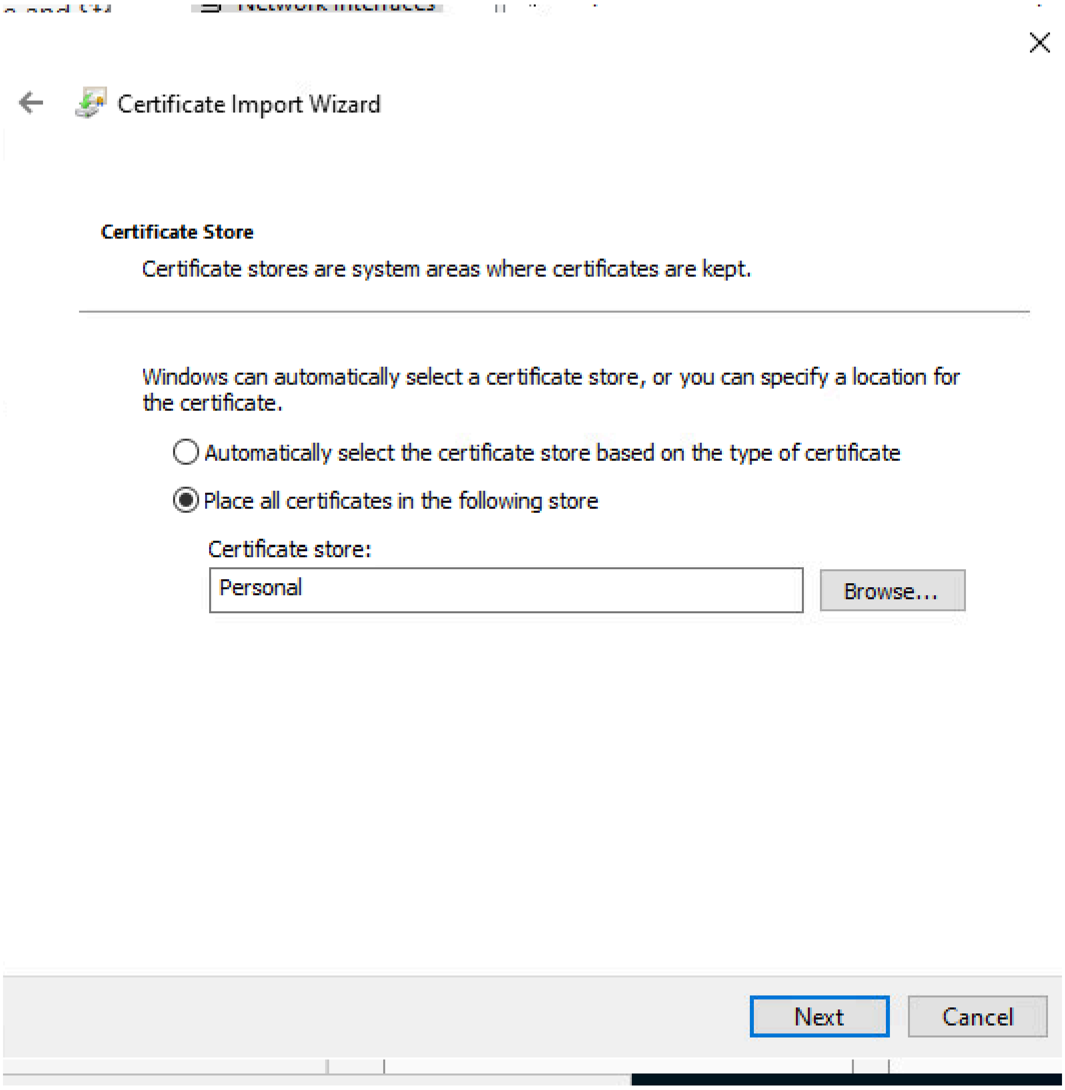
C:\certs\RTR-CPH.cer

Note: More than one certificate can be stored in a single file in the following formats:

Personal Information Exchange- PKCS #12 (.PFX,.P12)

Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

Microsoft Serialized Certificate Store (.SST)



Certificate Store

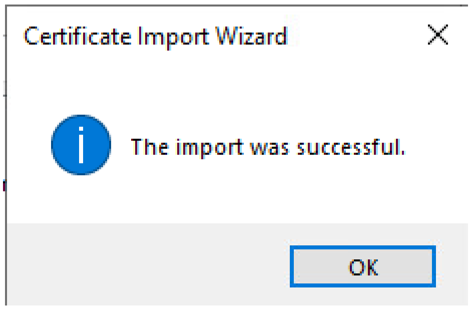
Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

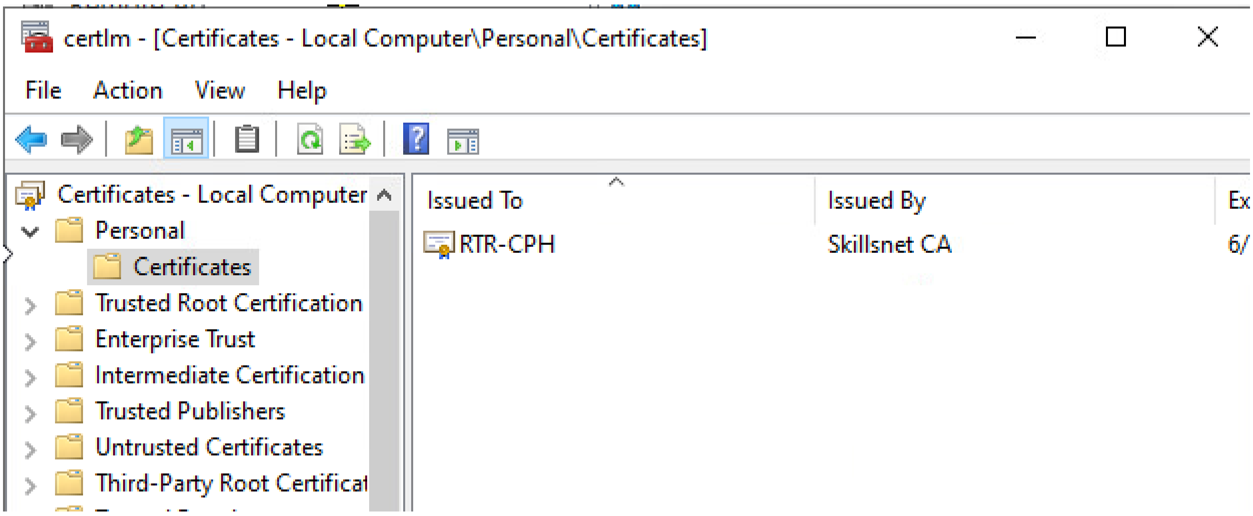
○ Automatically select the certificate store based on the type of certificate

● Place all certificates in the following store

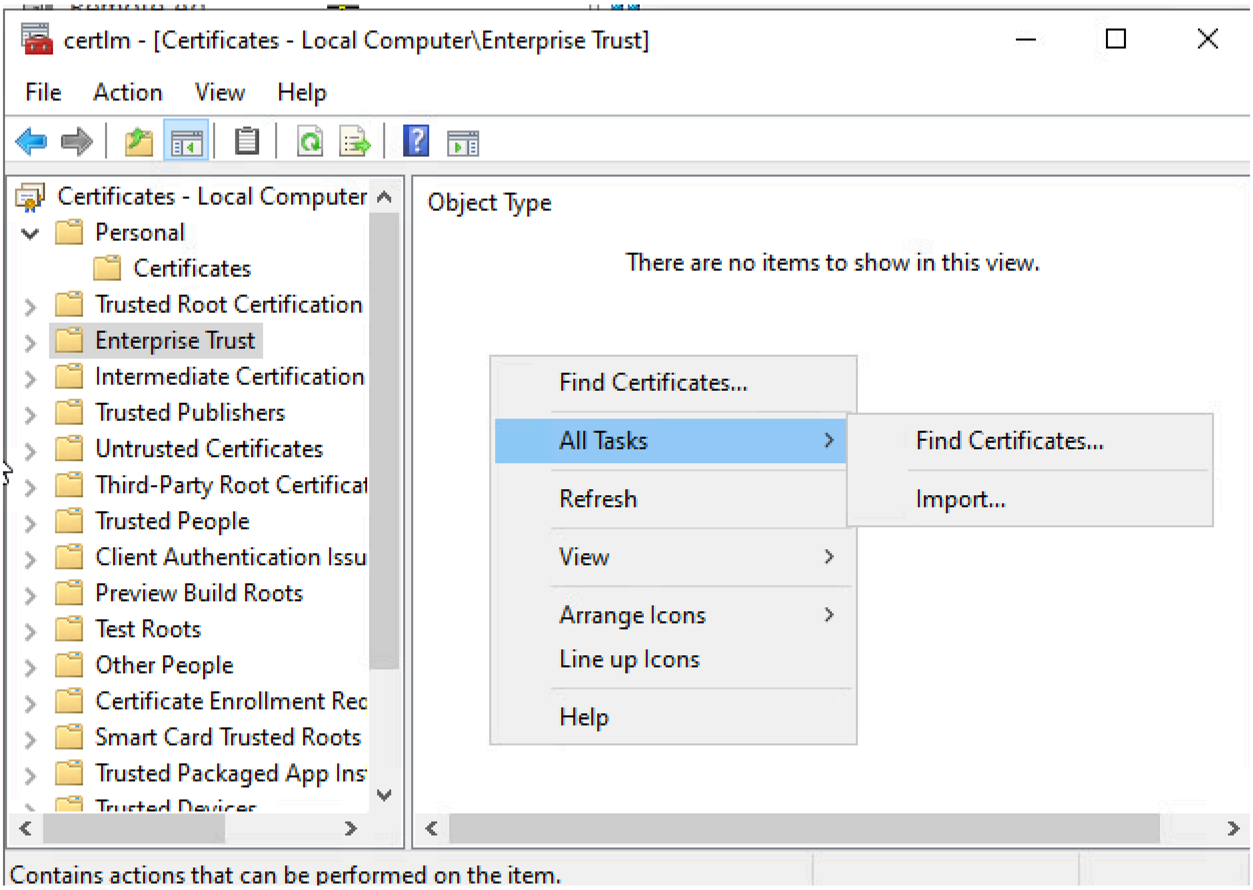
Certificate store: Personal



The import was successful.

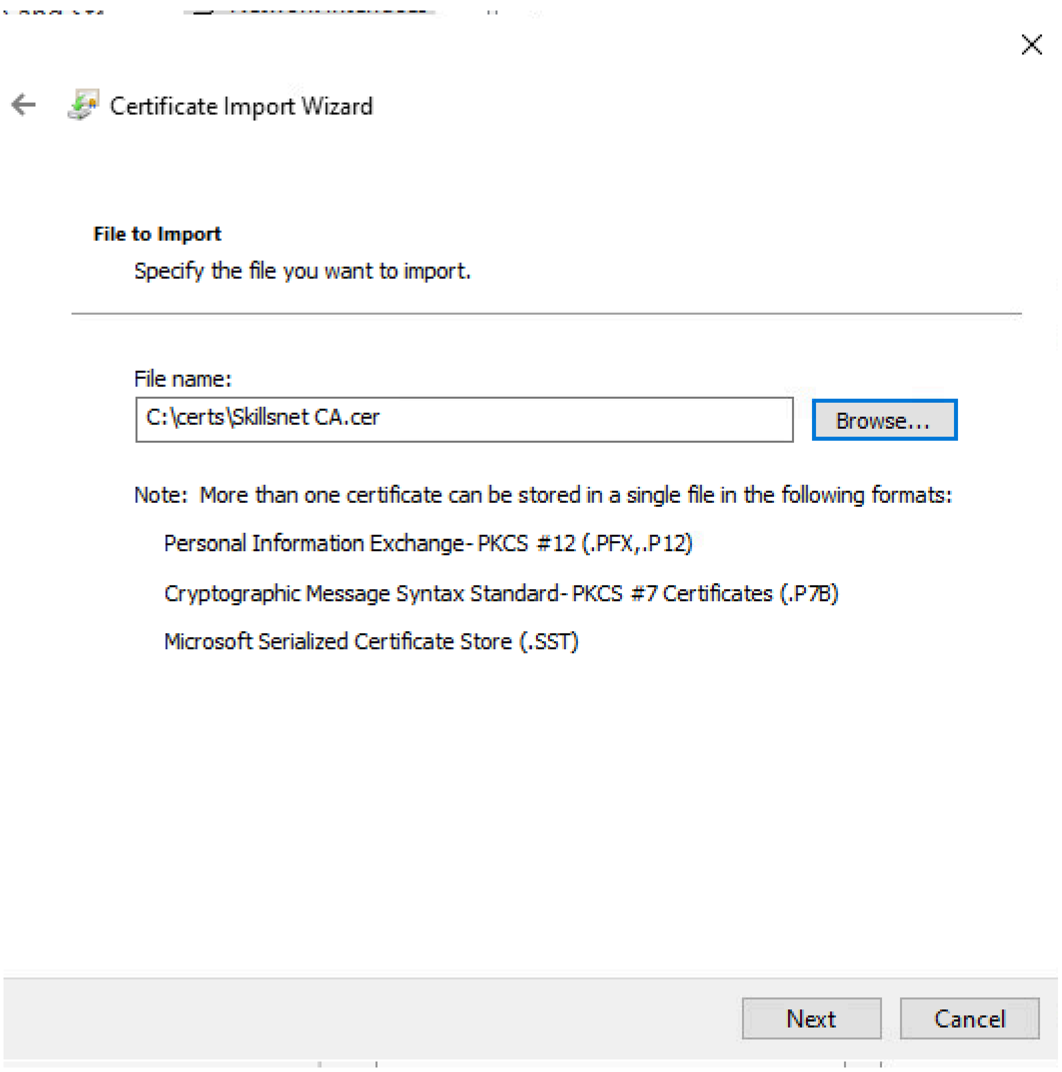

certlm - [Certificates - Local Computer\Personal\Certificates]
File
Action
View
Help
Certificates - Local Computer
Personal
Certificates
Trusted Root Certification
Enterprise Trust
Intermediate Certification
Trusted Publishers
Untrusted Certificates
Third-Party Root Certificat

Issued To	Issued By	Ex
RTR-CPH	Skillsnet CA	6/



There are no items to show in this view.

Contains actions that can be performed on the item.



File to Import

Specify the file you want to import.

File name:

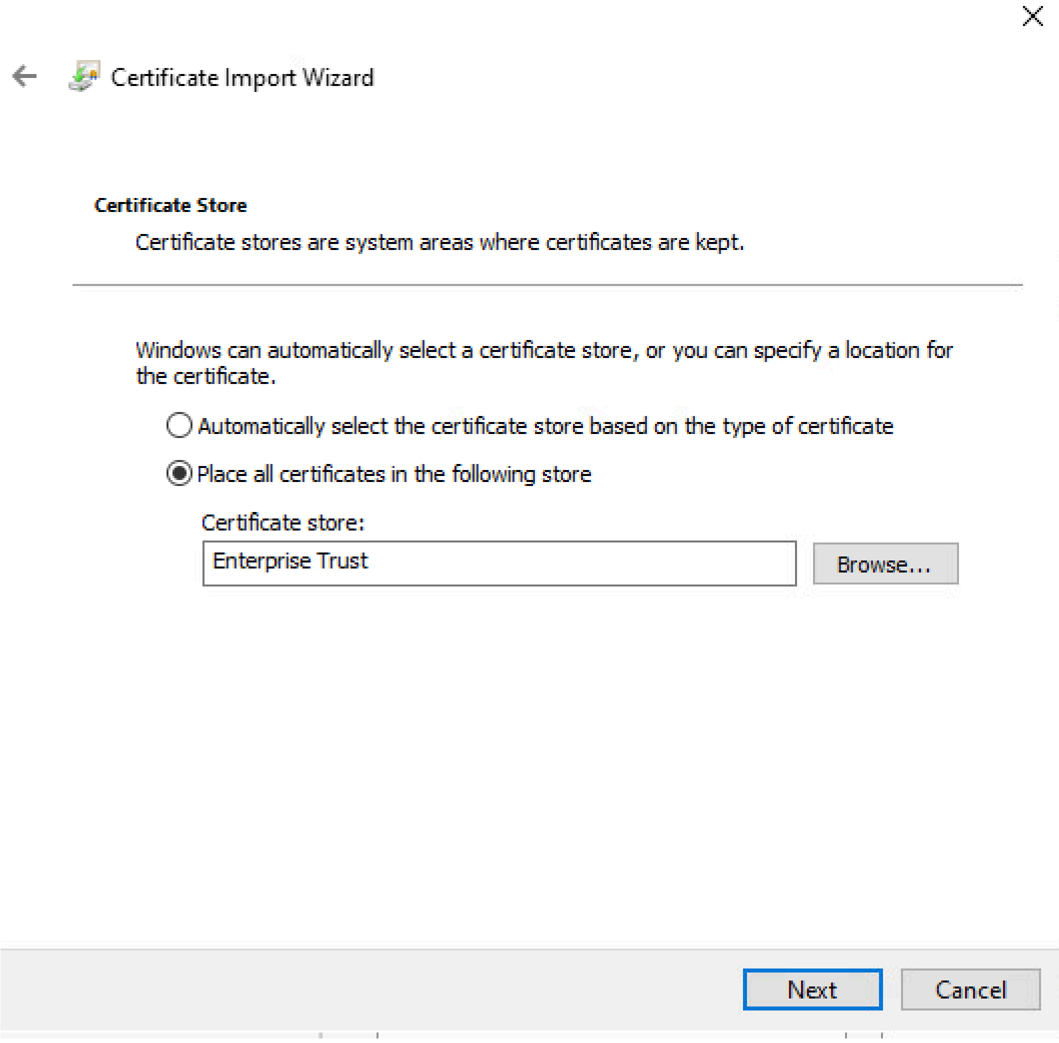
C:\certs\Skillsnet CA.cer

Note: More than one certificate can be stored in a single file in the following formats:

Personal Information Exchange- PKCS #12 (.PFX,.P12)

Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

Microsoft Serialized Certificate Store (.SST)



Certificate Import Wizard

Certificate Store

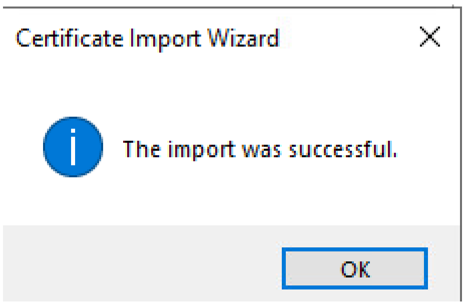
Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

○ Automatically select the certificate store based on the type of certificate

● Place all certificates in the following store

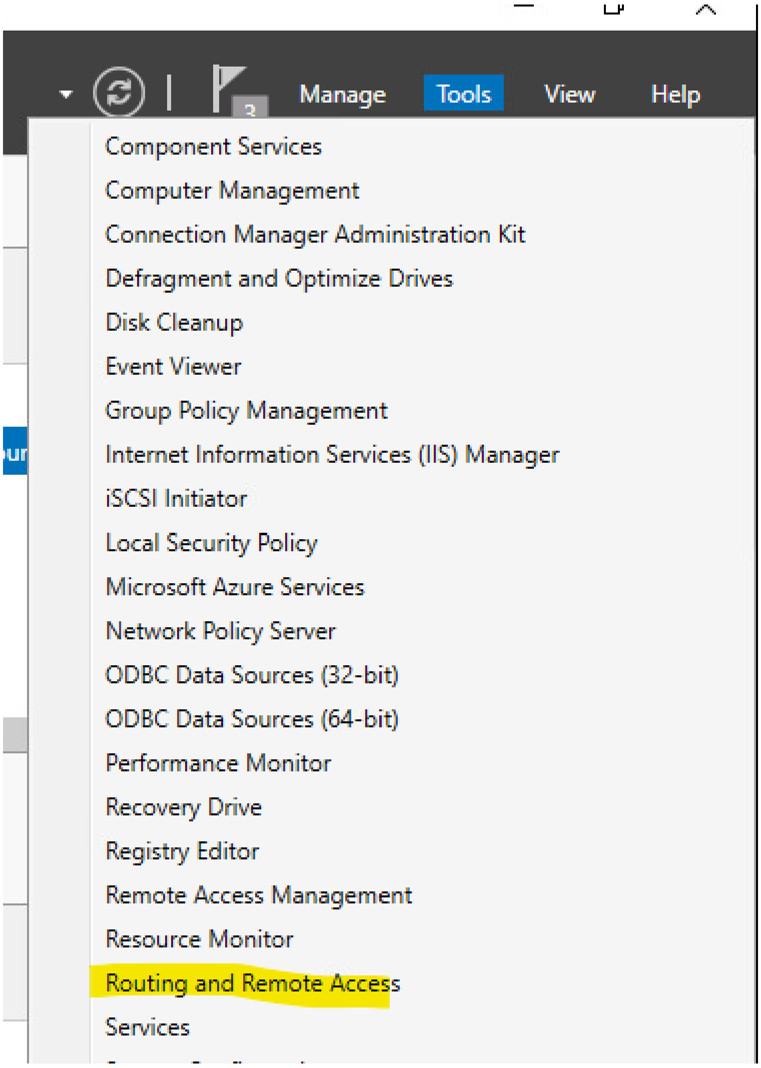
Certificate store: Enterprise Trust

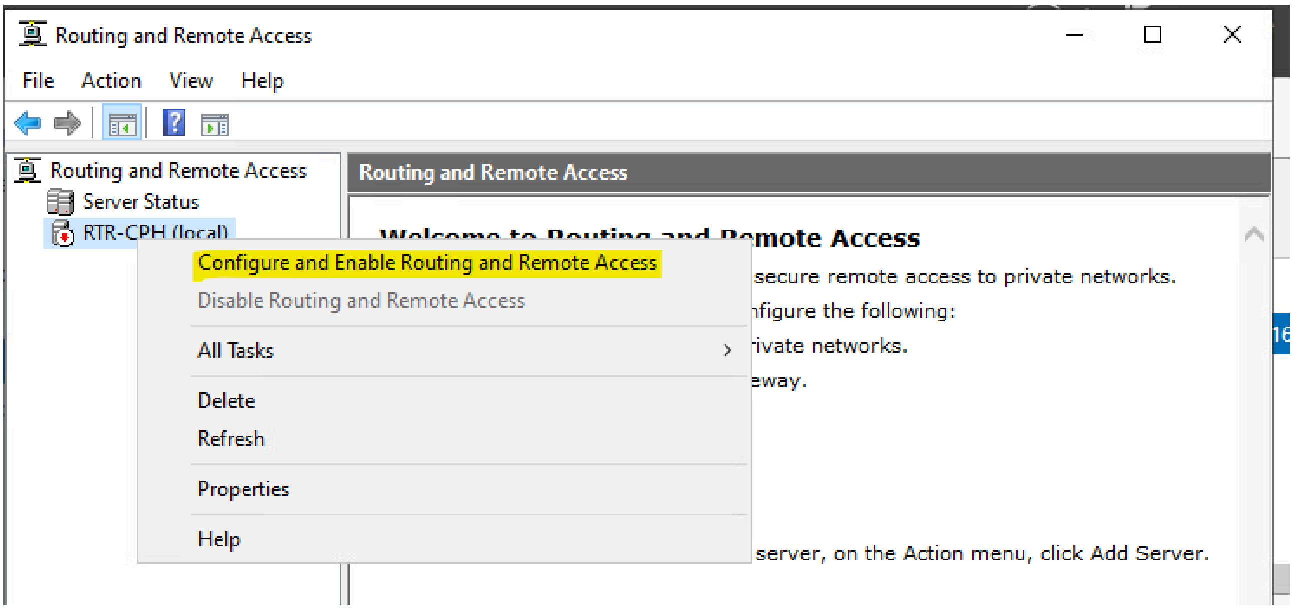


Certificate Import Wizard

The import was successful.

- Site-to-site VPN configuration:




Routing and Remote Access
File
Action
View
Help
Routing and Remote Access
Server Status
RTR-CPH (local)
Configure and Enable Routing and Remote Access
Disable Routing and Remote Access
All Tasks
Delete
Refresh
Properties
Help
Routing and Remote Access
Welcome to Routing and Remote Access

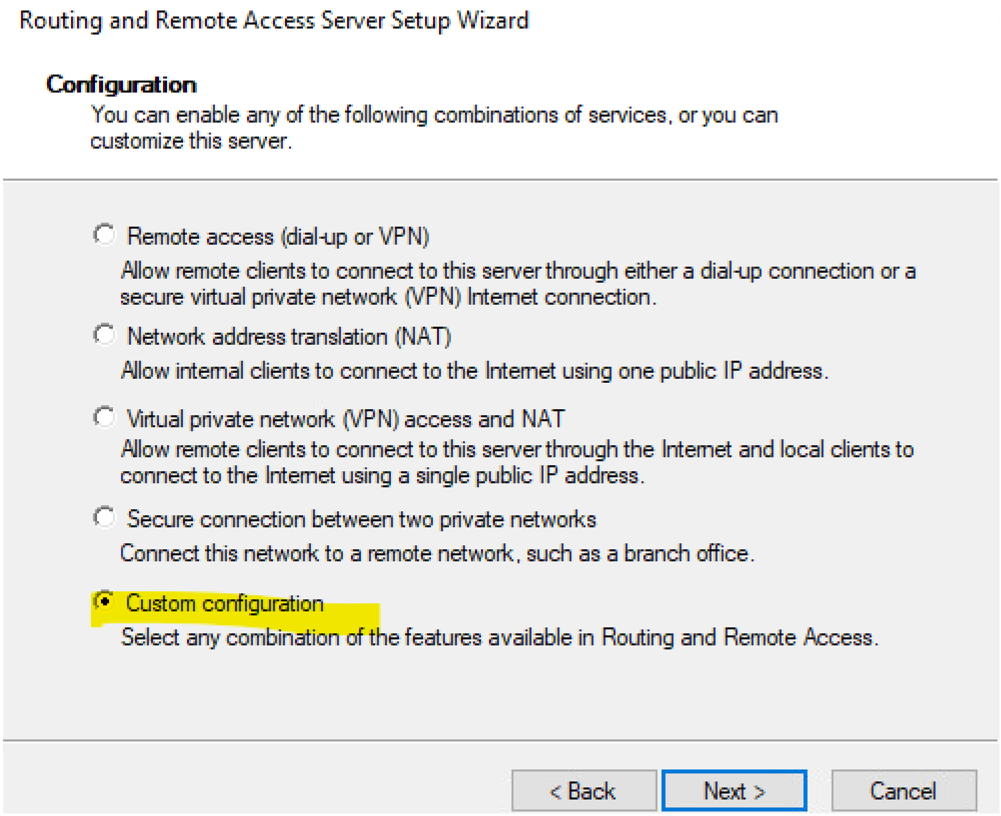
secure remote access to private networks.

nfigure the following:

rivate networks.

eway.

server, on the Action menu, click Add Server.



Routing and Remote Access Server Setup Wizard

Configuration

You can enable any of the following combinations of services, or you can customize this server.

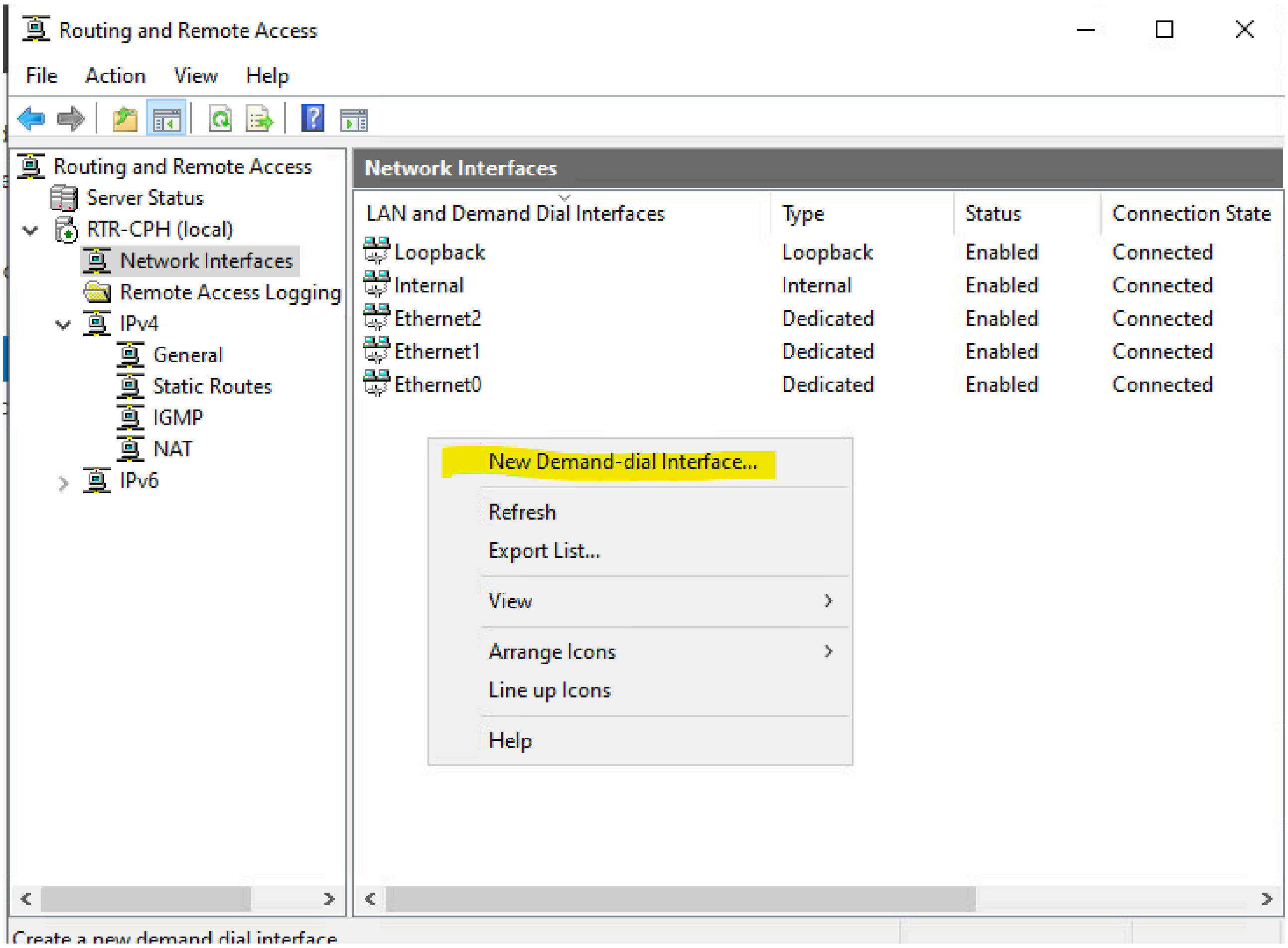
○ Remote access (dial-up or VPN)
Allow remote clients to connect to this server through either a dial-up connection or a secure virtual private network (VPN) Internet connection.

○ Network address translation (NAT)
Allow internal clients to connect to the Internet using one public IP address.

○ Virtual private network (VPN) access and NAT
Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.

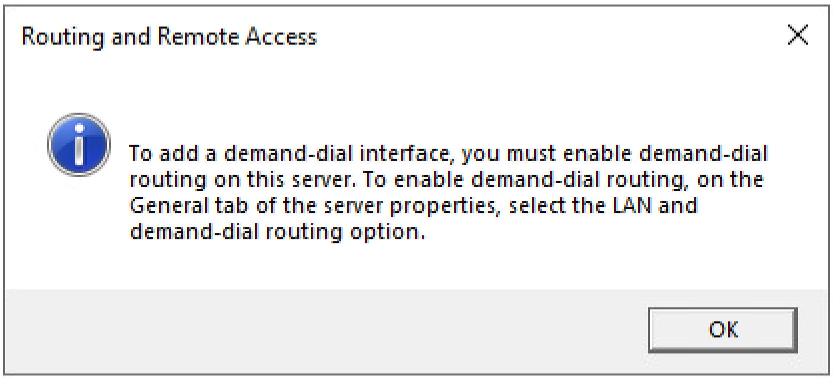
○ Secure connection between two private networks
Connect this network to a remote network, such as a branch office.

● Custom configuration
Select any combination of the features available in Routing and Remote Access.



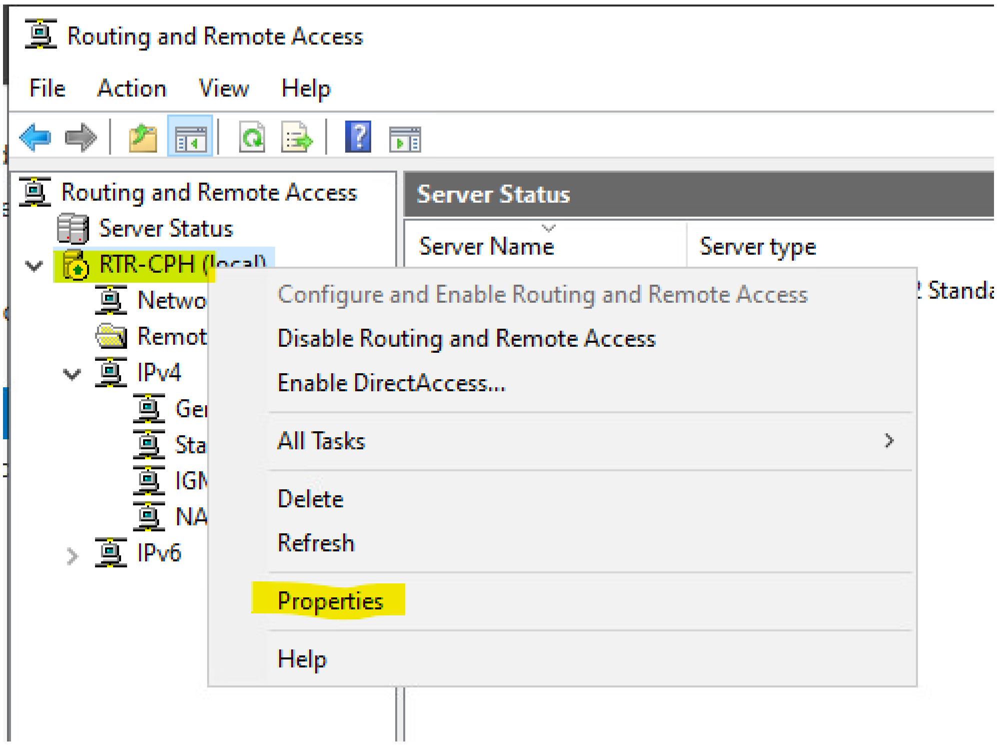
LAN and Demand Dial Interfaces	Type	Status	Connection State
Loopback	Loopback	Enabled	Connected
Internal	Internal	Enabled	Connected
Ethernet2	Dedicated	Enabled	Connected
Ethernet1	Dedicated	Enabled	Connected
Ethernet0	Dedicated	Enabled	Connected

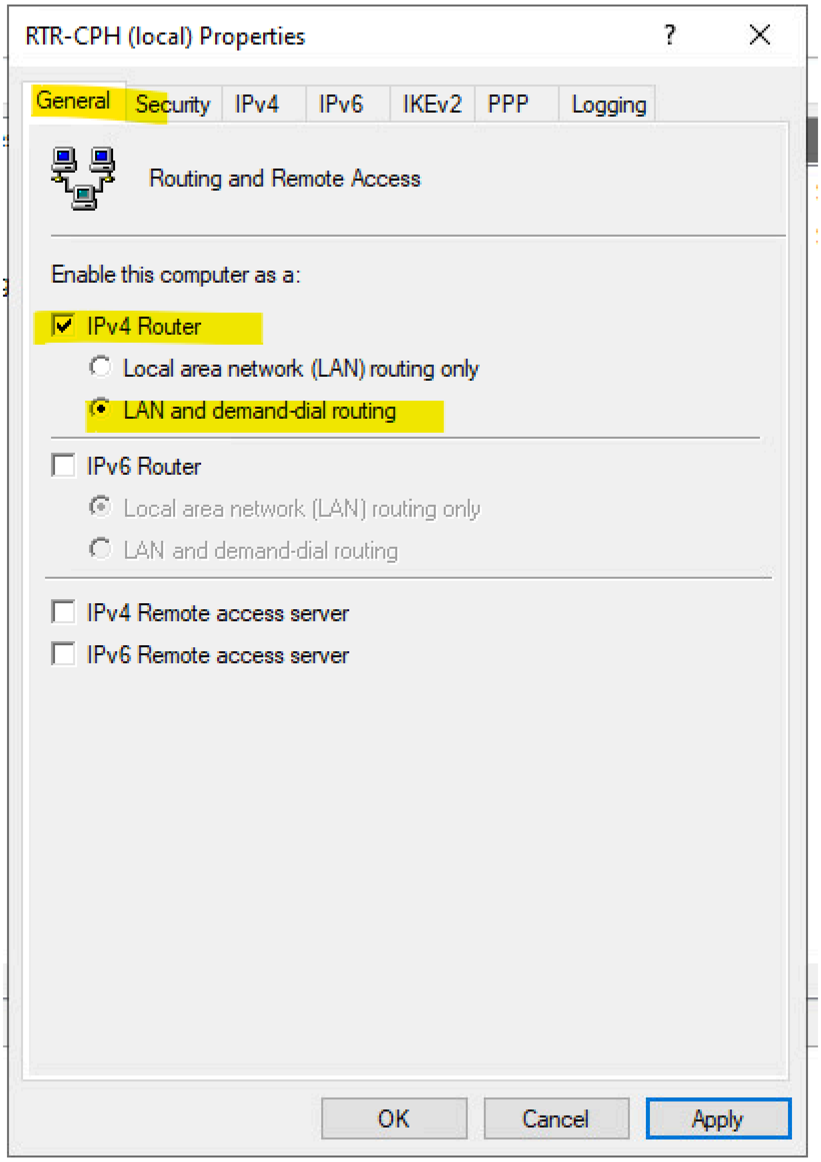
Create a new demand dial interface



Routing and Remote Access

To add a demand-dial interface, you must enable demand-dial routing on this server. To enable demand-dial routing, on the General tab of the server properties, select the LAN and demand-dial routing option.





RTR-CPH (local) Properties

Routing and Remote Access

Enable this computer as a:

☑ IPv4 Router

○ Local area network (LAN) routing only

● LAN and demand-dial routing

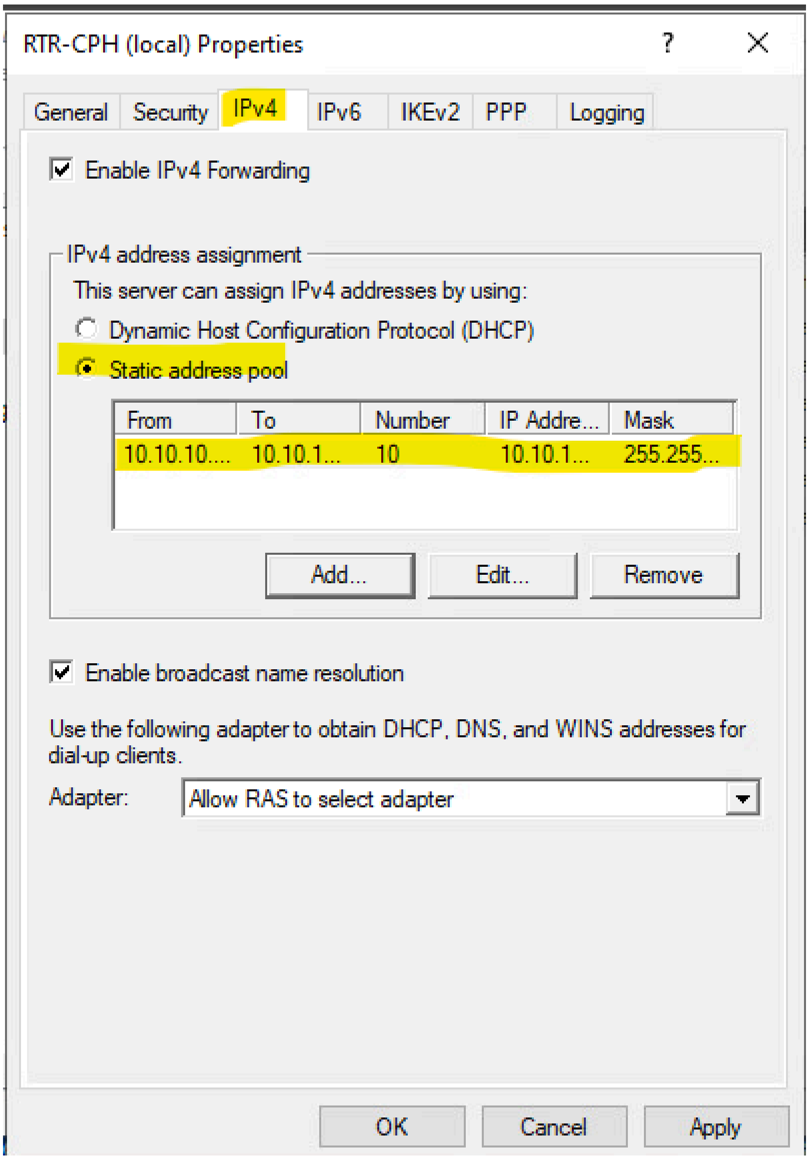
□ IPv6 Router

● Local area network (LAN) routing only

○ LAN and demand-dial routing

□ IPv4 Remote access server

□ IPv6 Remote access server



☑ Enable IPv4 Forwarding

IPv4 address assignment

This server can assign IPv4 addresses by using:

○ Dynamic Host Configuration Protocol (DHCP)

● Static address pool

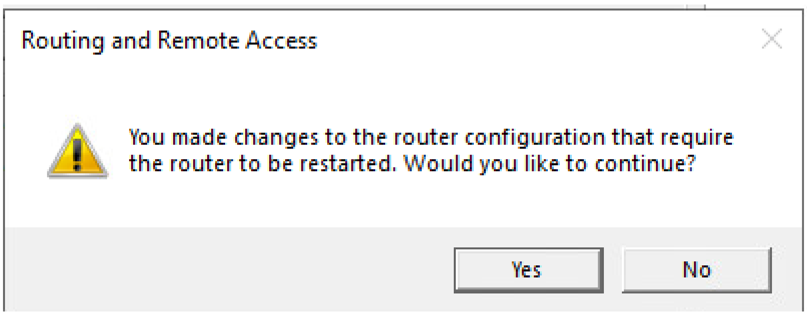
From	To	Number	IP Addre...	Mask
10.10.10....	10.10.1...	10	10.10.1...	255.255...

☑ Enable broadcast name resolution

Use the following adapter to obtain DHCP, DNS, and WINS addresses for dial-up clients.

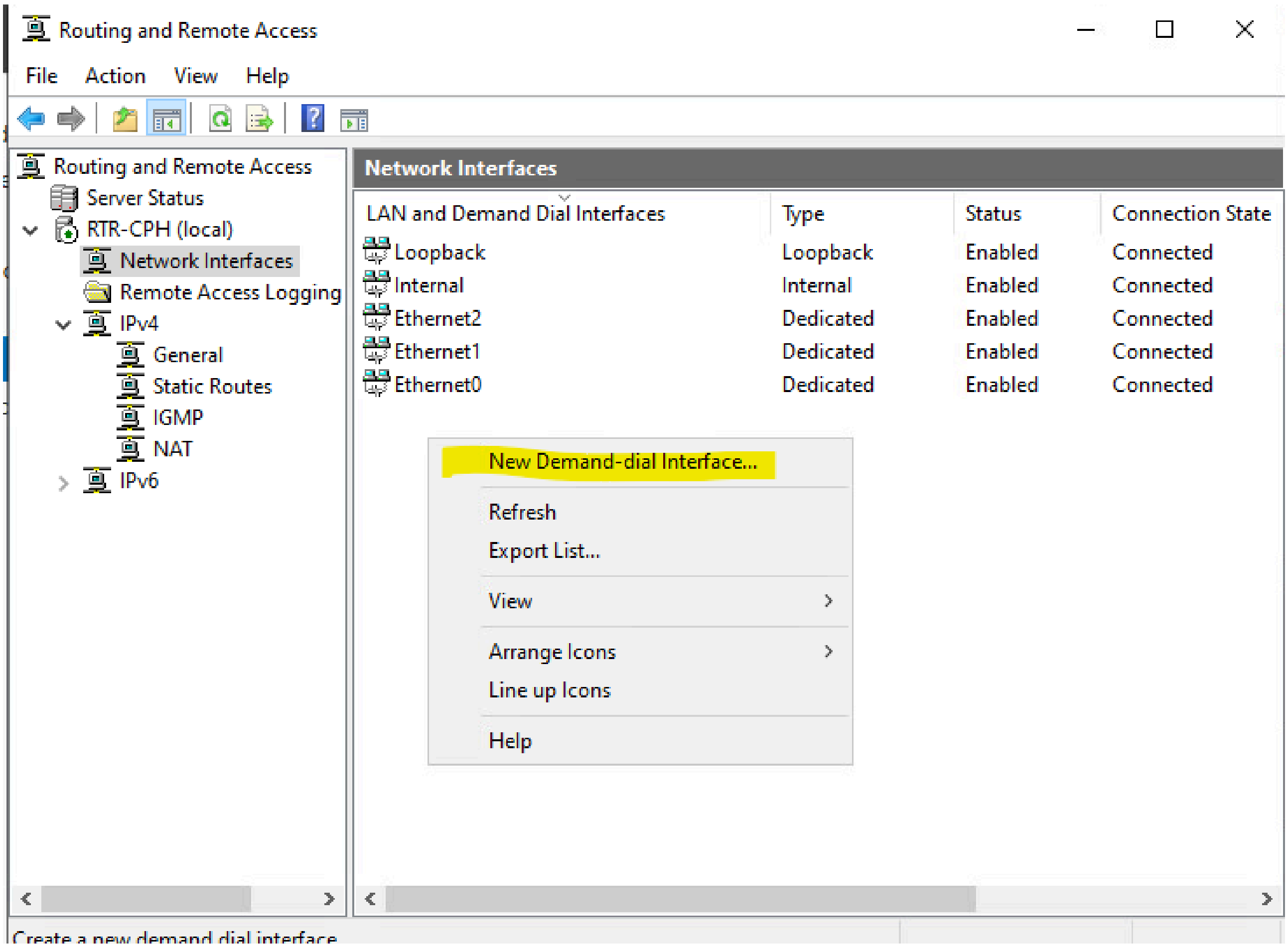
Adapter: Allow RAS to select adapter

IP range: 10.10.10.11-10.10.10.20 (10 IPs)
Configuration only necessary in one extreme (for example, RTR-CPH)

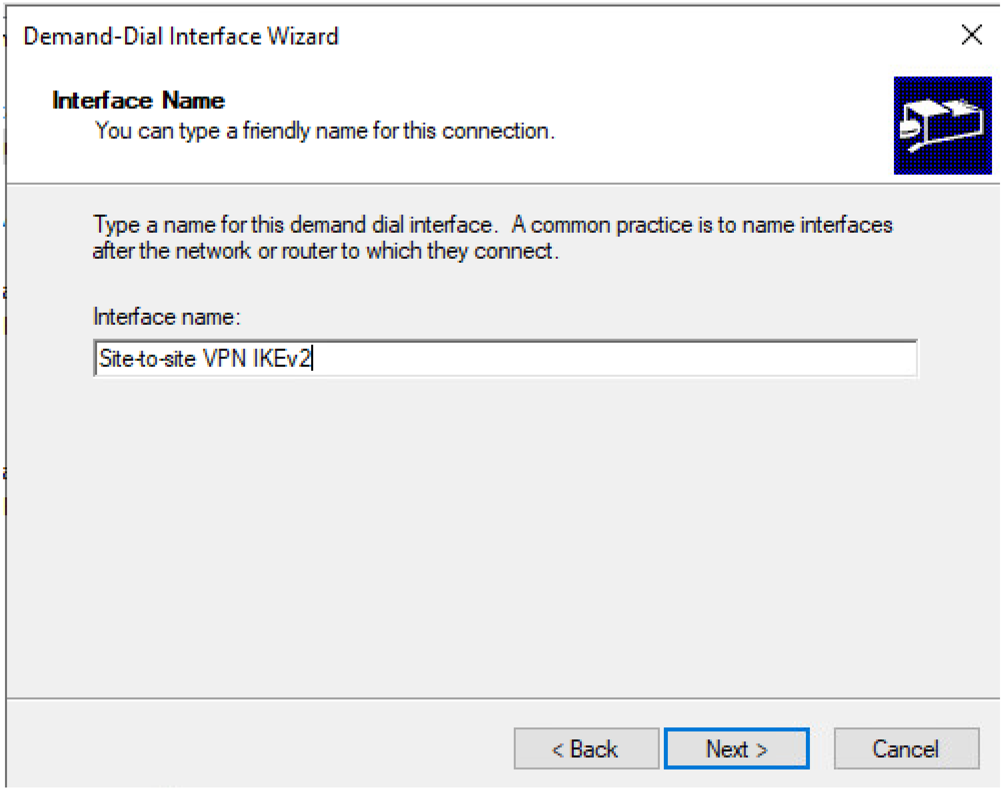


You made changes to the router configuration that require the router to be restarted. Would you like to continue?

Maybe you must restart the computer.

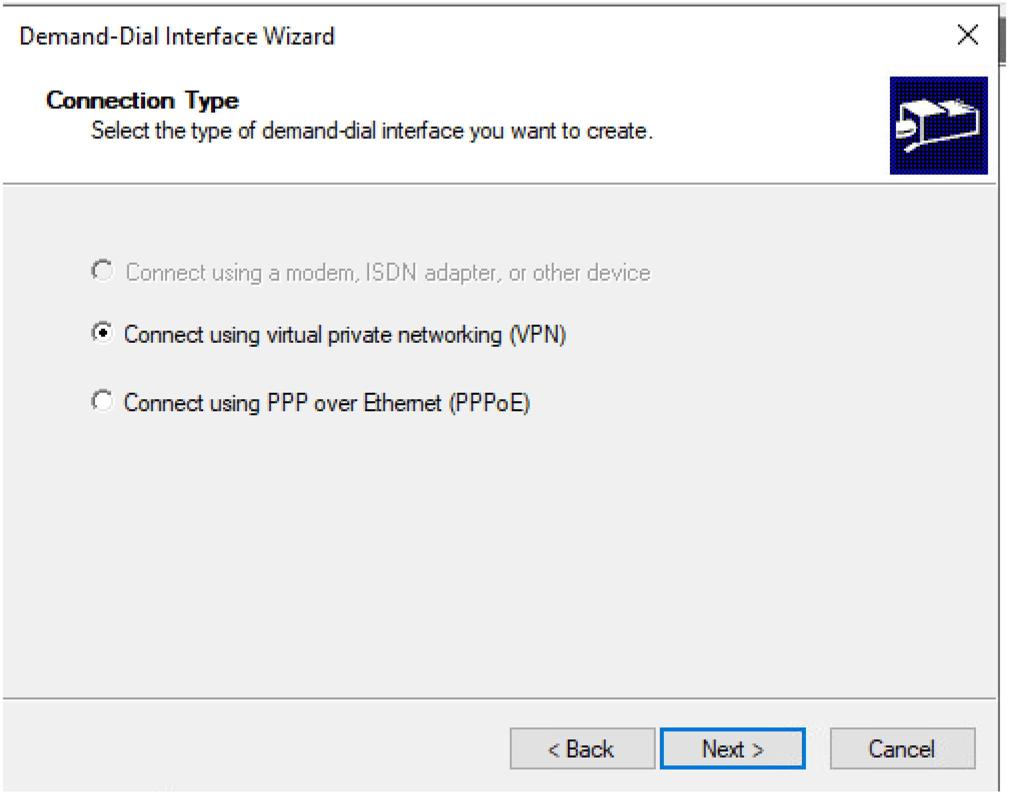


LAN and Demand Dial Interfaces	Type	Status	Connection State
Loopback	Loopback	Enabled	Connected
Internal	Internal	Enabled	Connected
Ethernet2	Dedicated	Enabled	Connected
Ethernet1	Dedicated	Enabled	Connected
Ethernet0	Dedicated	Enabled	Connected


Demand-Dial Interface Wizard
Interface Name
You can type a friendly name for this connection.
< Back
Next >
Cancel

Type a name for this demand dial interface. A common practice is to name interfaces after the network or router to which they connect.

Interface name: Site-to-site VPN IKEv2



Demand-Dial Interface Wizard

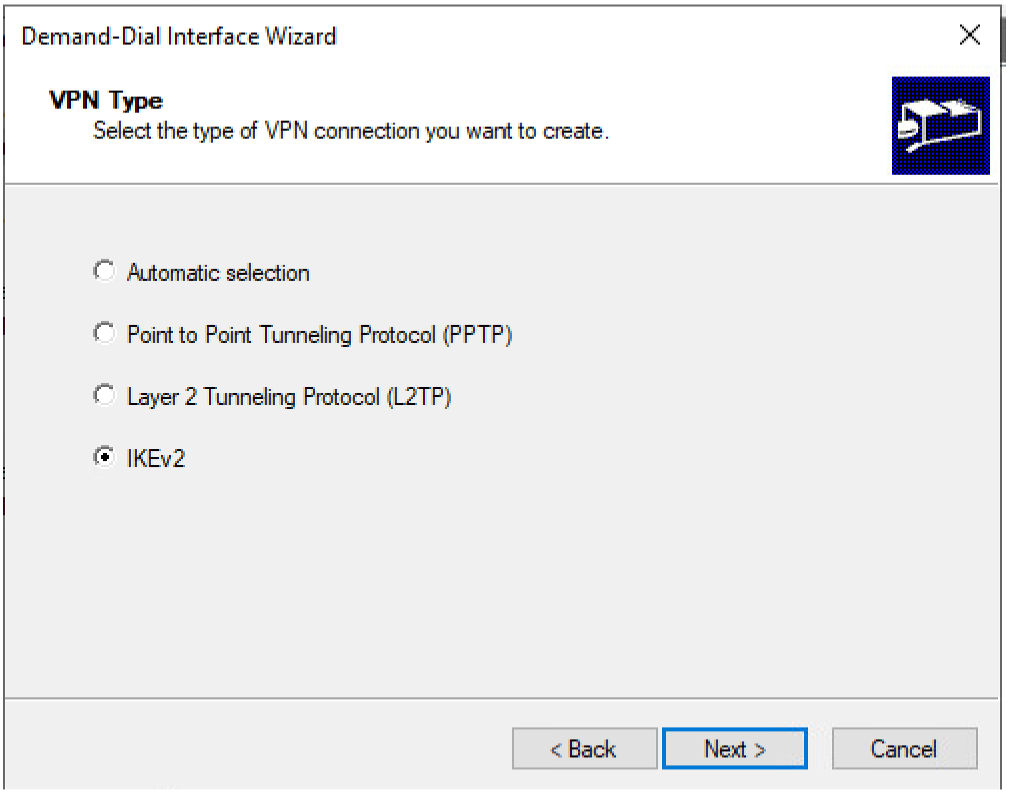
Connection Type

Select the type of demand-dial interface you want to create.

○ Connect using a modem, ISDN adapter, or other device

● Connect using virtual private networking (VPN)

○ Connect using PPP over Ethernet (PPPoE)



Demand-Dial Interface Wizard

VPN Type

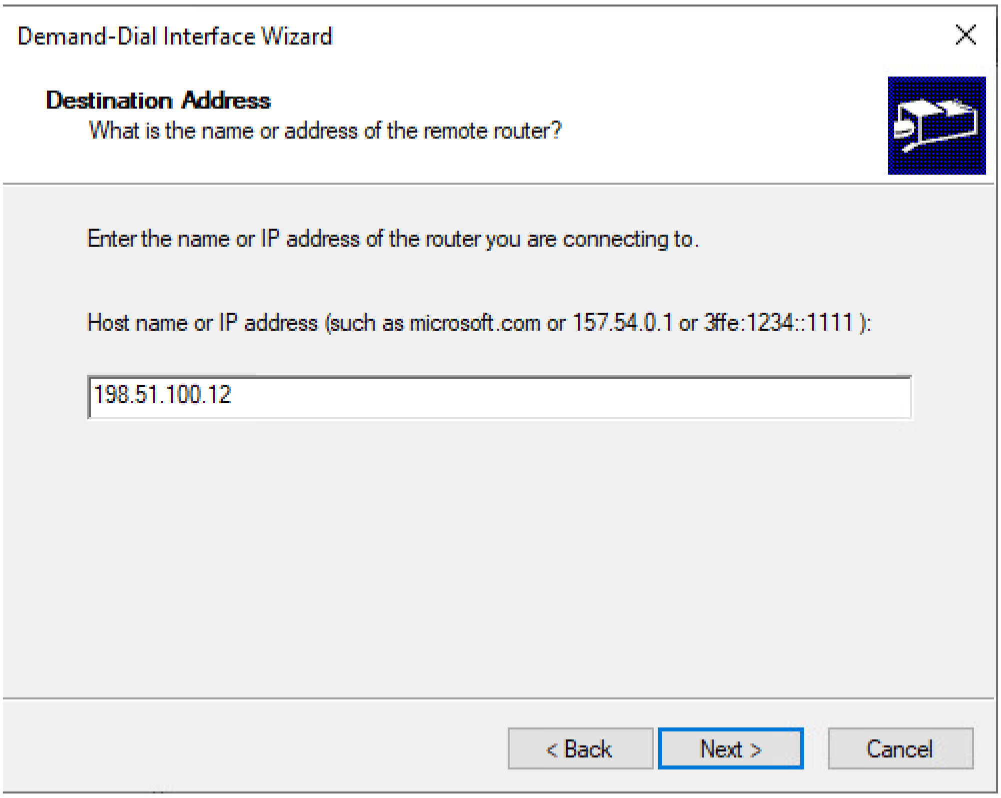
Select the type of VPN connection you want to create.

○ Automatic selection

○ Point to Point Tunneling Protocol (PPTP)

○ Layer 2 Tunneling Protocol (L2TP)

● IKEv2



Demand-Dial Interface Wizard

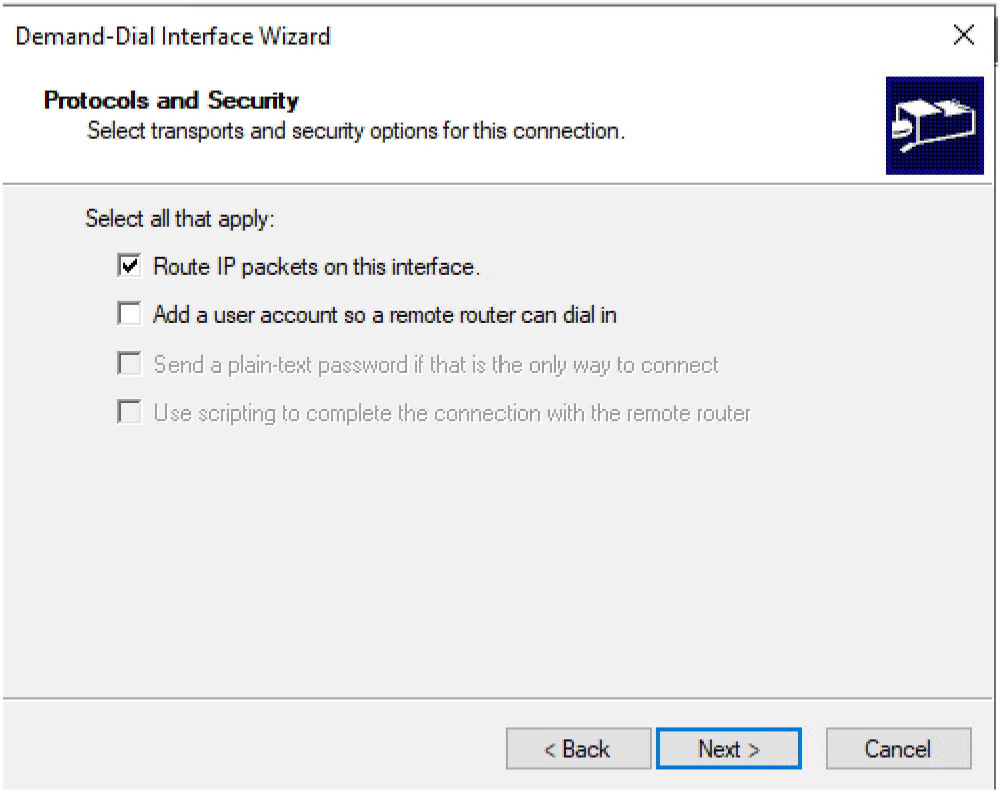
Destination Address

What is the name or address of the remote router?

Enter the name or IP address of the router you are connecting to.

Host name or IP address (such as microsoft.com or 157.54.0.1 or 3ffe:1234::1111):

198.51.100.12



Demand-Dial Interface Wizard

Protocols and Security

Select transports and security options for this connection.

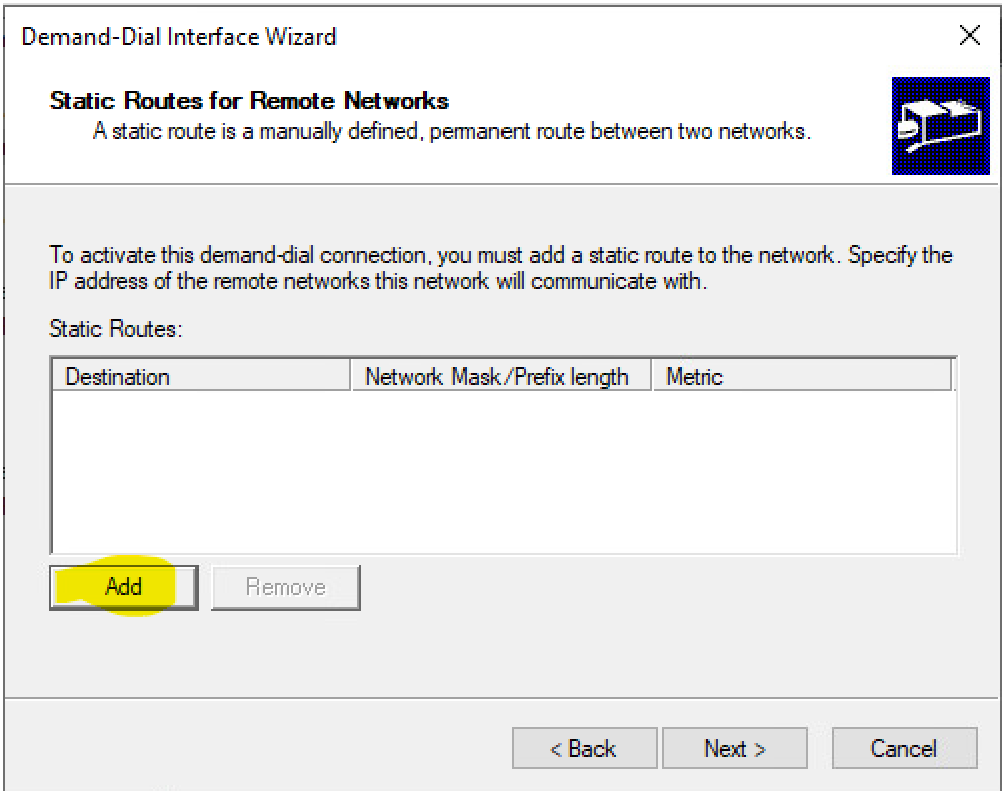
Select all that apply:

☑ Route IP packets on this interface.

□ Add a user account so a remote router can dial in

□ Send a plain-text password if that is the only way to connect

□ Use scripting to complete the connection with the remote router



Demand-Dial Interface Wizard

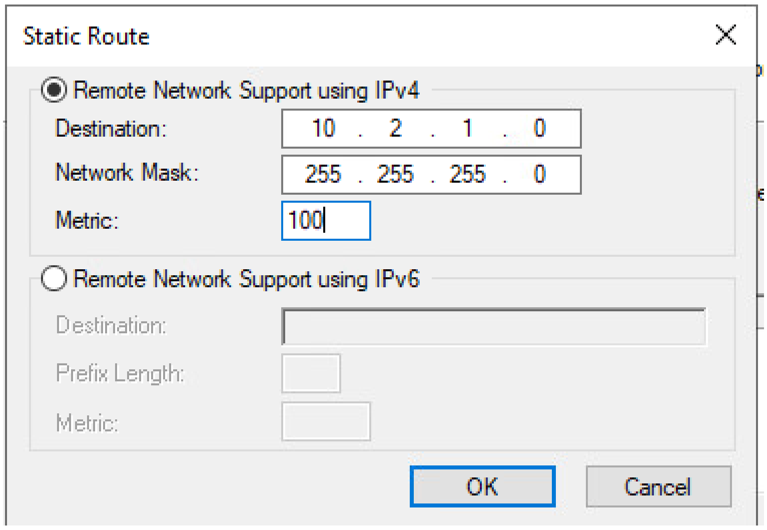
Static Routes for Remote Networks

A static route is a manually defined, permanent route between two networks.

To activate this demand-dial connection, you must add a static route to the network. Specify the IP address of the remote networks this network will communicate with.

Static Routes:

Destination	Network Mask/Prefix length	Metric



Static Route

● Remote Network Support using IPv4

Destination: 10 . 2 . 1 . 0

Network Mask: 255 . 255 . 255 . 0

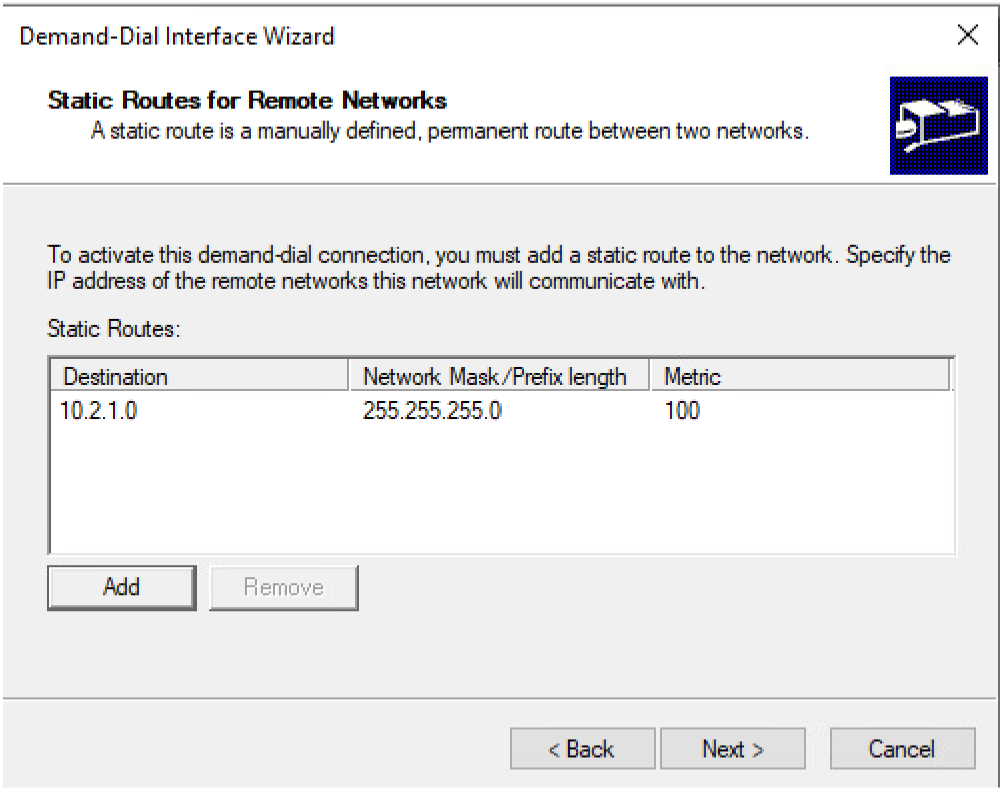
Metric: 100

○ Remote Network Support using IPv6

Destination:

Prefix Length:

Metric:



Demand-Dial Interface Wizard

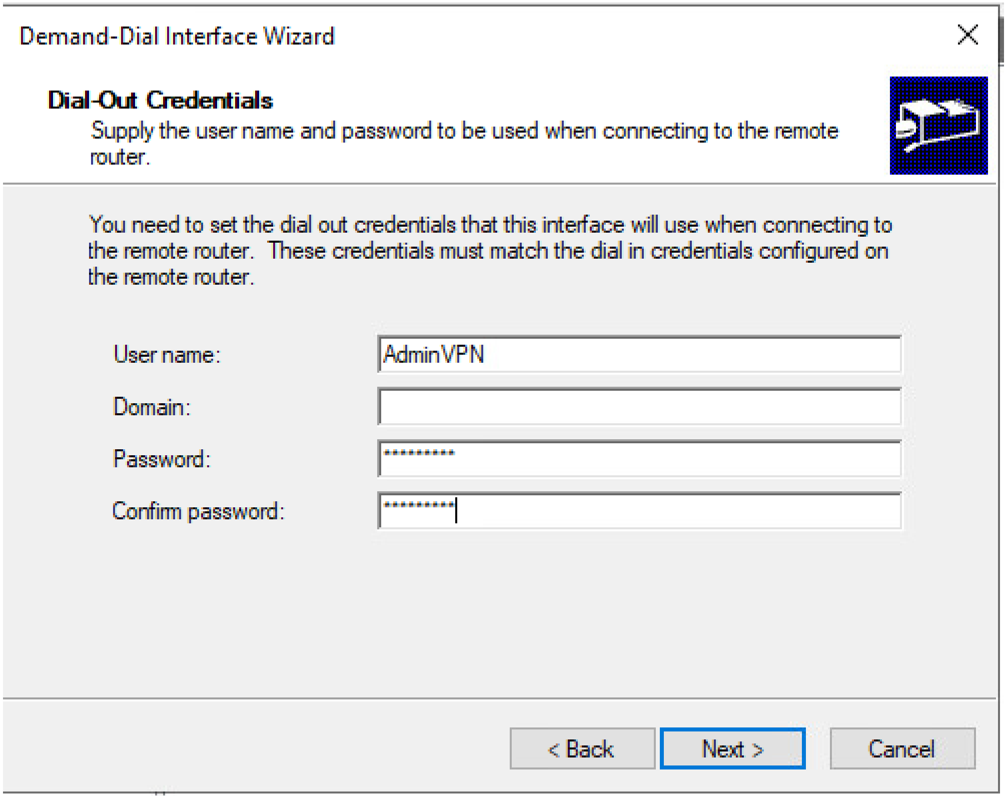
Static Routes for Remote Networks

A static route is a manually defined, permanent route between two networks.

To activate this demand-dial connection, you must add a static route to the network. Specify the IP address of the remote networks this network will communicate with.

Static Routes:

Destination	Network Mask/Prefix length	Metric
10.2.1.0	255.255.255.0	100



Demand-Dial Interface Wizard

Dial-Out Credentials

Supply the user name and password to be used when connecting to the remote router.

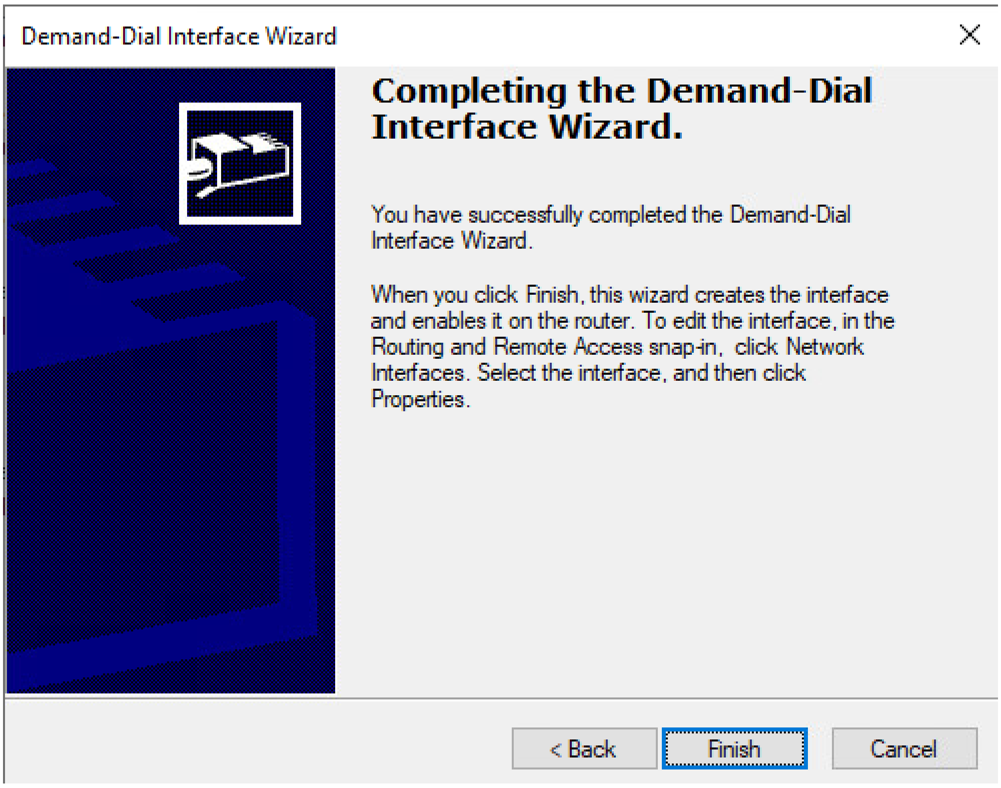
You need to set the dial out credentials that this interface will use when connecting to the remote router. These credentials must match the dial in credentials configured on the remote router.

User name: AdminVPN

Domain:

Password: **********

Confirm password: **********



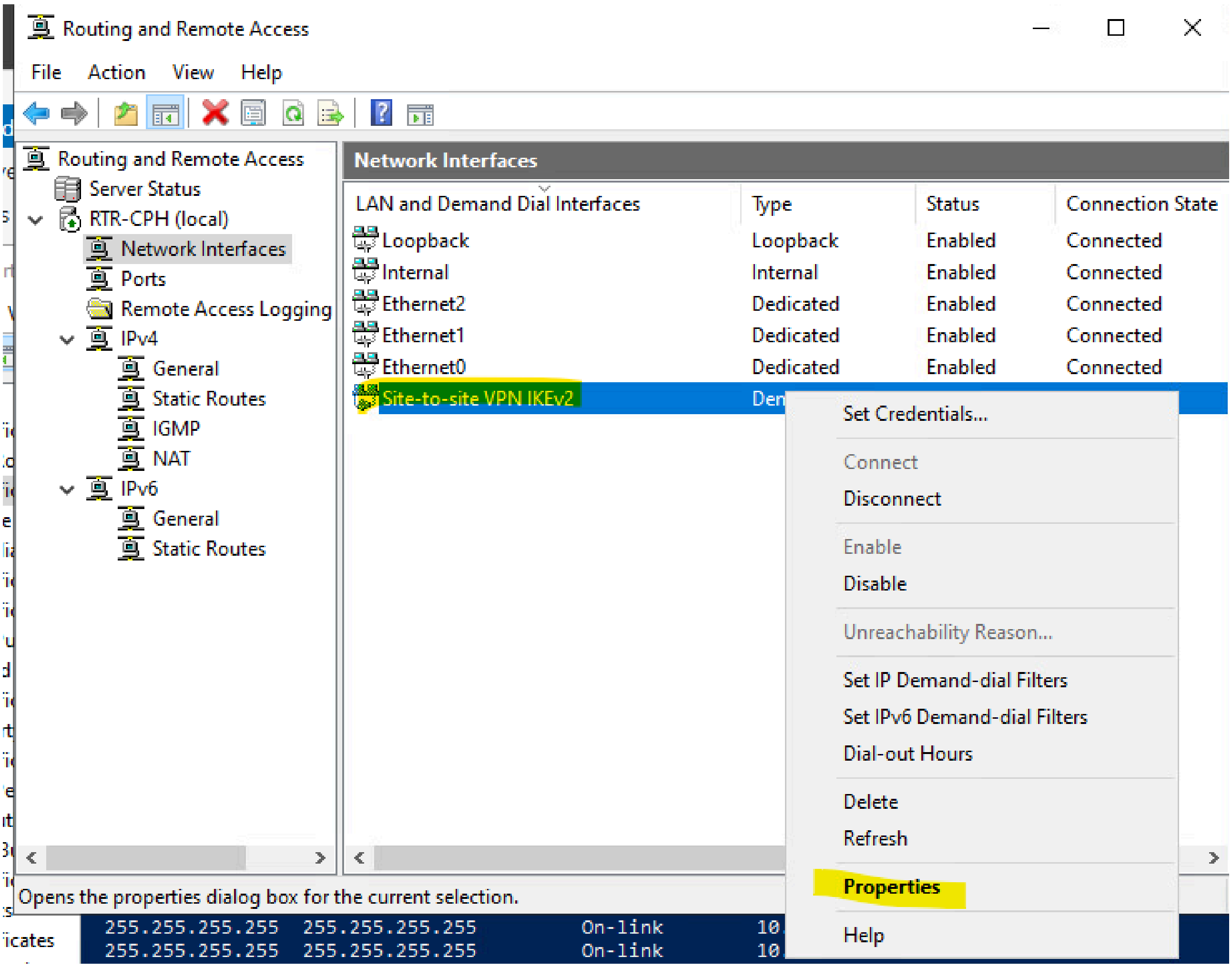
Demand-Dial Interface Wizard

Completing the Demand-Dial Interface Wizard.

You have successfully completed the Demand-Dial Interface Wizard.

When you click Finish, this wizard creates the interface and enables it on the router. To edit the interface, in the Routing and Remote Access snap-in, click Network Interfaces. Select the interface, and then click Properties.

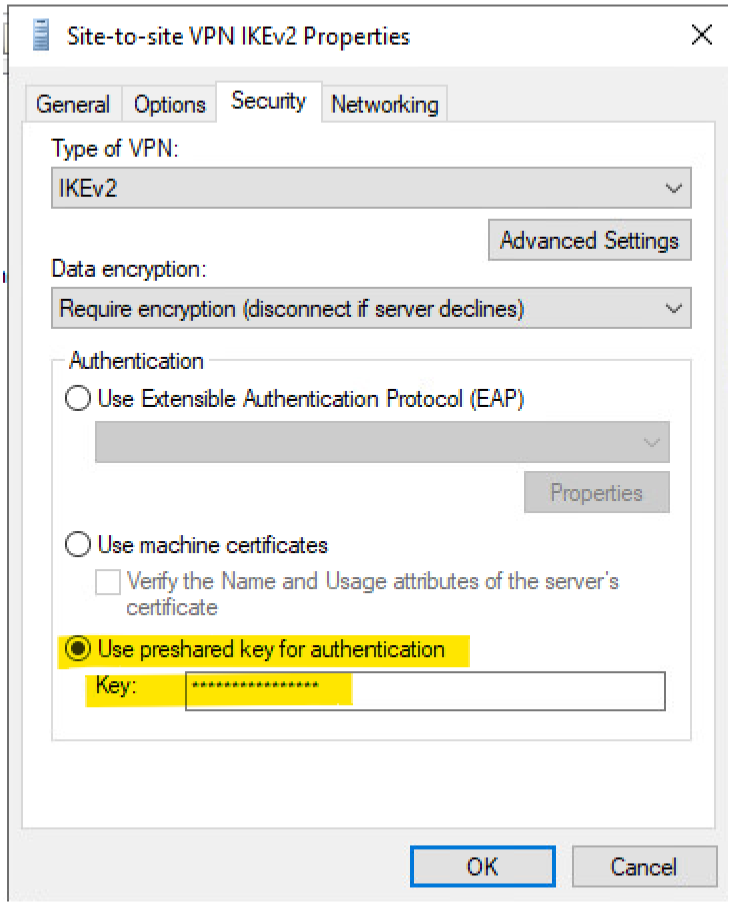
Certificates do not seem to work properly. Use PSK instead:



LAN and Demand Dial Interfaces	Type	Status	Connection State
Loopback	Loopback	Enabled	Connected
Internal	Internal	Enabled	Connected
Ethernet2	Dedicated	Enabled	Connected
Ethernet1	Dedicated	Enabled	Connected
Ethernet0	Dedicated	Enabled	Connected
Site-to-site VPN IKEv2	Den		

Opens the properties dialog box for the current selection.

```
255.255.255.255  255.255.255.255        On-link        10
255.255.255.255  255.255.255.255        On-link        10
```



Site-to-site VPN IKEv2 Properties

Type of VPN: IKEv2

Data encryption: Require encryption (disconnect if server declines)

Authentication

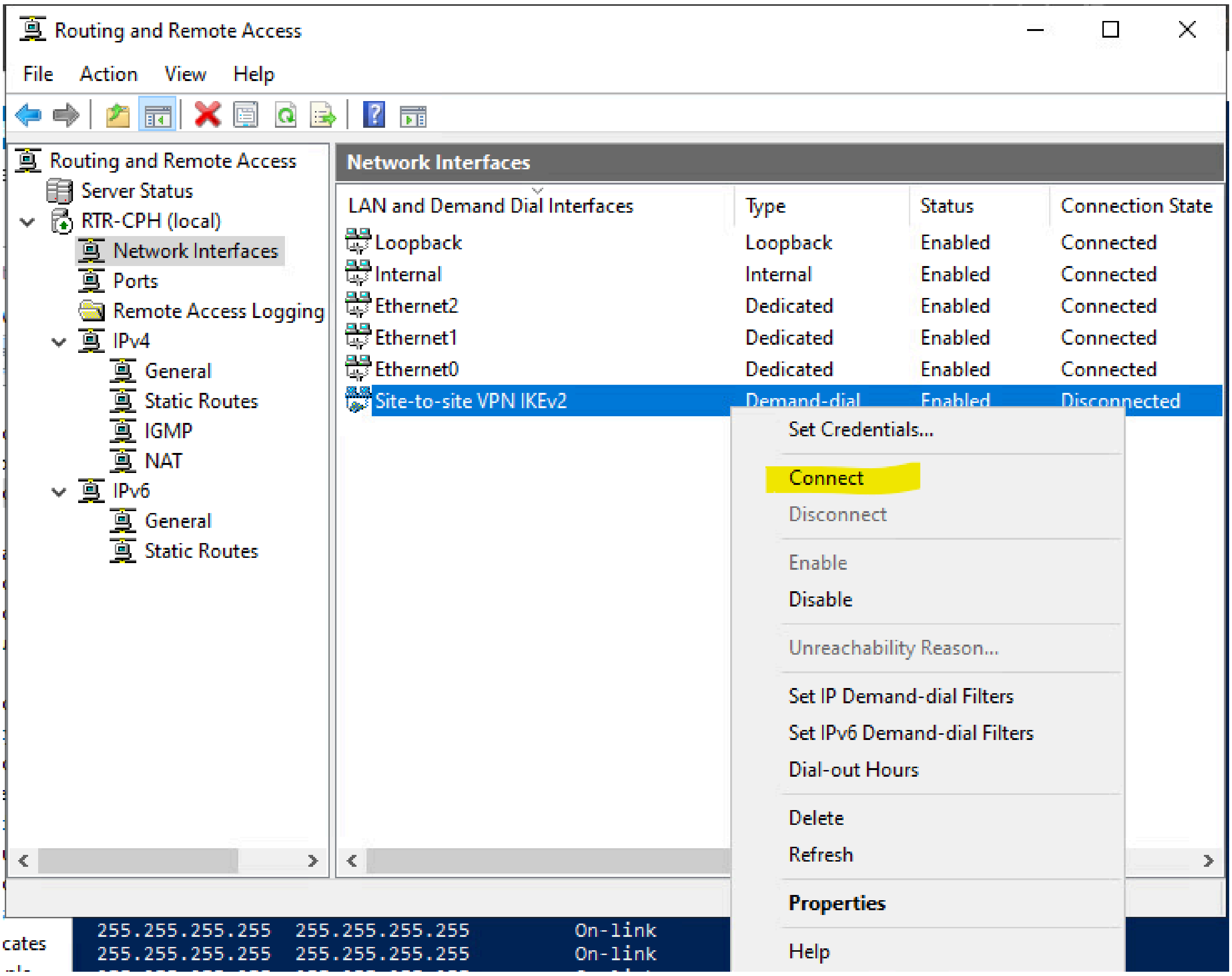
○ Use Extensible Authentication Protocol (EAP)

○ Use machine certificates

□ Verify the Name and Usage attributes of the server's certificate

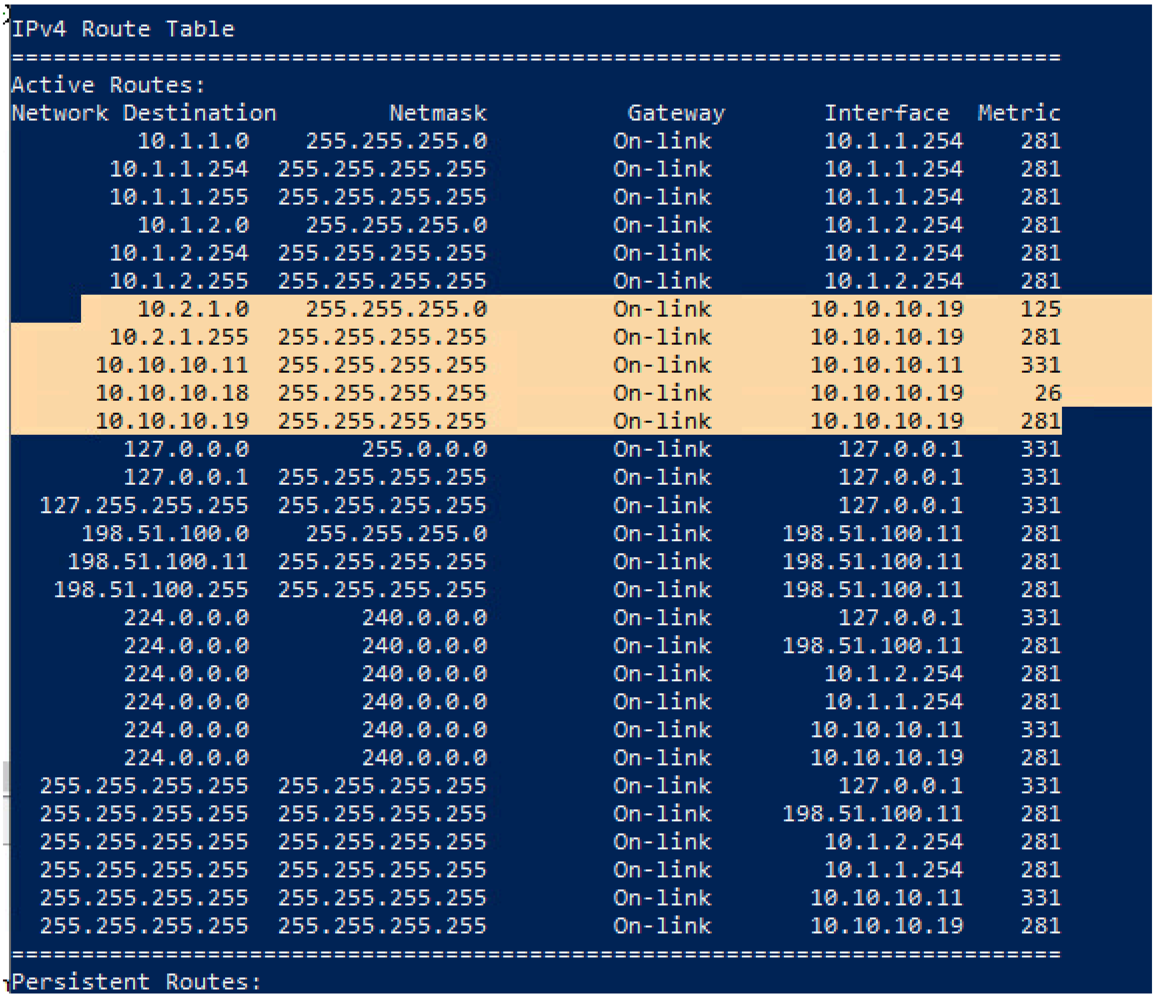
● Use preshared key for authentication

Key: *****************



LAN and Demand Dial Interfaces	Type	Status	Connection State
Loopback	Loopback	Enabled	Connected
Internal	Internal	Enabled	Connected
Ethernet2	Dedicated	Enabled	Connected
Ethernet1	Dedicated	Enabled	Connected
Ethernet0	Dedicated	Enabled	Connected
Site-to-site VPN IKEv2	Demand-dial	Enabled	Disconnected

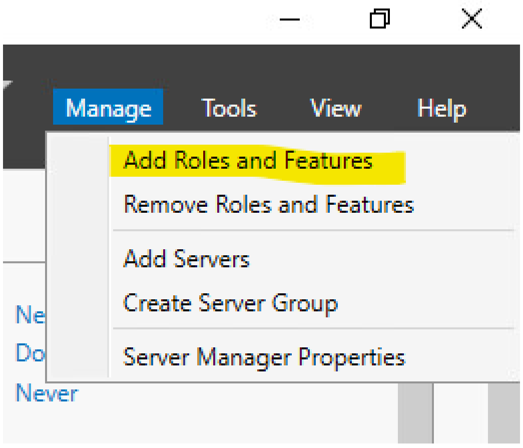
```
  255.255.255.255  255.255.255.255         On-link
  255.255.255.255  255.255.255.255         On-link
```

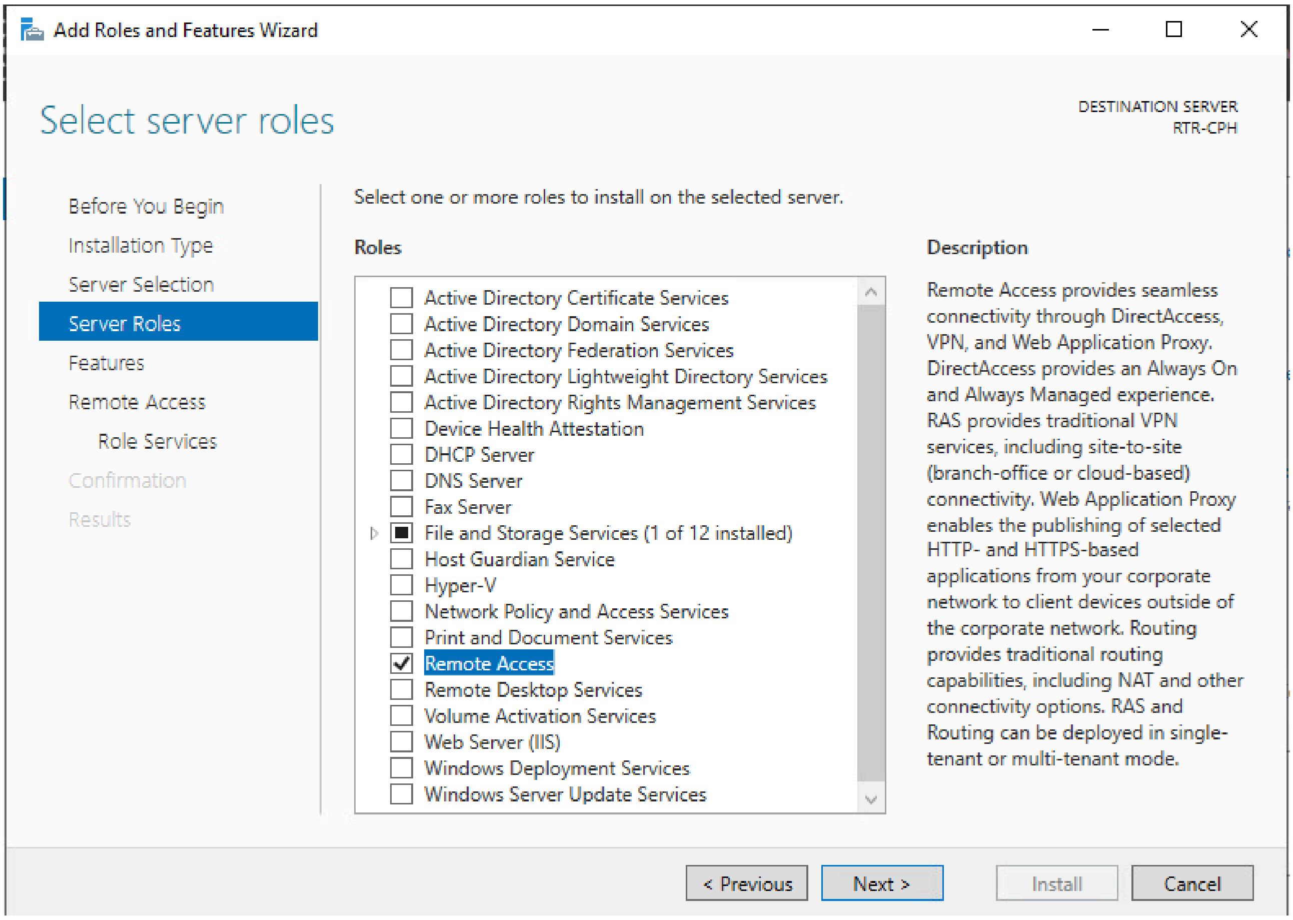


```
IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
         10.1.1.0    255.255.255.0         On-link        10.1.1.254    281
       10.1.1.254  255.255.255.255         On-link        10.1.1.254    281
       10.1.1.255  255.255.255.255         On-link        10.1.1.254    281
         10.1.2.0    255.255.255.0         On-link        10.1.2.254    281
       10.1.2.254  255.255.255.255         On-link        10.1.2.254    281
       10.1.2.255  255.255.255.255         On-link        10.1.2.254    281
         10.2.1.0    255.255.255.0         On-link       10.10.10.19    125
       10.2.1.255  255.255.255.255         On-link       10.10.10.19    281
      10.10.10.11  255.255.255.255         On-link       10.10.10.11    331
      10.10.10.18  255.255.255.255         On-link       10.10.10.19     26
      10.10.10.19  255.255.255.255         On-link       10.10.10.19    281
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
     198.51.100.0    255.255.255.0         On-link      198.51.100.11    281
    198.51.100.11  255.255.255.255         On-link      198.51.100.11    281
   198.51.100.255  255.255.255.255         On-link      198.51.100.11    281
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link      198.51.100.11    281
        224.0.0.0        240.0.0.0         On-link        10.1.2.254    281
        224.0.0.0        240.0.0.0         On-link        10.1.1.254    281
        224.0.0.0        240.0.0.0         On-link       10.10.10.11    331
        224.0.0.0        240.0.0.0         On-link       10.10.10.19    281
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link      198.51.100.11    281
  255.255.255.255  255.255.255.255         On-link        10.1.2.254    281
  255.255.255.255  255.255.255.255         On-link        10.1.1.254    281
  255.255.255.255  255.255.255.255         On-link       10.10.10.11    331
  255.255.255.255  255.255.255.255         On-link       10.10.10.19    281
===========================================================================
Persistent Routes:
```

RTR-CPH - Task2: RRAS FW

2. Configure RRAS firewall:
    2.1. Block all outbound traffic to TCP port 8080
    2.2. Block all outbound connections to WinRM





Select server roles

DESTINATION SERVER
RTR-CPH

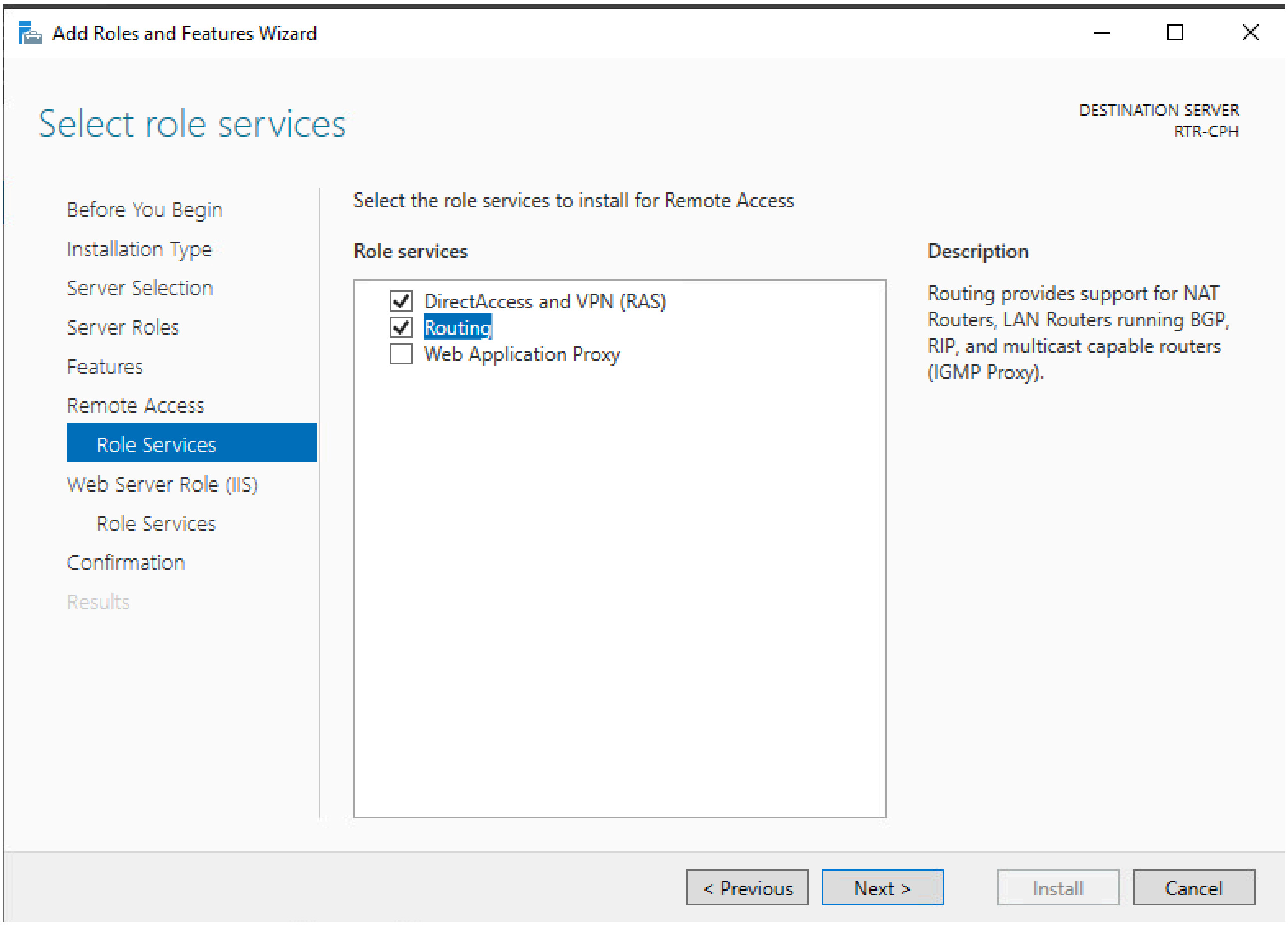
Select one or more roles to install on the selected server.

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)
- □ 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)
- □ Windows Deployment Services
- □ Windows Server Update Services

Description

Remote Access provides seamless connectivity through DirectAccess, VPN, and Web Application Proxy. DirectAccess provides an Always On and Always Managed experience. RAS provides traditional VPN services, including site-to-site (branch-office or cloud-based) connectivity. Web Application Proxy enables the publishing of selected HTTP- and HTTPS-based applications from your corporate network to client devices outside of the corporate network. Routing provides traditional routing capabilities, including NAT and other connectivity options. RAS and Routing can be deployed in single-tenant or multi-tenant mode.



Add Roles and Features Wizard

Select role services

DESTINATION SERVER
RTR-CPH

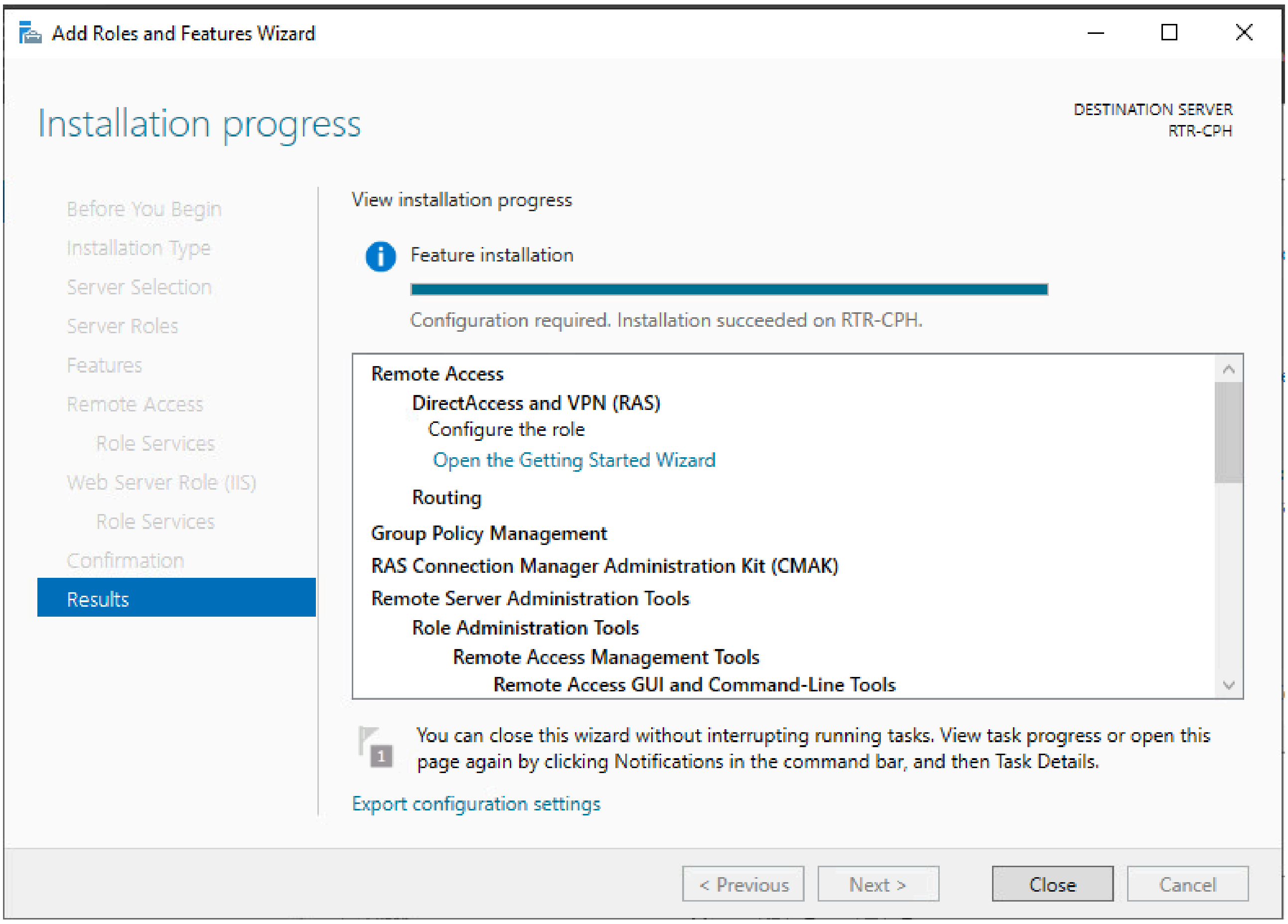
Select the role services to install for Remote Access

Role services

☑ DirectAccess and VPN (RAS)
☑ Routing
□ Web Application Proxy

Description

Routing provides support for NAT Routers, LAN Routers running BGP, RIP, and multicast capable routers (IGMP Proxy).



Add Roles and Features Wizard

Installation progress

DESTINATION SERVER
RTR-CPH

View installation progress

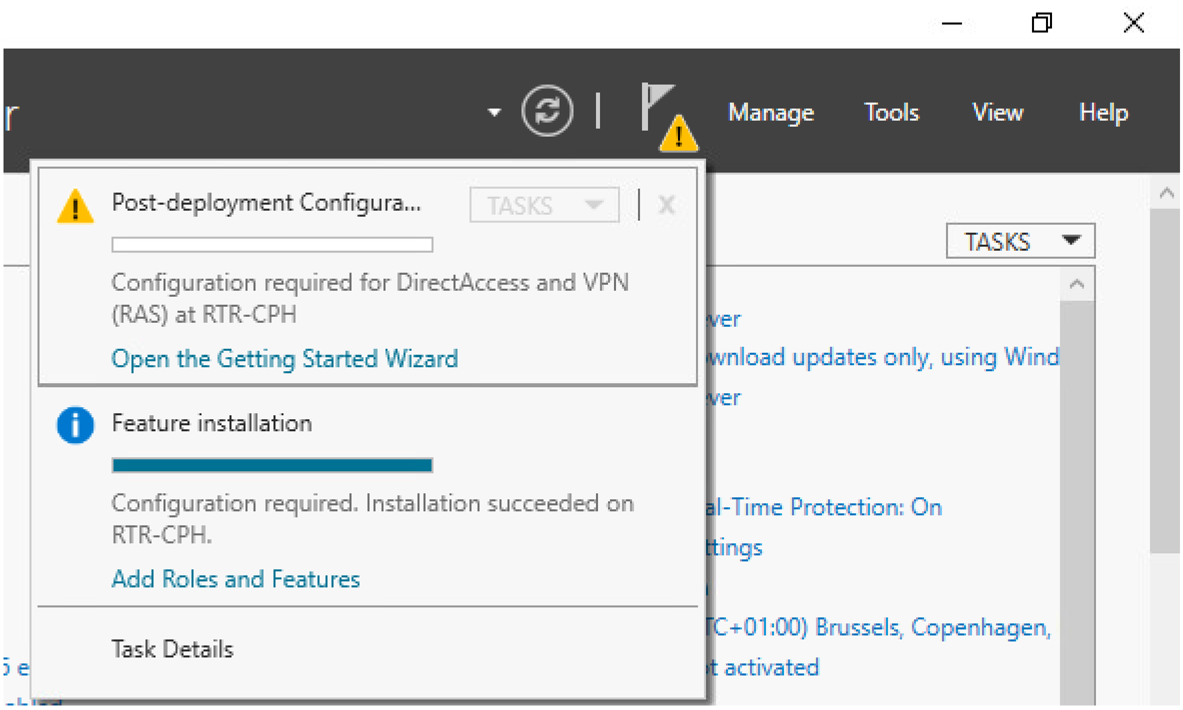
Feature installation

Configuration required. Installation succeeded on RTR-CPH.

Remote Access
DirectAccess and VPN (RAS)
Configure the role
Open the Getting Started Wizard
Routing
Group Policy Management
RAS Connection Manager Administration Kit (CMAK)
Remote Server Administration Tools
Role Administration Tools
Remote Access Management Tools
Remote Access GUI and Command-Line Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings



Post-deployment Configura...

Configuration required for DirectAccess and VPN (RAS) at RTR-CPH

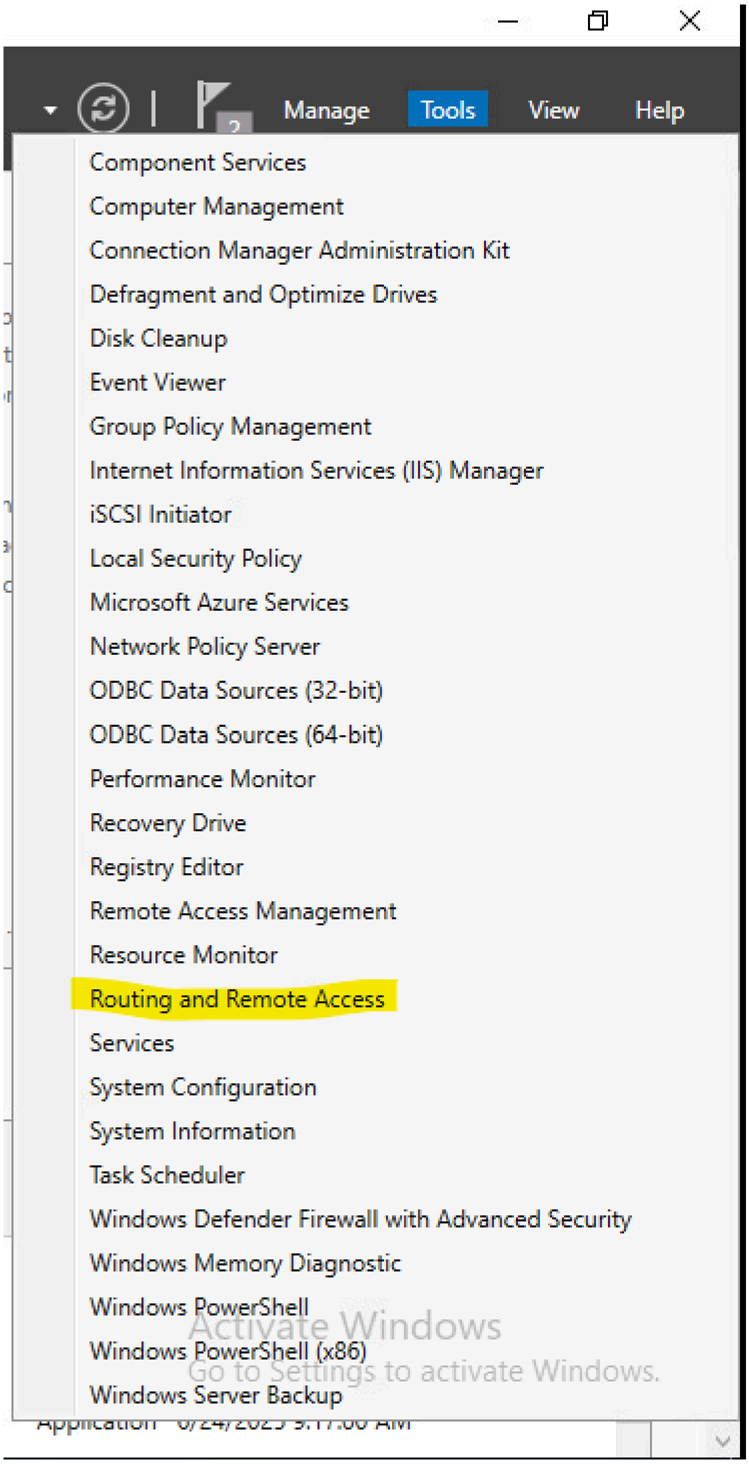
Open the Getting Started Wizard

Feature installation

Configuration required. Installation succeeded on RTR-CPH.

Add Roles and Features

Task Details


Manage
Tools
View
Help
Component Services
Computer Management
Connection Manager Administration Kit
Defragment and Optimize Drives
Disk Cleanup
Event Viewer
Group Policy Management
Internet Information Services (IIS) Manager
iSCSI Initiator
Local Security Policy
Microsoft Azure Services
Network Policy Server
ODBC Data Sources (32-bit)
ODBC Data Sources (64-bit)
Performance Monitor
Recovery Drive
Registry Editor
Remote Access Management
Resource Monitor
Routing and Remote Access
Services
System Configuration
System Information
Task Scheduler
Windows Defender Firewall with Advanced Security
Windows Memory Diagnostic
Windows PowerShell
Windows PowerShell (x86)
Windows Server Backup
Activate Windows
Go to Settings to activate Windows.

RTR-CPH - Task3: Port forwarding

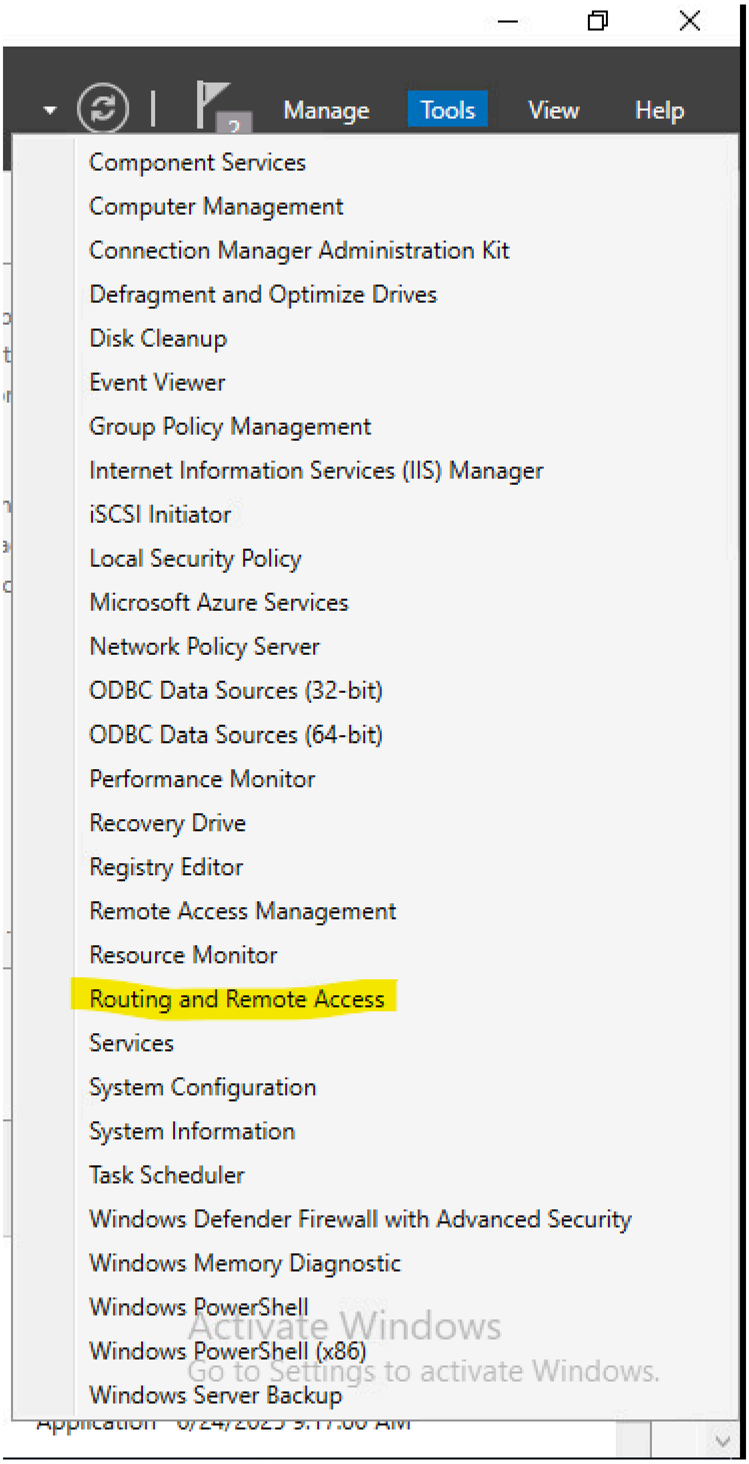
3. Port forward 198.51.100.11:8080 to DEV-SRV port 80

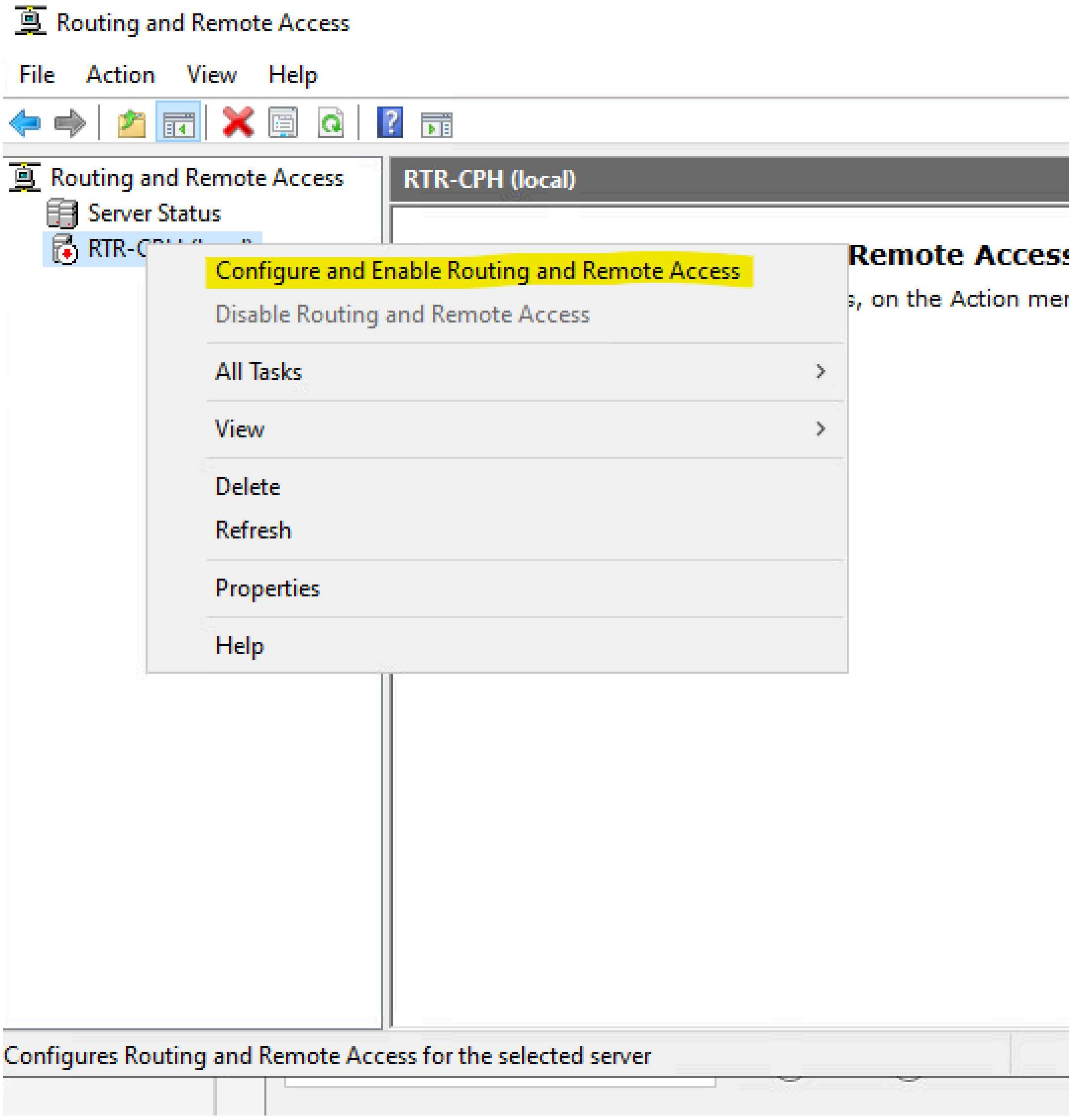
RTR-CPH - Task4: Reverse proxy

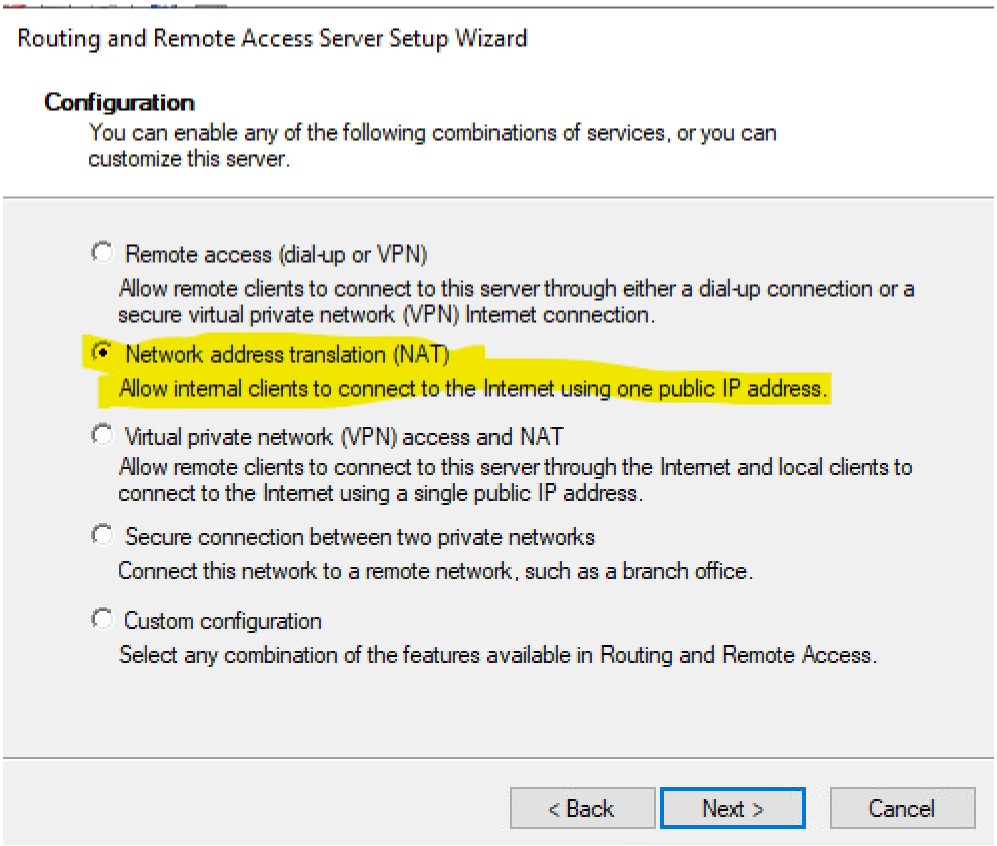
4. Configure reverse proxy against www.skillsnet.dk, host it as www.skillspublic.dk

RTR-CPH - Taskr: NAT (masquerade)

5. Configure NAT rules for outbound (external) connectivity


Manage
Tools
View
Help
Component Services
Computer Management
Connection Manager Administration Kit
Defragment and Optimize Drives
Disk Cleanup
Event Viewer
Group Policy Management
Internet Information Services (IIS) Manager
iSCSI Initiator
Local Security Policy
Microsoft Azure Services
Network Policy Server
ODBC Data Sources (32-bit)
ODBC Data Sources (64-bit)
Performance Monitor
Recovery Drive
Registry Editor
Remote Access Management
Resource Monitor
Routing and Remote Access
Services
System Configuration
System Information
Task Scheduler
Windows Defender Firewall with Advanced Security
Windows Memory Diagnostic
Windows PowerShell
Windows PowerShell (x86)
Windows Server Backup
Activate Windows
Go to Settings to activate Windows.


Routing and Remote Access
File
Action
View
Help
Routing and Remote Access
Server Status
RTR-CPH (local)
RTR-CPH (local)
Remote Access
, on the Action men
Configure and Enable Routing and Remote Access
Disable Routing and Remote Access
All Tasks
View
Delete
Refresh
Properties
Help
Configures Routing and Remote Access for the selected server



Routing and Remote Access Server Setup Wizard

Configuration

You can enable any of the following combinations of services, or you can customize this server.

○ Remote access (dial-up or VPN)

Allow remote clients to connect to this server through either a dial-up connection or a secure virtual private network (VPN) Internet connection.

● Network address translation (NAT)

Allow internal clients to connect to the Internet using one public IP address.

○ Virtual private network (VPN) access and NAT

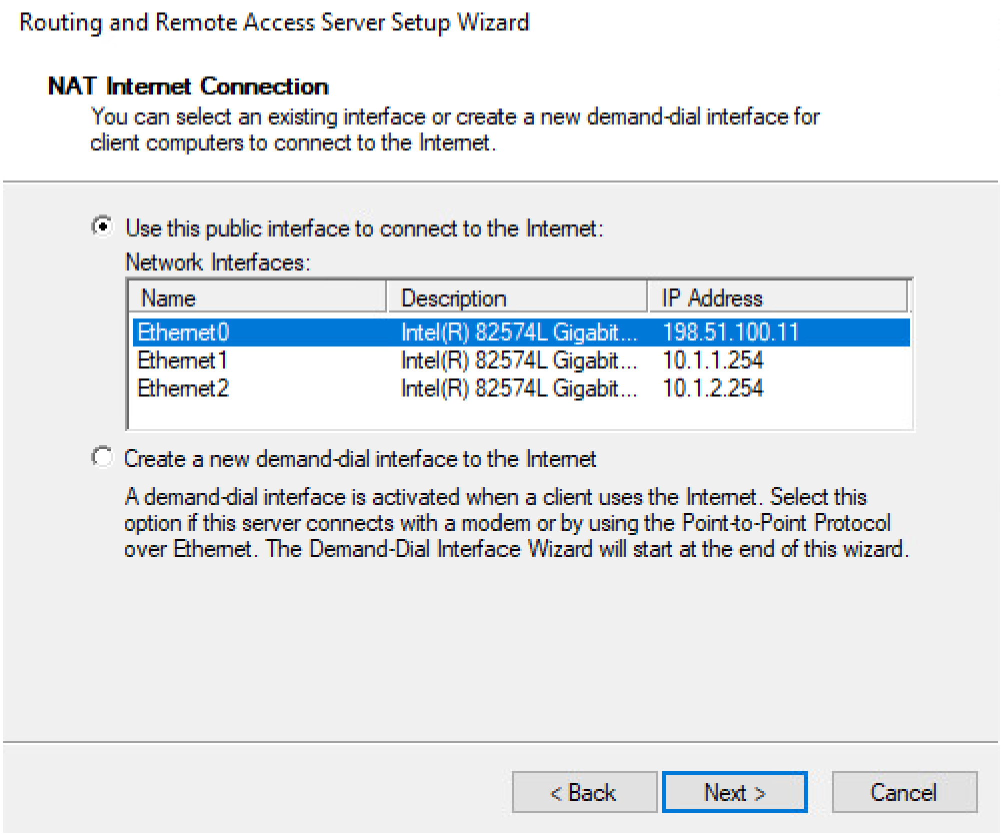
Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.

○ Secure connection between two private networks

Connect this network to a remote network, such as a branch office.

○ Custom configuration

Select any combination of the features available in Routing and Remote Access.



Routing and Remote Access Server Setup Wizard

NAT Internet Connection

You can select an existing interface or create a new demand-dial interface for client computers to connect to the Internet.

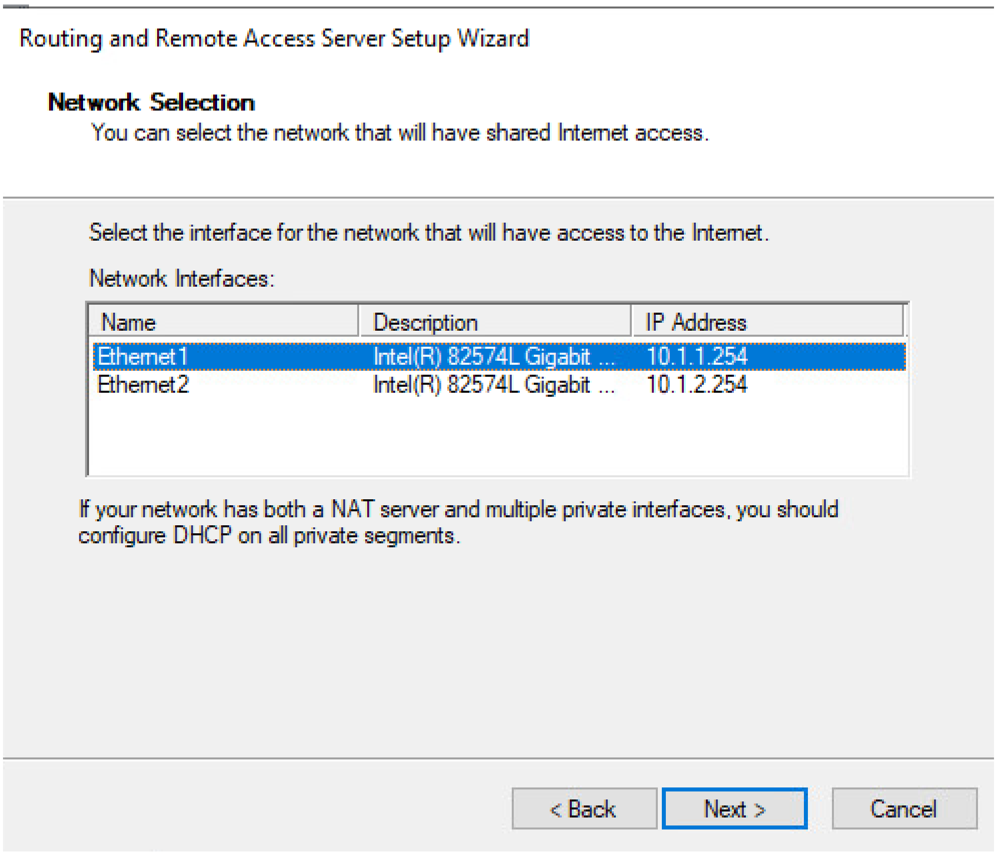
● Use this public interface to connect to the Internet:

Network Interfaces:

Name	Description	IP Address
Ethernet0	Intel(R) 82574L Gigabit...	198.51.100.11
Ethernet1	Intel(R) 82574L Gigabit...	10.1.1.254
Ethernet2	Intel(R) 82574L Gigabit...	10.1.2.254

○ Create a new demand-dial interface to the Internet

A demand-dial interface is activated when a client uses the Internet. Select this option if this server connects with a modem or by using the Point-to-Point Protocol over Ethernet. The Demand-Dial Interface Wizard will start at the end of this wizard.



Routing and Remote Access Server Setup Wizard

Network Selection

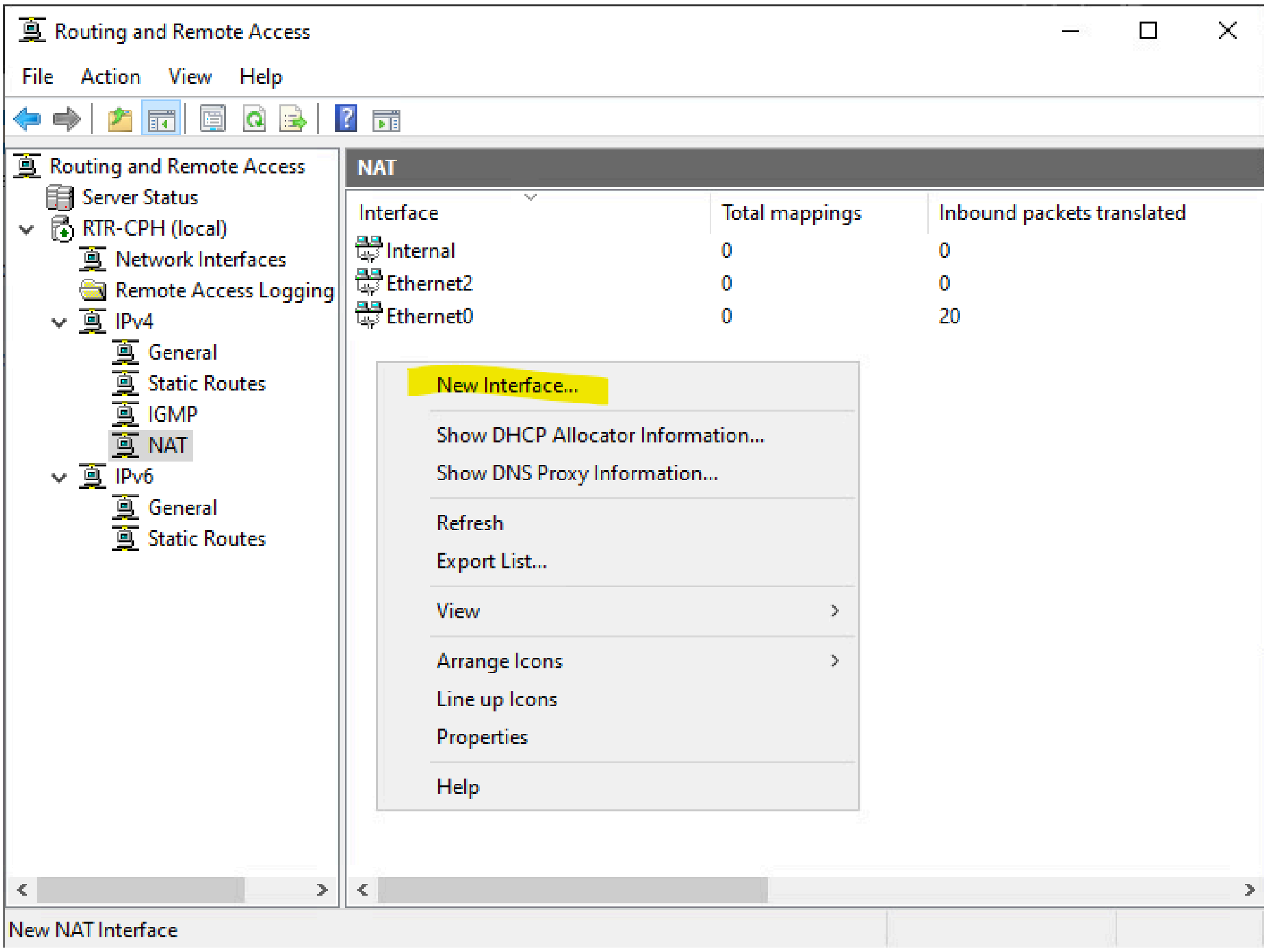
You can select the network that will have shared Internet access.

Select the interface for the network that will have access to the Internet.

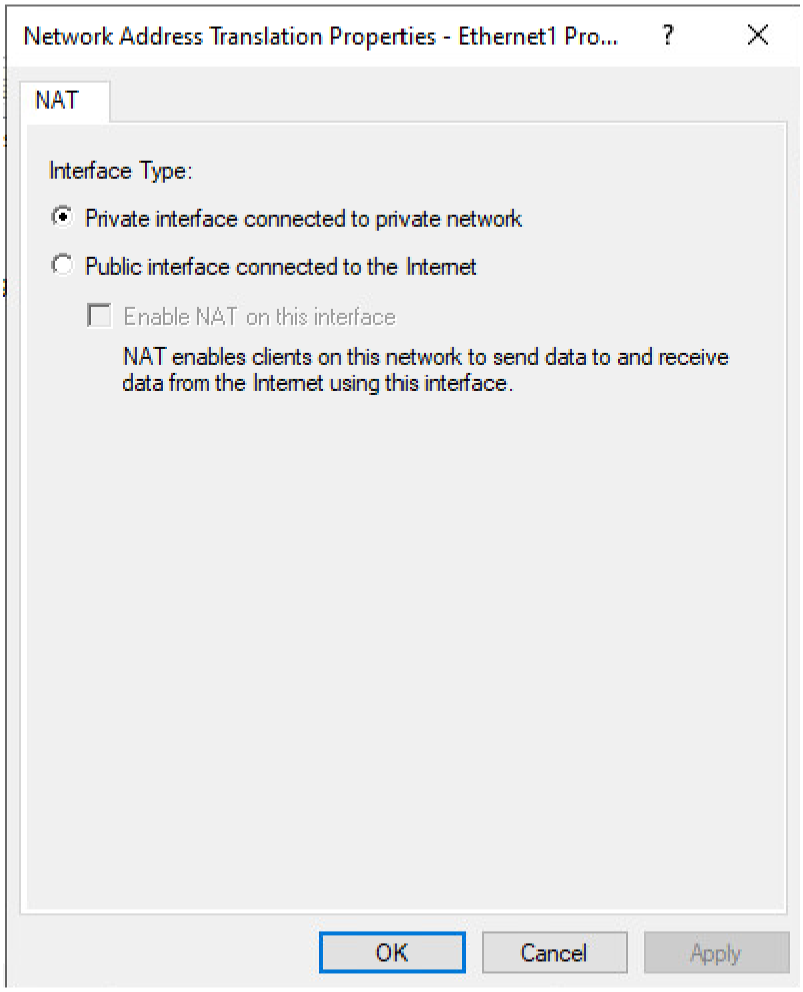
Network Interfaces:

Name	Description	IP Address
Ethernet1	Intel(R) 82574L Gigabit ...	10.1.1.254
Ethernet2	Intel(R) 82574L Gigabit ...	10.1.2.254

If your network has both a NAT server and multiple private interfaces, you should configure DHCP on all private segments.



Interface	Total mappings	Inbound packets translated
Internal	0	0
Ethernet2	0	0
Ethernet0	0	20



Network Address Translation Properties - Ethernet1 Pro...

NAT

Interface Type:

● Private interface connected to private network

○ Public interface connected to the Internet

□ Enable NAT on this interface

NAT enables clients on this network to send data to and receive data from the Internet using this interface.

RTR-AAL

Role: Branch Router
Tasks:

RTR-AAL - Task1: Site-to-site VPN

1. Configure IKEv2 Site-to-Site VPN with RTR-CPH

RTR-AAL - Task2: NAT (masquerade)

2. Configure NAT rules for outbound (external) connectivity

DC

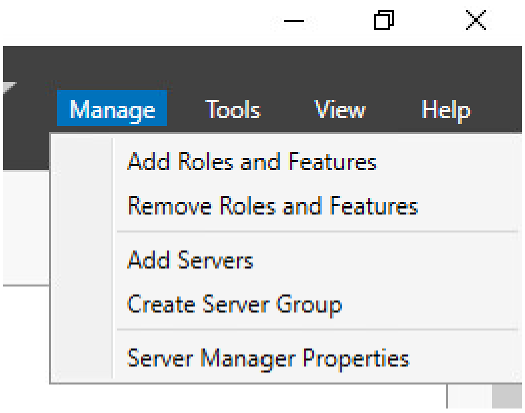
Role: Primary Domain Controller for skillsnet.dk. Provides Enterprise PKI and SAML IdP.

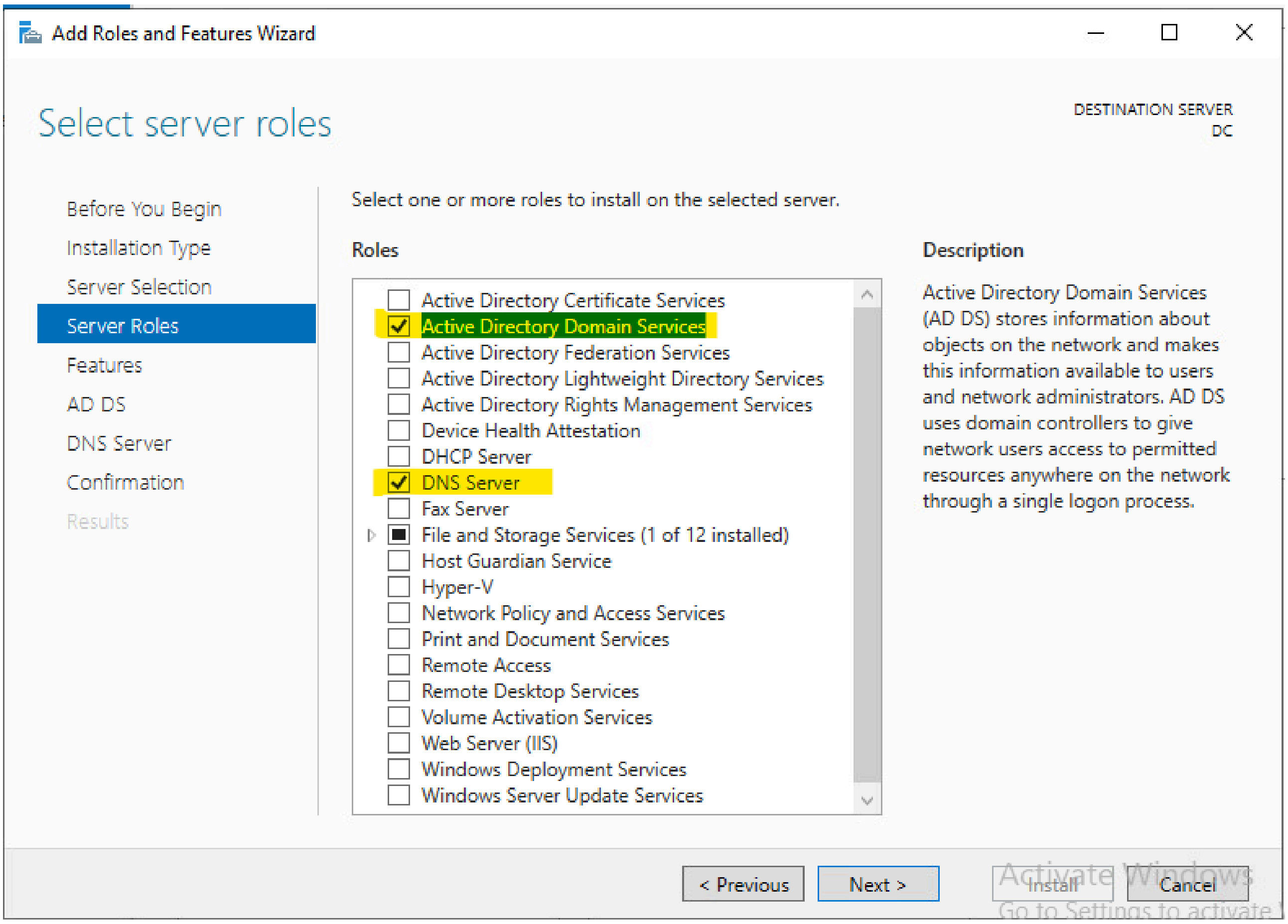
Active Directory & Identity Services

DC AD - Task1: Domain controller

- **Don’t forget rename host to DC previously.**

1. Promote to DC and create domain skillsnet.dk





Add Roles and Features Wizard

Select server roles

DESTINATION SERVER
DC

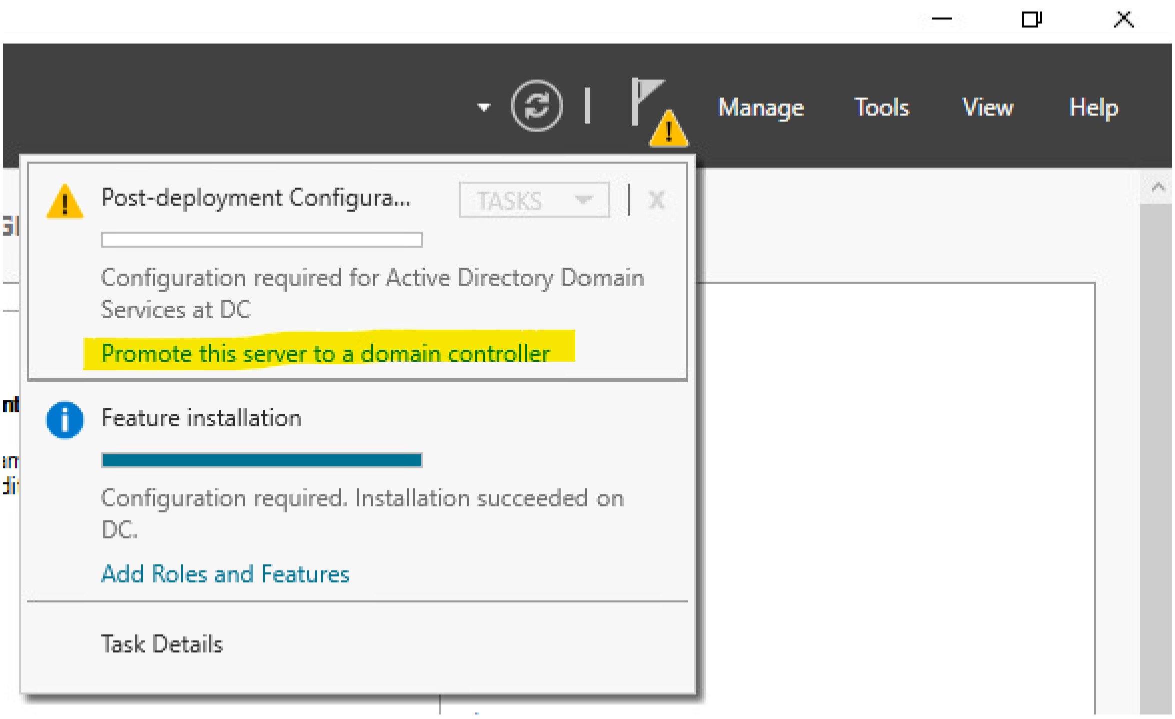
Select one or more roles to install on the selected server.

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)
- ☐ 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)
- ☐ Windows Deployment Services
- ☐ Windows Server Update Services

Description

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process.



Post-deployment Configura...

Configuration required for Active Directory Domain Services at DC

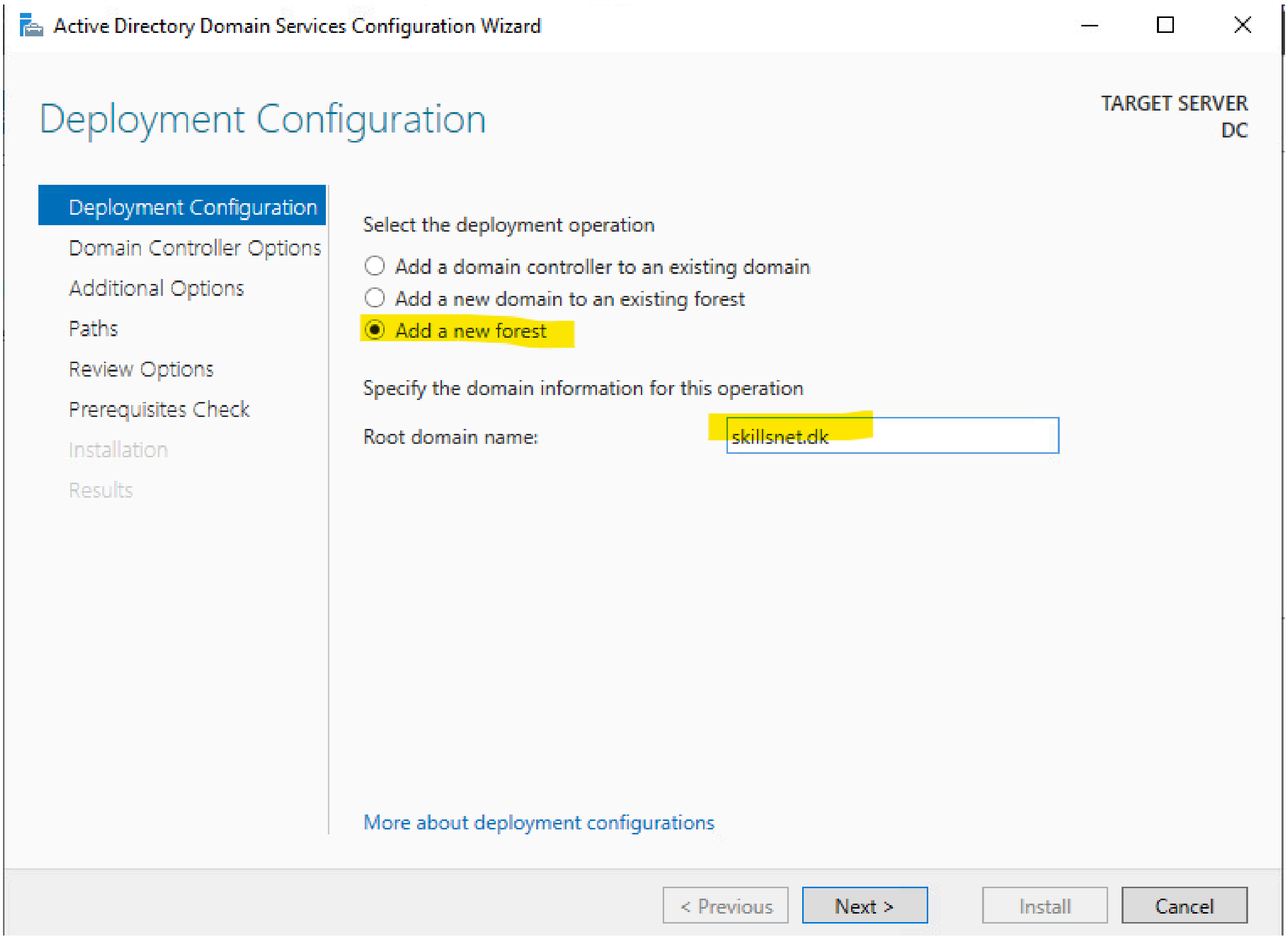
Promote this server to a domain controller

Feature installation

Configuration required. Installation succeeded on DC.

Add Roles and Features

Task Details



Deployment Configuration

Select the deployment operation

○ Add a domain controller to an existing domain

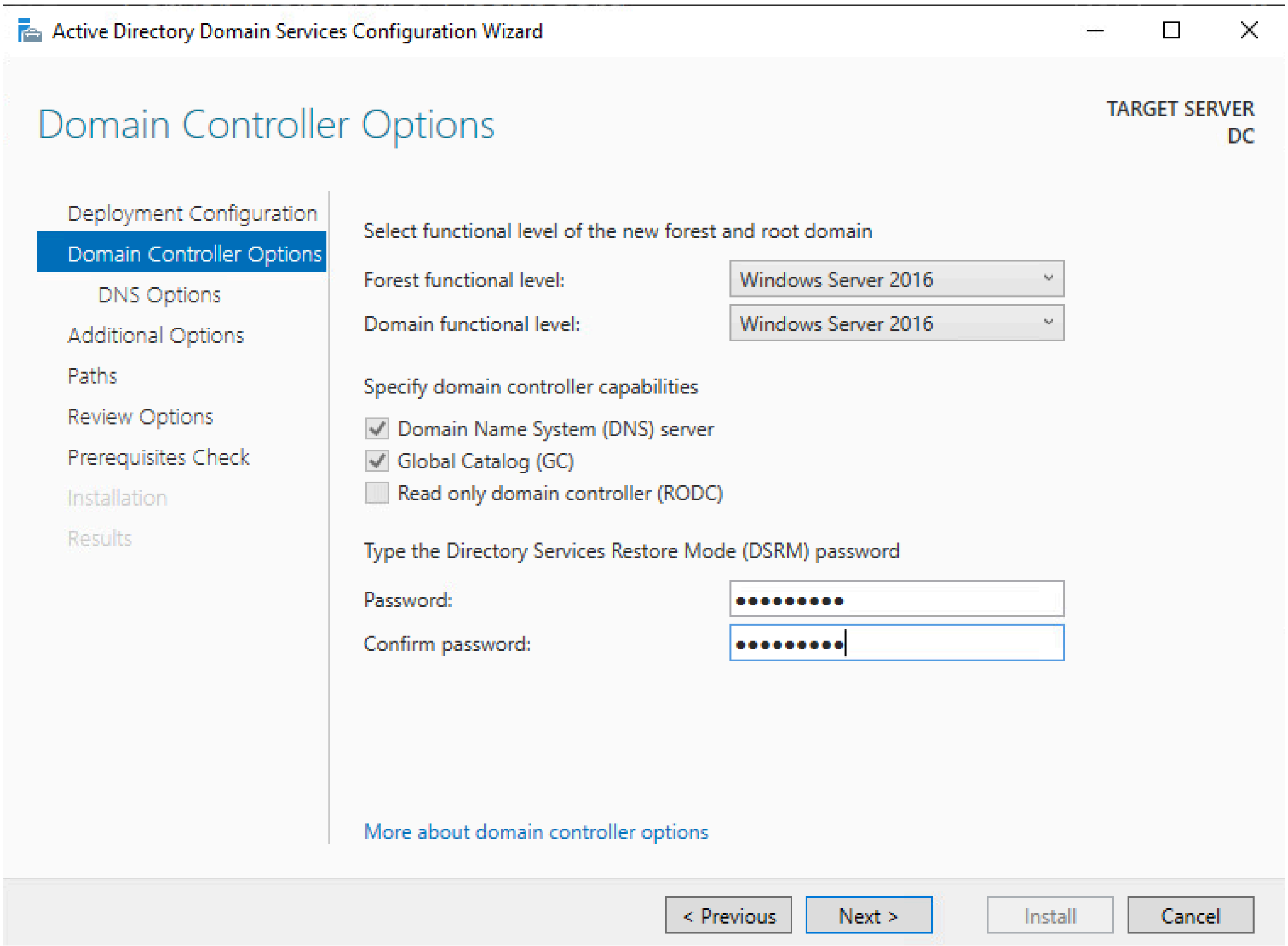
○ Add a new domain to an existing forest

● Add a new forest

Specify the domain information for this operation

Root domain name: skillsnet.dk

More about deployment configurations



Active Directory Domain Services Configuration Wizard

Domain Controller Options

TARGET SERVER
DC

Select functional level of the new forest and root domain

Forest functional level: Windows Server 2016

Domain functional level: Windows Server 2016

Specify domain controller capabilities

☑ Domain Name System (DNS) server

☑ Global Catalog (GC)

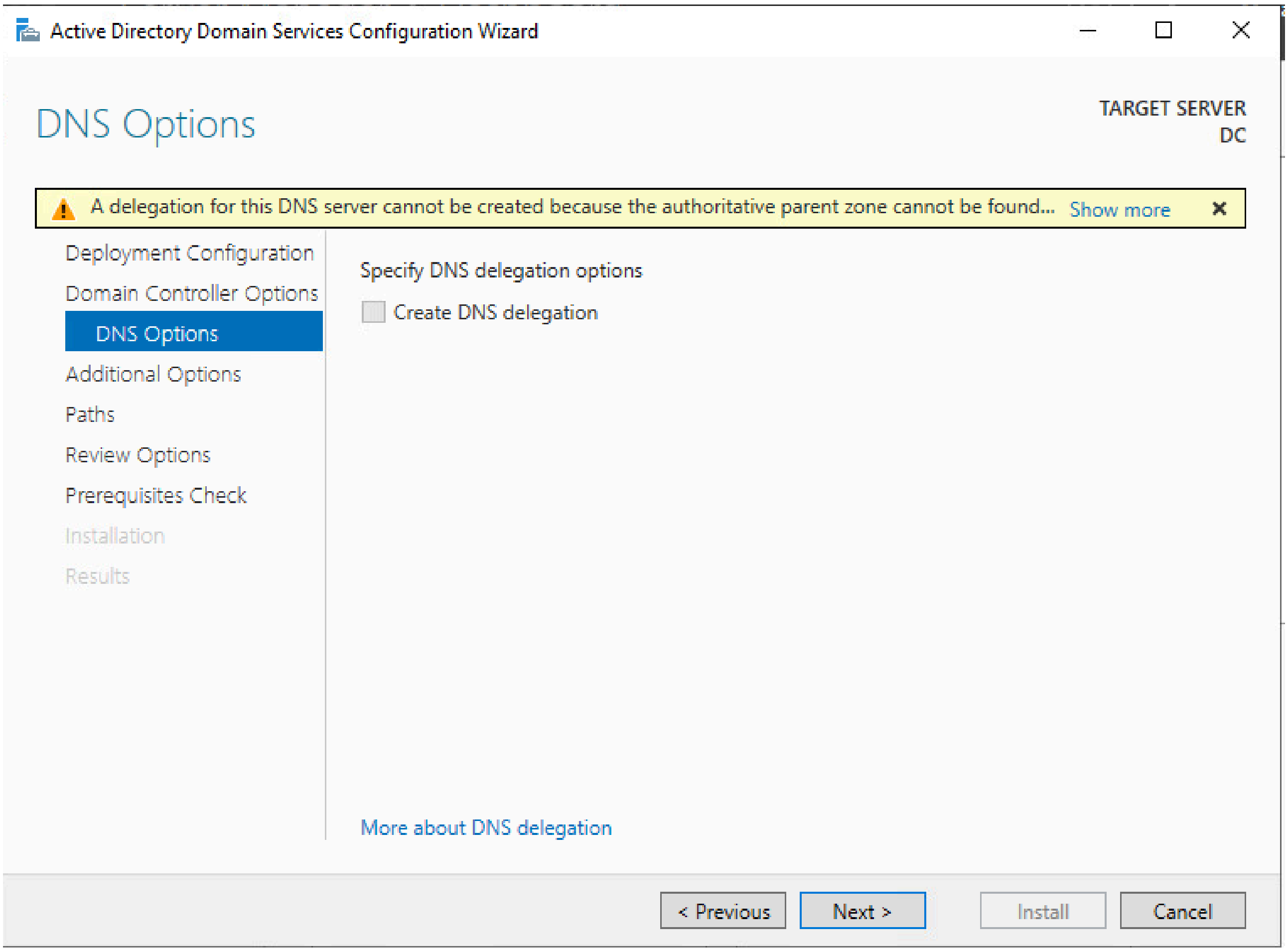
□ Read only domain controller (RODC)

Type the Directory Services Restore Mode (DSRM) password

Password: ●●●●●●●●●

Confirm password: ●●●●●●●●●

More about domain controller options



Active Directory Domain Services Configuration Wizard

DNS Options

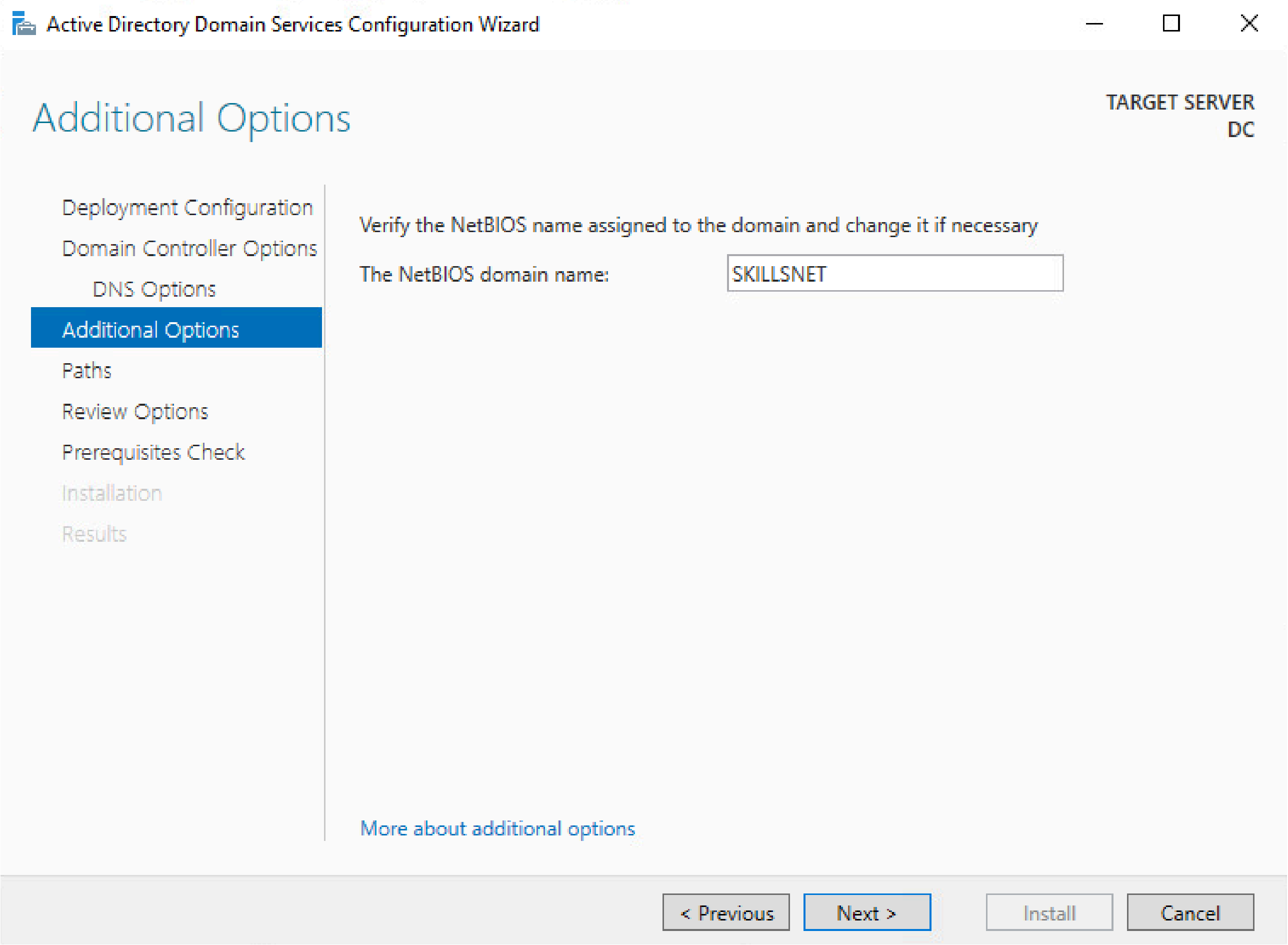
TARGET SERVER
DC

A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found... Show more

Specify DNS delegation options

□ Create DNS delegation

More about DNS delegation



Active Directory Domain Services Configuration Wizard

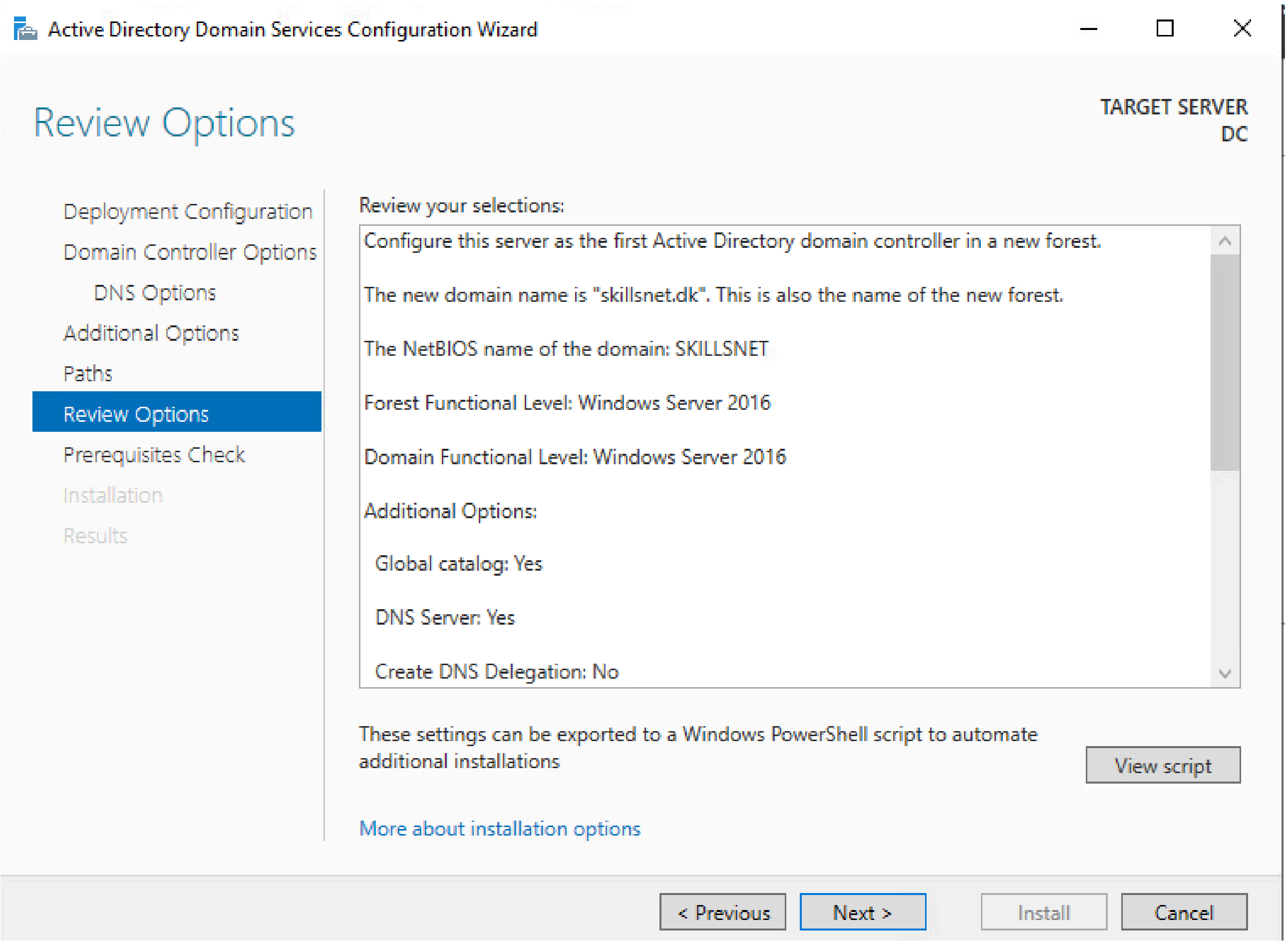
Additional Options

TARGET SERVER
DC

Verify the NetBIOS name assigned to the domain and change it if necessary

The NetBIOS domain name: SKILLSNET

More about additional options



Active Directory Domain Services Configuration Wizard

Review Options

TARGET SERVER
DC

Review your selections:

Configure this server as the first Active Directory domain controller in a new forest.

The new domain name is "skillsnet.dk". This is also the name of the new forest.

The NetBIOS name of the domain: SKILLSNET

Forest Functional Level: Windows Server 2016

Domain Functional Level: Windows Server 2016

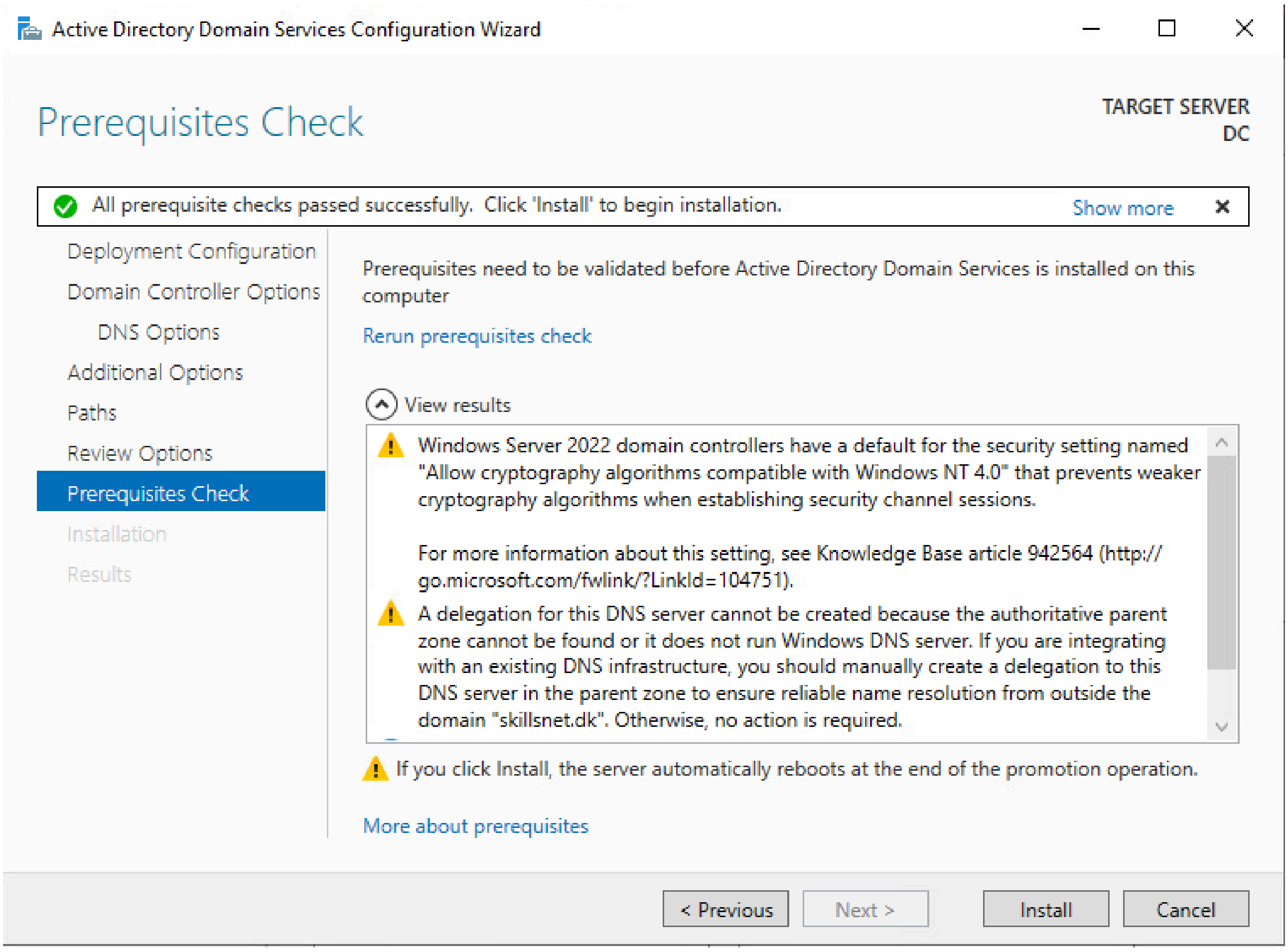
Additional Options:

Global catalog: Yes

DNS Server: Yes

Create DNS Delegation: No

These settings can be exported to a Windows PowerShell script to automate additional installations



Active Directory Domain Services Configuration Wizard

Prerequisites Check

TARGET SERVER
DC

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation. Show more ✕

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

Rerun prerequisites check

View results

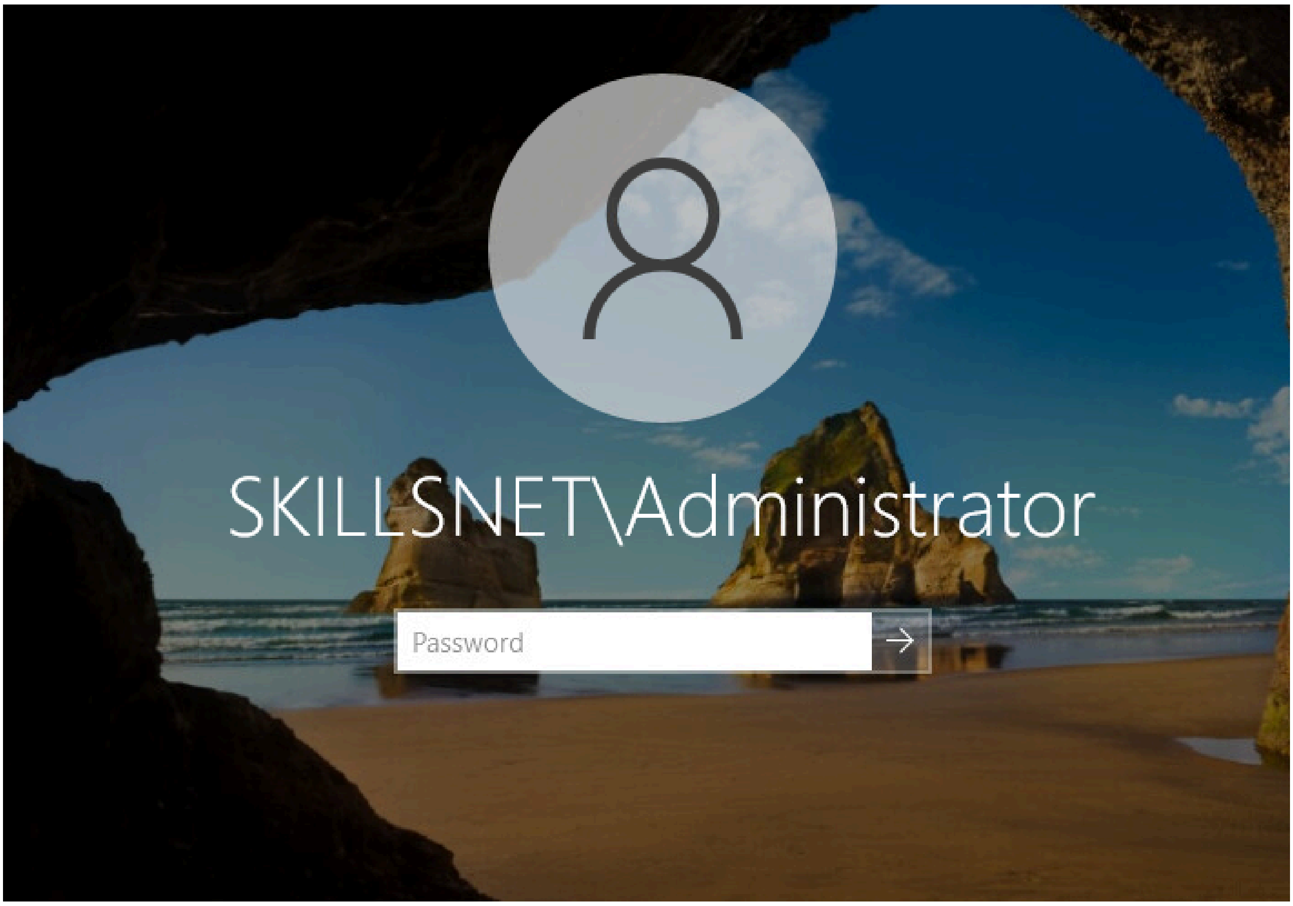
⚠ Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

⚠ A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "skillsnet.dk". Otherwise, no action is required.

⚠ If you click Install, the server automatically reboots at the end of the promotion operation.

More about prerequisites



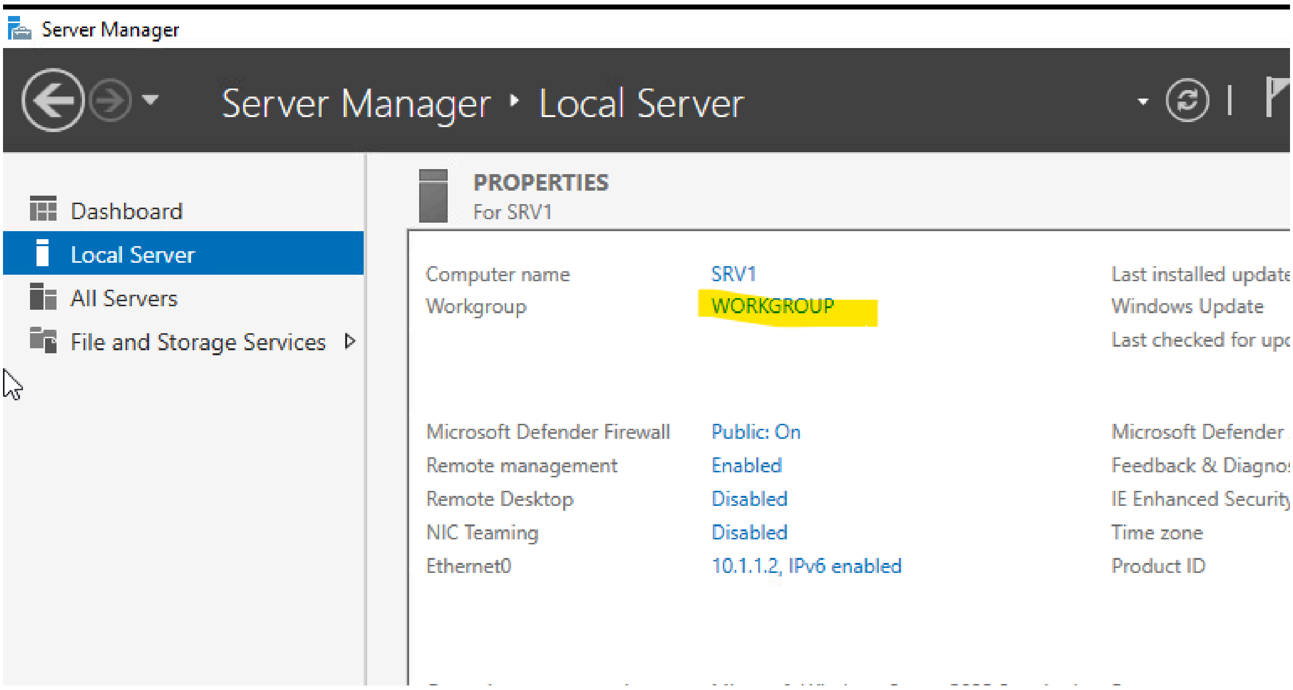
SKILLSNET\Administrator

- **Join machines to domain.**

Notes:

- **RODC needs the VPN active to join domain.**

Example with GUI: SRV1



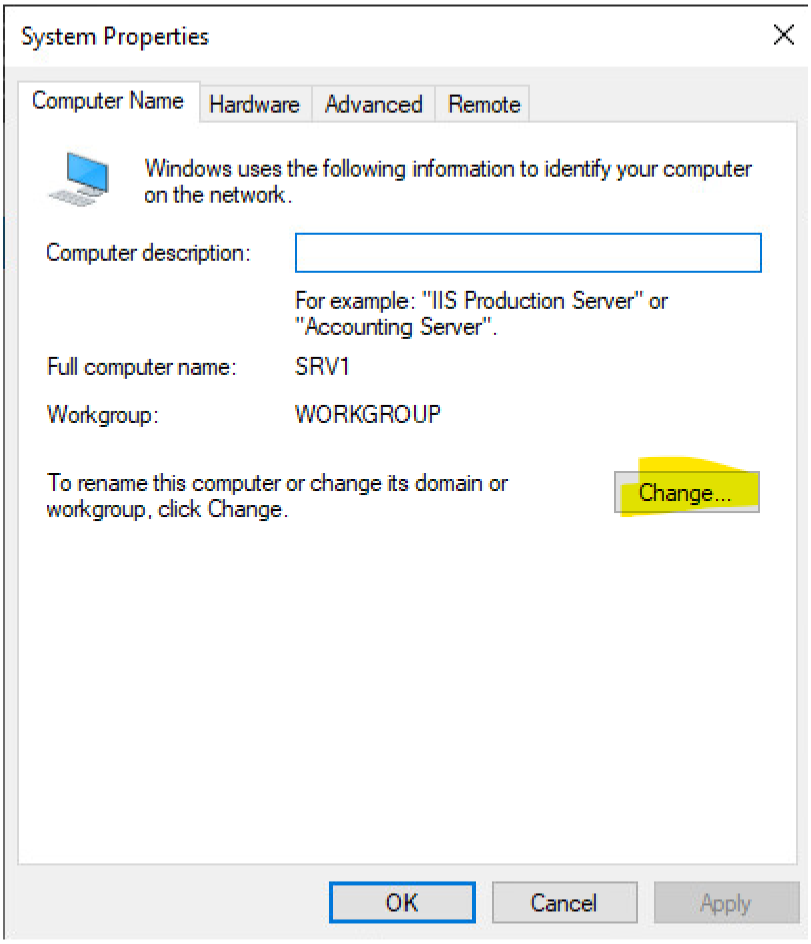
PROPERTIES
For SRV1

Computer name SRV1
Workgroup WORKGROUP

Last installed update
Windows Update
Last checked for upc

Microsoft Defender Firewall Public: On
Remote management Enabled
Remote Desktop Disabled
NIC Teaming Disabled
Ethernet0 10.1.1.2, IPv6 enabled

Microsoft Defender
Feedback & Diagno:
IE Enhanced Security
Time zone
Product ID



Windows uses the following information to identify your computer on the network.

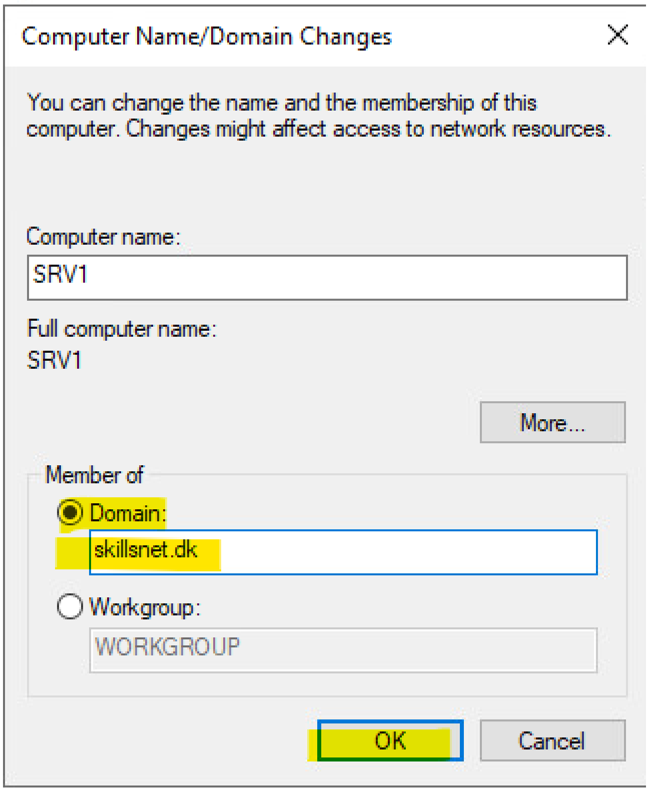
Computer description:

For example: "IIS Production Server" or "Accounting Server".

Full computer name: SRV1

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.



Computer Name/Domain Changes

You can change the name and the membership of this computer. Changes might affect access to network resources.

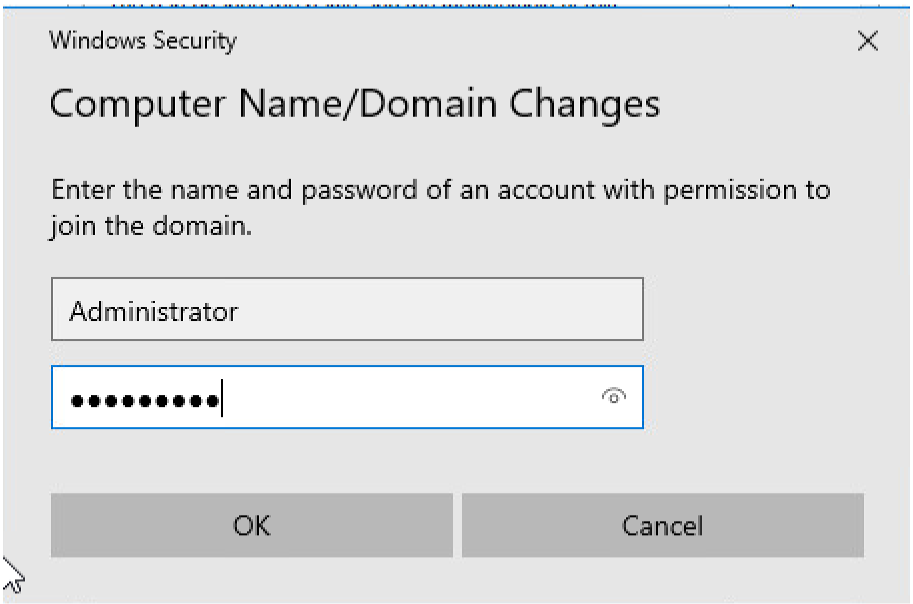
Computer name: SRV1

Full computer name:
SRV1

Member of

● Domain: skillsnet.dk

○ Workgroup: WORKGROUP



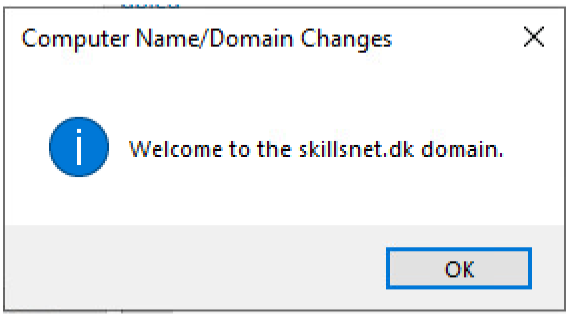
Windows Security

Computer Name/Domain Changes

Enter the name and password of an account with permission to join the domain.

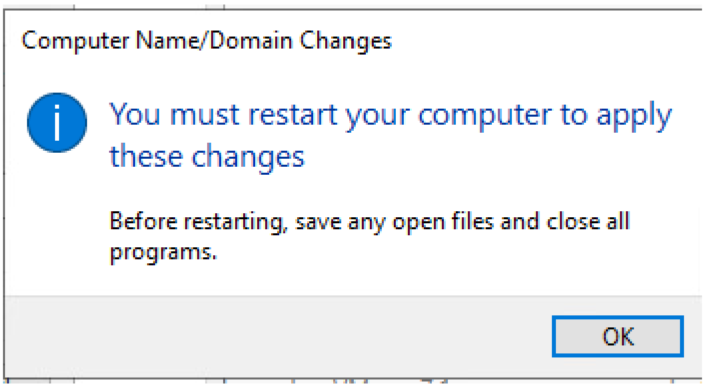
Administrator

●●●●●●●●●



Computer Name/Domain Changes

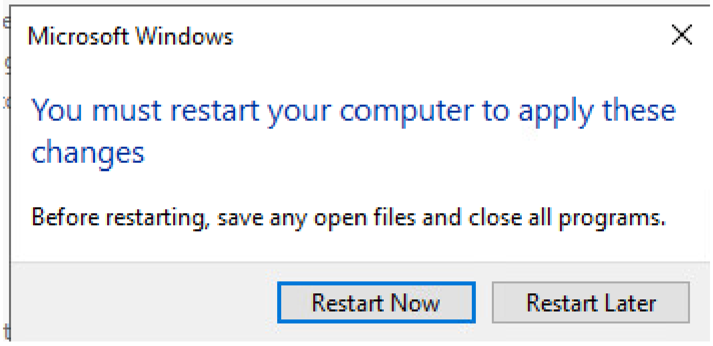
Welcome to the skillsnet.dk domain.



Computer Name/Domain Changes

You must restart your computer to apply these changes

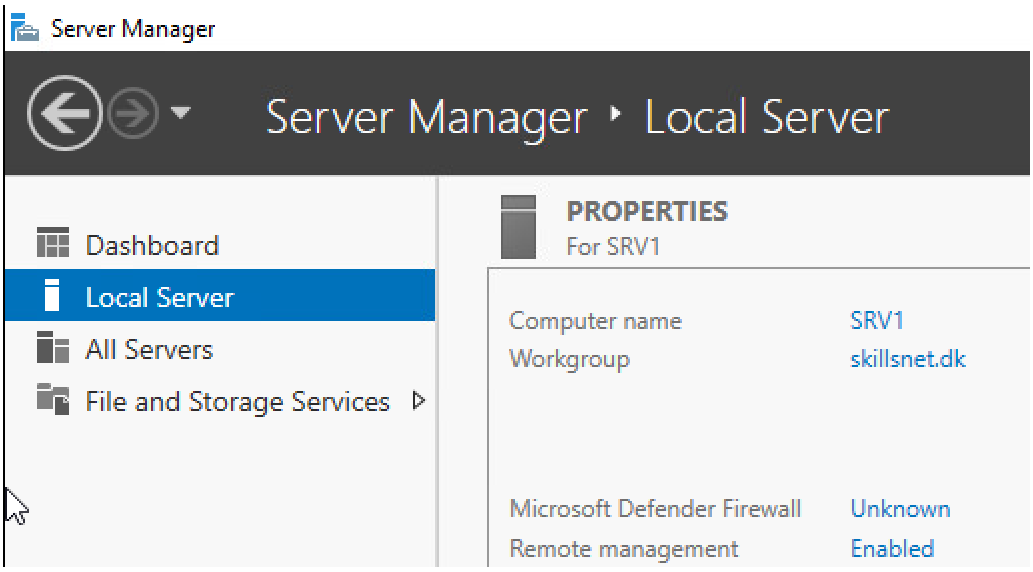
Before restarting, save any open files and close all programs.



Microsoft Windows

You must restart your computer to apply these changes

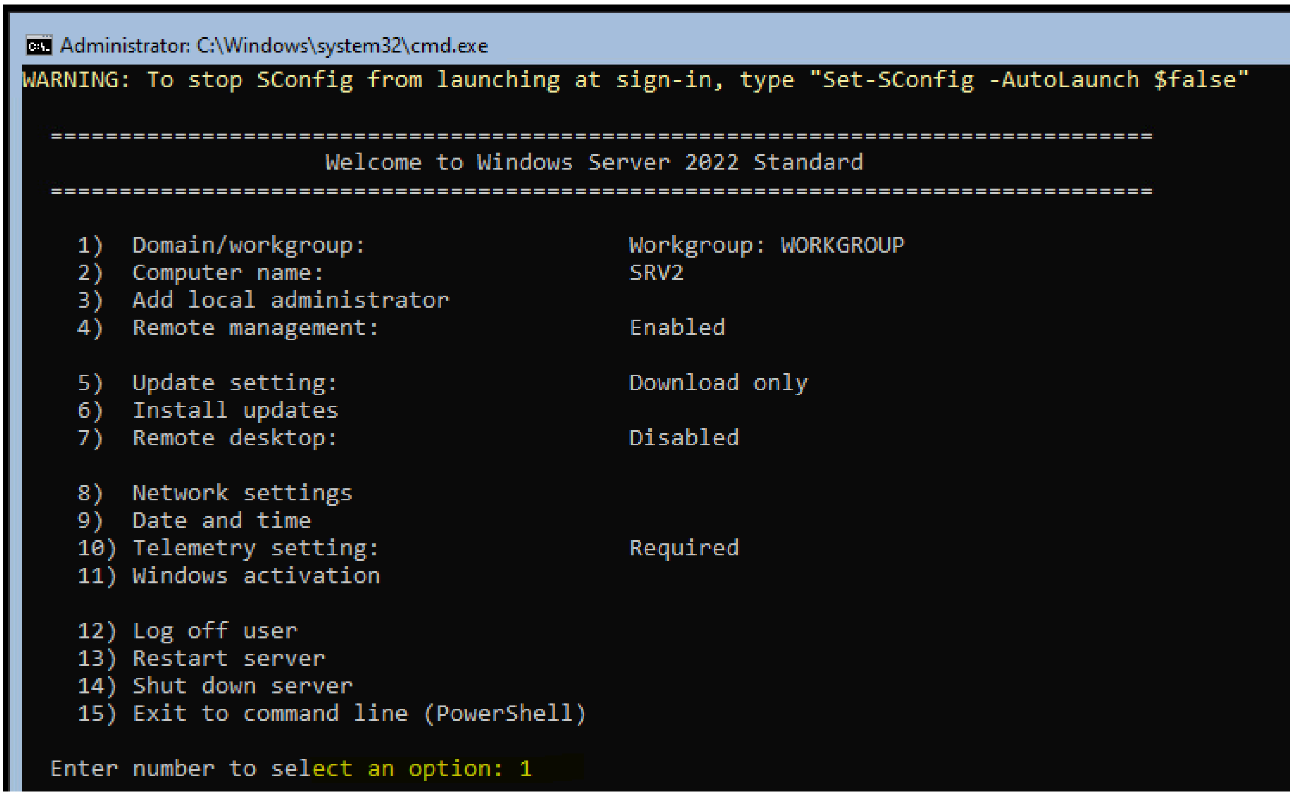
Before restarting, save any open files and close all programs.



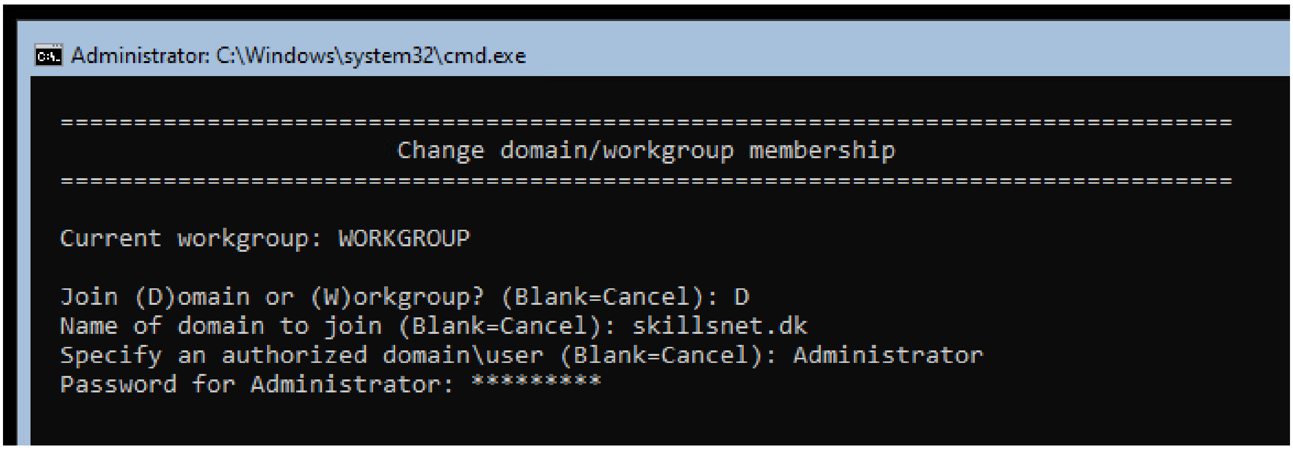
Computer name SRV1
Workgroup skillsnet.dk
Microsoft Defender Firewall Unknown
Remote management Enabled

Example without GUI: SRV2

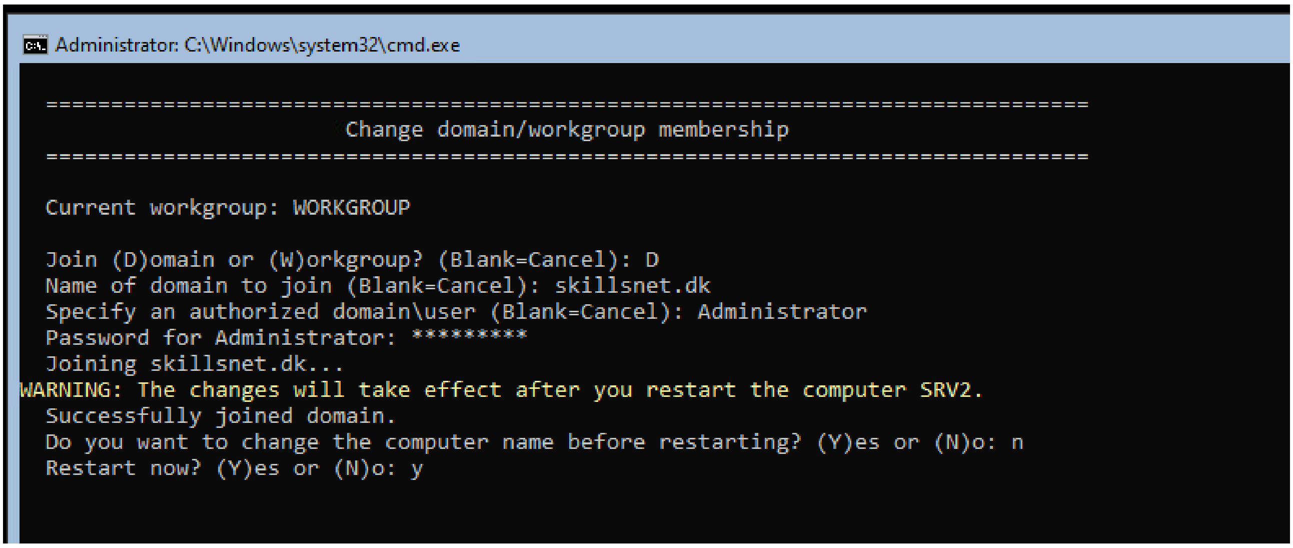
- **Don't forget to fix previously dns server to 10.1.1.1 in SRV2**



```
Administrator: C:\Windows\system32\cmd.exe
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch $false"

  ===============================================================================
                    Welcome to Windows Server 2022 Standard
  ===============================================================================

    1)  Domain/workgroup:                    Workgroup: WORKGROUP
    2)  Computer name:                       SRV2
    3)  Add local administrator
    4)  Remote management:                   Enabled

    5)  Update setting:                      Download only
    6)  Install updates
    7)  Remote desktop:                      Disabled

    8)  Network settings
    9)  Date and time
    10) Telemetry setting:                   Required
    11) Windows activation

    12) Log off user
    13) Restart server
    14) Shut down server
    15) Exit to command line (PowerShell)

  Enter number to select an option: 1
```

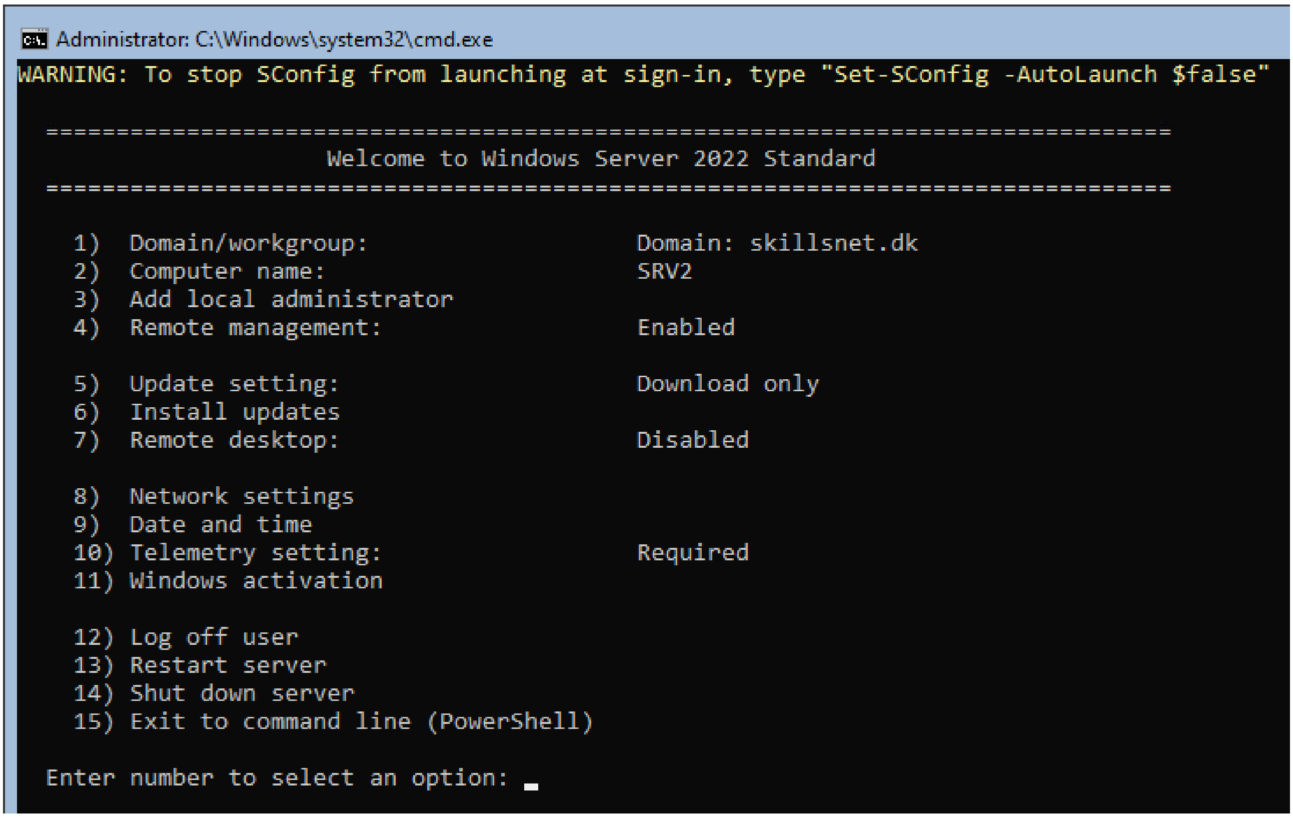


```
Administrator: C:\Windows\system32\cmd.exe

  ===============================================================================
                        Change domain/workgroup membership
  ===============================================================================

  Current workgroup: WORKGROUP

  Join (D)omain or (W)orkgroup? (Blank=Cancel): D
  Name of domain to join (Blank=Cancel): skillsnet.dk
  Specify an authorized domain\user (Blank=Cancel): Administrator
  Password for Administrator: *********
```



Administrator: C:\Windows\system32\cmd.exe

```
  ===============================================================================
                         Change domain/workgroup membership
  ===============================================================================

  Current workgroup: WORKGROUP

  Join (D)omain or (W)orkgroup? (Blank=Cancel): D
  Name of domain to join (Blank=Cancel): skillsnet.dk
  Specify an authorized domain\user (Blank=Cancel): Administrator
  Password for Administrator: *********
  Joining skillsnet.dk...
WARNING: The changes will take effect after you restart the computer SRV2.
  Successfully joined domain.
  Do you want to change the computer name before restarting? (Y)es or (N)o: n
  Restart now? (Y)es or (N)o: y
```

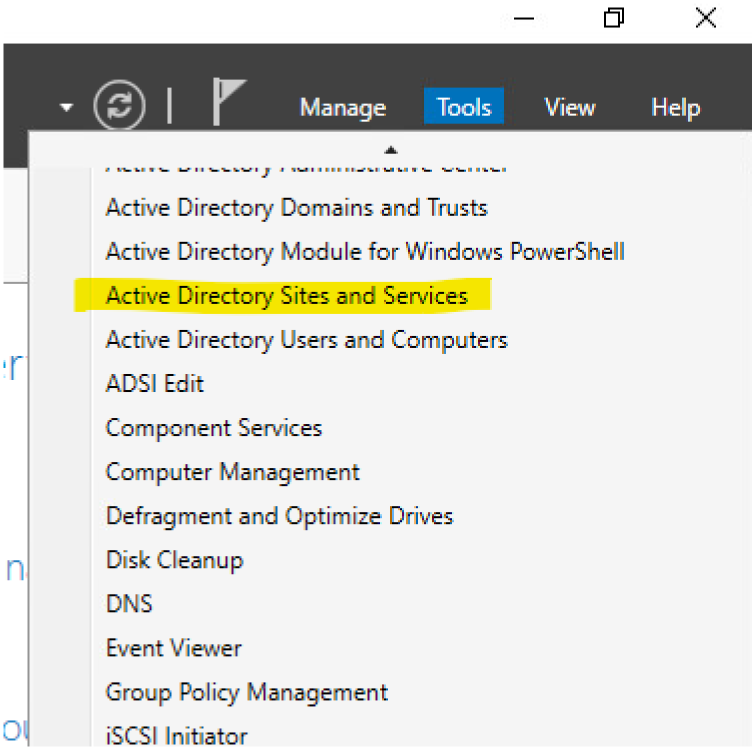


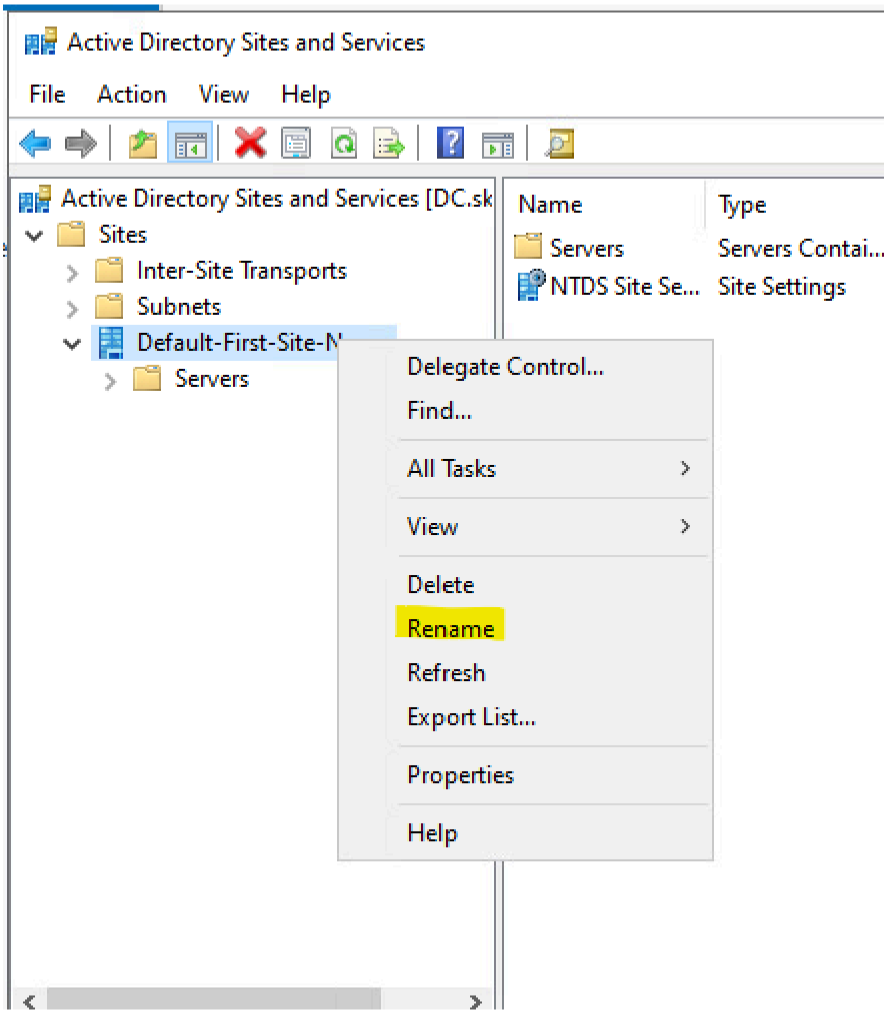
Administrator: C:\Windows\system32\cmd.exe

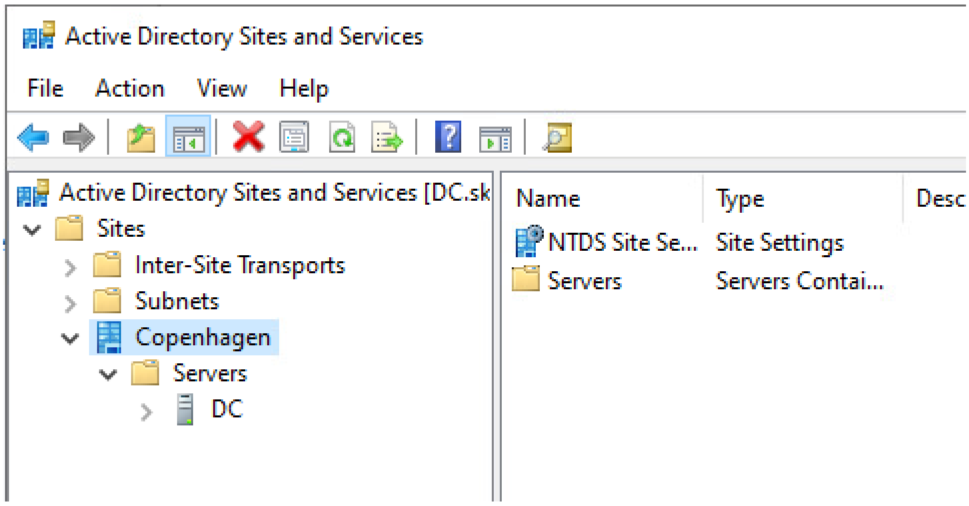
```
WARNING: To stop SConfig from launching at sign-in, type "Set-SConfig -AutoLaunch $false"

  ===============================================================================
                    Welcome to Windows Server 2022 Standard
  ===============================================================================

    1)  Domain/workgroup:                    Domain: skillsnet.dk
    2)  Computer name:                       SRV2
    3)  Add local administrator
    4)  Remote management:                   Enabled

    5)  Update setting:                      Download only
    6)  Install updates
    7)  Remote desktop:                      Disabled

    8)  Network settings
    9)  Date and time
    10) Telemetry setting:                   Required
    11) Windows activation

    12) Log off user
    13) Restart server
    14) Shut down server
    15) Exit to command line (PowerShell)

  Enter number to select an option: _
```

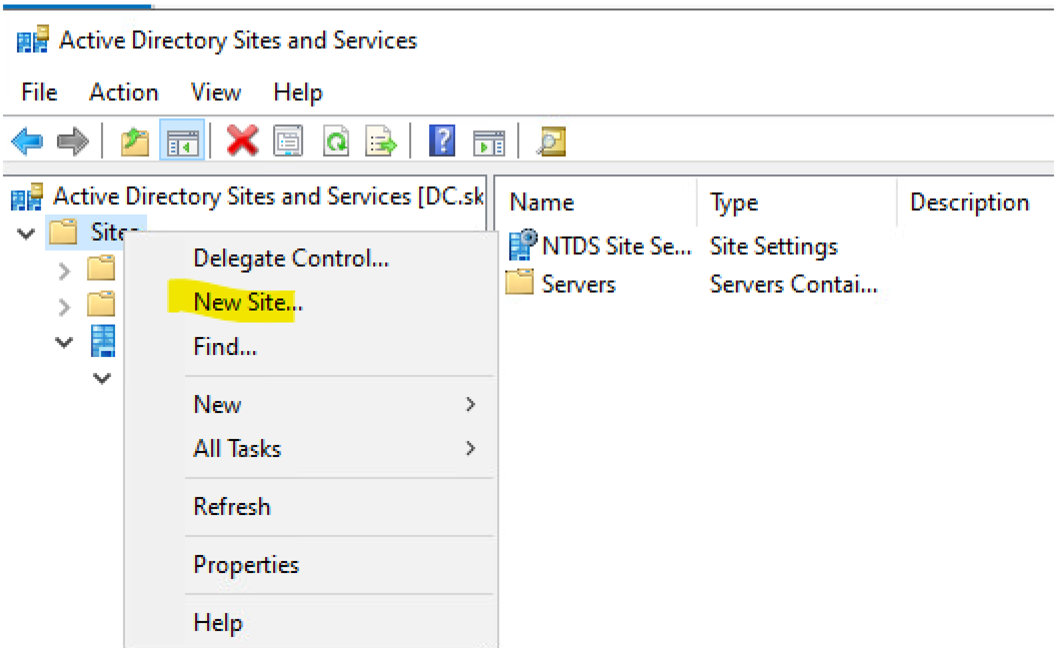
DC AD- Task2: Configure sites

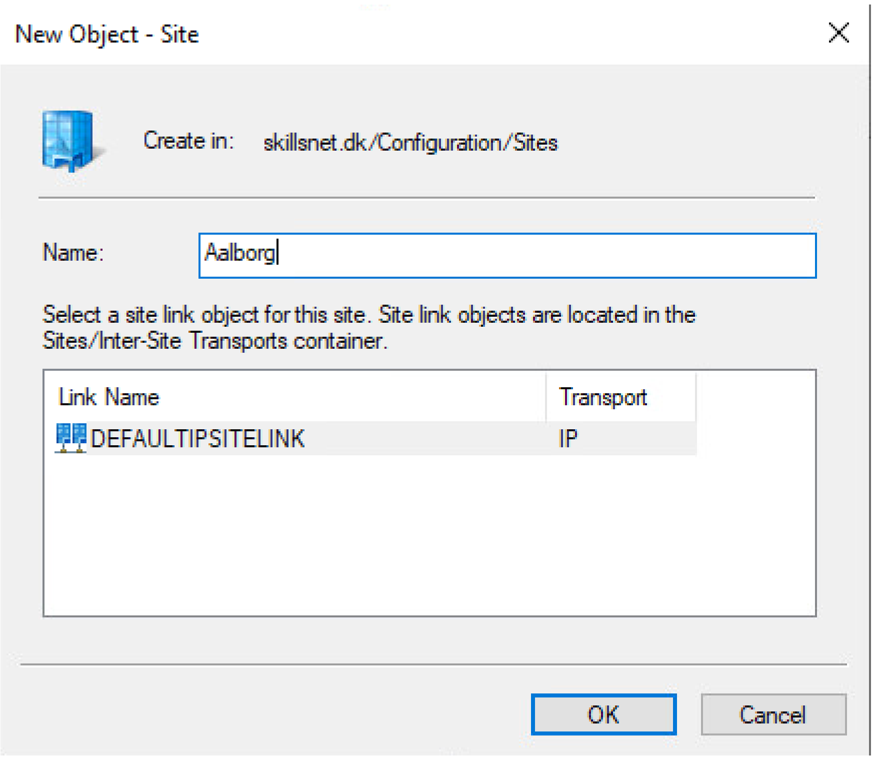
2. Configure Sites: **Copenhagen** and **Aalborg**; assign DC/RODC accordingly


Manage
Tools
View
Help
Active Directory Administrative Center
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer
Group Policy Management
iSCSI Initiator


Active Directory Sites and Services
File Action View Help
Active Directory Sites and Services [DC.sk
Sites
Inter-Site Transports
Subnets
Default-First-Site-N
Servers
Name
Type
Servers
Servers Contai...
NTDS Site Se...
Site Settings
Delegate Control...
Find...
All Tasks
View
Delete
Rename
Refresh
Export List...
Properties
Help


Active Directory Sites and Services
File Action View Help
Active Directory Sites and Services [DC.sk
Sites
Inter-Site Transports
Subnets
Copenhagen
Servers
DC
Name
Type
Desc
NTDS Site Se...
Site Settings
Servers
Servers Contai...



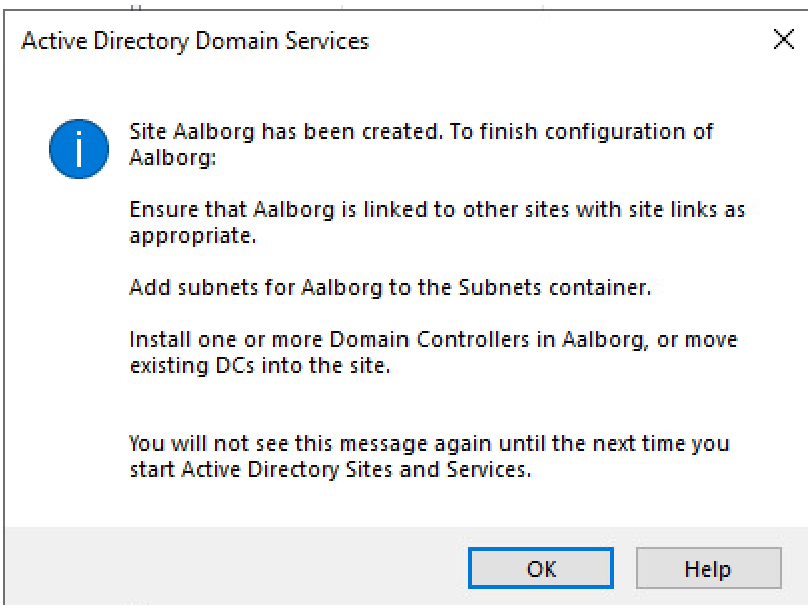


Create in: skillsnet.dk/Configuration/Sites

Name: Aalborg

Select a site link object for this site. Site link objects are located in the Sites/Inter-Site Transports container.

Link Name	Transport
DEFAULTIPSITELINK	IP



Active Directory Domain Services

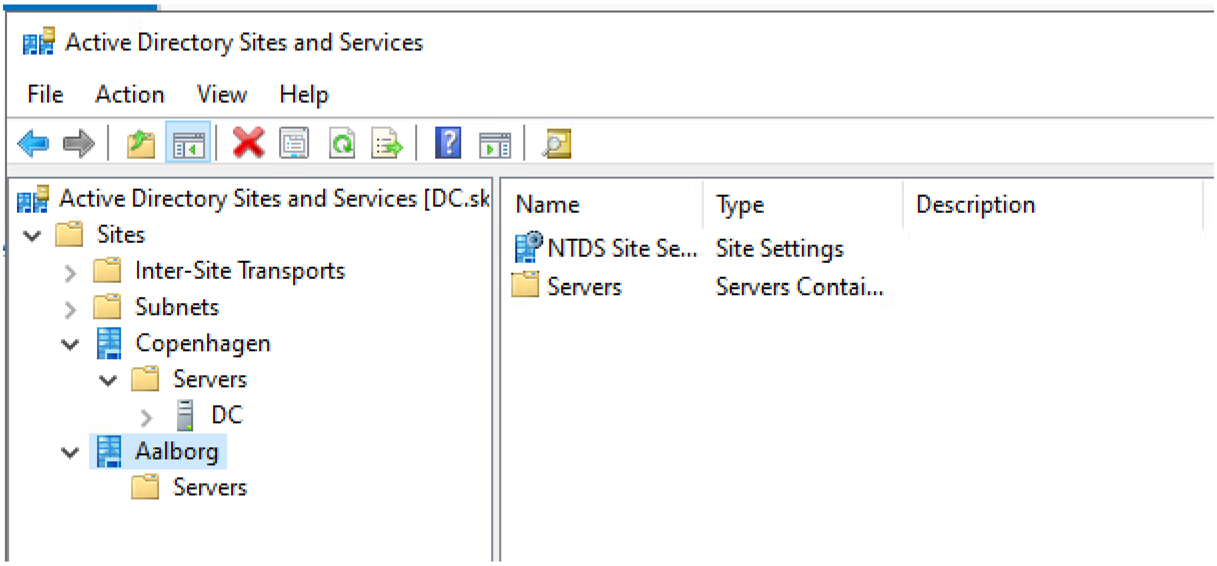
Site Aalborg has been created. To finish configuration of Aalborg:

Ensure that Aalborg is linked to other sites with site links as appropriate.

Add subnets for Aalborg to the Subnets container.

Install one or more Domain Controllers in Aalborg, or move existing DCs into the site.

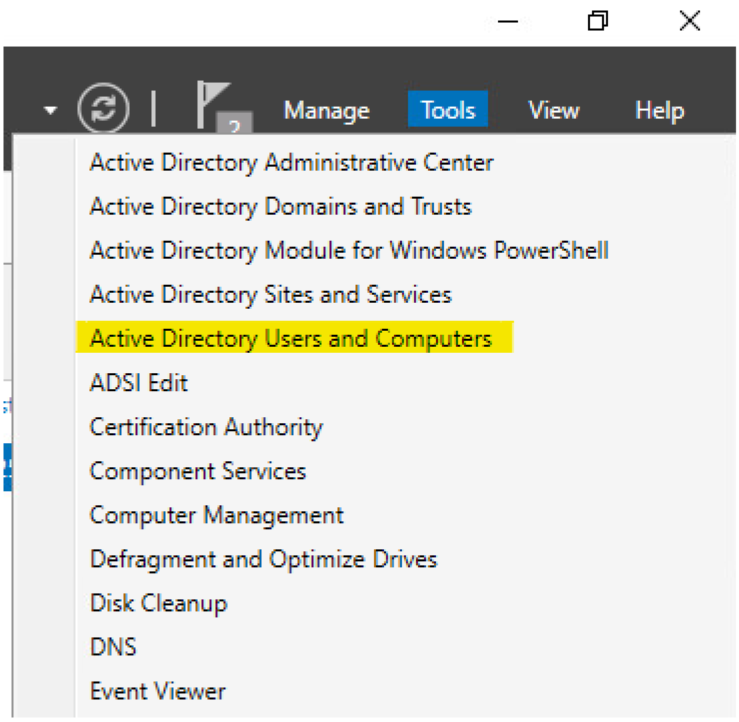
You will not see this message again until the next time you start Active Directory Sites and Services.



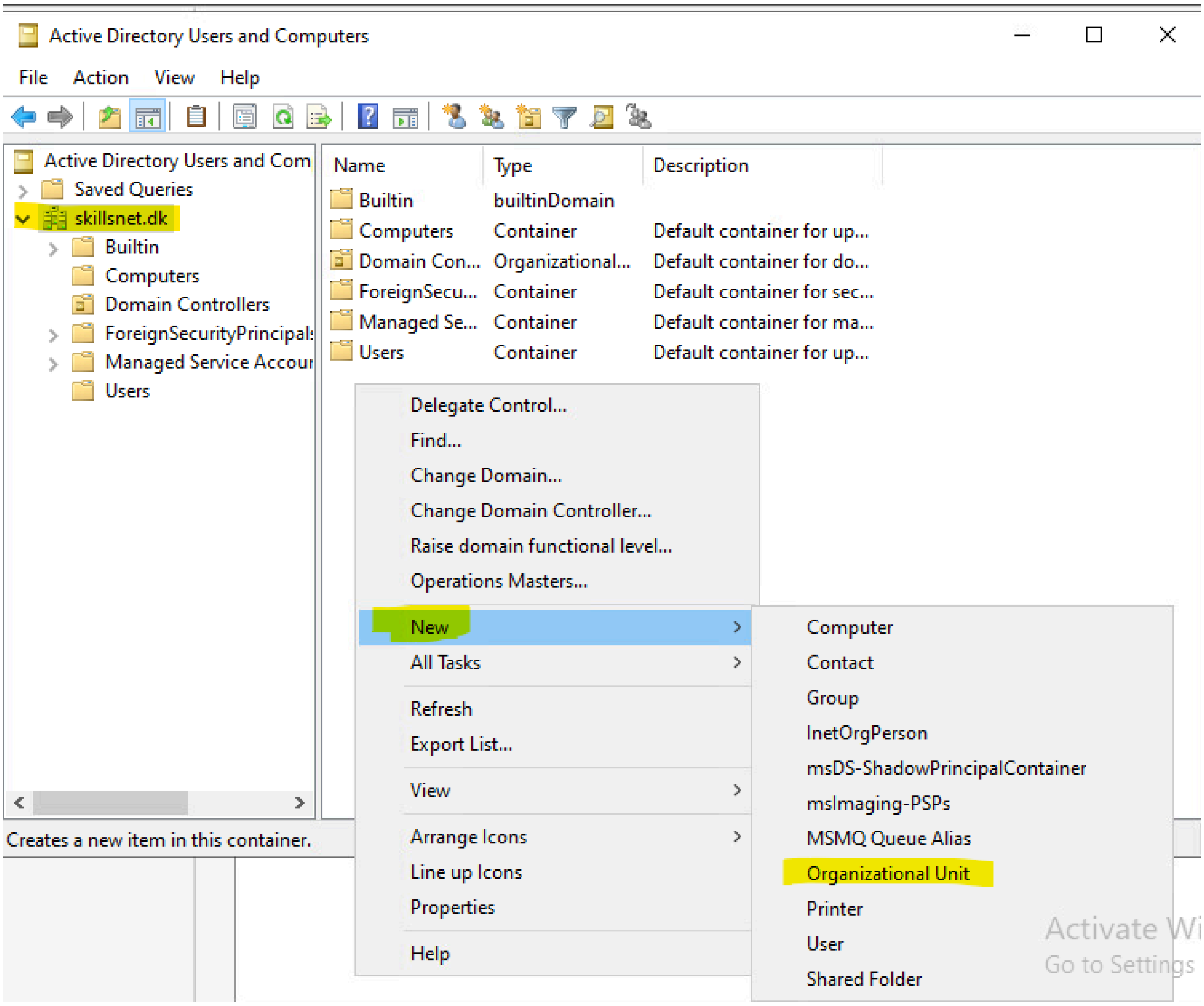
Name	Type	Description
NTDS Site Se...	Site Settings	
Servers	Servers Contai...	

DC AD- Task3: Create OU structure

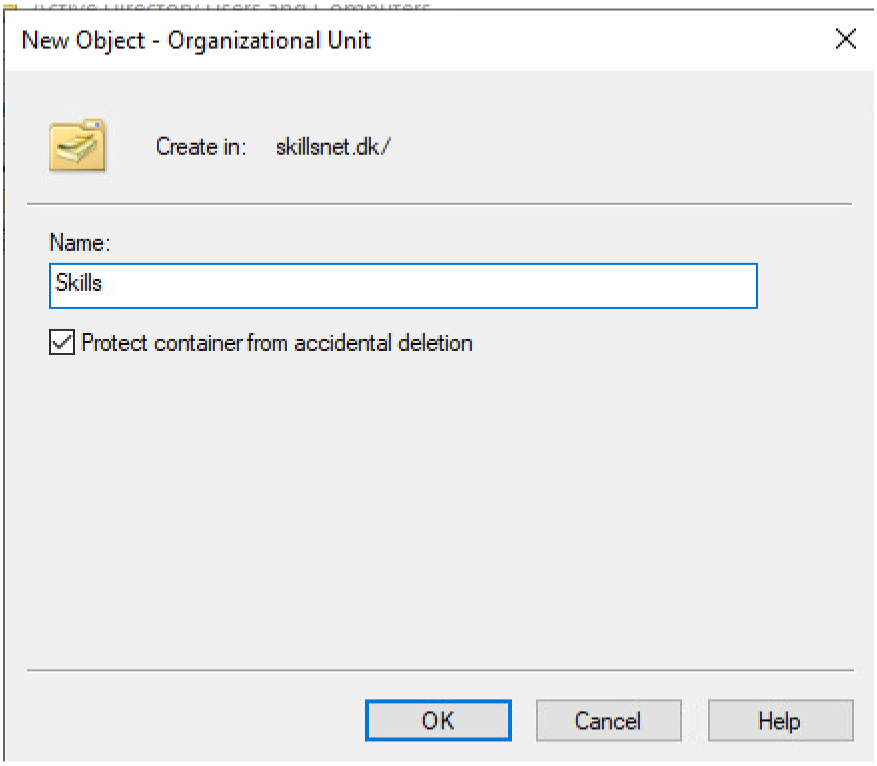
3. Create OU structure according to the **Appendix C**



Manage
Tools
View
Help
Active Directory Administrative Center
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Certification Authority
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer



Name	Type	Description
Builtin	builtinDomain	
Computers	Container	Default container for up...
Domain Con...	Organizational...	Default container for do...
ForeignSecu...	Container	Default container for sec...
Managed Se...	Container	Default container for ma...
Users	Container	Default container for up...

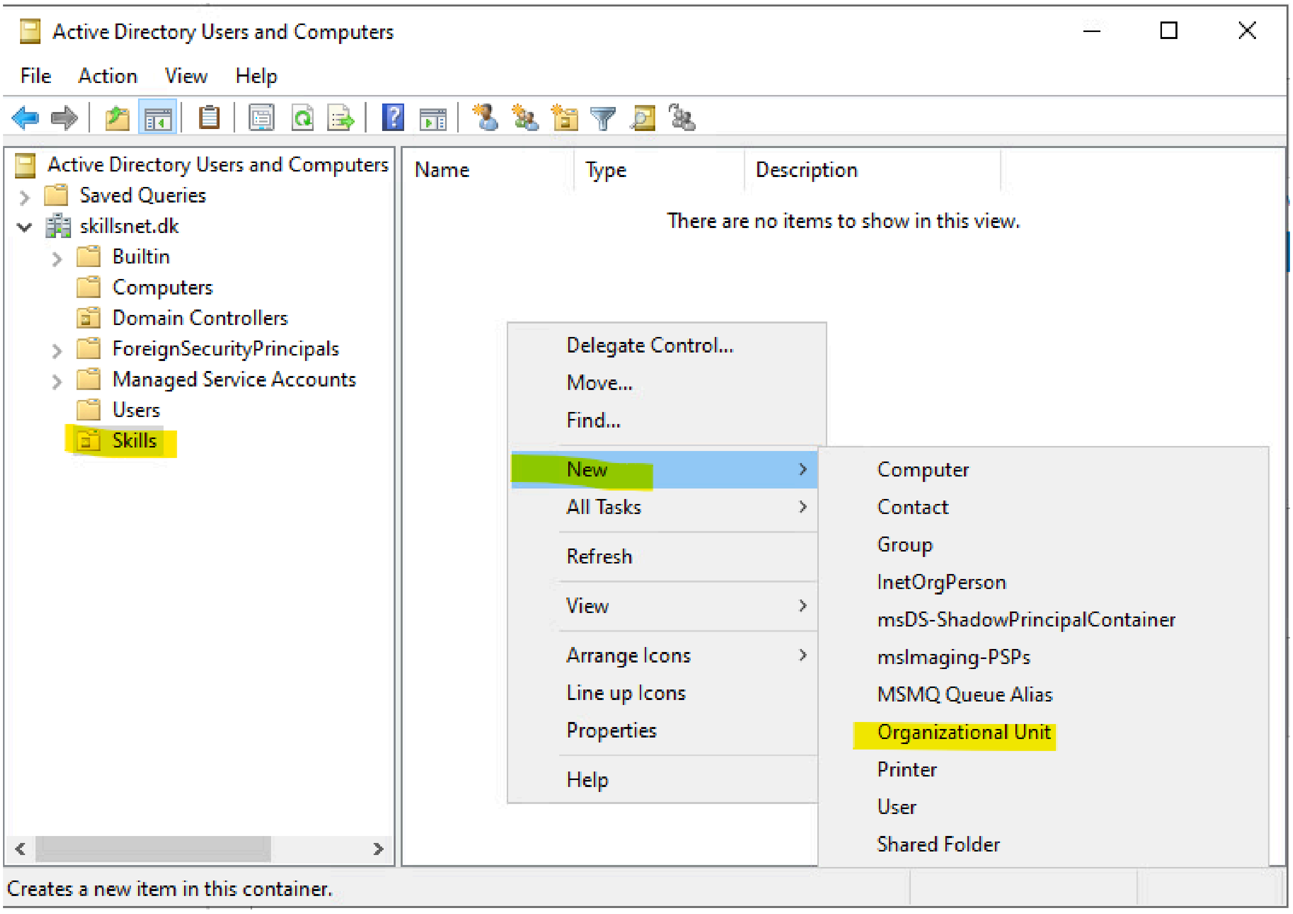


New Object - Organizational Unit

Create in: skillsnet.dk/

Name: Skills

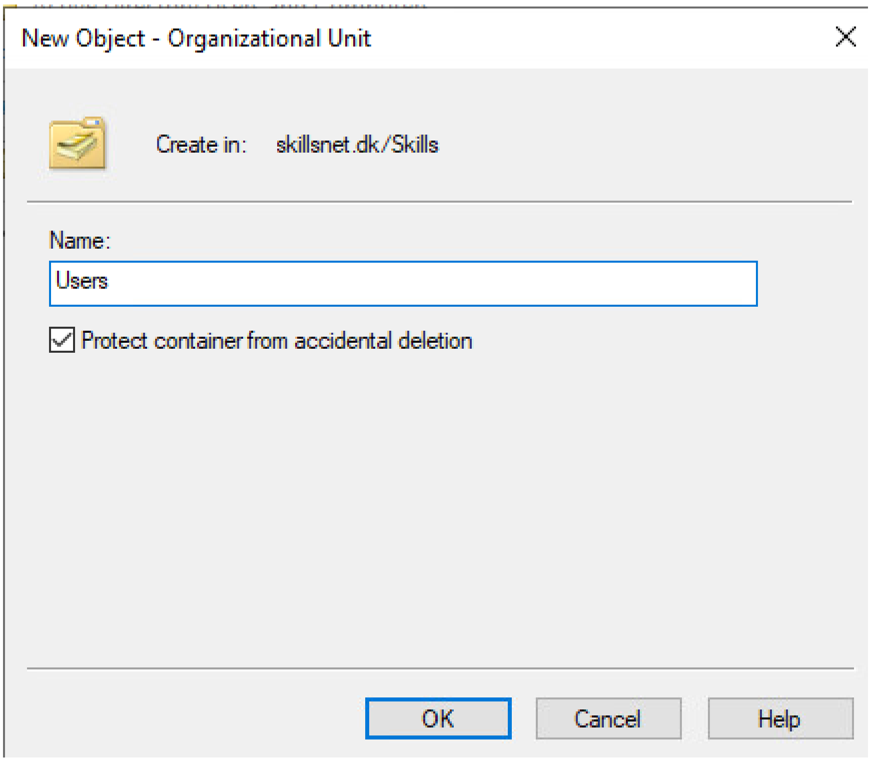
☑ Protect container from accidental deletion



Active Directory Users and Computers

There are no items to show in this view.

Creates a new item in this container.

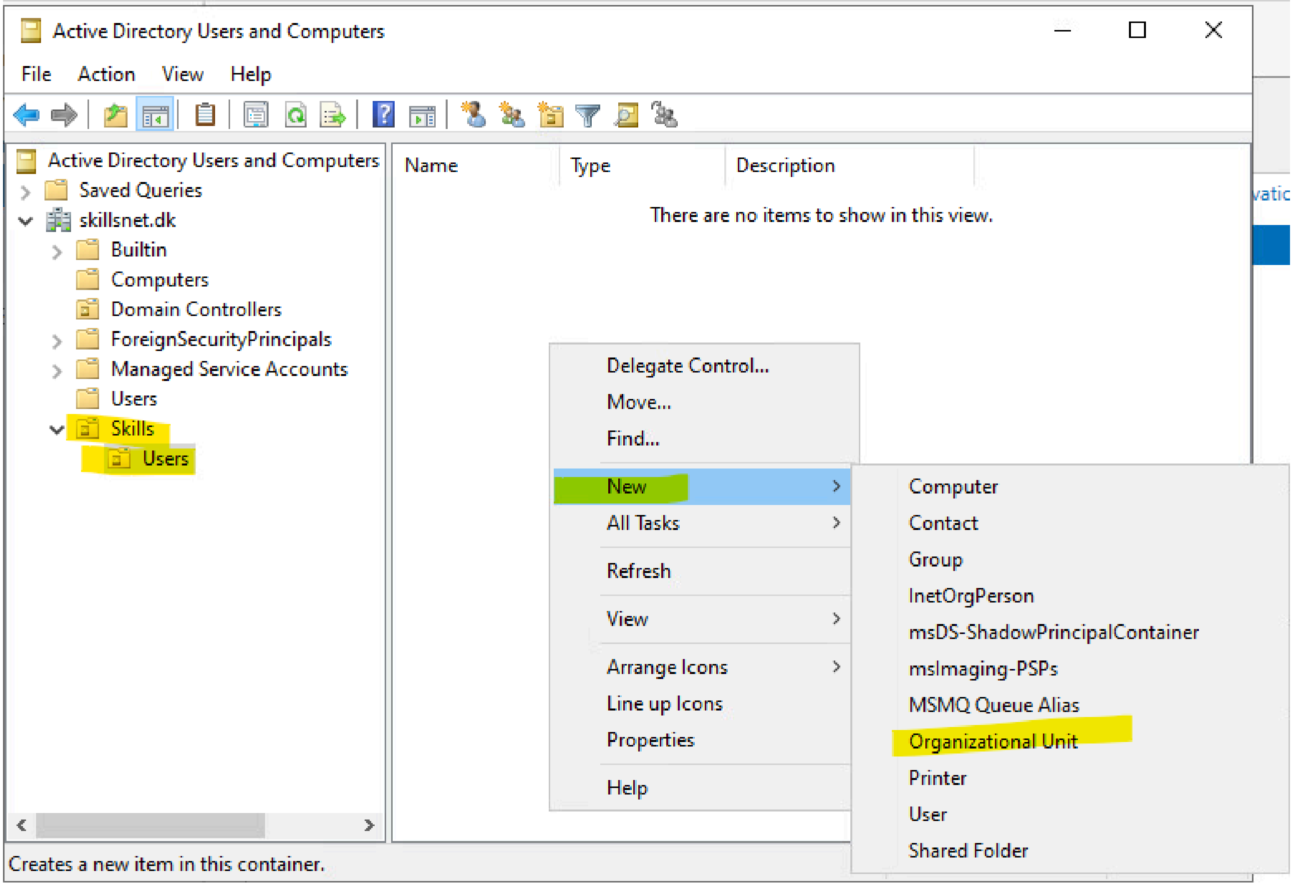


New Object - Organizational Unit

Create in: skillsnet.dk/Skills

Name: Users

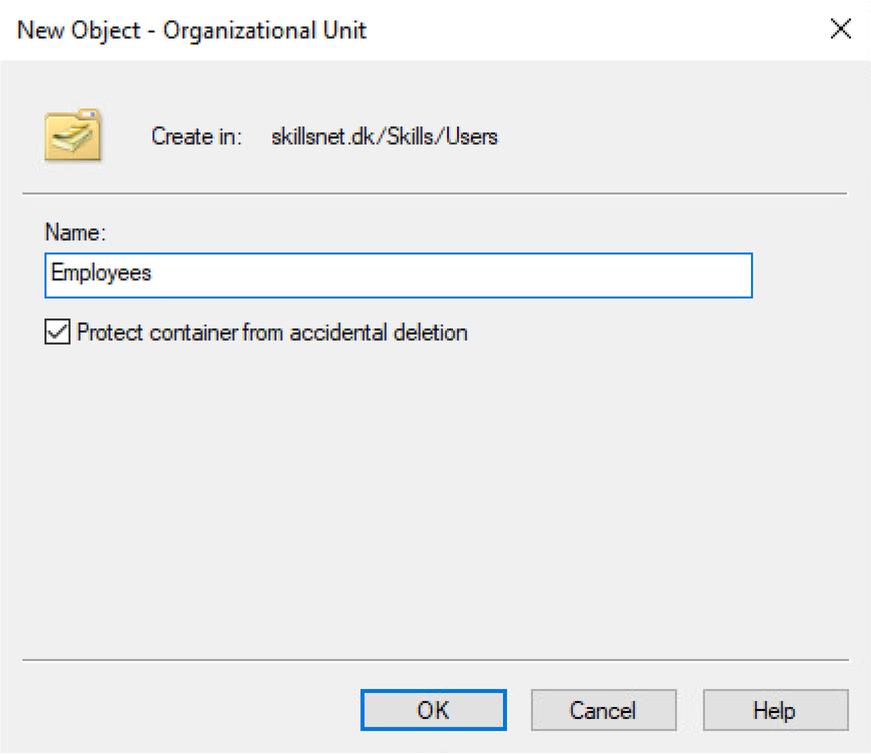
☑ Protect container from accidental deletion



Active Directory Users and Computers

There are no items to show in this view.

Creates a new item in this container.



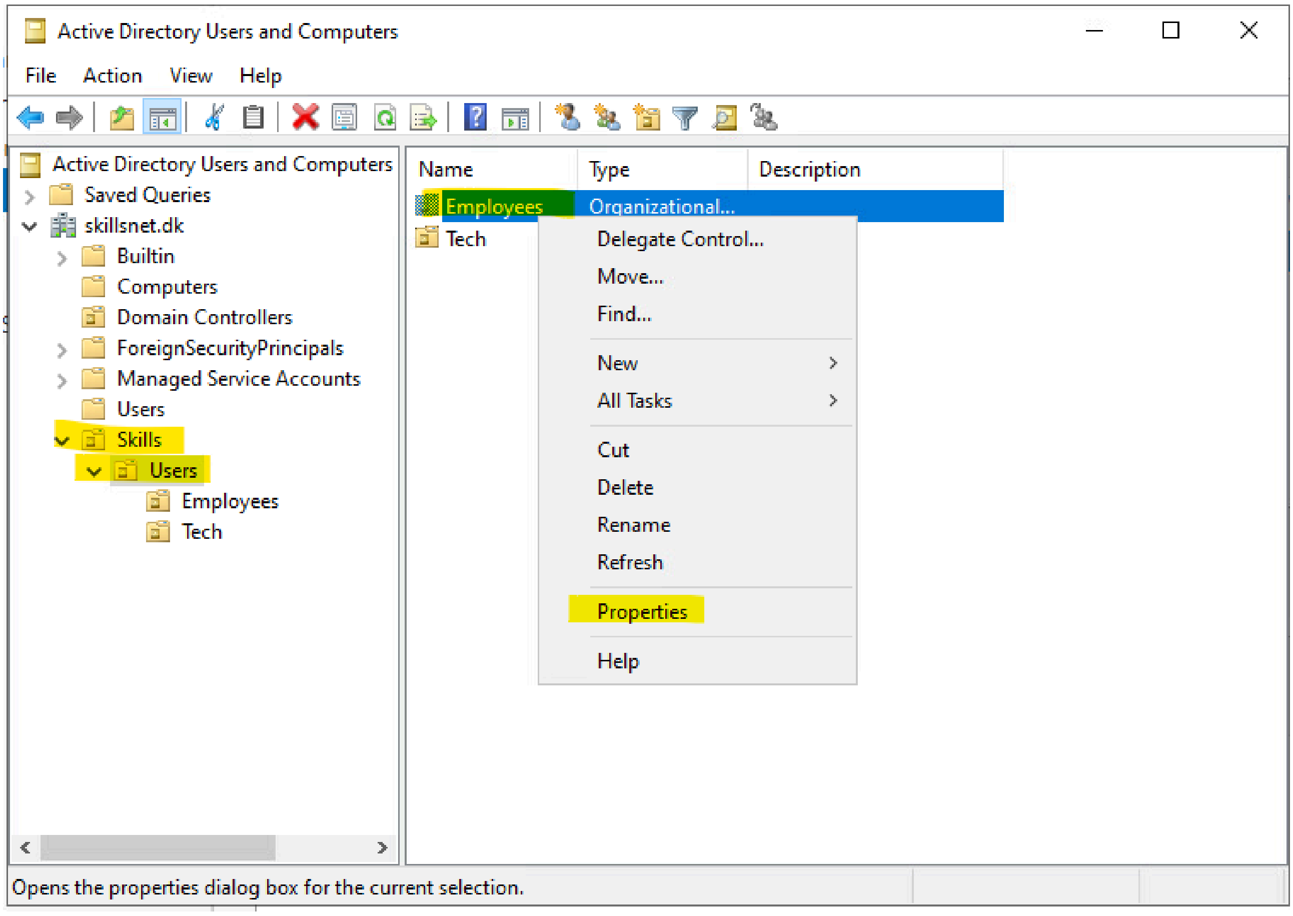
New Object - Organizational Unit

Create in: skillsnet.dk/Skills/Users

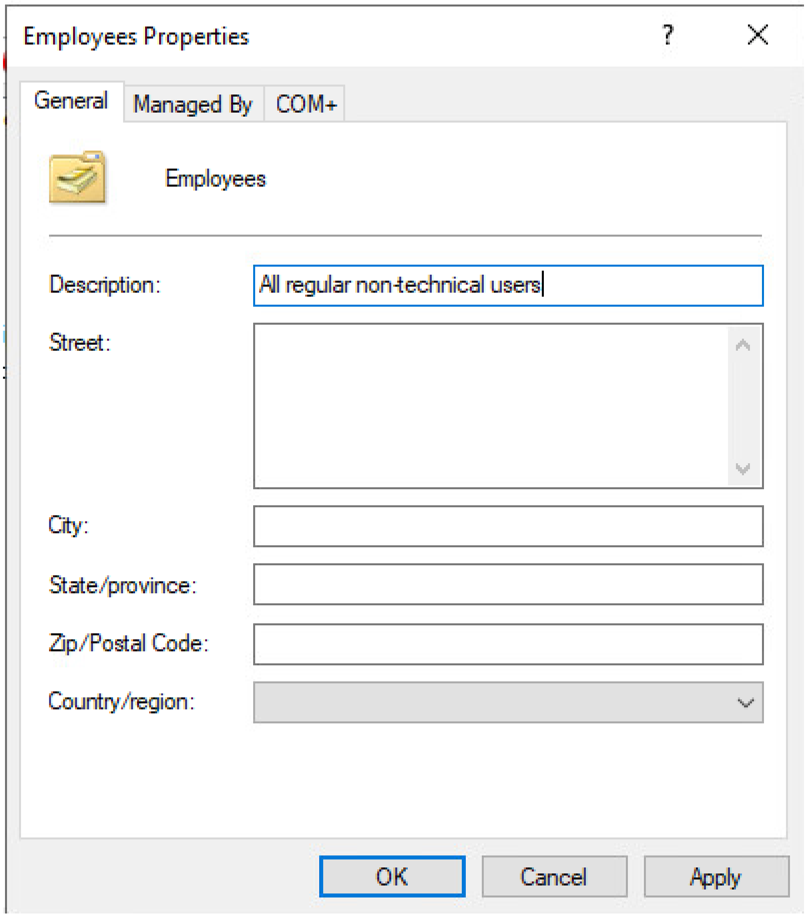
Name: Employees

☑ Protect container from accidental deletion

Don’t forget to change the Description:



Opens the properties dialog box for the current selection.



Description: All regular non-technical users

Street:

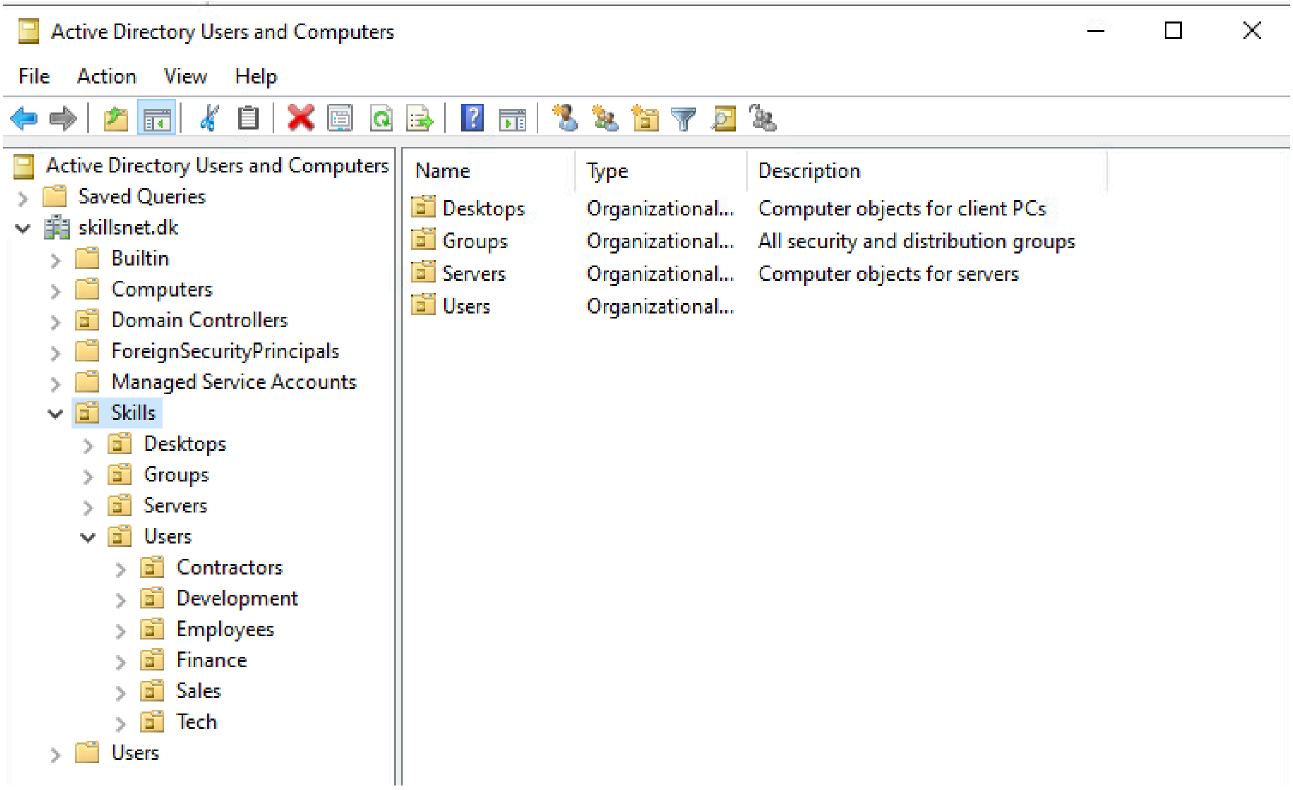
City:

State/province:

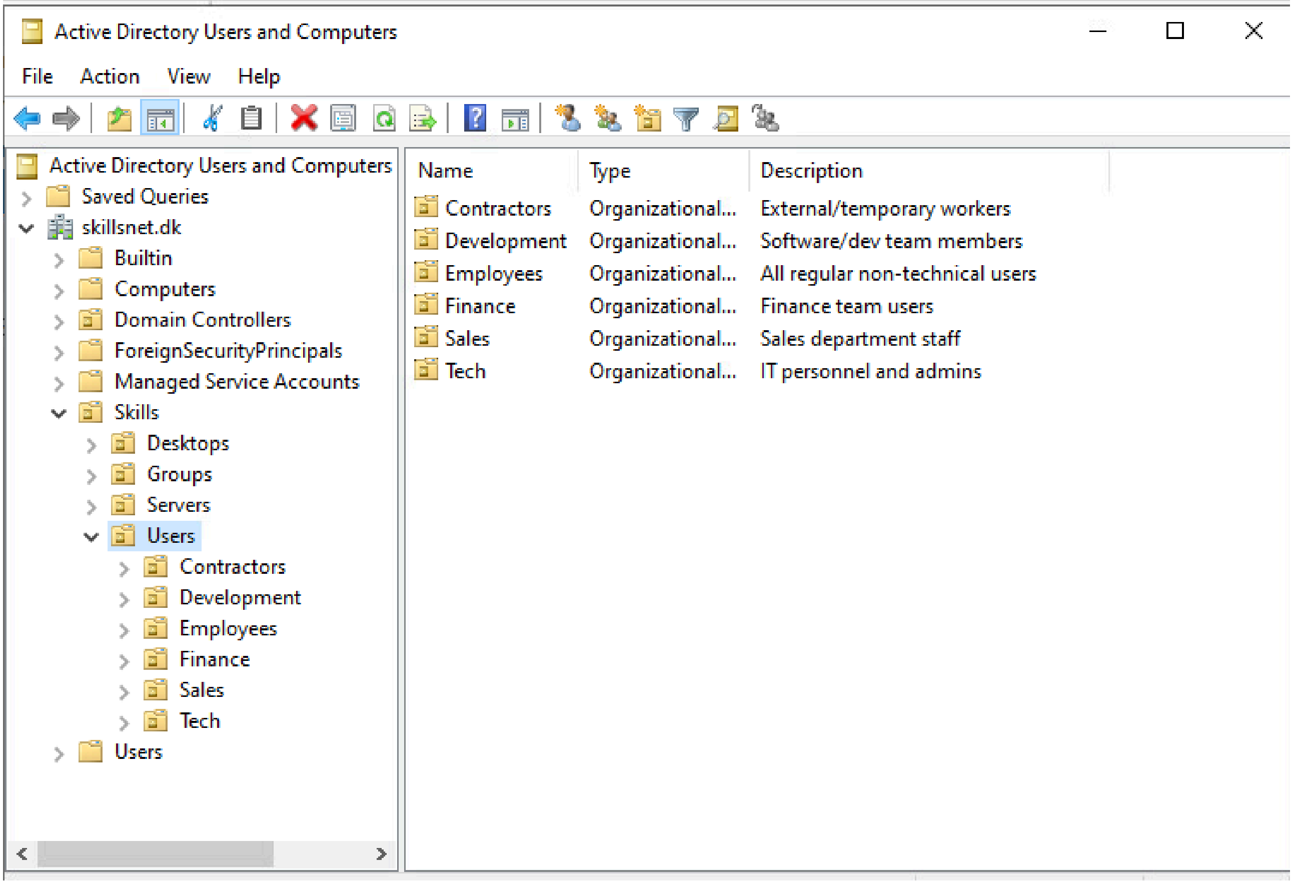
Zip/Postal Code:

Country/region:

Repreat the process for all the OU structure. The result should be this:



Name	Type	Description
Desktops	Organizational...	Computer objects for client PCs
Groups	Organizational...	All security and distribution groups
Servers	Organizational...	Computer objects for servers
Users	Organizational...	



Name	Type	Description
Contractors	Organizational...	External/temporary workers
Development	Organizational...	Software/dev team members
Employees	Organizational...	All regular non-technical users
Finance	Organizational...	Finance team users
Sales	Organizational...	Sales department staff
Tech	Organizational...	IT personnel and admins

DC AD- Task4: Password policies

4. Create password policies according to the **Appendix D**

DC AD- Task5: ADFS

5. Deploy ADFS at **sso.skillsnet.dk** using UPN logins

DC AD- Task6: Import users

6. Import users from **C:\Resources\ES2025_TP39_ModuleB_Users_Skillsnet.csv**
   6.1. Ensure all users are activated and have UPN defined
   6.2. Based on Department value, create unique groups
   6.3. Assign users to role groups and OUs based on their Department value
   6.4. Usernames must follow the format: **Firstname.Lastname**

Group Policies

Use the **first bullet point** in each policy block as the **GPO name**. The **subsequent bullets** define the **settings required** in that GPO.

Group Policies need to be mapped and configured according to best practices.

DC GPO - Task1: Baseline Security Policy for Servers

1. Baseline Security Policy for Servers
   1.1. Send NTLMv2 responses only;
   1.2. Allow only AES256_HBA_SHA1 and future encryption types for Kerberos;

1.3. Audit successful and failed logons;
1.4. Do not store LM hash value on next password change;
1.5. Disallow WinRM Server and Client Basic authentication and unencrypted traffic;
1.6. Set high level encryption and secure RPC communication on Remote Desktop Services Host;

DC GPO - Task2: Baseline Security Policy for Desktops

2. Baseline Security Policy for Desktops
    2.1. Send NTLMv2 responses only;
    2.2. Allow only AES256_HBA_SHA1 and future encryption types for Kerberos;
    2.3. Set high level encryption and secure RPC communication on Remote Desktop Services Host;
    2.4. Do not store LM hash value on next password change;
    2.5. Disallow WinRM Server and Client Basic authentication and unencrypted traffic;
    2.6. Turn off Microsoft consumer experiences;
    2.7. Turn off Autoplay on all drives.

DC GPO - Task3: Administrative accounts

3. Administrative Accounts
    3.1. Grant administrative rights on desktops only to Tech users

DC GPO - Task4: Users – Restrict Tools

4. Users – Restrict Tools
    4.1. Applicable only for Sales, Finance and Contractors;
    4.2. Disable ability to use Registry editing tools, PowerShell and Command Prompt;

DC GPO - Task5: Contractors – Customization

5. Contractors – Customization
    5.1. Login banner that reads:
    Welcome to Skillsnet, you’re a contractor and all your activities are recorded. You will be legally responsible for any damage that you cause.

DC GPO - Task6: Folder Redirection

6. Folder Redirection
    6.1. Applicable only for Finance, Sales
    6.2. Redirect all user folders to \\srv1.skillsnet.dk\Users\<username>

DC GPO - Task7: Disk Encryption

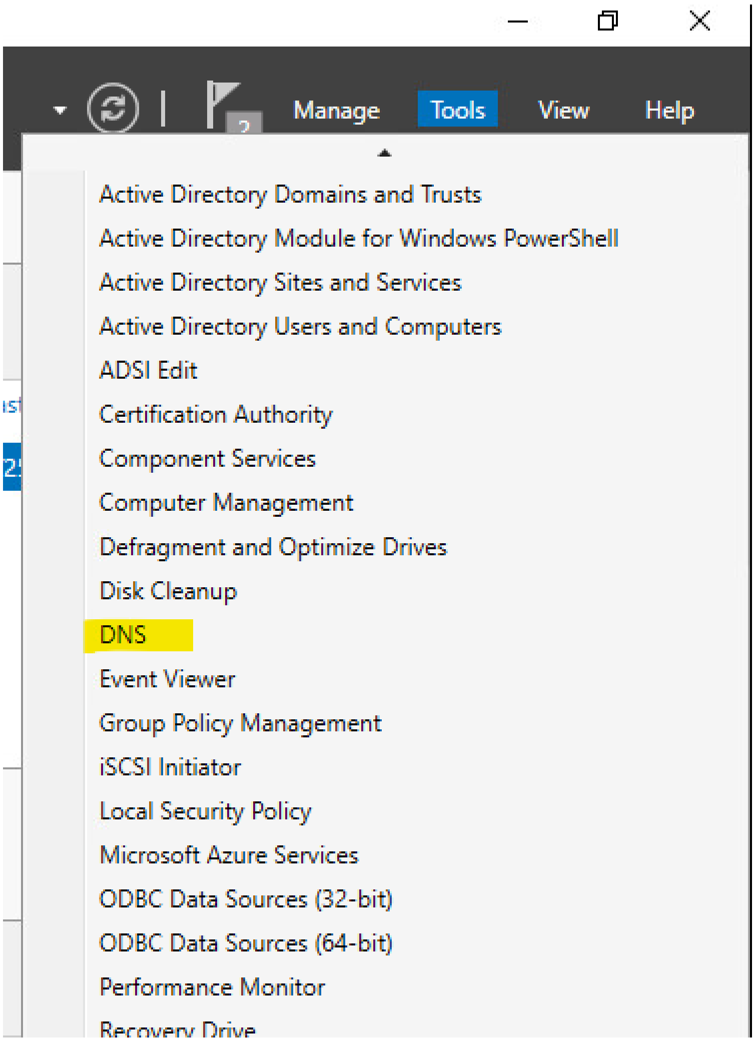
7. Disk Encryption
    7.1. Store all recovery keys for domain-joined systems in Active Directory

Name Resolution

DC DNS - Task1: A & AAAA records

1. Create **A** and **AAAA** records for all relevant hosts based on the **Appendix A**

DNS server already installed with ADDS


Manage
Tools
View
Help
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Certification Authority
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer
Group Policy Management
iSCSI Initiator
Local Security Policy
Microsoft Azure Services
ODBC Data Sources (32-bit)
ODBC Data Sources (64-bit)
Performance Monitor
Recovery Drive

¿Susceptibles DNS Forward Records A and AAAA for skillsnet.dk?:

1. skillsnet.dk 10.1.1.1
2. dc.skillsnet.dk 10.1.1.1
3. srv1.skillsnet.dk 10.1.1.2
4. srv2.skillsnet.dk 10.1.1.3
5. rodc.skillsnet.dk (Aalborg) 10.2.1.1
6. client.skillsnet.dk (Aalborg) 10.2.1.10
7. www.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
8. sso.skillsnet.dk 10.1.1.1 ¿Cname de dc?
9. cdp.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
10. crl.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
11. aia.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
12. cacerts.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
13. ocsp.skillsnet.dk10.1.1.1 ¿Cname de dc?
14. intra.skillsnet.dk 10.1.1.3 ¿Cname de srv2?
15. app.skillsnet.dk 10.1.1.3 ¿Cname de srv2?

DC DNS - Task2: Reverse lookup zones

2. Create reverse lookup zones for both IPv4 and IPv6 subnets. Enable dynamic updates for domain-joined machines

DC DNS - Task3: Authority delegation

3. Delegate authority for the **skillsdev.dk** to the **DEV-SRV**

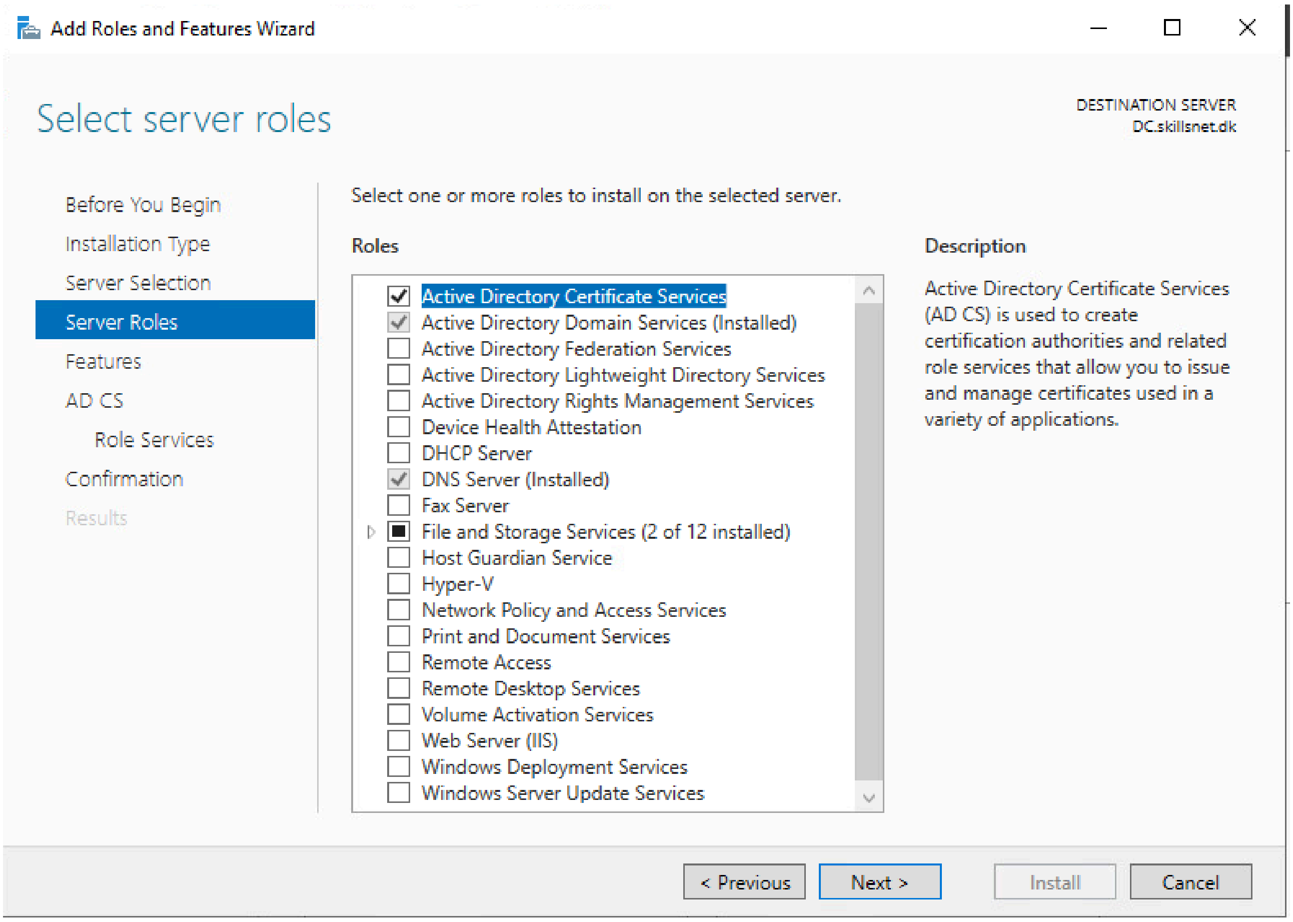
DC DNS - Task4: DNS forwarding

4. Configure DNS forwarding so that all unresolved queries are forwarded to the INET server

Certificate services

DC Certs - Task1: PKI and Root CA

1. Deploy an Enterprise PKI. The root Certification Authority must be named “**Skillsnet CA**”



Select server roles

DESTINATION SERVER
DC.skillsnet.dk

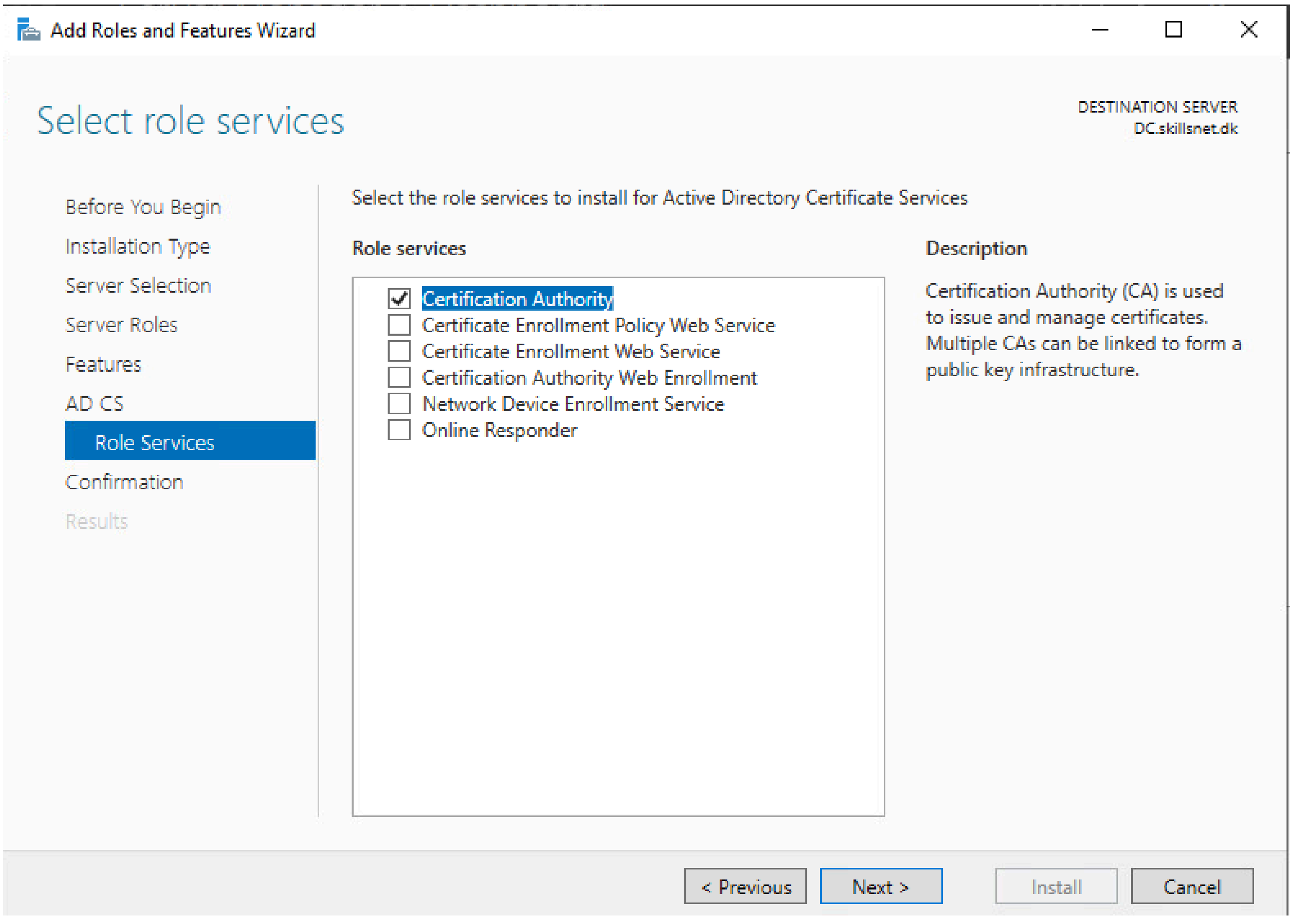
Select one or more roles to install on the selected server.

Roles

- ☑ Active Directory Certificate Services
- ☑ Active Directory Domain Services (Installed)
- □ Active Directory Federation Services
- □ Active Directory Lightweight Directory Services
- □ Active Directory Rights Management Services
- □ Device Health Attestation
- □ DHCP Server
- ☑ DNS Server (Installed)
- □ Fax Server
- ■ File and Storage Services (2 of 12 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)
- □ Windows Deployment Services
- □ Windows Server Update Services

Description

Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.



Add Roles and Features Wizard

Select role services

DESTINATION SERVER
DC.skillsnet.dk

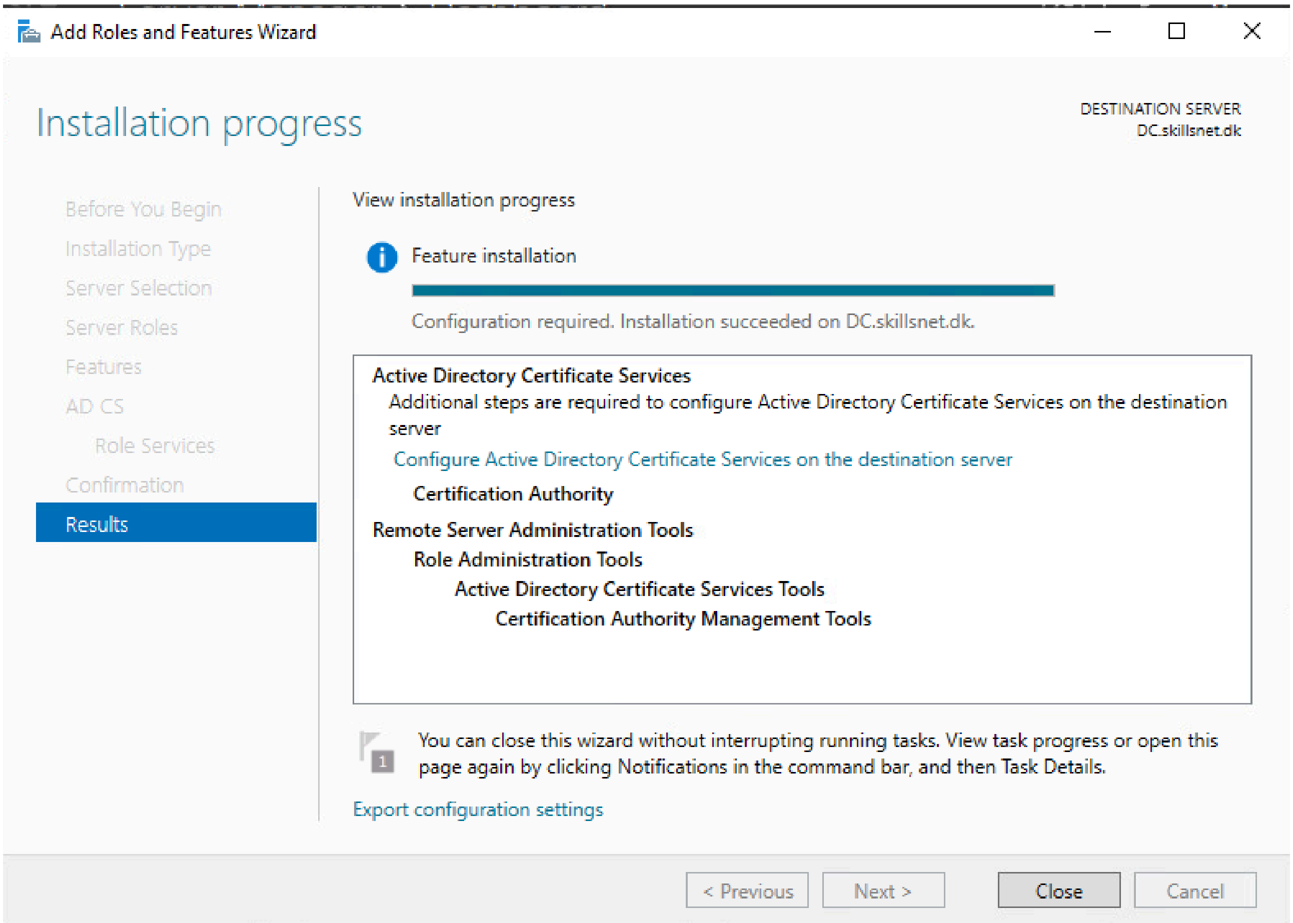
Select the role services to install for Active Directory Certificate Services

Role services

☑ Certification Authority
□ Certificate Enrollment Policy Web Service
□ Certificate Enrollment Web Service
□ Certification Authority Web Enrollment
□ Network Device Enrollment Service
□ Online Responder

Description

Certification Authority (CA) is used to issue and manage certificates. Multiple CAs can be linked to form a public key infrastructure.



Add Roles and Features Wizard

Installation progress

DESTINATION SERVER
DC.skillsnet.dk

View installation progress

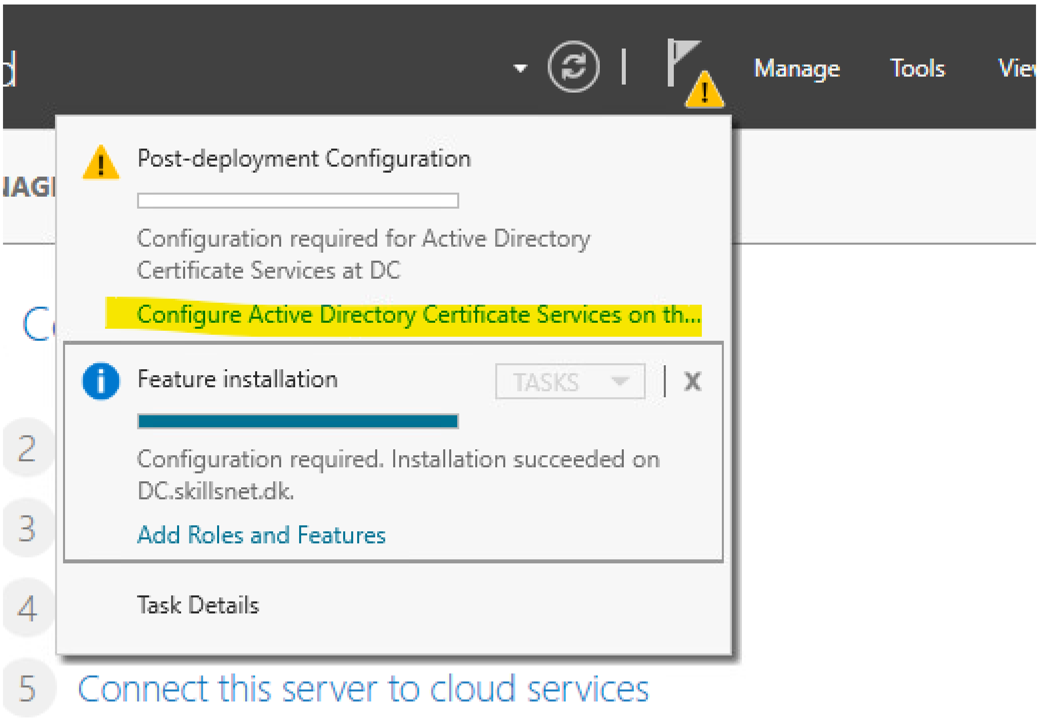
Feature installation

Configuration required. Installation succeeded on DC.skillsnet.dk.

Active Directory Certificate Services
Additional steps are required to configure Active Directory Certificate Services on the destination server
Configure Active Directory Certificate Services on the destination server
Certification Authority
Remote Server Administration Tools
Role Administration Tools
Active Directory Certificate Services Tools
Certification Authority Management Tools

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings



Post-deployment Configuration

Configuration required for Active Directory Certificate Services at DC

Configure Active Directory Certificate Services on th...

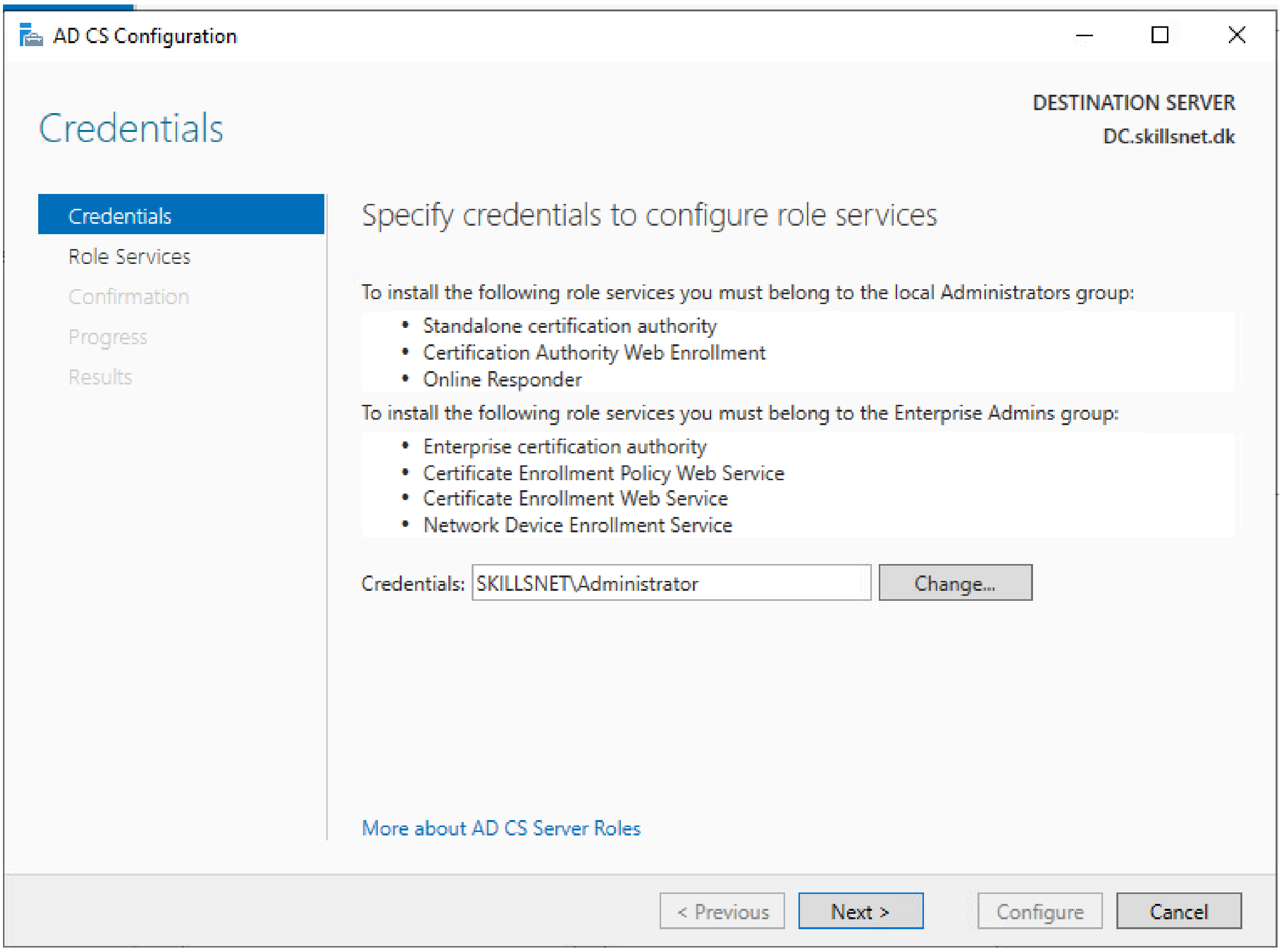
Feature installation

Configuration required. Installation succeeded on DC.skillsnet.dk.

Add Roles and Features

Task Details

5 Connect this server to cloud services



Credentials

DESTINATION SERVER
DC.skillsnet.dk

Specify credentials to configure role services

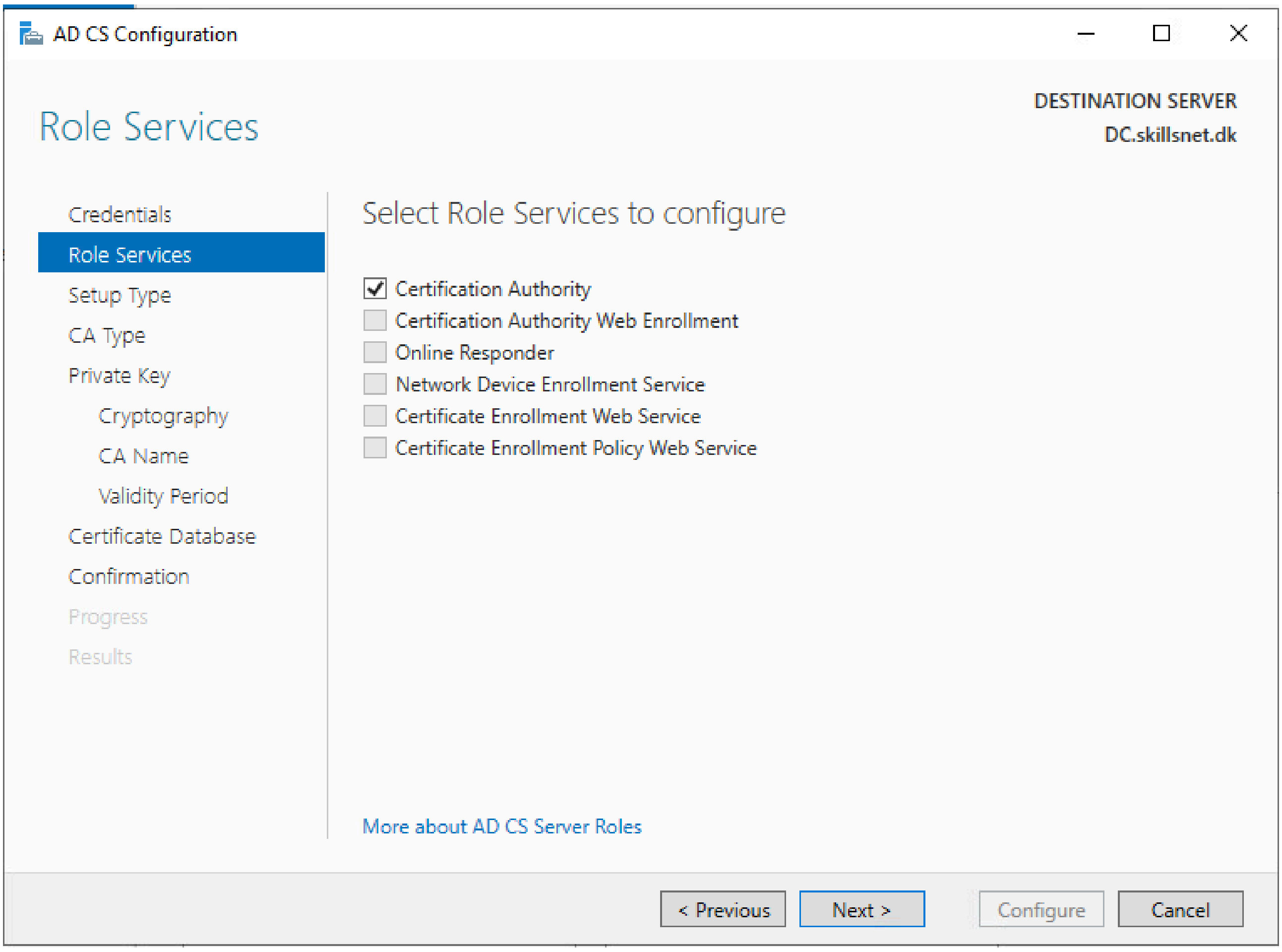
To install the following role services you must belong to the local Administrators group:

- Standalone certification authority
- Certification Authority Web Enrollment
- Online Responder

To install the following role services you must belong to the Enterprise Admins group:

- Enterprise certification authority
- Certificate Enrollment Policy Web Service
- Certificate Enrollment Web Service
- Network Device Enrollment Service

Credentials: SKILLSNET\Administrator



AD CS Configuration

Role Services

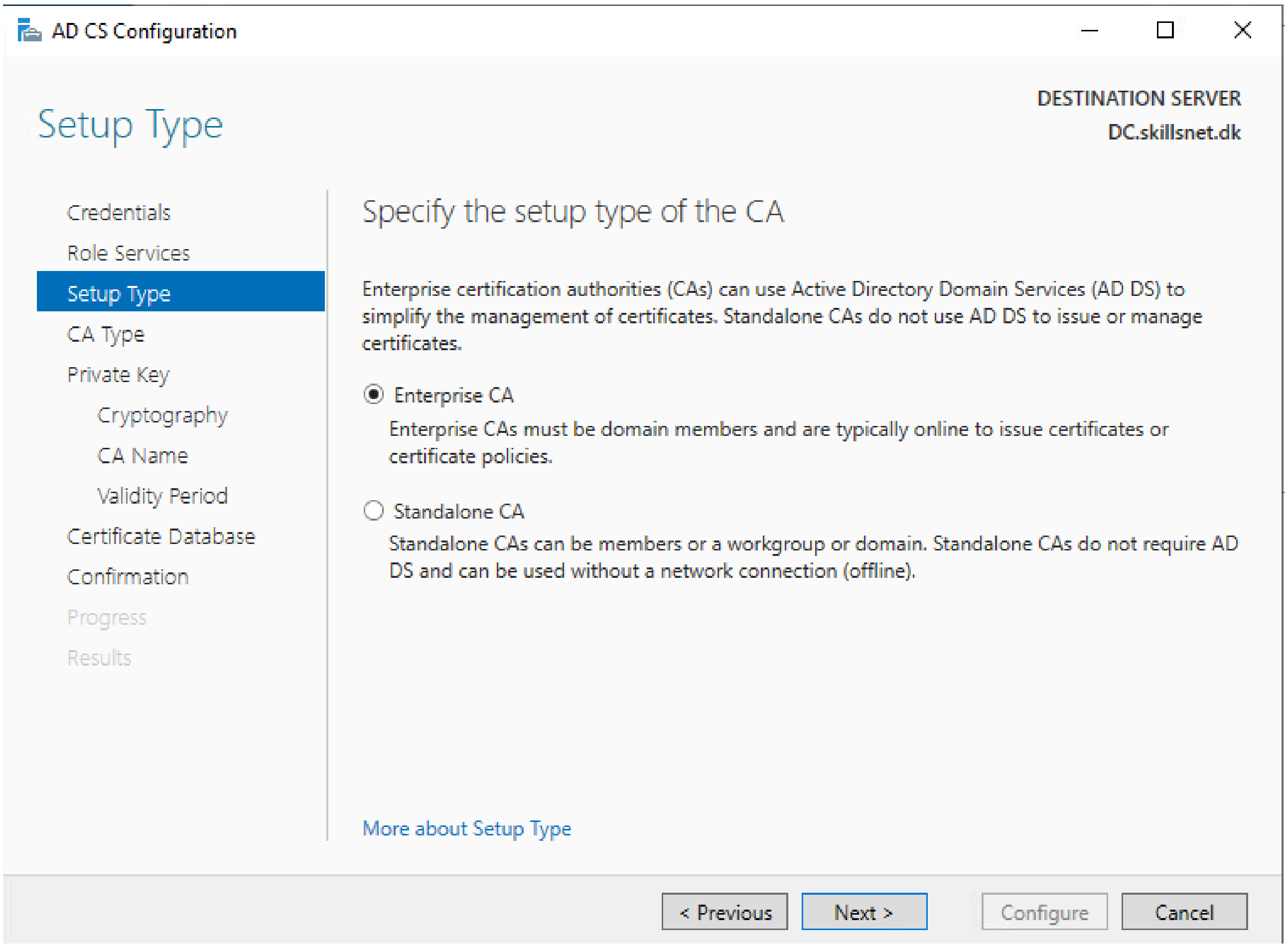
DESTINATION SERVER
DC.skillsnet.dk

- Credentials
- Role Services
- Setup Type
- CA Type
- Private Key
  - Cryptography
  - CA Name
  - Validity Period
- Certificate Database
- Confirmation
- Progress
- Results

Select Role Services to configure

☑ Certification Authority
□ Certification Authority Web Enrollment
□ Online Responder
□ Network Device Enrollment Service
□ Certificate Enrollment Web Service
□ Certificate Enrollment Policy Web Service

More about AD CS Server Roles



AD CS Configuration

DESTINATION SERVER
DC.skillsnet.dk

Setup Type

Specify the setup type of the CA

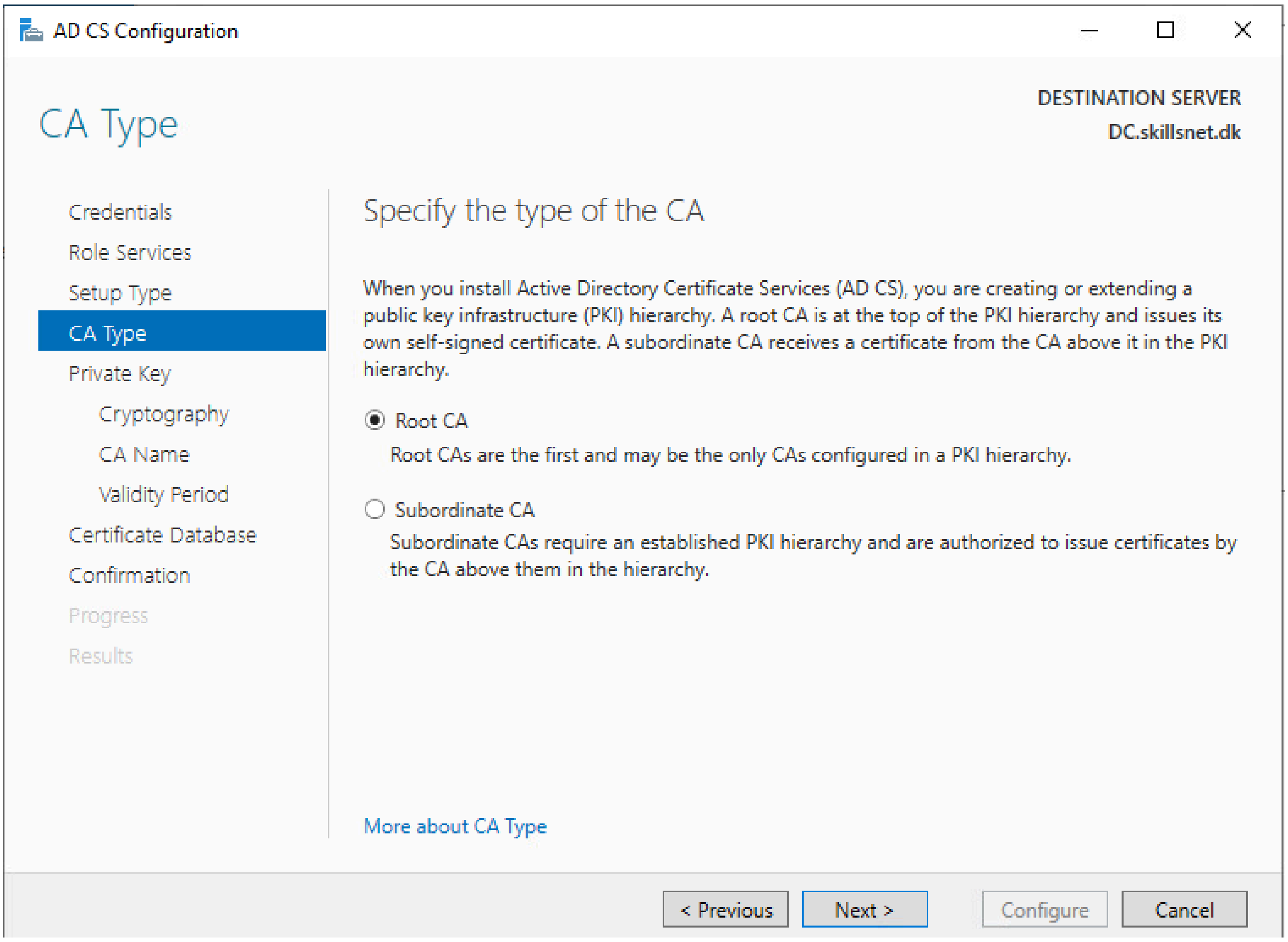
Enterprise certification authorities (CAs) can use Active Directory Domain Services (AD DS) to simplify the management of certificates. Standalone CAs do not use AD DS to issue or manage certificates.

● Enterprise CA

Enterprise CAs must be domain members and are typically online to issue certificates or certificate policies.

○ Standalone CA

Standalone CAs can be members or a workgroup or domain. Standalone CAs do not require AD DS and can be used without a network connection (offline).



AD CS Configuration

CA Type

DESTINATION SERVER
DC.skillsnet.dk

Specify the type of the CA

When you install Active Directory Certificate Services (AD CS), you are creating or extending a public key infrastructure (PKI) hierarchy. A root CA is at the top of the PKI hierarchy and issues its own self-signed certificate. A subordinate CA receives a certificate from the CA above it in the PKI hierarchy.

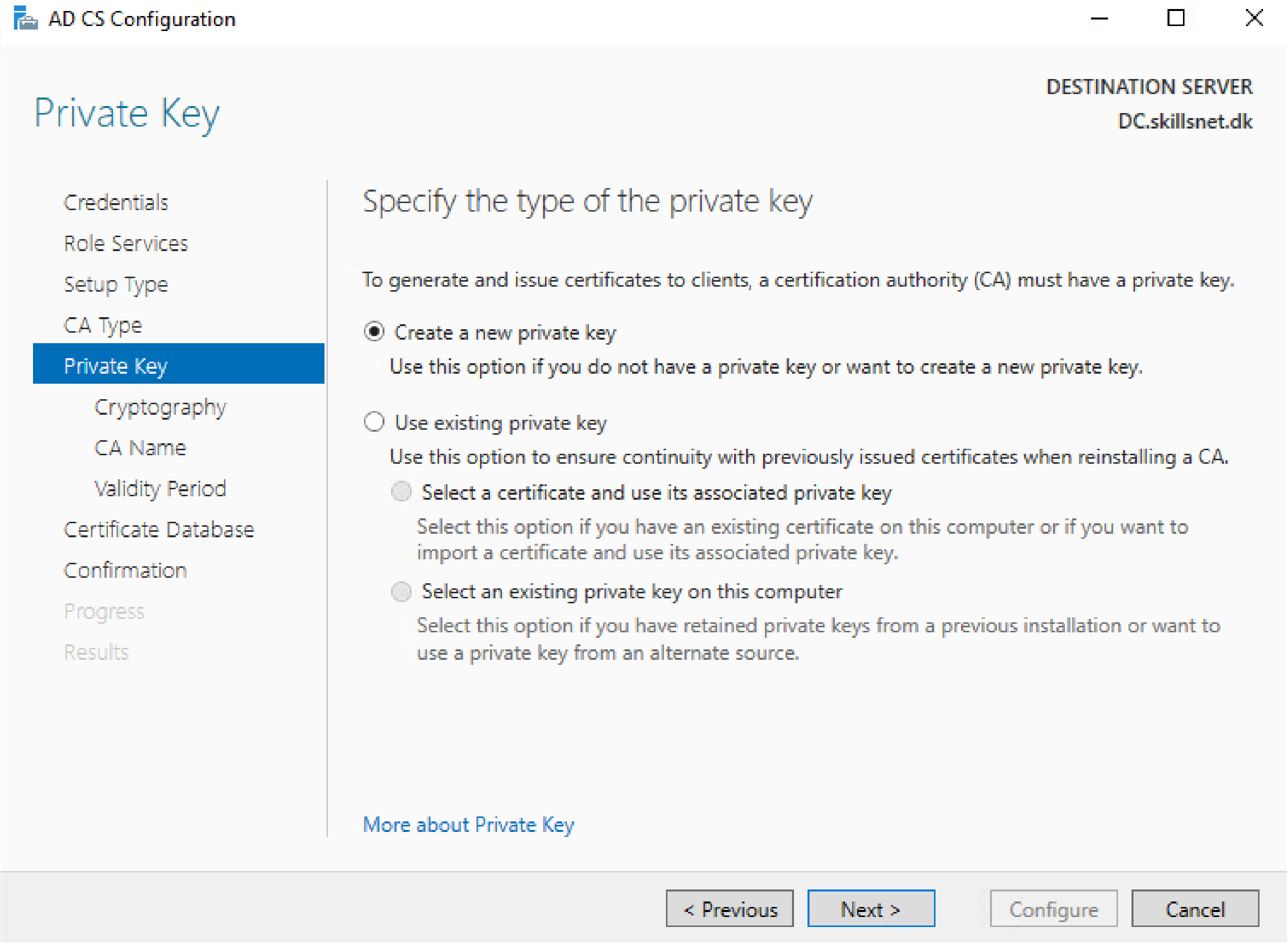
● Root CA

Root CAs are the first and may be the only CAs configured in a PKI hierarchy.

○ Subordinate CA

Subordinate CAs require an established PKI hierarchy and are authorized to issue certificates by the CA above them in the hierarchy.

More about CA Type



AD CS Configuration

Private Key

DESTINATION SERVER
DC.skillsnet.dk

Specify the type of the private key

To generate and issue certificates to clients, a certification authority (CA) must have a private key.

● Create a new private key

Use this option if you do not have a private key or want to create a new private key.

○ Use existing private key

Use this option to ensure continuity with previously issued certificates when reinstalling a CA.

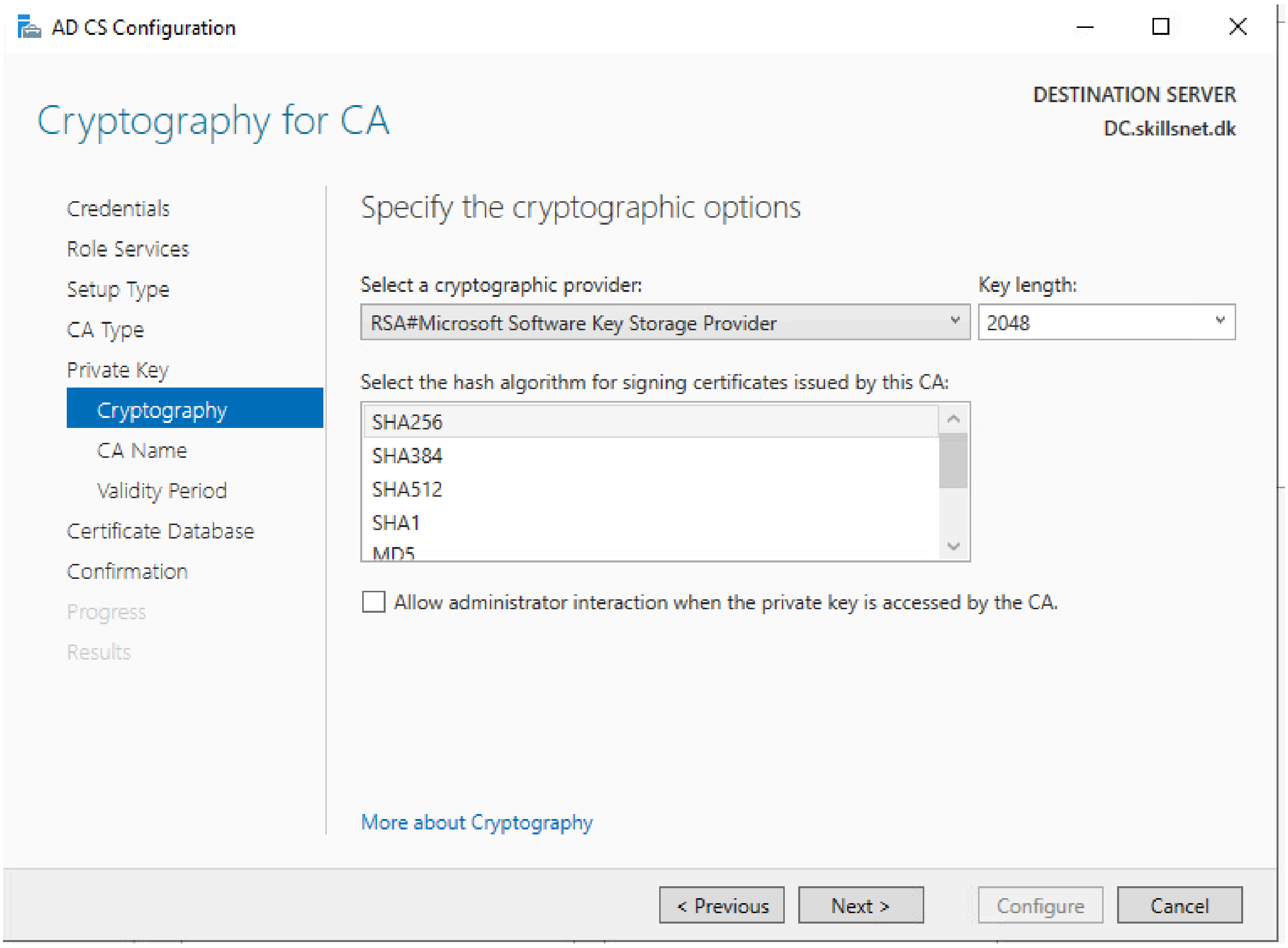
○ Select a certificate and use its associated private key

Select this option if you have an existing certificate on this computer or if you want to import a certificate and use its associated private key.

○ Select an existing private key on this computer

Select this option if you have retained private keys from a previous installation or want to use a private key from an alternate source.

More about Private Key



AD CS Configuration

Cryptography for CA

DESTINATION SERVER
DC.skillsnet.dk

Specify the cryptographic options

Select a cryptographic provider: RSA#Microsoft Software Key Storage Provider

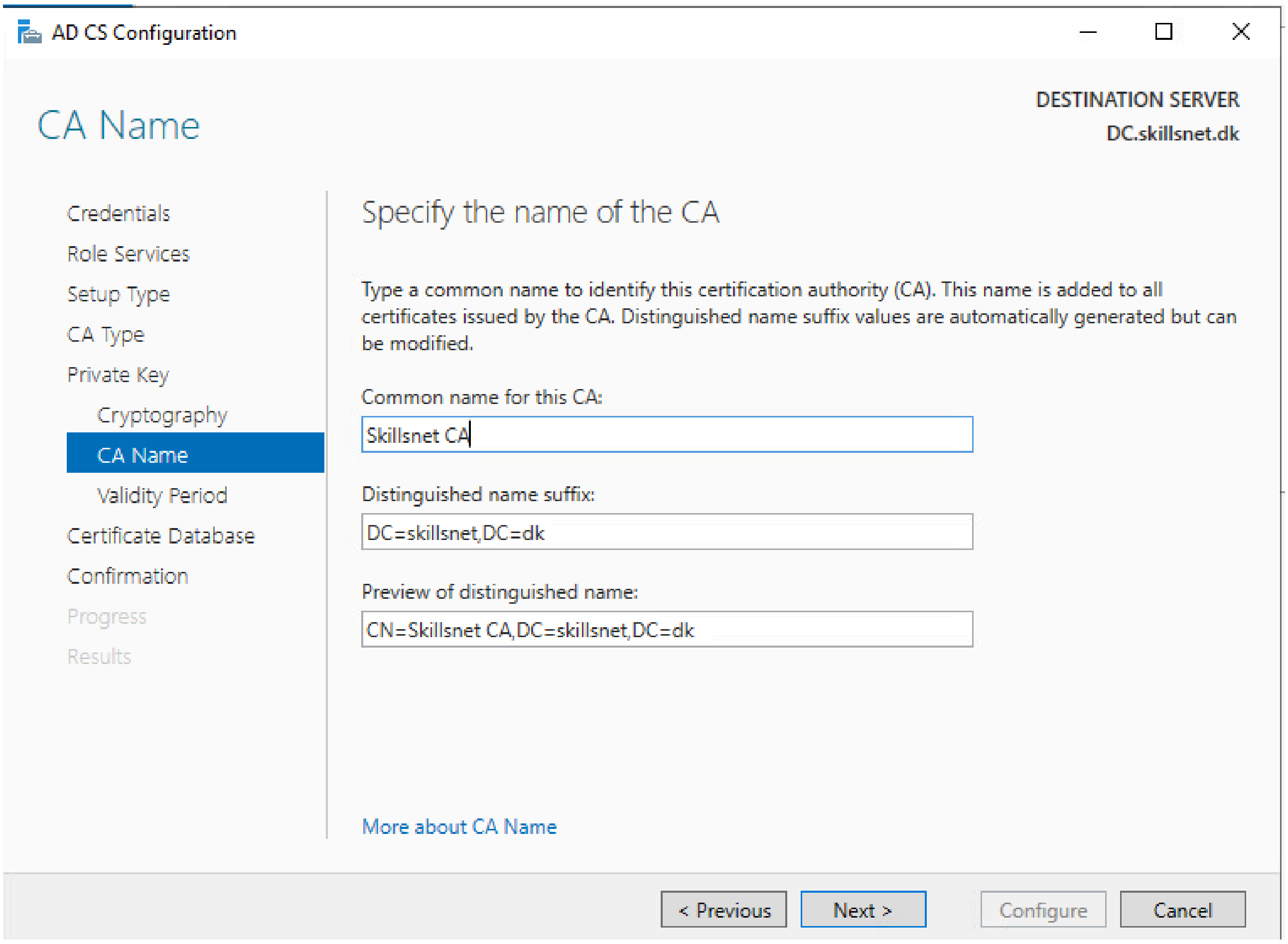
Key length: 2048

Select the hash algorithm for signing certificates issued by this CA:

SHA256
SHA384
SHA512
SHA1
MD5

□ Allow administrator interaction when the private key is accessed by the CA.

More about Cryptography



AD CS Configuration

DESTINATION SERVER
DC.skillsnet.dk

CA Name

Specify the name of the CA

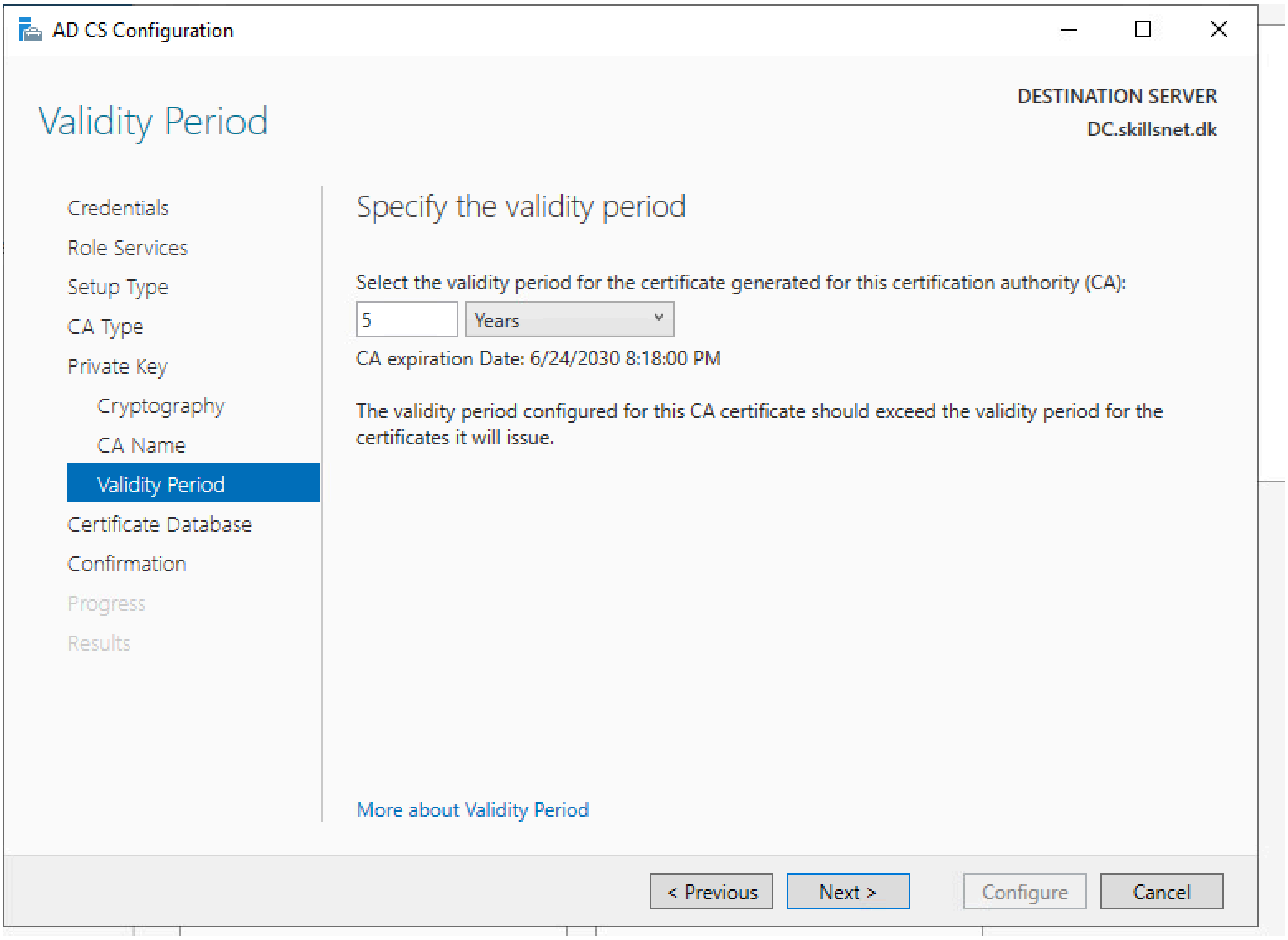
Type a common name to identify this certification authority (CA). This name is added to all certificates issued by the CA. Distinguished name suffix values are automatically generated but can be modified.

Common name for this CA:
Skillsnet CA

Distinguished name suffix:
DC=skillsnet,DC=dk

Preview of distinguished name:
CN=Skillsnet CA,DC=skillsnet,DC=dk

More about CA Name



AD CS Configuration

Validity Period

DESTINATION SERVER
DC.skillsnet.dk

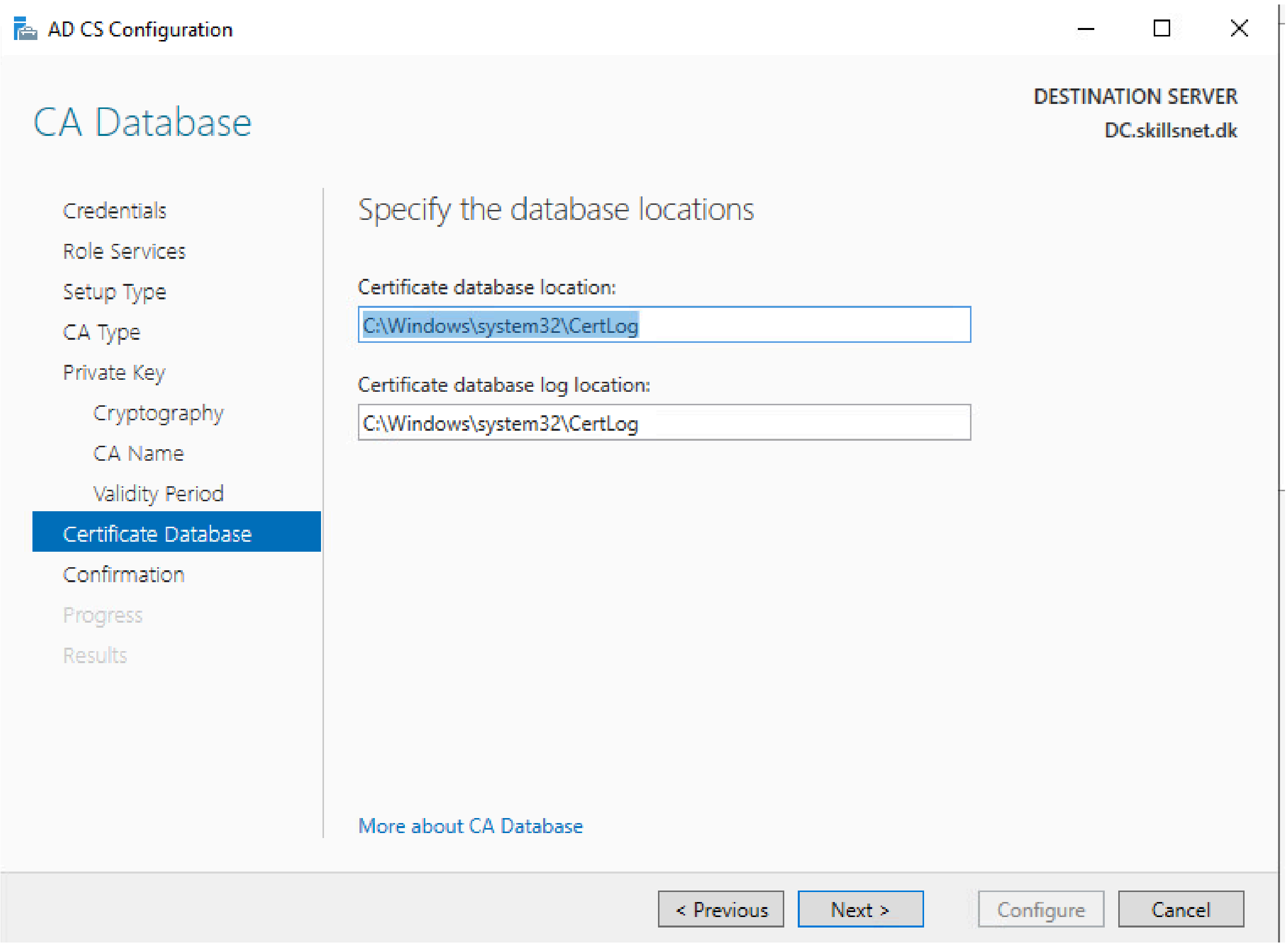
Specify the validity period

Select the validity period for the certificate generated for this certification authority (CA):

5 Years

CA expiration Date: 6/24/2030 8:18:00 PM

The validity period configured for this CA certificate should exceed the validity period for the certificates it will issue.



AD CS Configuration

CA Database

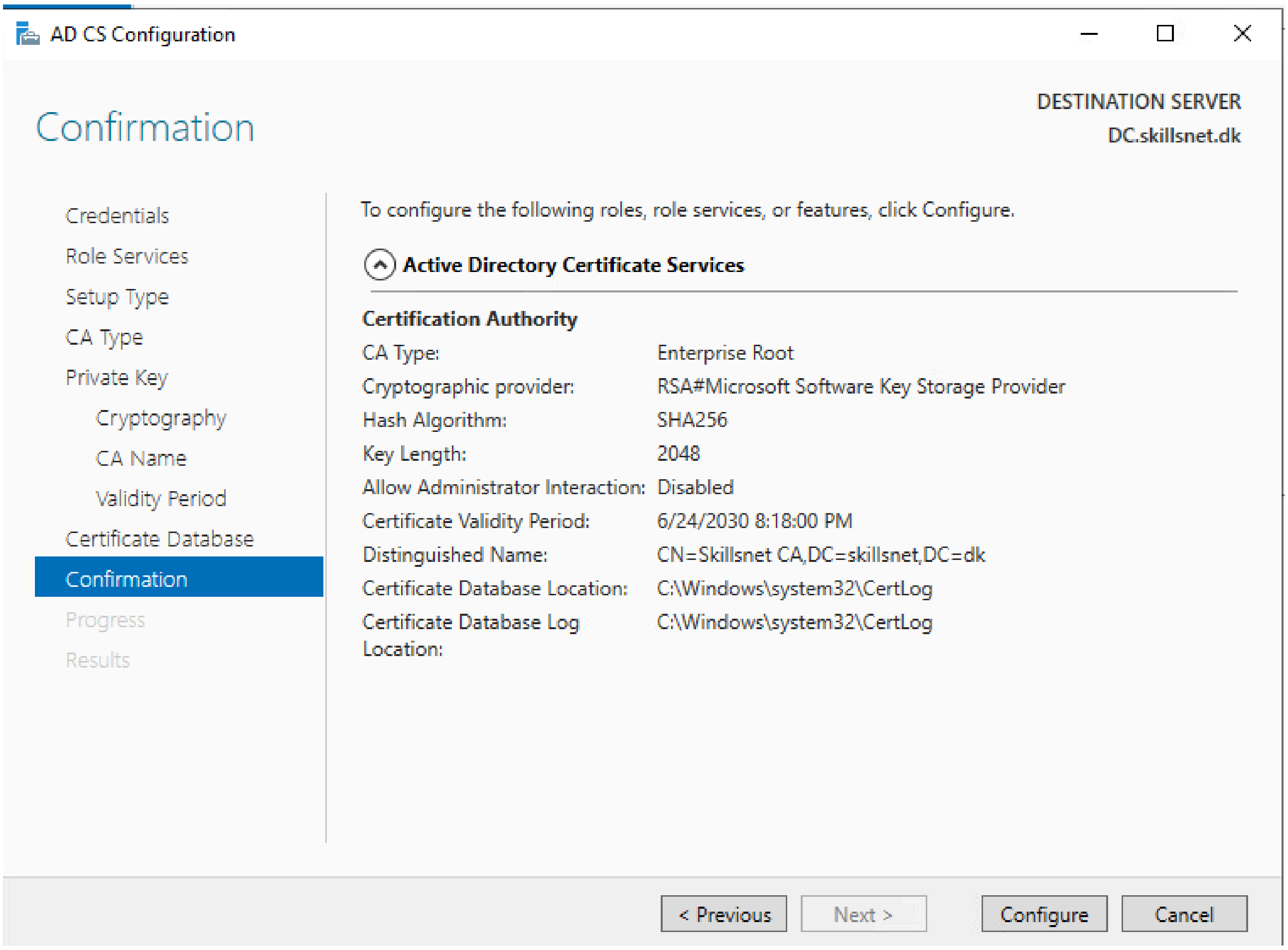
DESTINATION SERVER
DC.skillsnet.dk

Specify the database locations

Certificate database location:
C:\Windows\system32\CertLog

Certificate database log location:
C:\Windows\system32\CertLog

More about CA Database



Confirmation

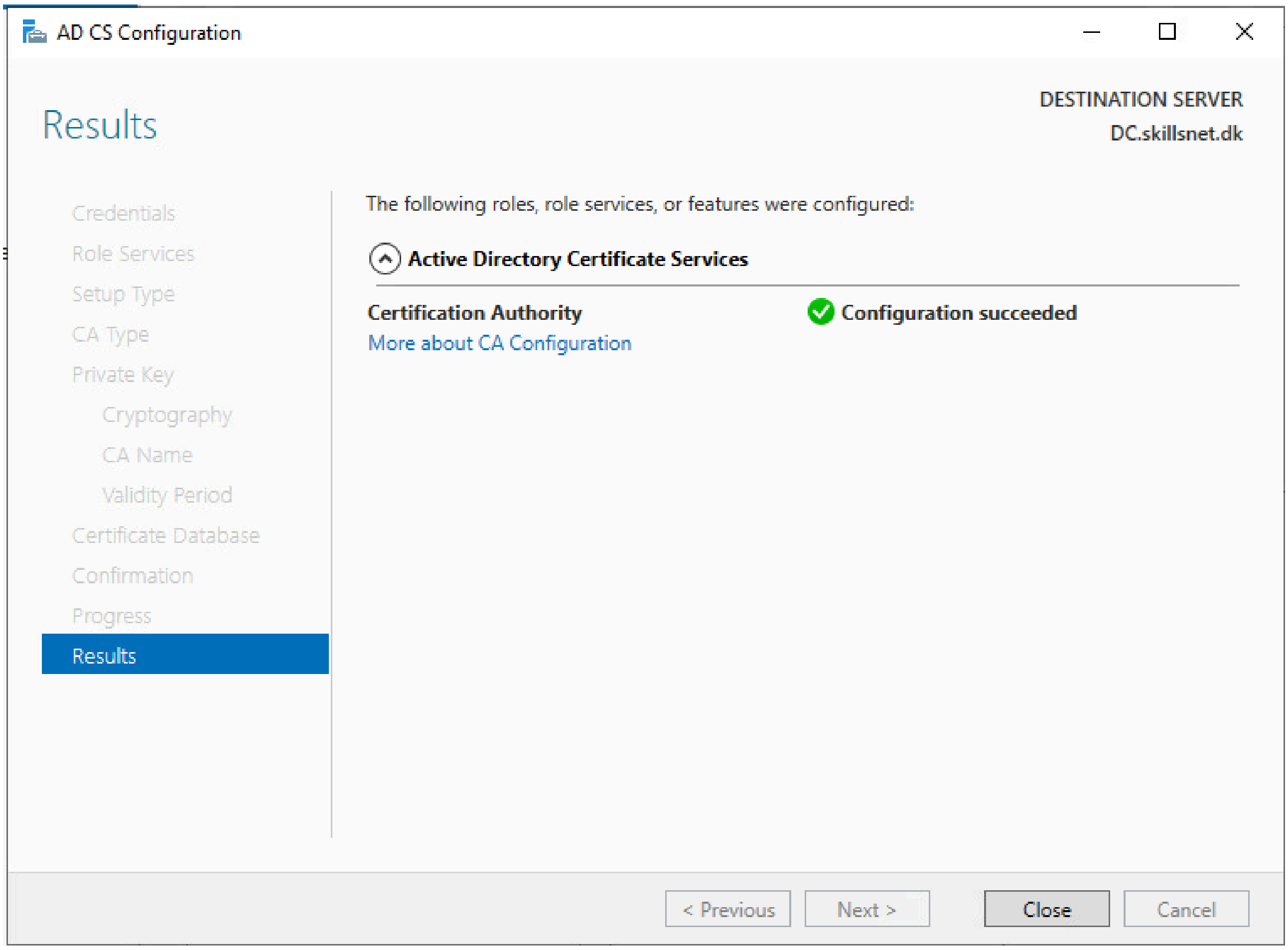
DESTINATION SERVER
DC.skillsnet.dk

To configure the following roles, role services, or features, click Configure.

Active Directory Certificate Services

Certification Authority

CA Type:	Enterprise Root
Cryptographic provider:	RSA#Microsoft Software Key Storage Provider
Hash Algorithm:	SHA256
Key Length:	2048
Allow Administrator Interaction:	Disabled
Certificate Validity Period:	6/24/2030 8:18:00 PM
Distinguished Name:	CN=Skillsnet CA,DC=skillsnet,DC=dk
Certificate Database Location:	C:\Windows\system32\CertLog
Certificate Database Log Location:	C:\Windows\system32\CertLog

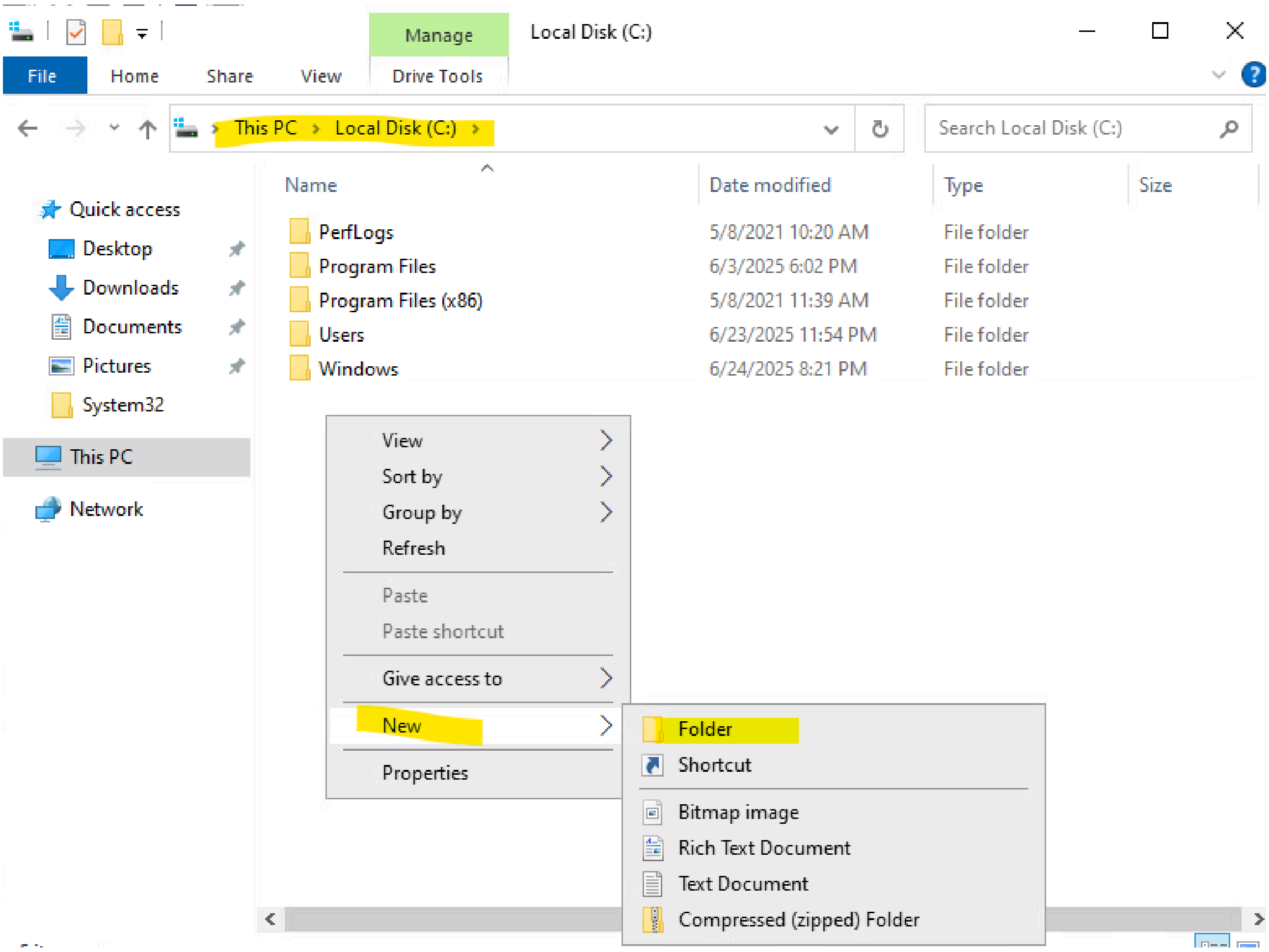


The following roles, role services, or features were configured:

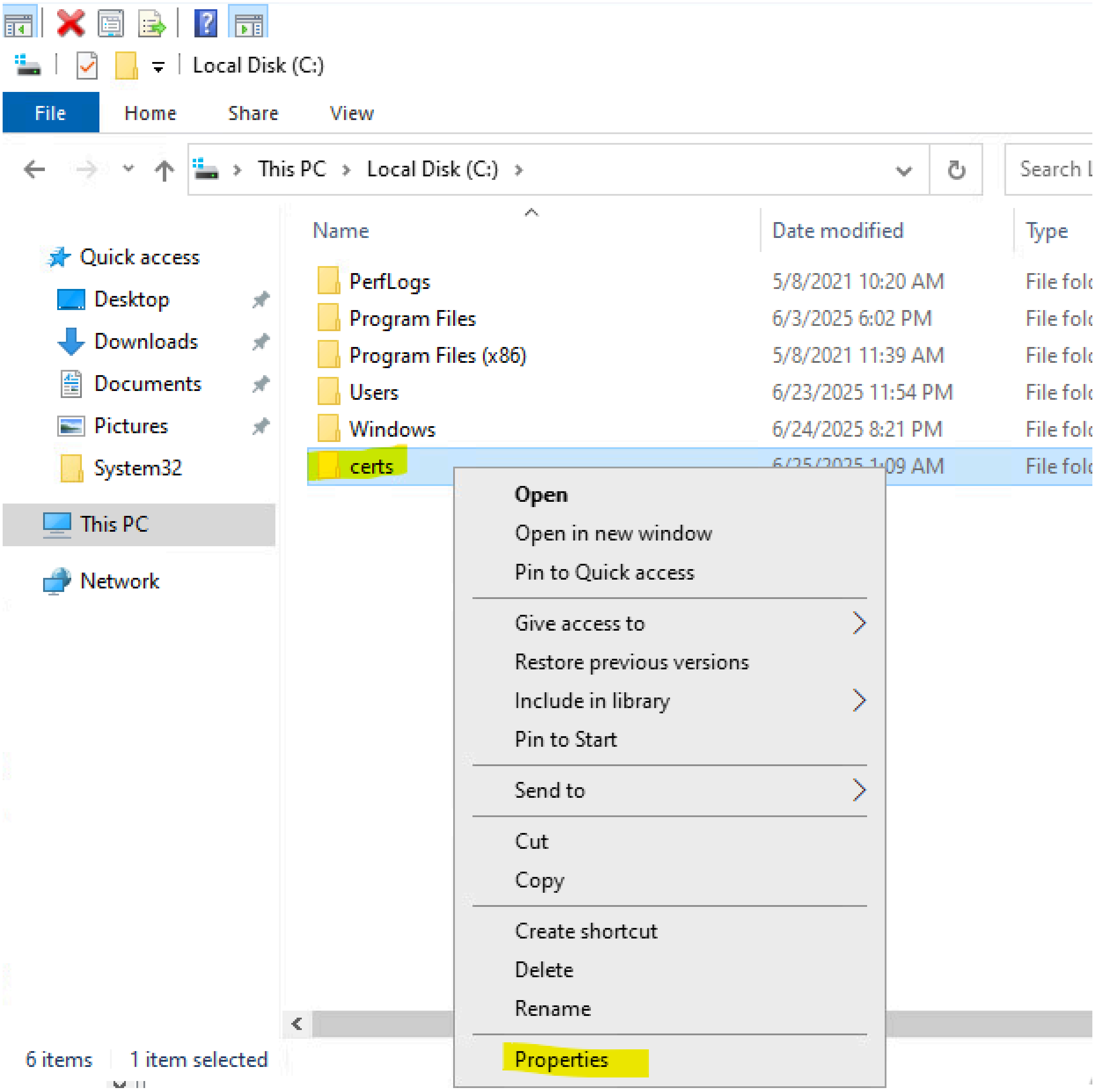
Active Directory Certificate Services

Certification Authority More about CA Configuration	✓ **Configuration succeeded**

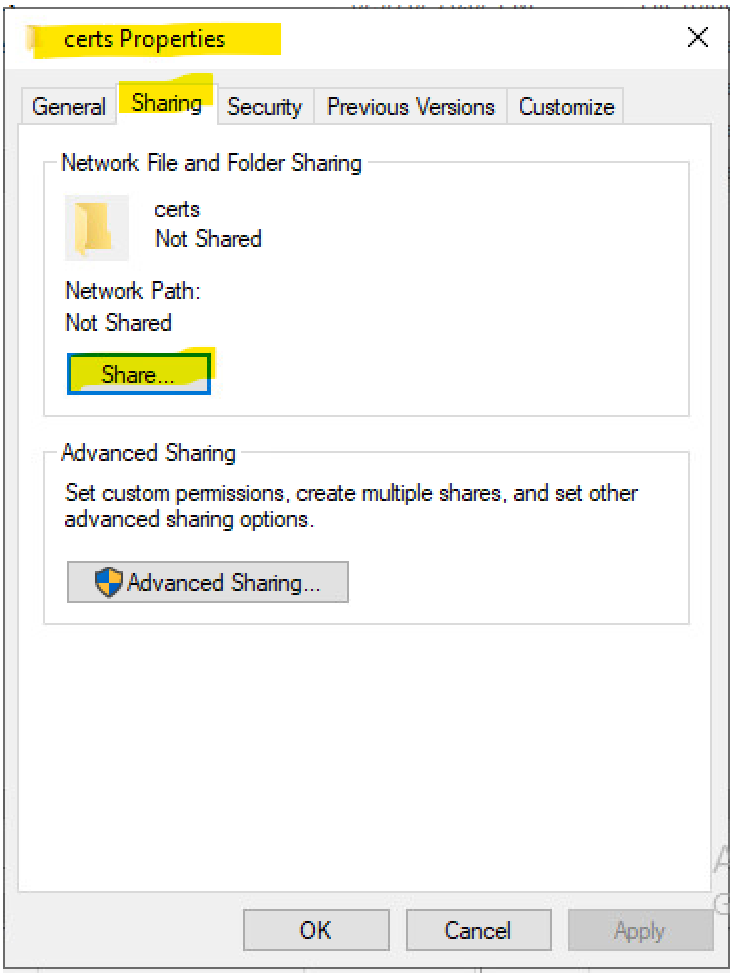
- Create a shared folder for sharing certificates



Name	Date modified	Type	Size
PerfLogs	5/8/2021 10:20 AM	File folder	
Program Files	6/3/2025 6:02 PM	File folder	
Program Files (x86)	5/8/2021 11:39 AM	File folder	
Users	6/23/2025 11:54 PM	File folder	
Windows	6/24/2025 8:21 PM	File folder	



Name	Date modified	Type
PerfLogs	5/8/2021 10:20 AM	File fol
Program Files	6/3/2025 6:02 PM	File fol
Program Files (x86)	5/8/2021 11:39 AM	File fol
Users	6/23/2025 11:54 PM	File fol
Windows	6/24/2025 8:21 PM	File fol
certs	6/25/2025 1:09 AM	File fol



certs Properties

General | Sharing | Security | Previous Versions | Customize

Network File and Folder Sharing

certs
Not Shared

Network Path:
Not Shared

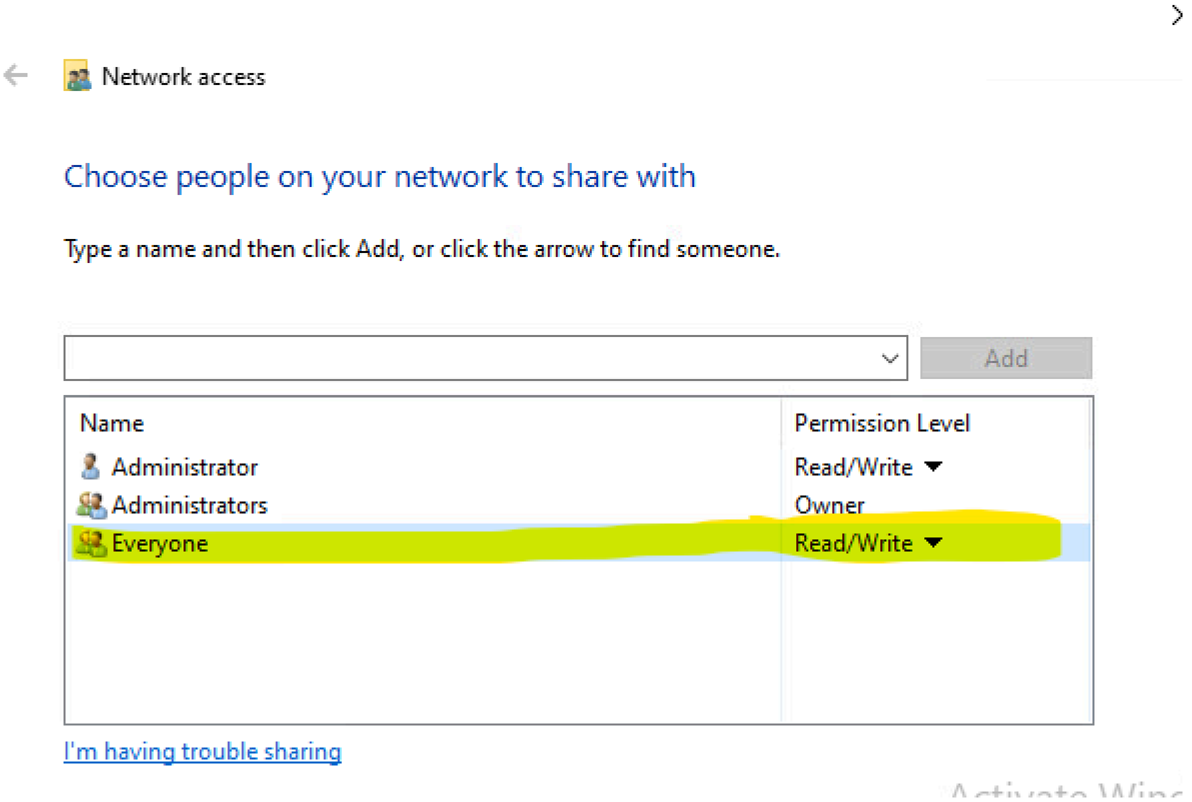
Share...

Advanced Sharing

Set custom permissions, create multiple shares, and set other advanced sharing options.

Advanced Sharing...

OK | Cancel | Apply



Network access

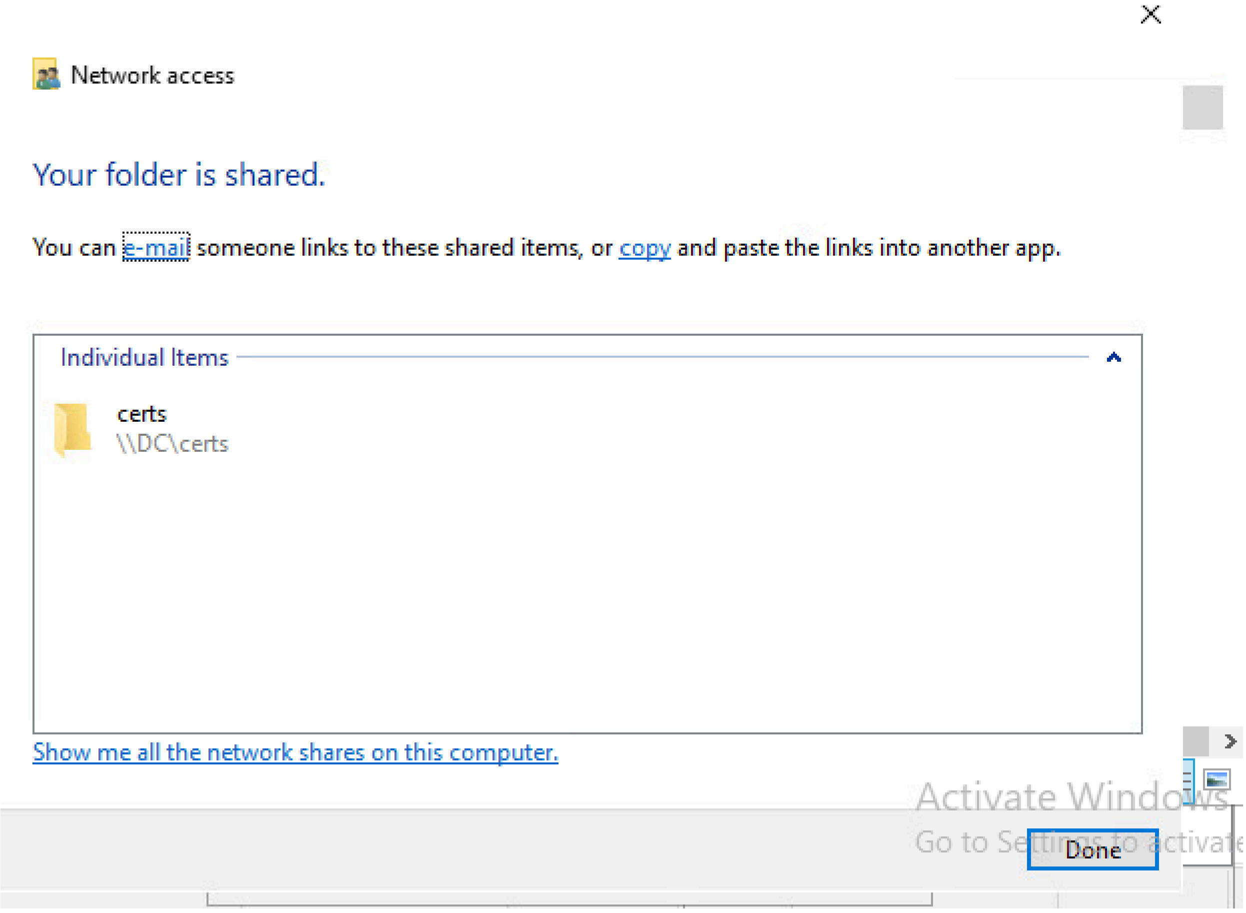
Choose people on your network to share with

Type a name and then click Add, or click the arrow to find someone.

Add

Name	Permission Level
Administrator	Read/Write ▼
Administrators	Owner
Everyone	Read/Write ▼

I'm having trouble sharing



Network access

Your folder is shared.

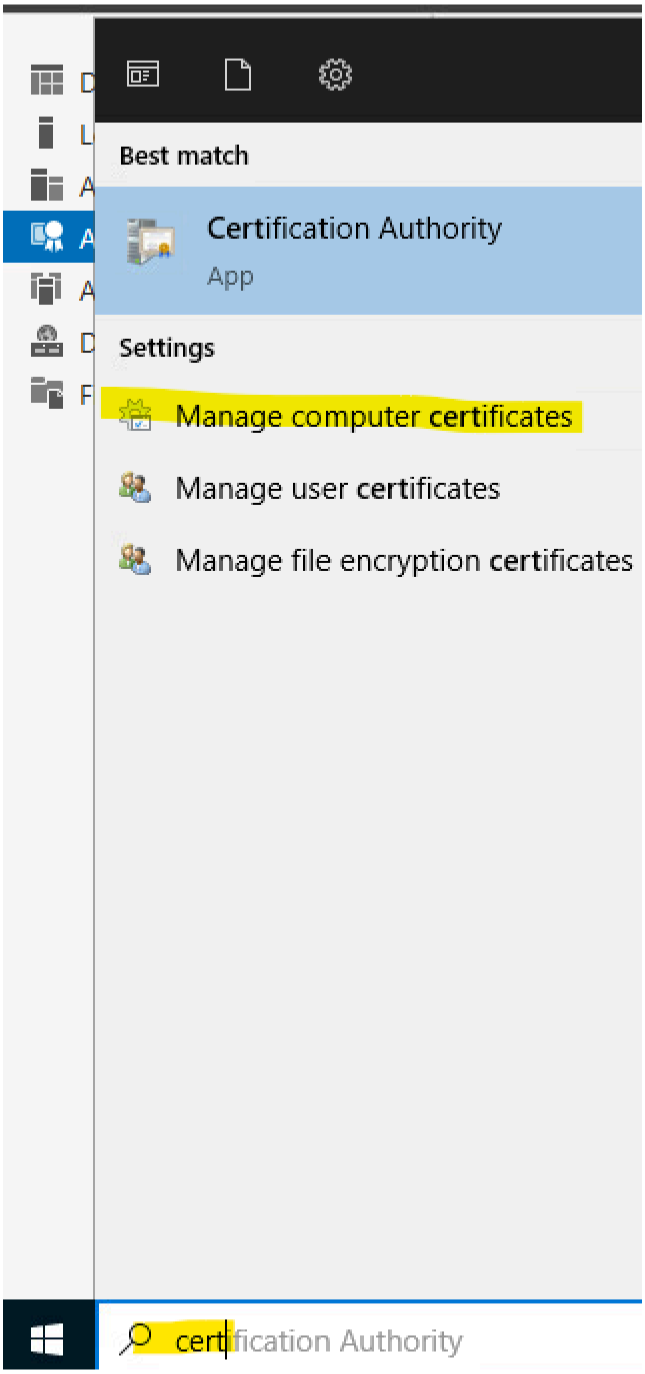
You can e-mail someone links to these shared items, or copy and paste the links into another app.

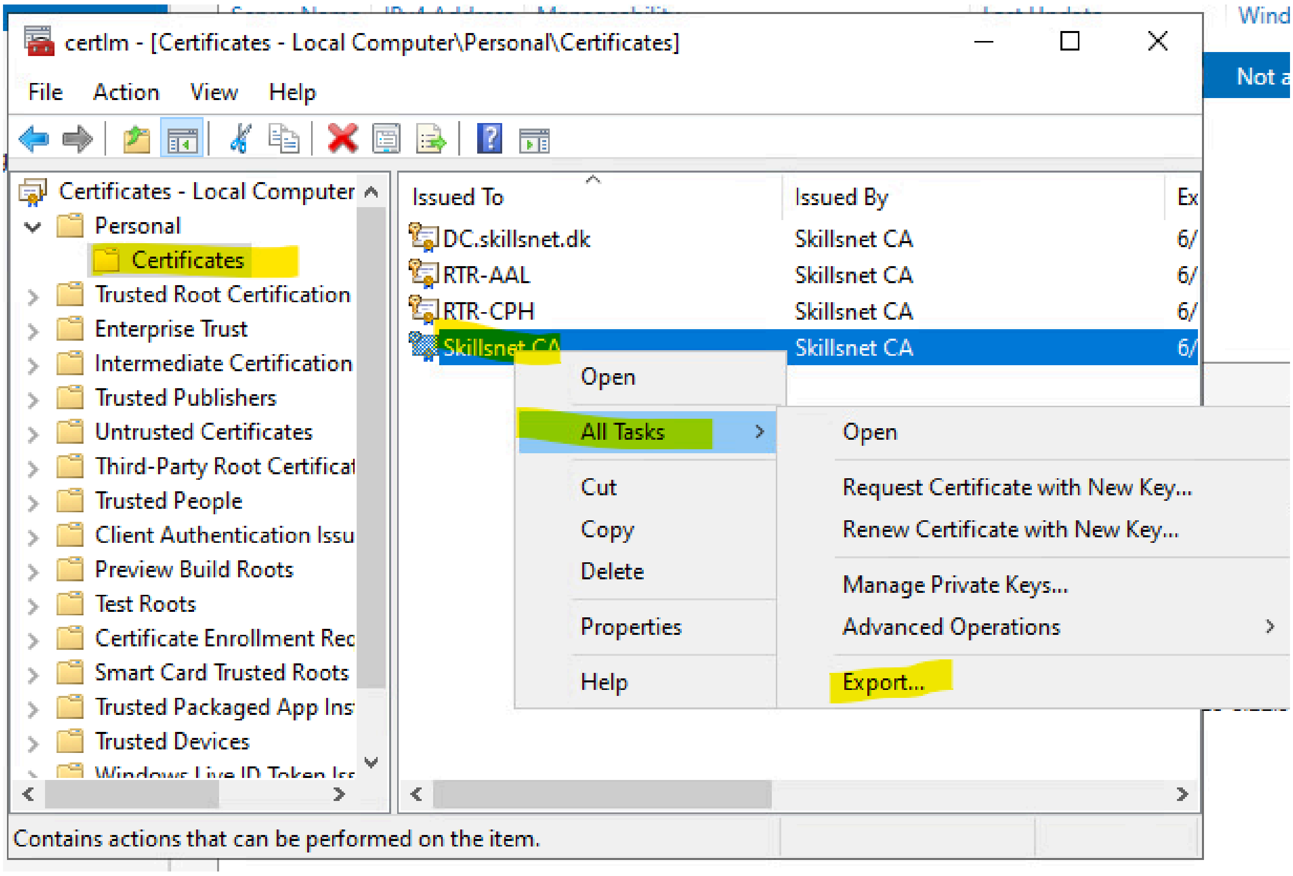
Individual Items

certs
\\DC\certs

Show me all the network shares on this computer.

- Share the Skillsnet CA

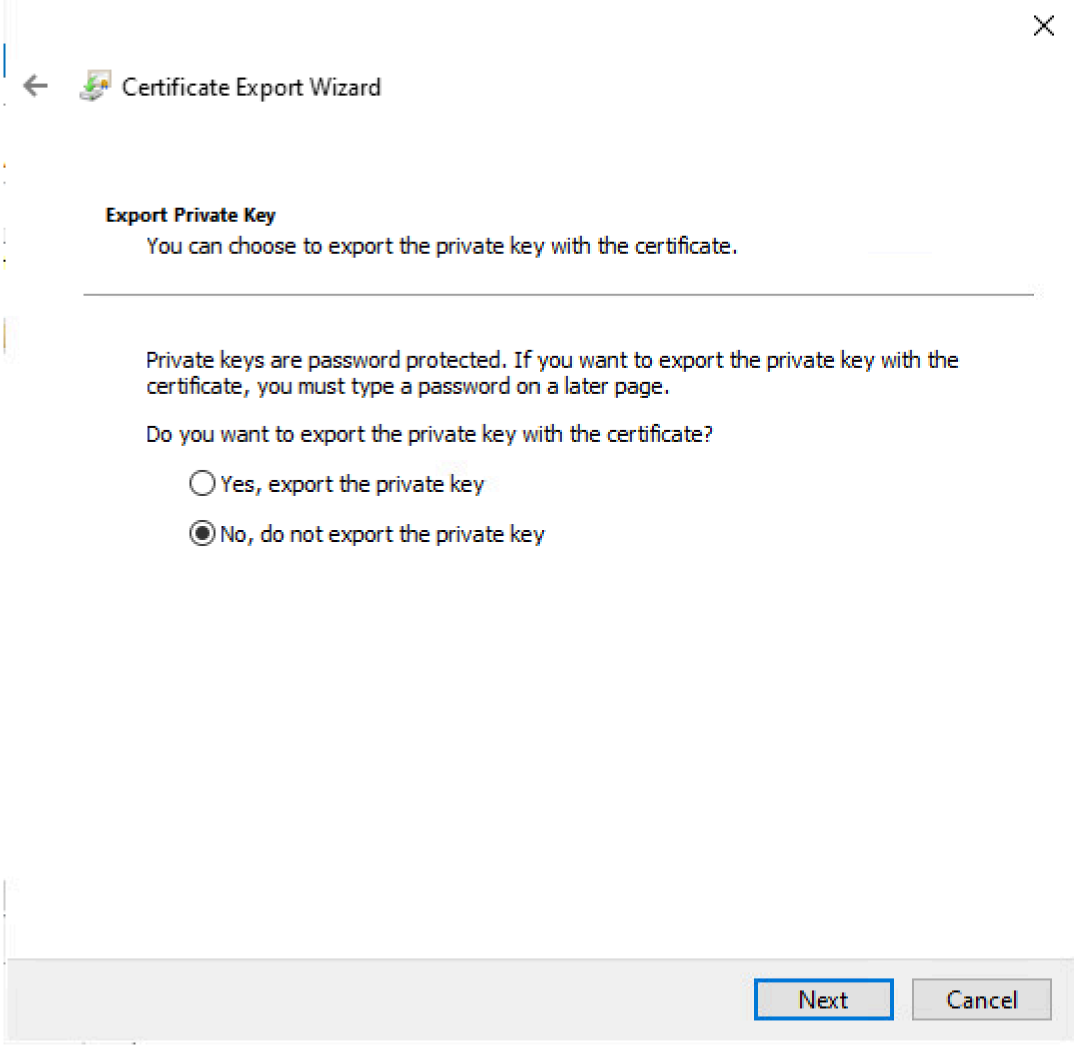

Best match
Certification Authority
App
Settings
Manage computer certificates
Manage user certificates
Manage file encryption certificates
certification Authority



certlm - [Certificates - Local Computer\Personal\Certificates]

Issued To	Issued By	Ex
DC.skillsnet.dk	Skillsnet CA	6/
RTR-AAL	Skillsnet CA	6/
RTR-CPH	Skillsnet CA	6/
Skillsnet CA	Skillsnet CA	6/

Contains actions that can be performed on the item.



Certificate Export Wizard

Export Private Key

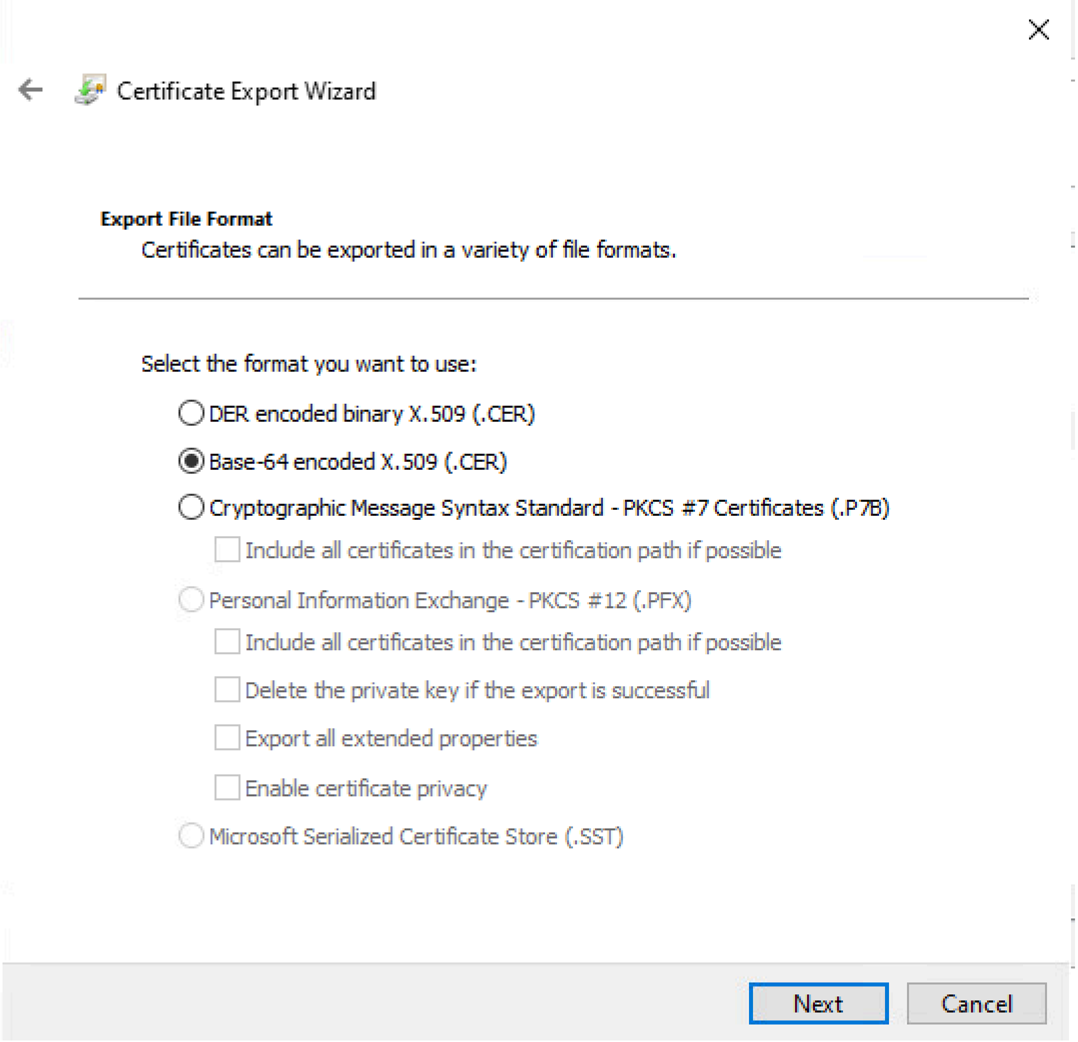
You can choose to export the private key with the certificate.

Private keys are password protected. If you want to export the private key with the certificate, you must type a password on a later page.

Do you want to export the private key with the certificate?

○ Yes, export the private key

● No, do not export the private key



Certificate Export Wizard

Export File Format

Certificates can be exported in a variety of file formats.

Select the format you want to use:

○ DER encoded binary X.509 (.CER)

● Base-64 encoded X.509 (.CER)

○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)

□ Include all certificates in the certification path if possible

○ Personal Information Exchange - PKCS #12 (.PFX)

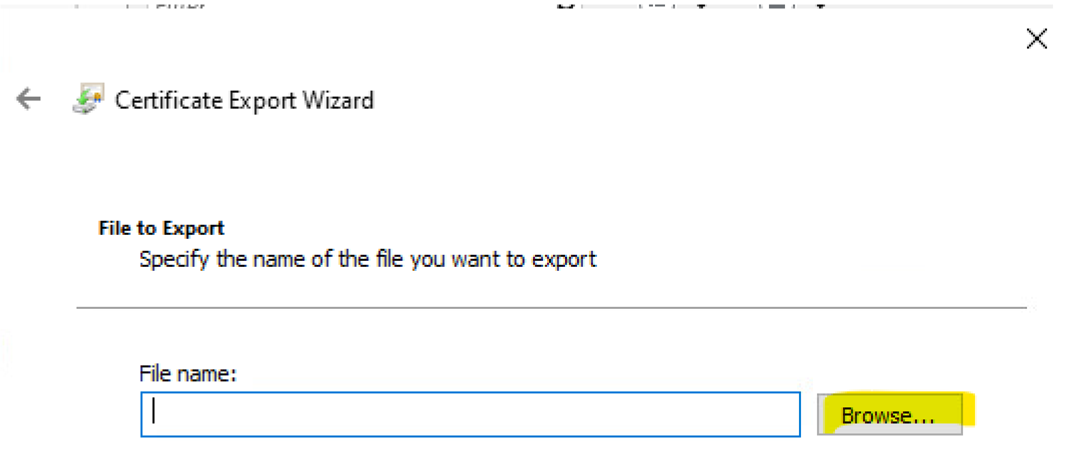
□ Include all certificates in the certification path if possible

□ Delete the private key if the export is successful

□ Export all extended properties

□ Enable certificate privacy

○ Microsoft Serialized Certificate Store (.SST)

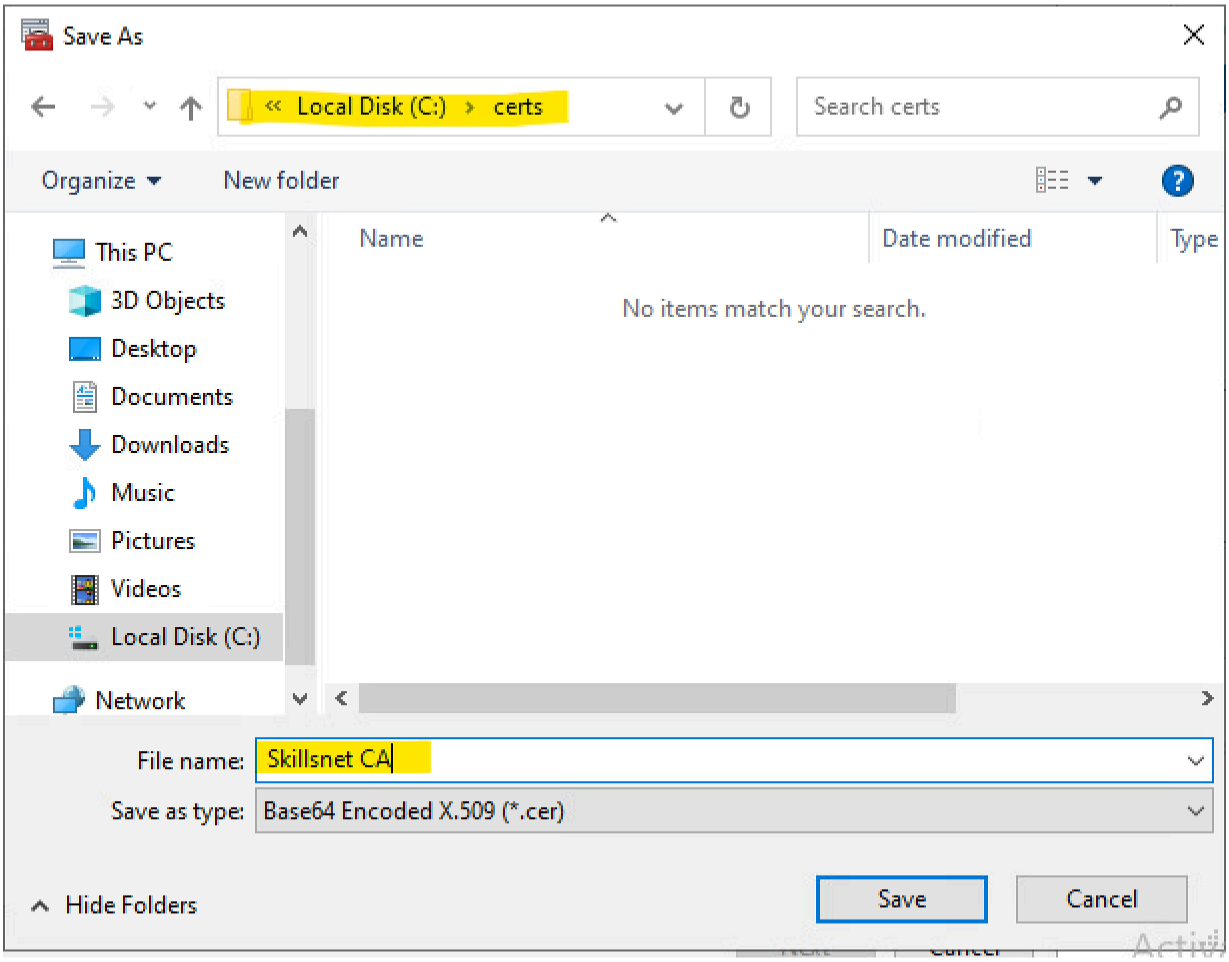


Certificate Export Wizard

File to Export

Specify the name of the file you want to export

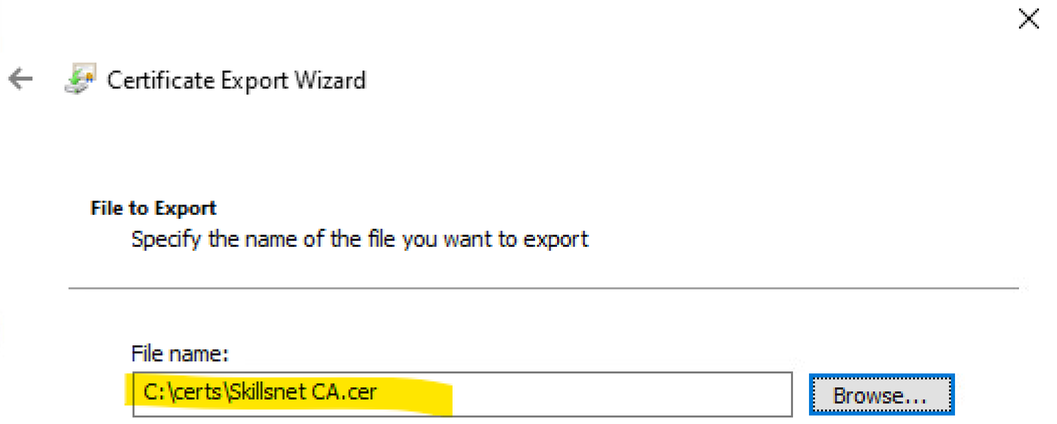
File name:



No items match your search.

File name: Skillsnet CA

Save as type: Base64 Encoded X.509 (*.cer)

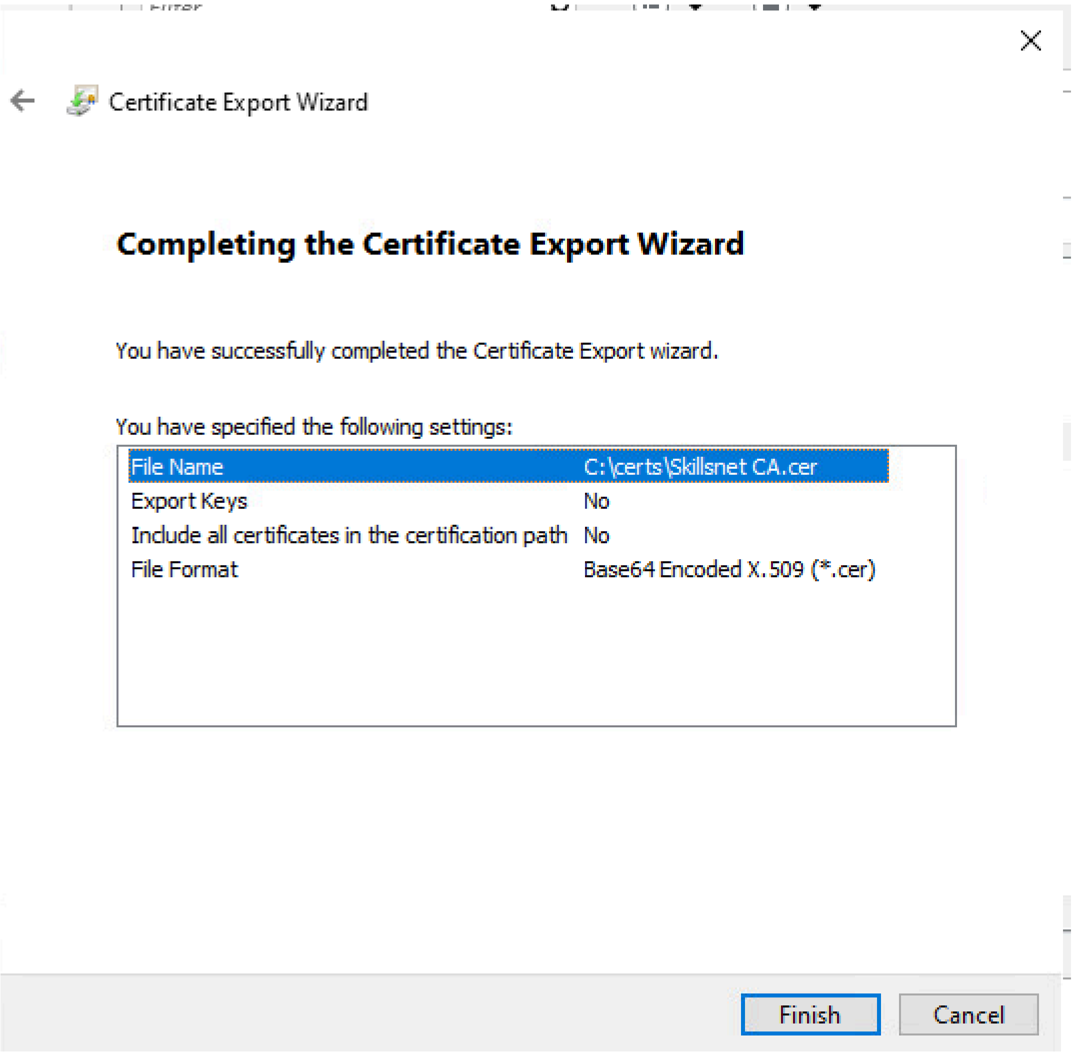


File to Export

Specify the name of the file you want to export

File name:

C:\certs\Skillsnet CA.cer

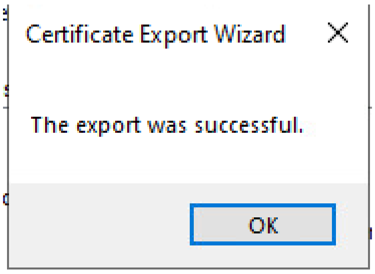


Completing the Certificate Export Wizard

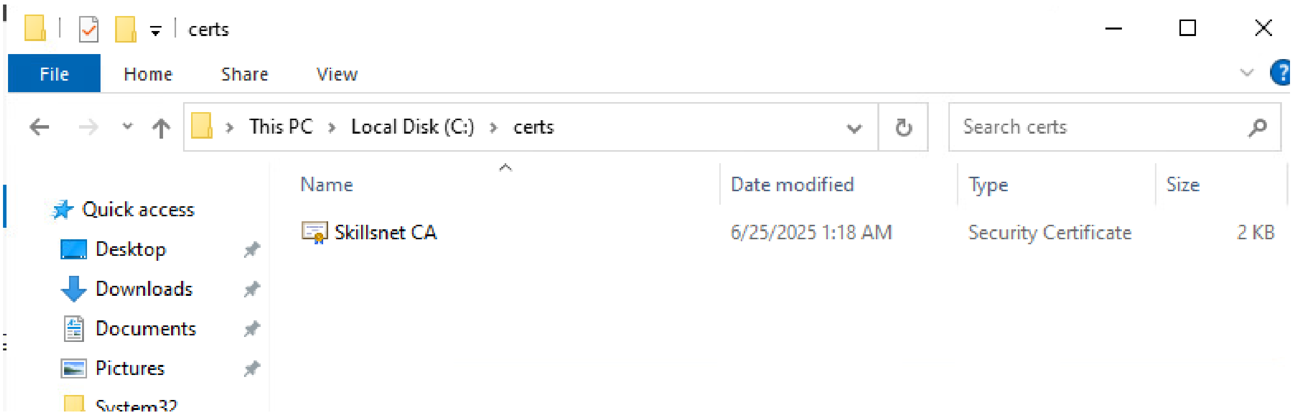
You have successfully completed the Certificate Export wizard.

You have specified the following settings:

File Name	C:\certs\Skillsnet CA.cer
Export Keys	No
Include all certificates in the certification path	No
File Format	Base64 Encoded X.509 (*.cer)



The export was successful.



Name	Date modified	Type	Size
Skillsnet CA	6/25/2025 1:18 AM	Security Certificate	2 KB

DC Certs - Task2: CDP

2. Configure the **CDP** endpoint at http://crl.skillsnet.dk/SkillsnetCA.crl

DC Certs - Task3: AIA

3. Configure the **AIA** endpoint at http://cacerts.skillsnet.dk/SkillsnetCA.crt

DC Certs - Task4: OCSP

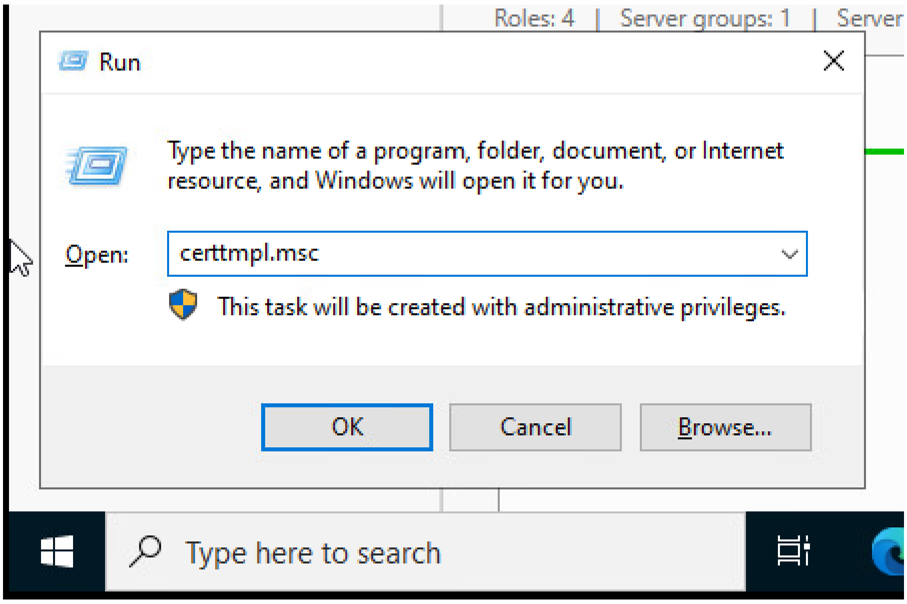
4. Configure the **OCSP** responder endpoint at http://ocsp.skillsnet.dk/

DC Certs - Task5: CDP and AIA on SRV2

5. CDP and AIA certificate endpoints need to be **hosted on SRV2**. OCSP responder is **hosted on DC**.

DC Certs - Task6: certificate templates

6. Create following certificate templates:
   6.1. **Skills Users** – For user certificates; certificate needs to be auto-enrolled for all users
   6.2. **Skills Endpoints** – For computer certificates; certificate needs to be auto-enrolled for all endpoints
   6.3. **Skills Web Server** – For web server certificates

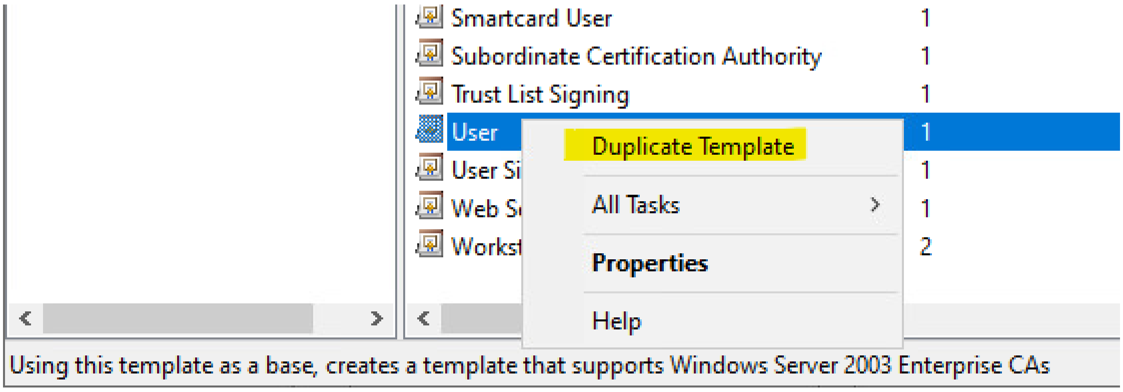


Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

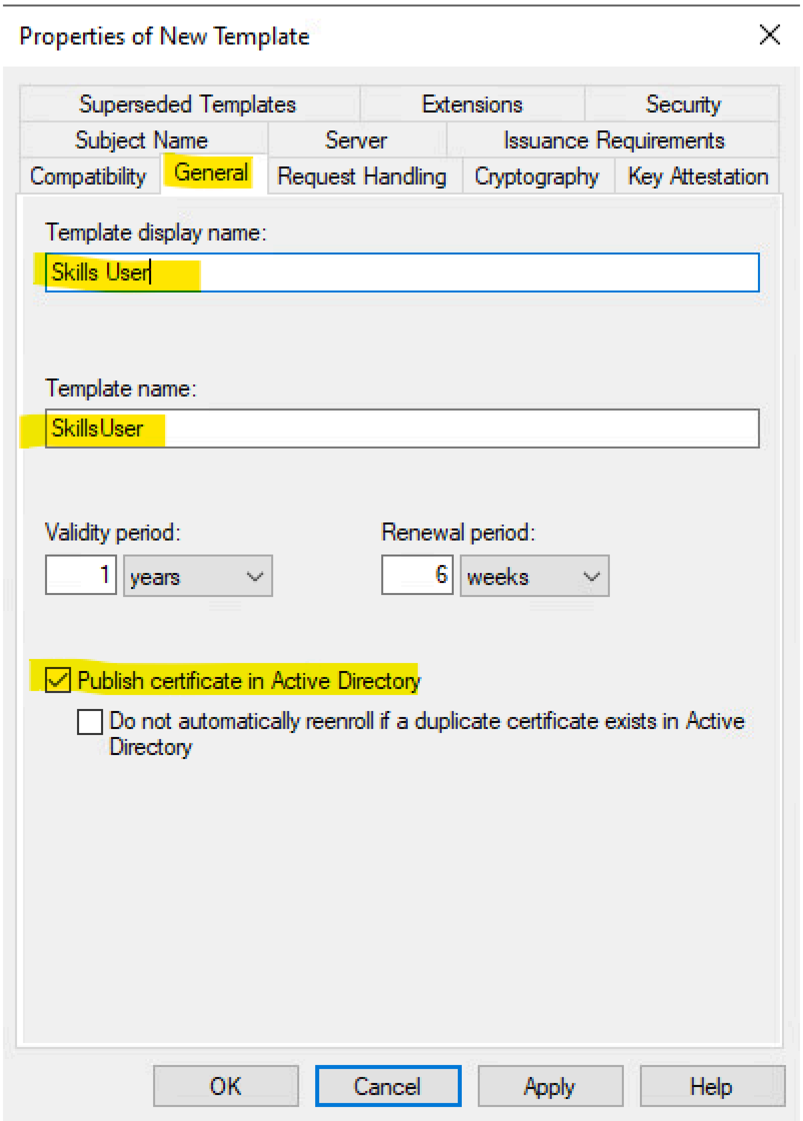
Open: certtmpl.msc

This task will be created with administrative privileges.

6.1. Skills Users



Using this template as a base, creates a template that supports Windows Server 2003 Enterprise CAs



Properties of New Template

Template display name: Skills User

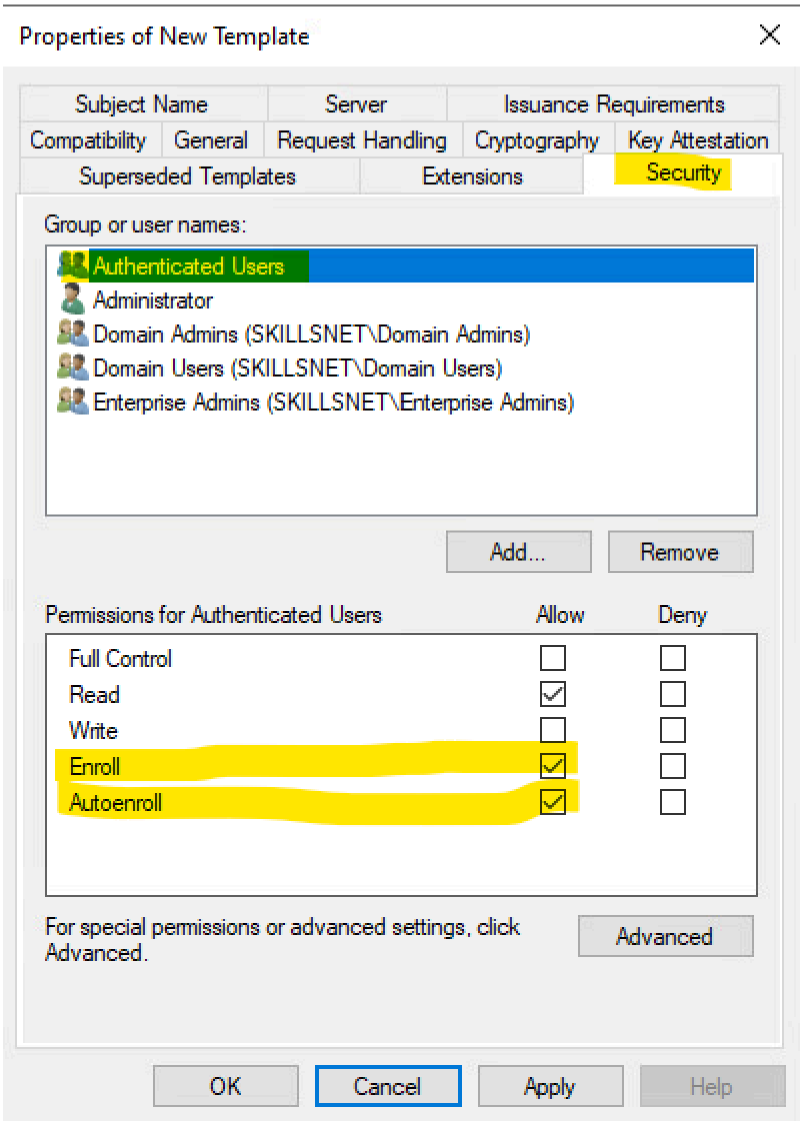
Template name: SkillsUser

Validity period: 1 years

Renewal period: 6 weeks

☑ Publish certificate in Active Directory

□ Do not automatically reenroll if a duplicate certificate exists in Active Directory



Properties of New Template

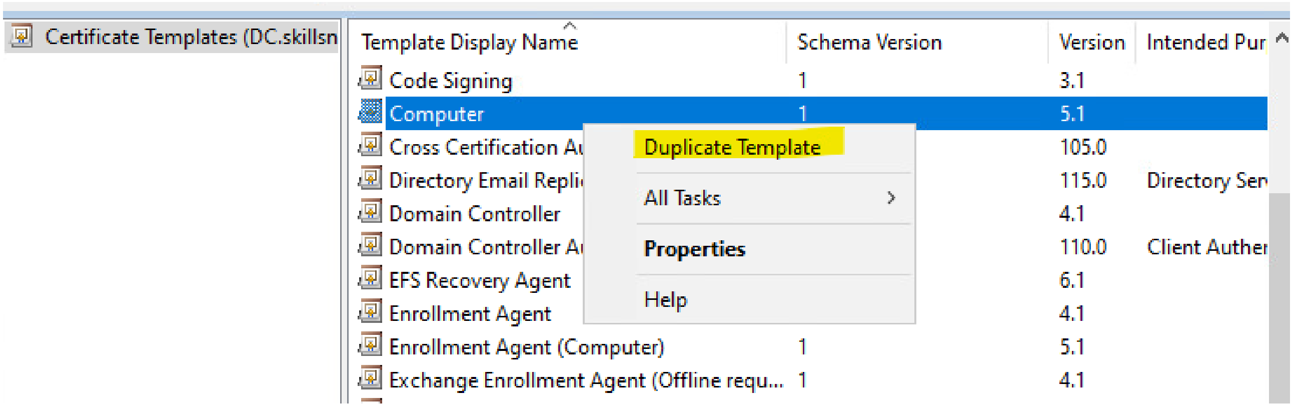
Group or user names:

- Authenticated Users
- Administrator
- Domain Admins (SKILLSNET\Domain Admins)
- Domain Users (SKILLSNET\Domain Users)
- Enterprise Admins (SKILLSNET\Enterprise Admins)

Permissions for Authenticated Users	Allow	Deny
Full Control	□	□
Read	☑	□
Write	□	□
Enroll	☑	□
Autoenroll	☑	□

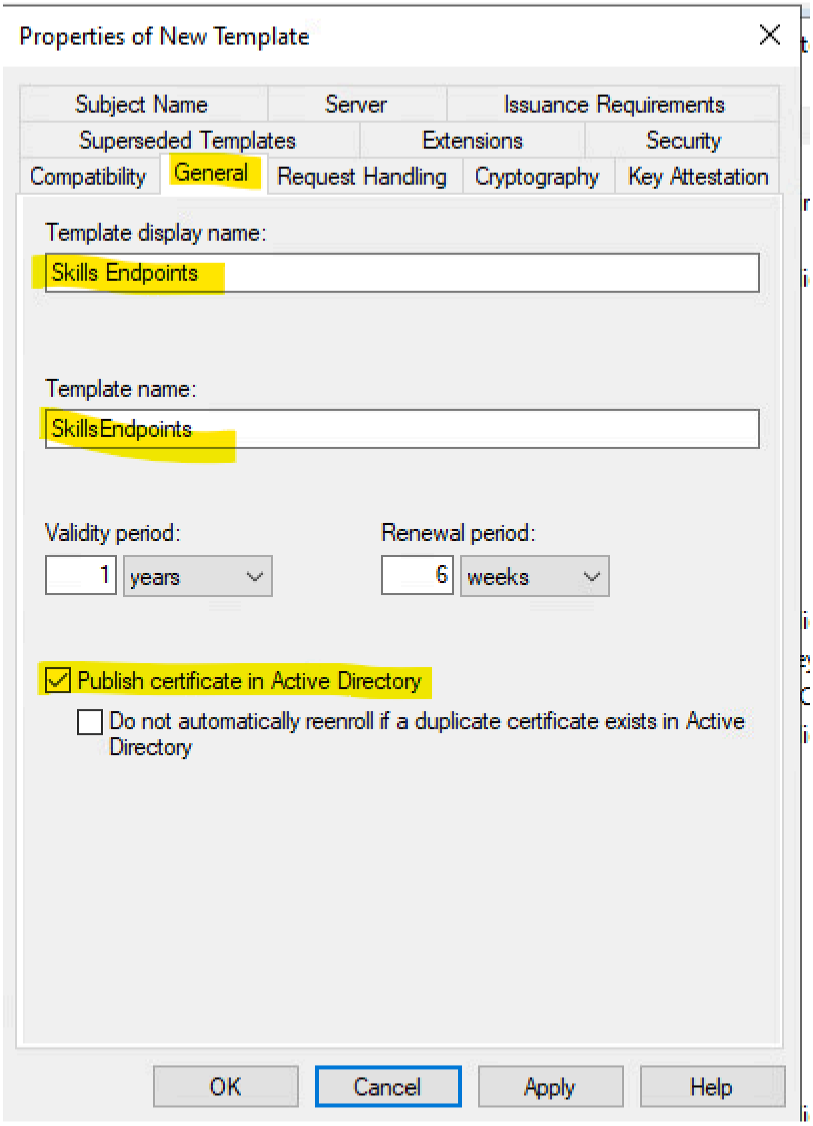
For special permissions or advanced settings, click Advanced.

6.2 Skills Endpoints



Certificate Templates (DC.skillsn

Template Display Name	Schema Version	Version	Intended Pur
Code Signing	1	3.1	
Computer	1	5.1	
Cross Certification Au		105.0	
Directory Email Repli		115.0	Directory Ser
Domain Controller		4.1	
Domain Controller Au		110.0	Client Auther
EFS Recovery Agent		6.1	
Enrollment Agent		4.1	
Enrollment Agent (Computer)	1	5.1	
Exchange Enrollment Agent (Offline requ...	1	4.1	



Properties of New Template

Template display name: Skills Endpoints

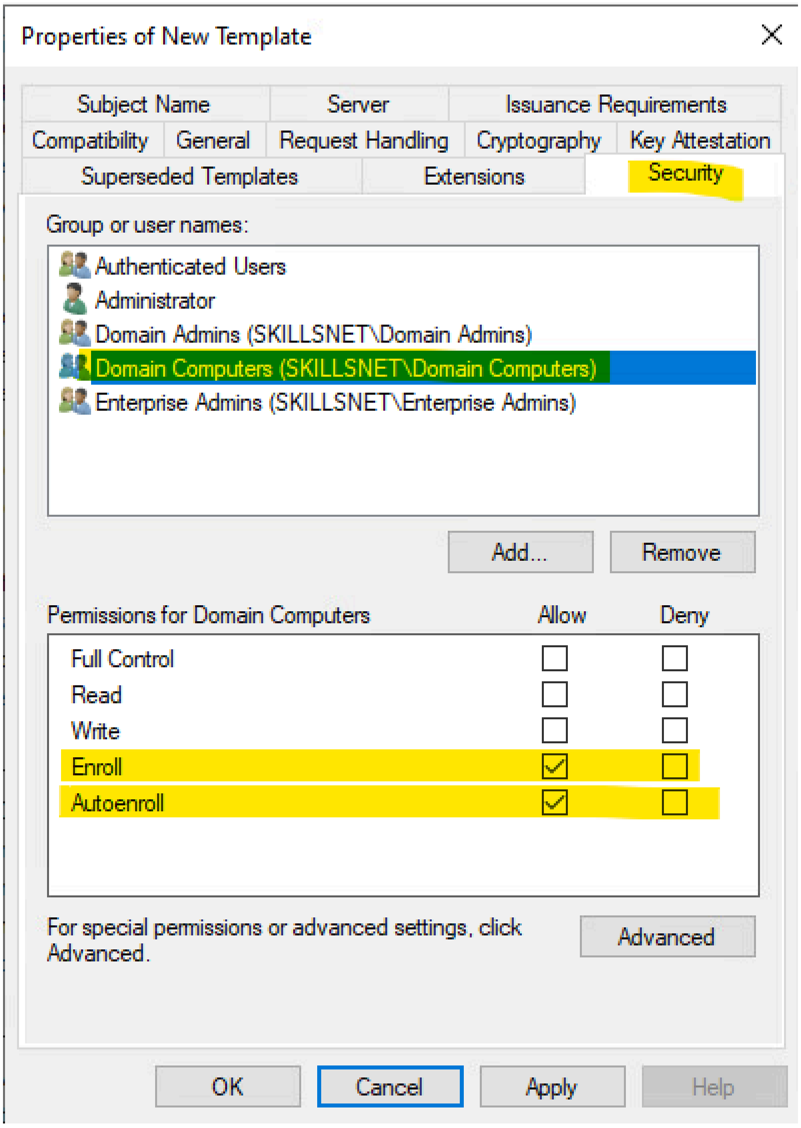
Template name: SkillsEndpoints

Validity period: 1 years

Renewal period: 6 weeks

☑ Publish certificate in Active Directory

□ Do not automatically reenroll if a duplicate certificate exists in Active Directory



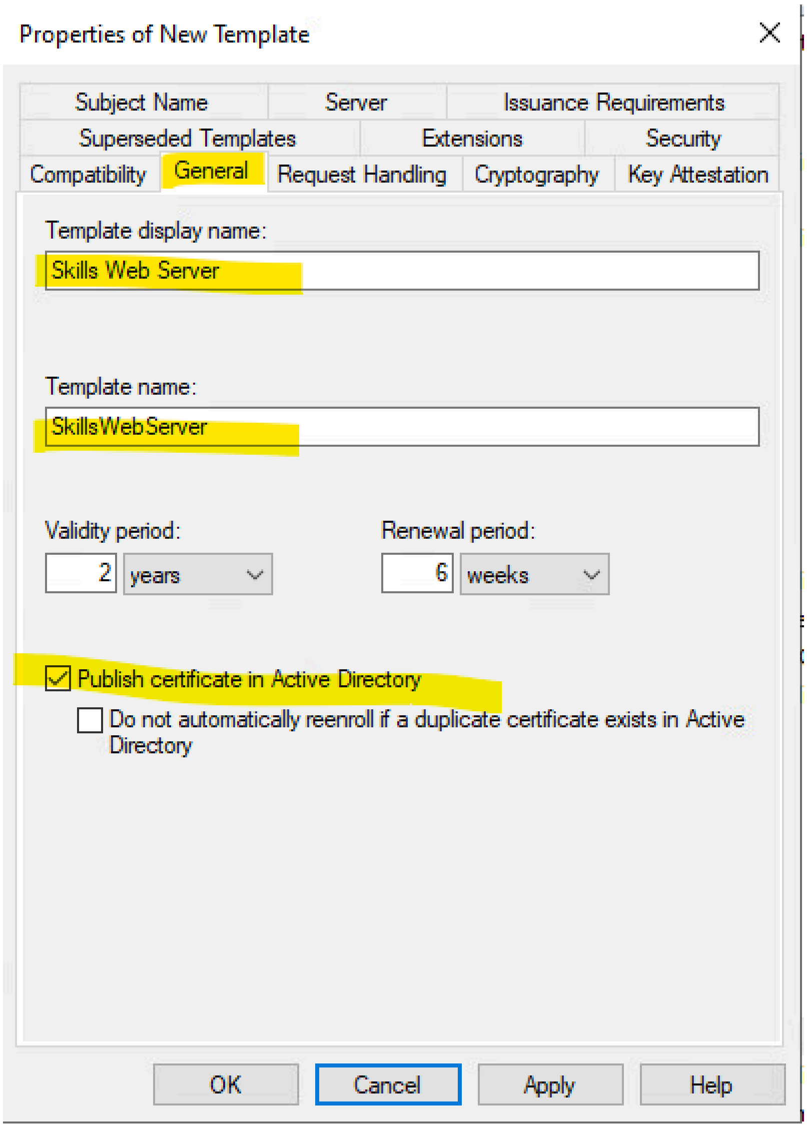
Group or user names:

- Authenticated Users
- Administrator
- Domain Admins (SKILLSNET\Domain Admins)
- Domain Computers (SKILLSNET\Domain Computers)
- Enterprise Admins (SKILLSNET\Enterprise Admins)

Permissions for Domain Computers	Allow	Deny
Full Control	□	□
Read	□	□
Write	□	□
Enroll	☑	□
Autoenroll	☑	□

For special permissions or advanced settings, click Advanced.

6.3. Skills Web Servers



Template display name: Skills Web Server

Template name: SkillsWebServer

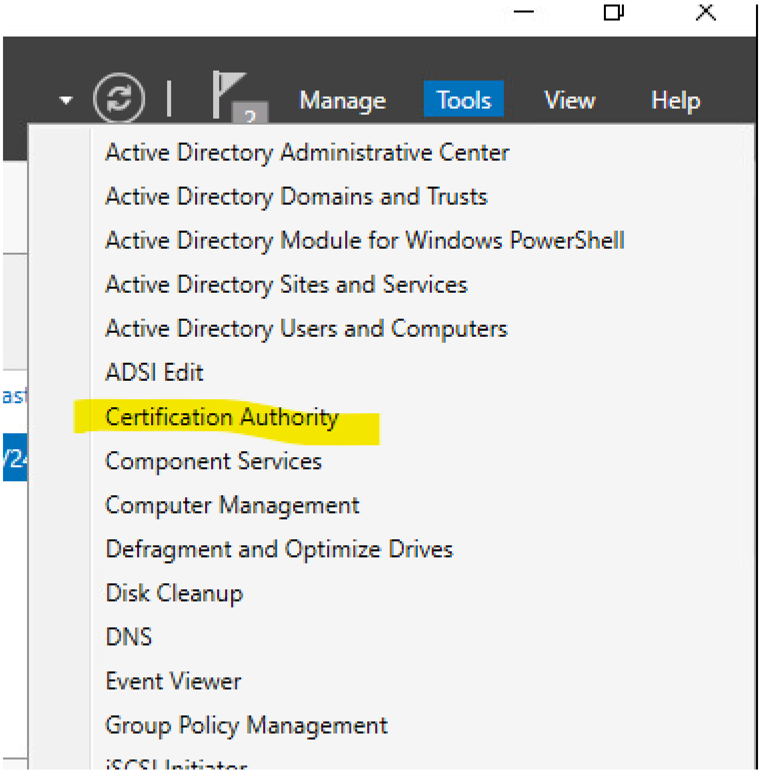
Validity period: 2 years

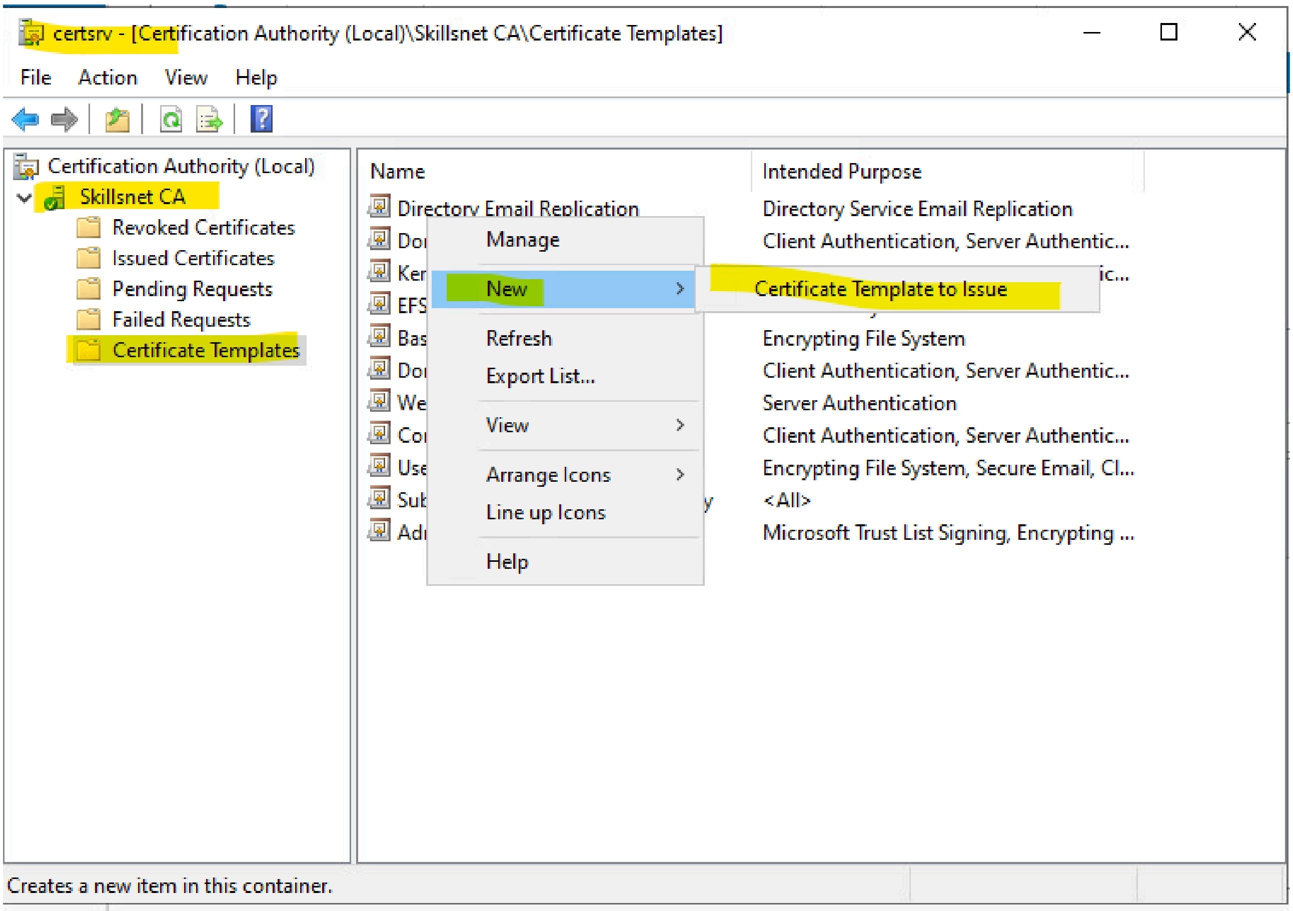
Renewal period: 6 weeks

☑ Publish certificate in Active Directory

□ Do not automatically reenroll if a duplicate certificate exists in Active Directory

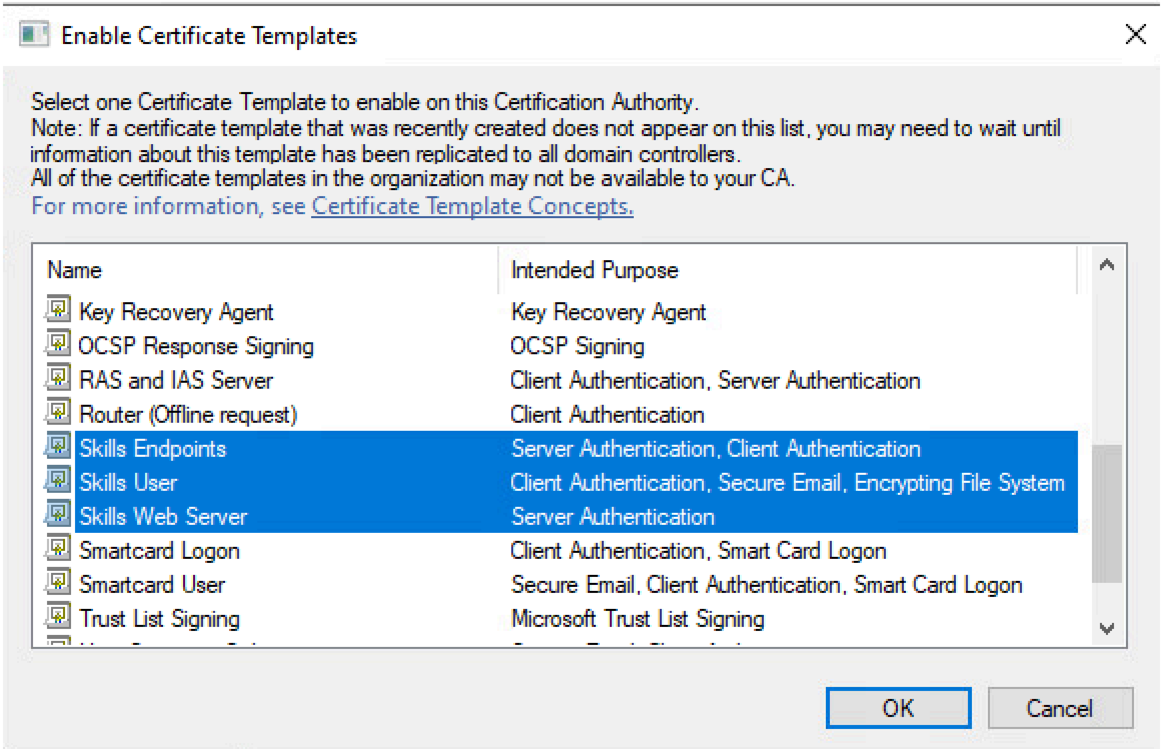
PUBLISH


Manage
Tools
View
Help
Active Directory Administrative Center
Active Directory Domains and Trusts
Active Directory Module for Windows PowerShell
Active Directory Sites and Services
Active Directory Users and Computers
ADSI Edit
Certification Authority
Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
DNS
Event Viewer
Group Policy Management
iSCSI Initiator


certsrv - [Certification Authority (Local)\Skillsnet CA\Certificate Templates]

File
Action
View
Help
Certification Authority (Local)
Skillsnet CA
Revoked Certificates
Issued Certificates
Pending Requests
Failed Requests
Certificate Templates
Name
Intended Purpose
Directory Email Replication
Directory Service Email Replication
Client Authentication, Server Authentic...
Encrypting File System
Client Authentication, Server Authentic...
Server Authentication
Client Authentication, Server Authentic...
Encrypting File System, Secure Email, Cl...
<All>
Microsoft Trust List Signing, Encrypting ...
Manage
New
Certificate Template to Issue
Refresh
Export List...
View
Arrange Icons
Line up Icons
Help

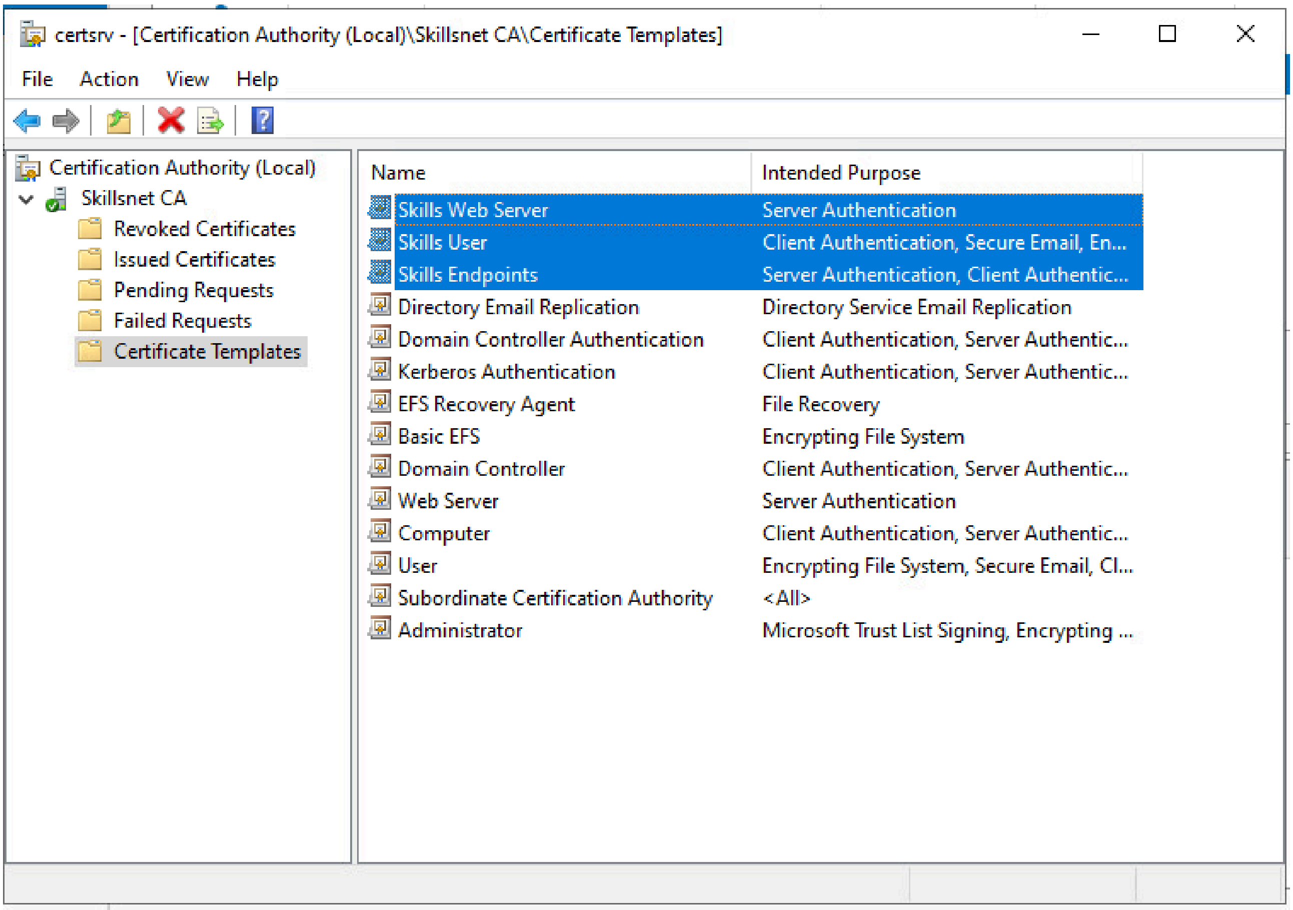
Creates a new item in this container.



Enable Certificate Templates

Select one Certificate Template to enable on this Certification Authority.
Note: If a certificate template that was recently created does not appear on this list, you may need to wait until information about this template has been replicated to all domain controllers.
All of the certificate templates in the organization may not be available to your CA.
For more information, see Certificate Template Concepts.

Name	Intended Purpose
Key Recovery Agent	Key Recovery Agent
OCSP Response Signing	OCSP Signing
RAS and IAS Server	Client Authentication, Server Authentication
Router (Offline request)	Client Authentication
Skills Endpoints	Server Authentication, Client Authentication
Skills User	Client Authentication, Secure Email, Encrypting File System
Skills Web Server	Server Authentication
Smartcard Logon	Client Authentication, Smart Card Logon
Smartcard User	Secure Email, Client Authentication, Smart Card Logon
Trust List Signing	Microsoft Trust List Signing



certsrv - [Certification Authority (Local)\Skillsnet CA\Certificate Templates]

Name	Intended Purpose
Skills Web Server	Server Authentication
Skills User	Client Authentication, Secure Email, En...
Skills Endpoints	Server Authentication, Client Authentic...
Directory Email Replication	Directory Service Email Replication
Domain Controller Authentication	Client Authentication, Server Authentic...
Kerberos Authentication	Client Authentication, Server Authentic...
EFS Recovery Agent	File Recovery
Basic EFS	Encrypting File System
Domain Controller	Client Authentication, Server Authentic...
Web Server	Server Authentication
Computer	Client Authentication, Server Authentic...
User	Encrypting File System, Secure Email, Cl...
Subordinate Certification Authority	<All>
Administrator	Microsoft Trust List Signing, Encrypting ...

Part 6: Enable Autoenrollment via Group Policy

1. **Open GPMC** on DC.

2. Create/Edit a GPO linked to the domain.

Navigate:

pgsql
CopiarEditar

```
User Configuration > Policies > Windows Settings > Security Settings > Public Key Policies
```

3.
    - Enable **Autoenrollment** for users.

4. Repeat under **Computer Configuration** for computers.

Backups

DC Backups - Task1: Backup script

1. Create a PowerShell script and save it as **C:\Scripts\Backup.ps1**
2. The script must back up the following items:
    2.1. **C:\Backups\Users.csv** – A CSV file containing the full OU path and all key user attributes (e.g samAccountName, UPN, first name, last name, etc.)
    2.2. **C:\Backups\GPOs\** - A directory containing exports of all existing Group Policy Objects
    2.3. **C:\Backups\Web\<site>** - A directory containing web root folders served by the IIS web servers on skillsnet.dk, organized using the corresponding DNS name of each site.
3. Implement email notification functionality within the script. It must send a success or failure report to: support@nordicbackup.net *(You may choose the message format)*
4. Configure Windows Server Backup to perform scheduled backups of the entire C:\Backups directory to an iSCSI target hosted on SRV2

5. Ensure the backup is scheduled to run **daily at 02:00**

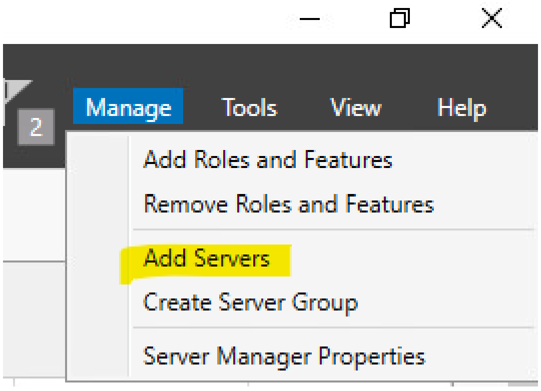
RODC

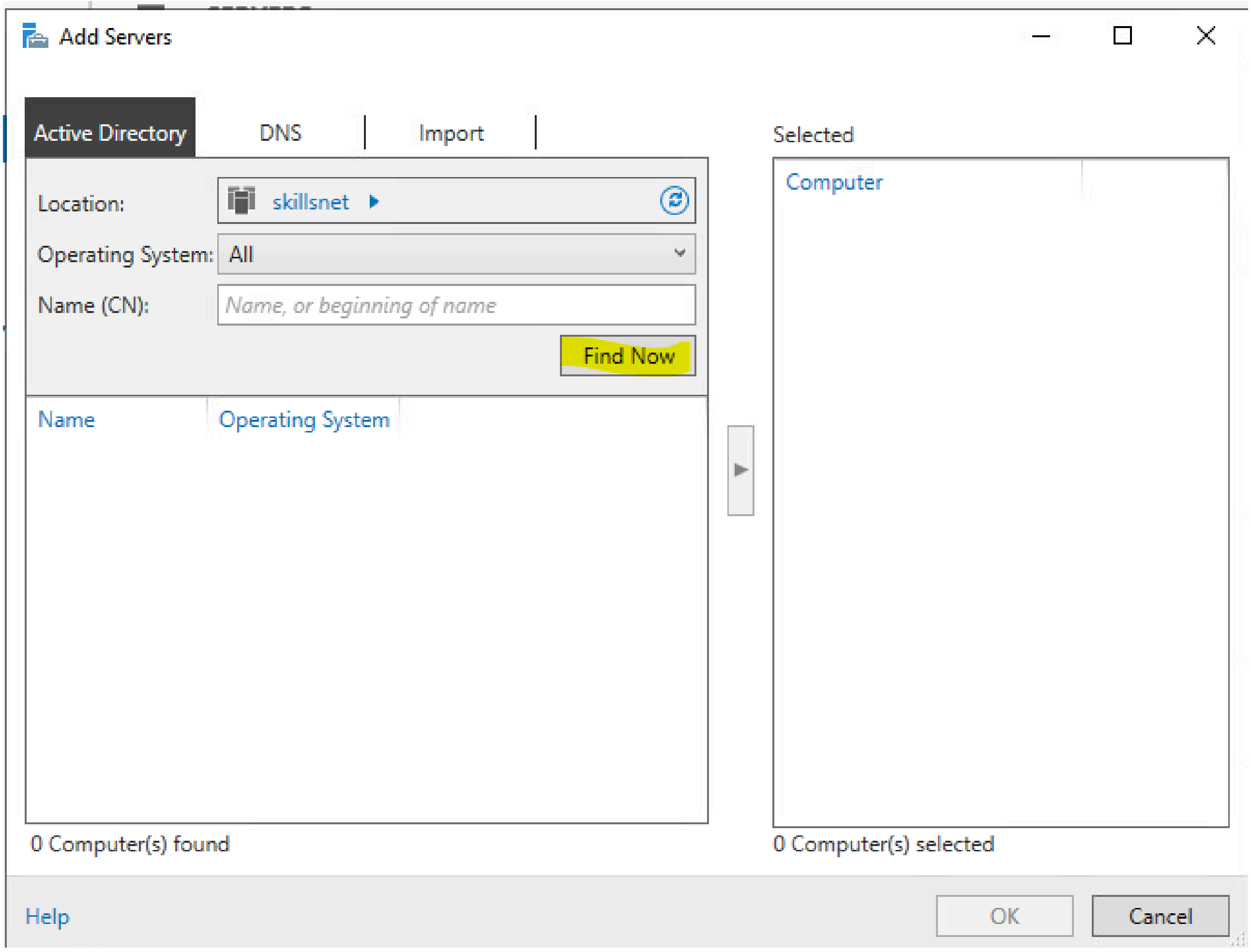
Role: Read-Only Domain Controller to provide authentication to Aalborg site.

RODC- Task1: Promote as RODC

Task: Promote as RODC on domain **skillsnet.dk**

Add the management of this server to DC. In DC machine:





Add Servers

Active Directory | DNS | Import

Location: skillsnet

Operating System: All

Name (CN): Name, or beginning of name

Find Now

Name	Operating System

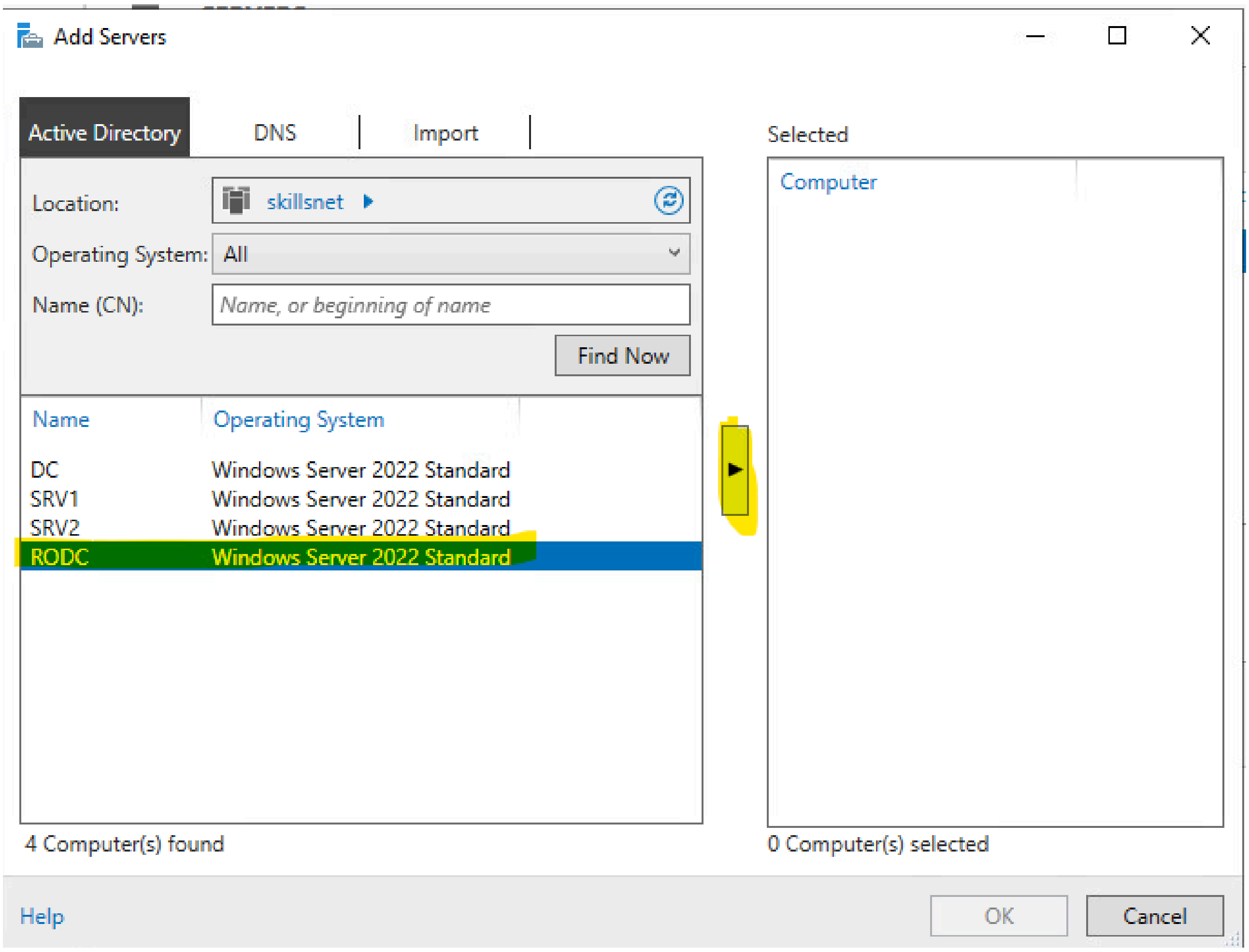
0 Computer(s) found

Selected

Computer

0 Computer(s) selected

Help | OK | Cancel



Location: skillsnet

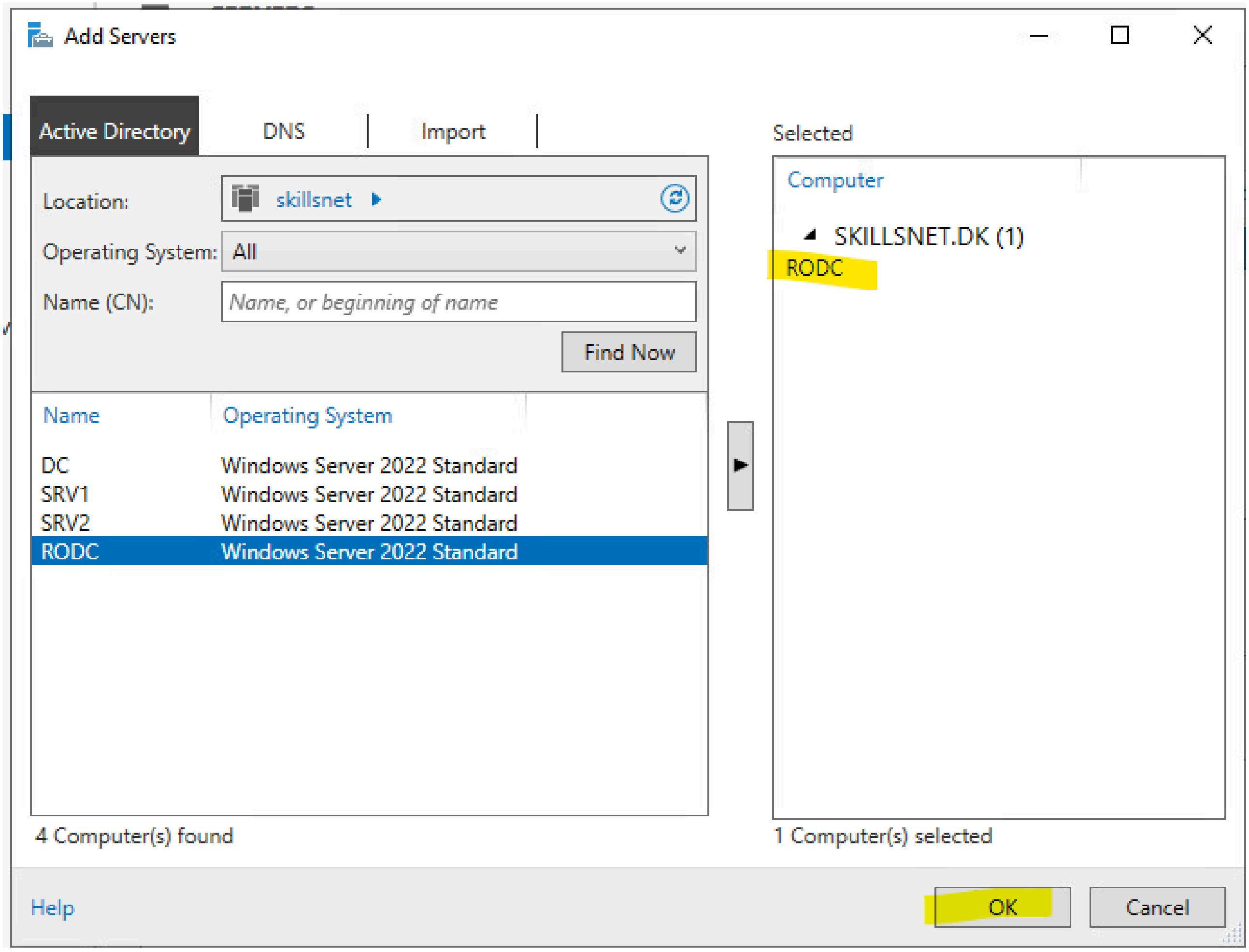
Operating System: All

Name (CN): Name, or beginning of name

Name	Operating System
DC	Windows Server 2022 Standard
SRV1	Windows Server 2022 Standard
SRV2	Windows Server 2022 Standard
RODC	Windows Server 2022 Standard

4 Computer(s) found

0 Computer(s) selected


Add Servers

Location: skillsnet

Operating System: All

Name (CN): Name, or beginning of name

Name	Operating System
DC	Windows Server 2022 Standard
SRV1	Windows Server 2022 Standard
SRV2	Windows Server 2022 Standard
RODC	Windows Server 2022 Standard

4 Computer(s) found

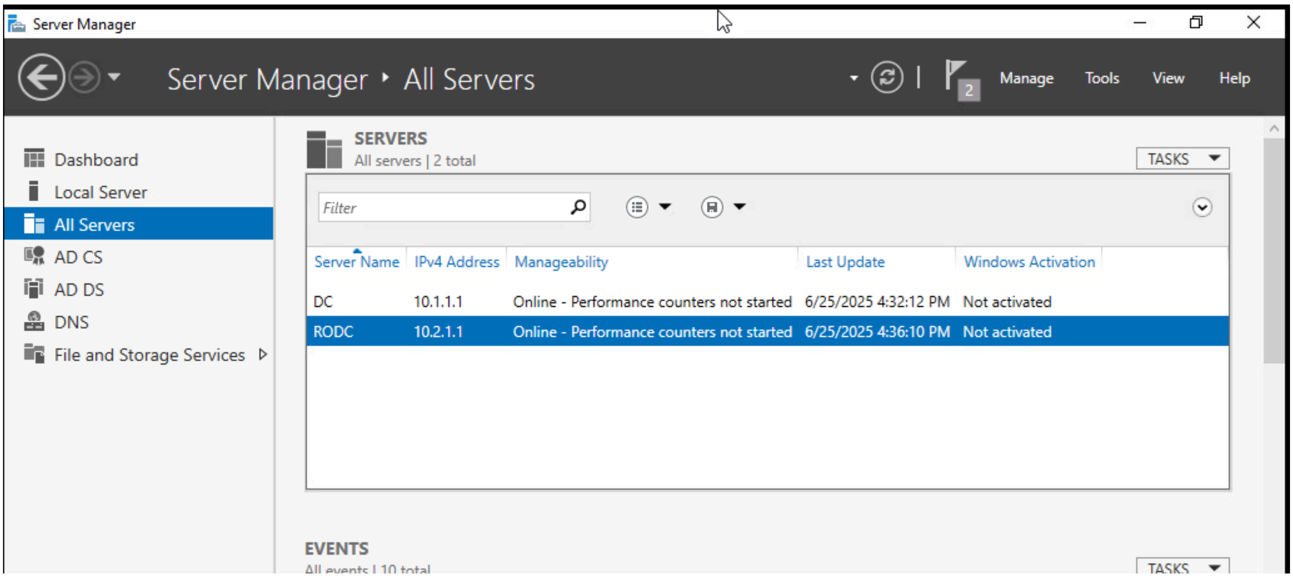
Selected

Computer

SKILLSNET.DK (1)

RODC

1 Computer(s) selected


Server Manager

Server Manager ▸ All Servers

SERVERS

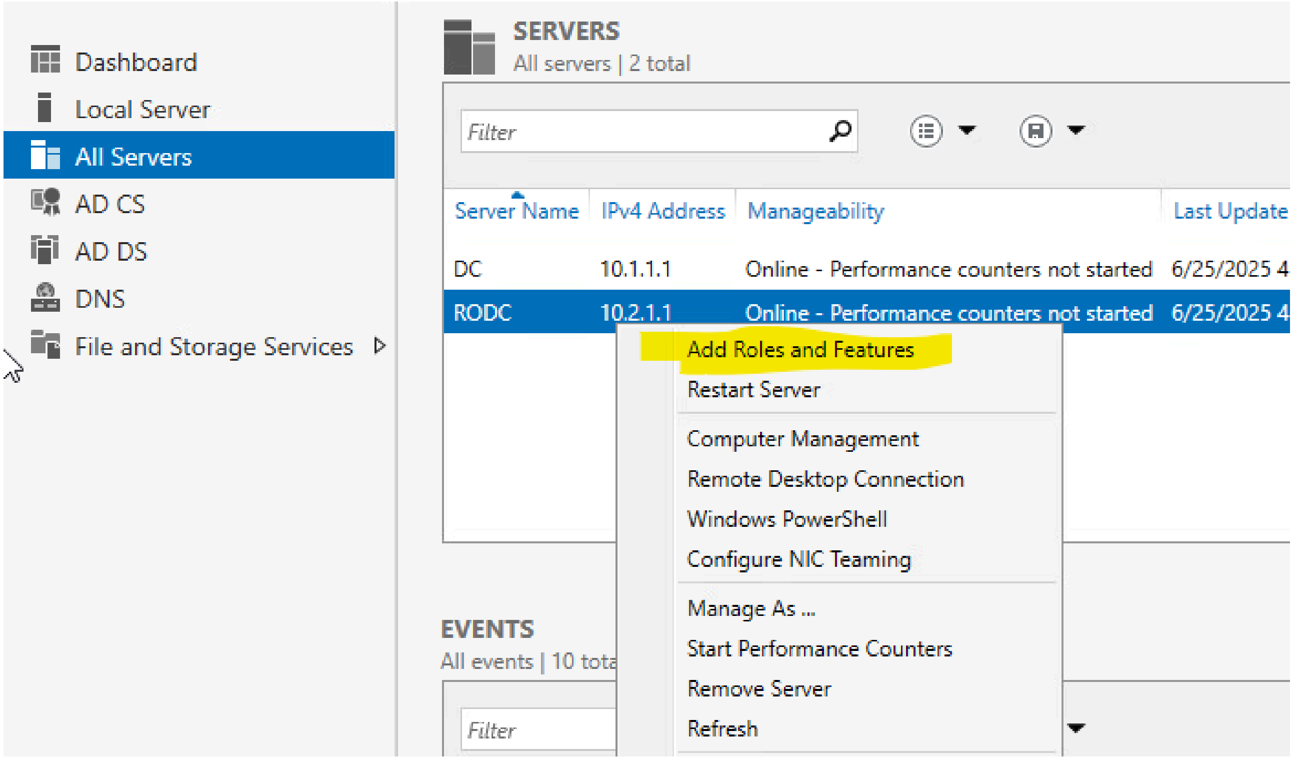
All servers | 2 total

Server Name	IPv4 Address	Manageability	Last Update	Windows Activation
DC	10.1.1.1	Online - Performance counters not started	6/25/2025 4:32:12 PM	Not activated
RODC	10.2.1.1	Online - Performance counters not started	6/25/2025 4:36:10 PM	Not activated

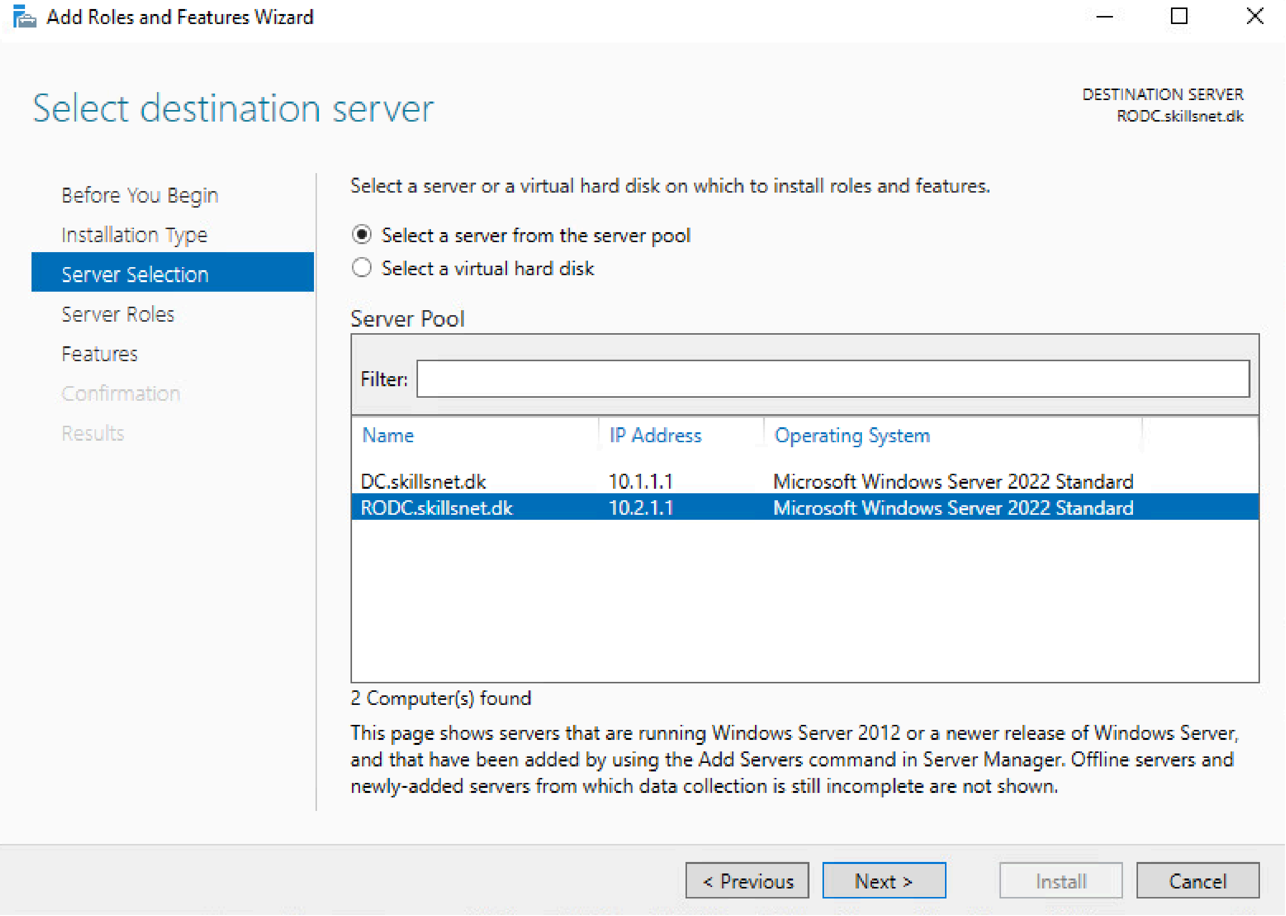
EVENTS

All events | 10 total

Install and configure ADDS



Server Name	IPv4 Address	Manageability	Last Update
DC	10.1.1.1	Online - Performance counters not started	6/25/2025 4
RODC	10.2.1.1	Online - Performance counters not started	6/25/2025 4



Select destination server

DESTINATION SERVER
RODC.skillsnet.dk

Select a server or a virtual hard disk on which to install roles and features.

● Select a server from the server pool

○ Select a virtual hard disk

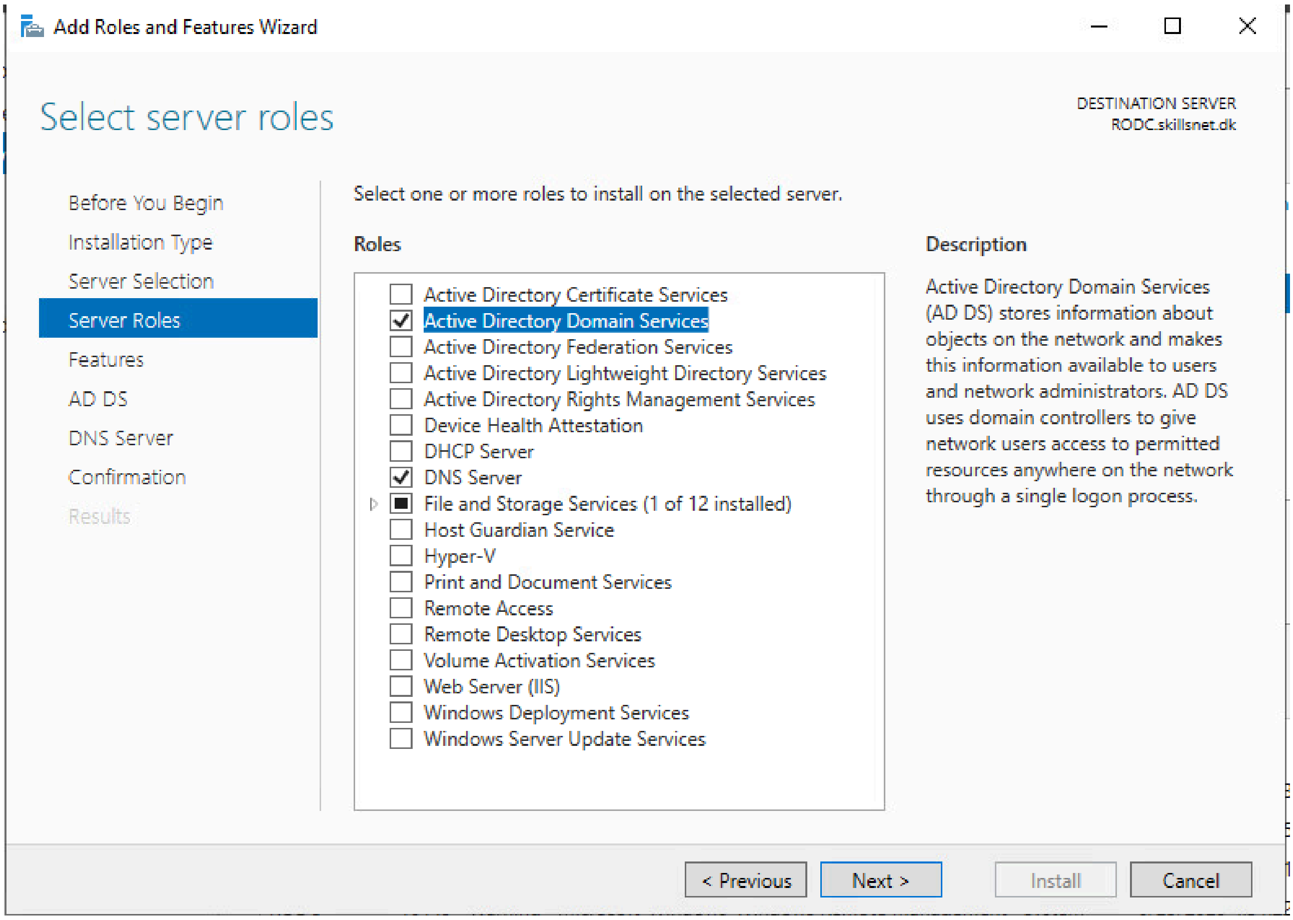
Server Pool

Filter:

Name	IP Address	Operating System
DC.skillsnet.dk	10.1.1.1	Microsoft Windows Server 2022 Standard
RODC.skillsnet.dk	10.2.1.1	Microsoft Windows Server 2022 Standard

2 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.



Select server roles

DESTINATION SERVER
RODC.skillsnet.dk

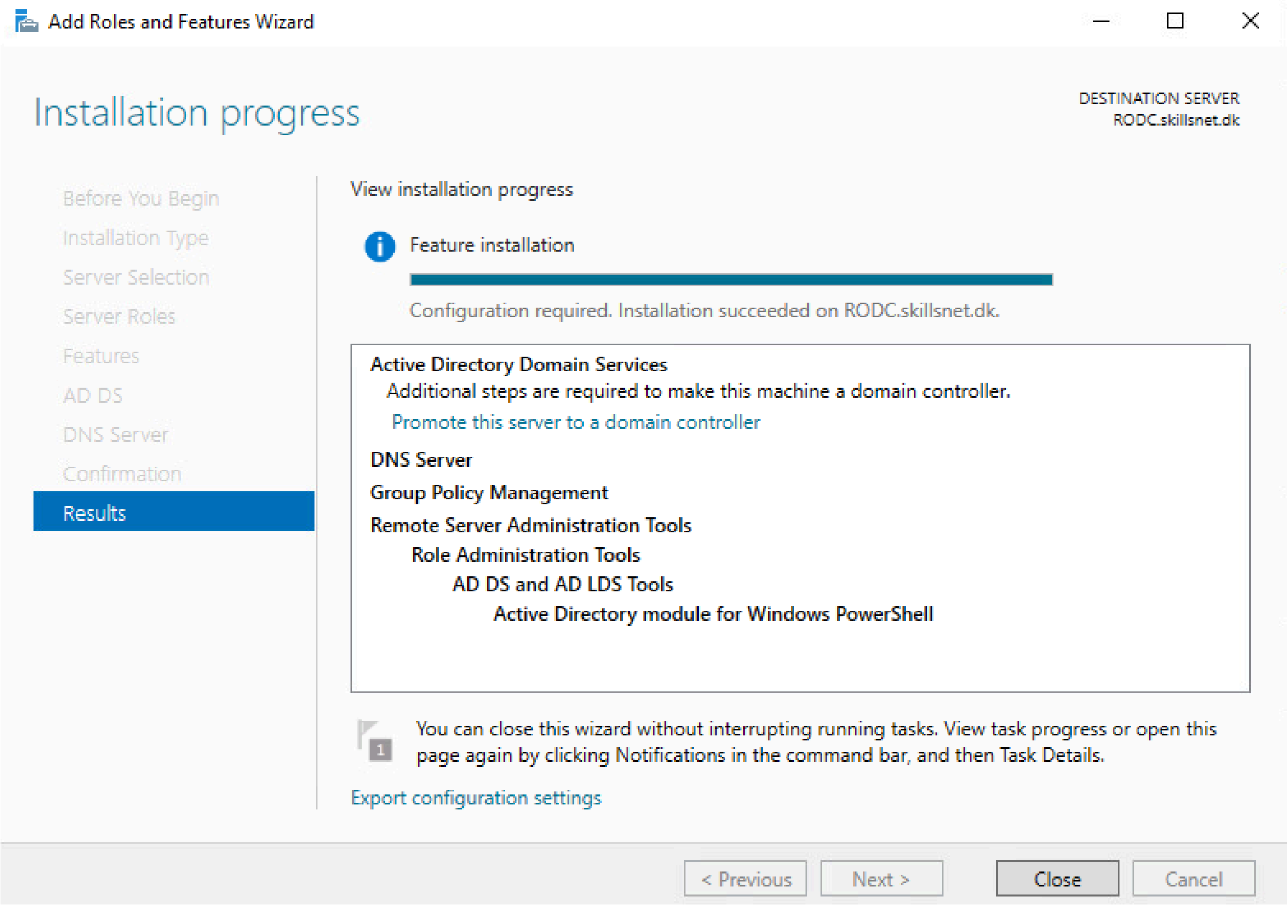
Select one or more roles to install on the selected server.

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
- ■ File and Storage Services (1 of 12 installed)
- □ Host Guardian Service
- □ Hyper-V
- □ Print and Document Services
- □ Remote Access
- □ Remote Desktop Services
- □ Volume Activation Services
- □ Web Server (IIS)
- □ Windows Deployment Services
- □ Windows Server Update Services

Description

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process.



Add Roles and Features Wizard

Installation progress

DESTINATION SERVER
RODC.skillsnet.dk

View installation progress

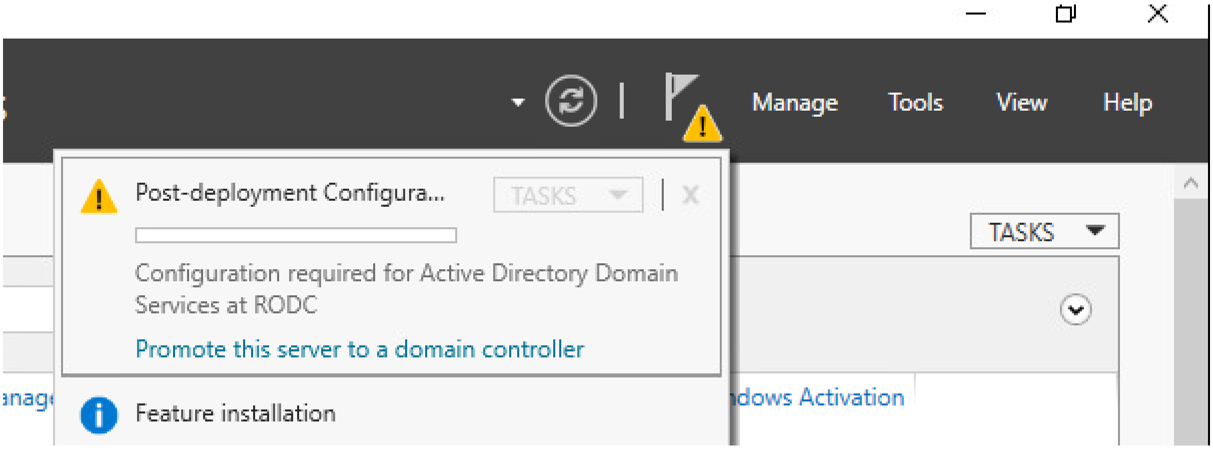
Feature installation

Configuration required. Installation succeeded on RODC.skillsnet.dk.

Active Directory Domain Services
Additional steps are required to make this machine a domain controller.
Promote this server to a domain controller
DNS Server
Group Policy Management
Remote Server Administration Tools
Role Administration Tools
AD DS and AD LDS Tools
Active Directory module for Windows PowerShell

You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

Export configuration settings

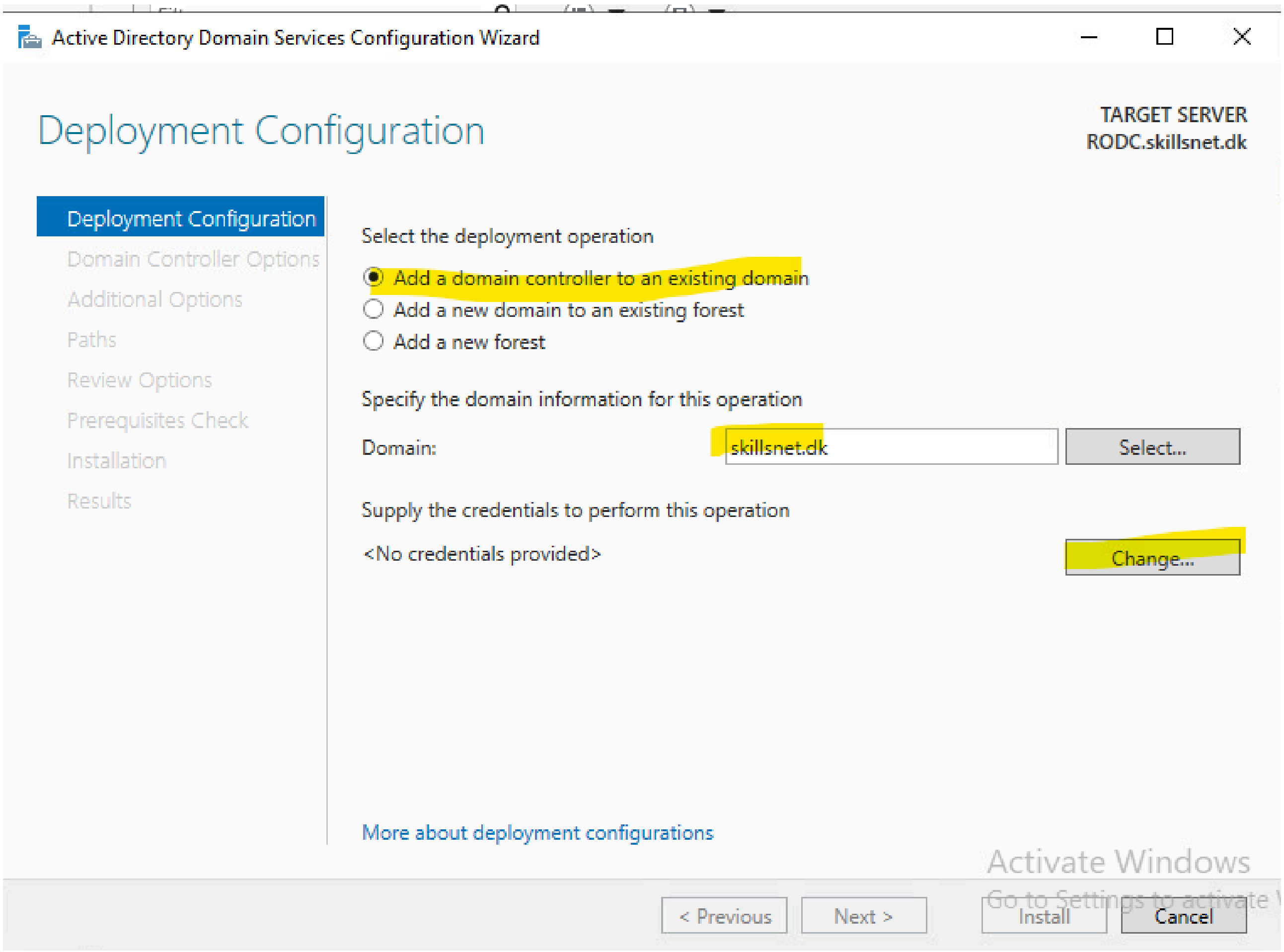


Post-deployment Configura...

Configuration required for Active Directory Domain Services at RODC

Promote this server to a domain controller

Feature installation



Active Directory Domain Services Configuration Wizard

Deployment Configuration

TARGET SERVER
RODC.skillsnet.dk

Select the deployment operation

● Add a domain controller to an existing domain
○ Add a new domain to an existing forest
○ Add a new forest

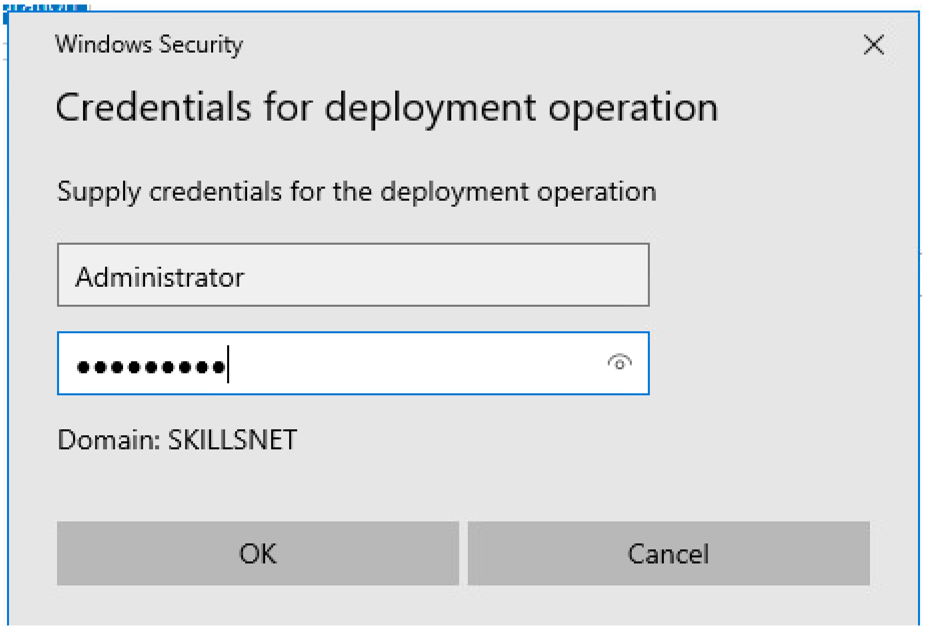
Specify the domain information for this operation

Domain: skillsnet.dk

Supply the credentials to perform this operation

<No credentials provided>

Change...
More about deployment configurations
Activate Windows
Go to Settings to activate W
< Previous
Next >
Install
Cancel



Windows Security

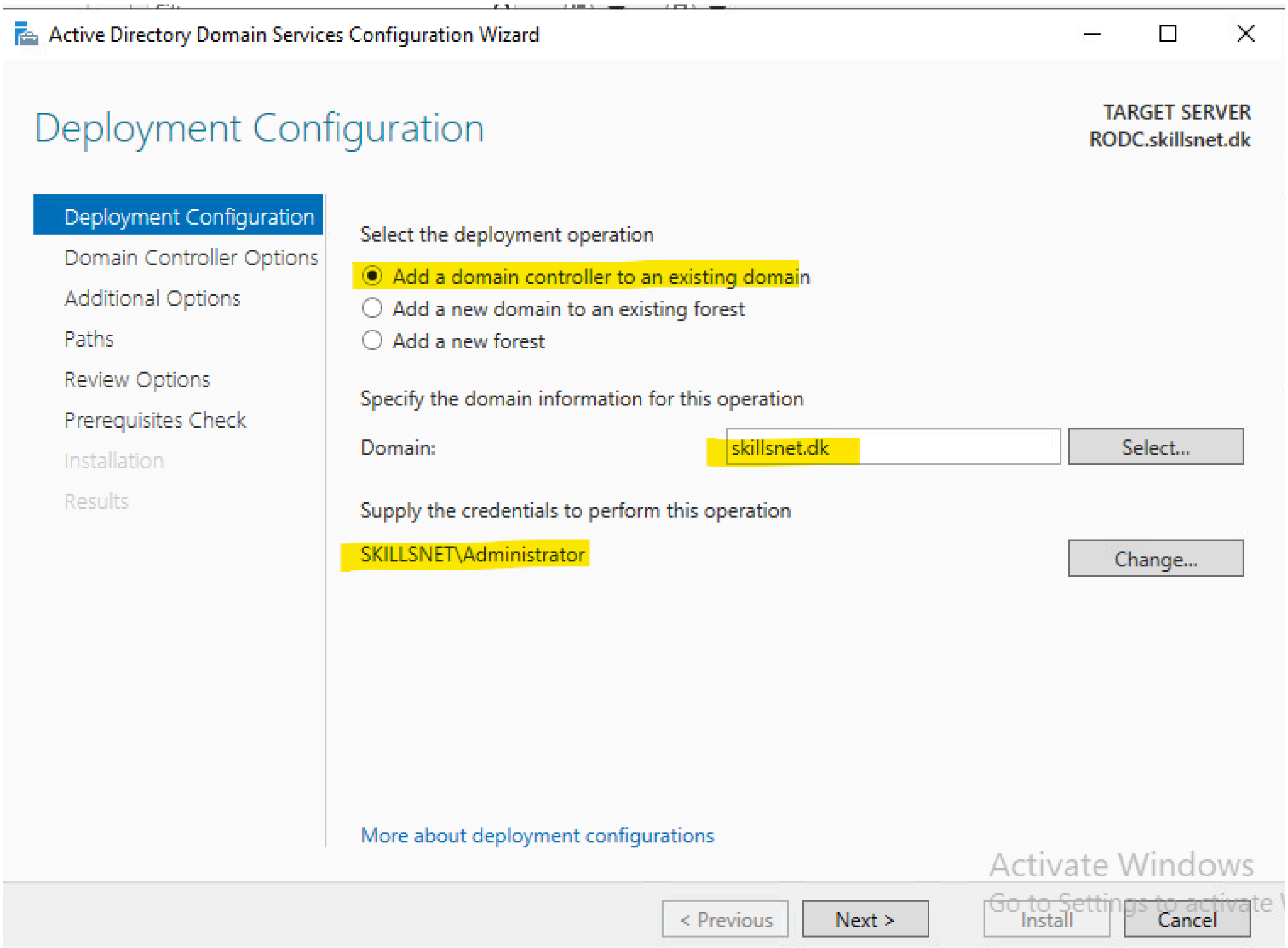
Credentials for deployment operation

Supply credentials for the deployment operation

Administrator

●●●●●●●●●●

Domain: SKILLSNET



Active Directory Domain Services Configuration Wizard

Deployment Configuration

TARGET SERVER
RODC.skillsnet.dk

Select the deployment operation

● Add a domain controller to an existing domain
○ Add a new domain to an existing forest
○ Add a new forest

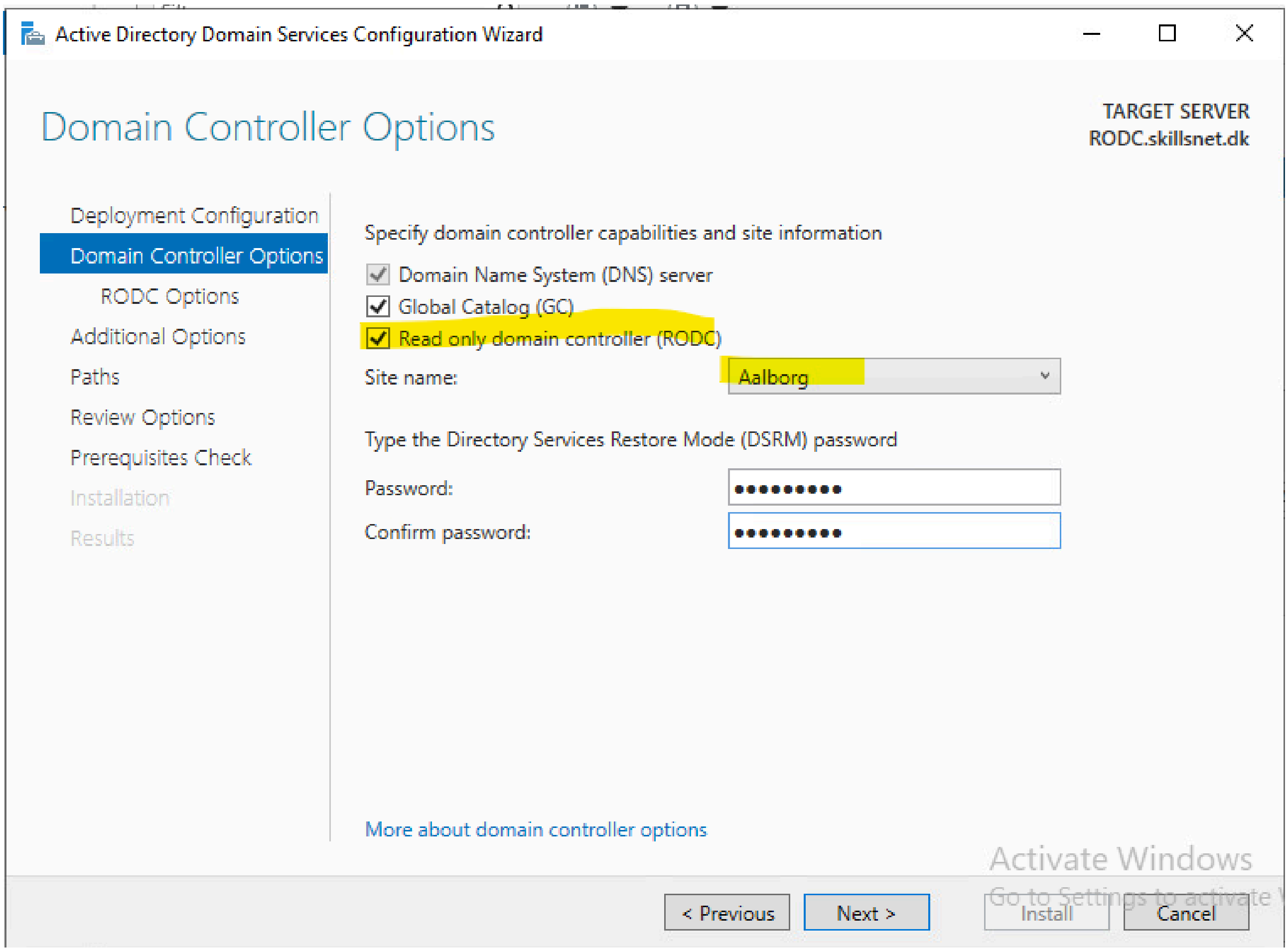
Specify the domain information for this operation

Domain: skillsnet.dk

Supply the credentials to perform this operation

SKILLSNET\Administrator

Select...
Change...
More about deployment configurations
Activate Windows
Go to Settings to activate W
< Previous
Next >
Install
Cancel



Active Directory Domain Services Configuration Wizard

Domain Controller Options

TARGET SERVER
RODC.skillsnet.dk

Specify domain controller capabilities and site information

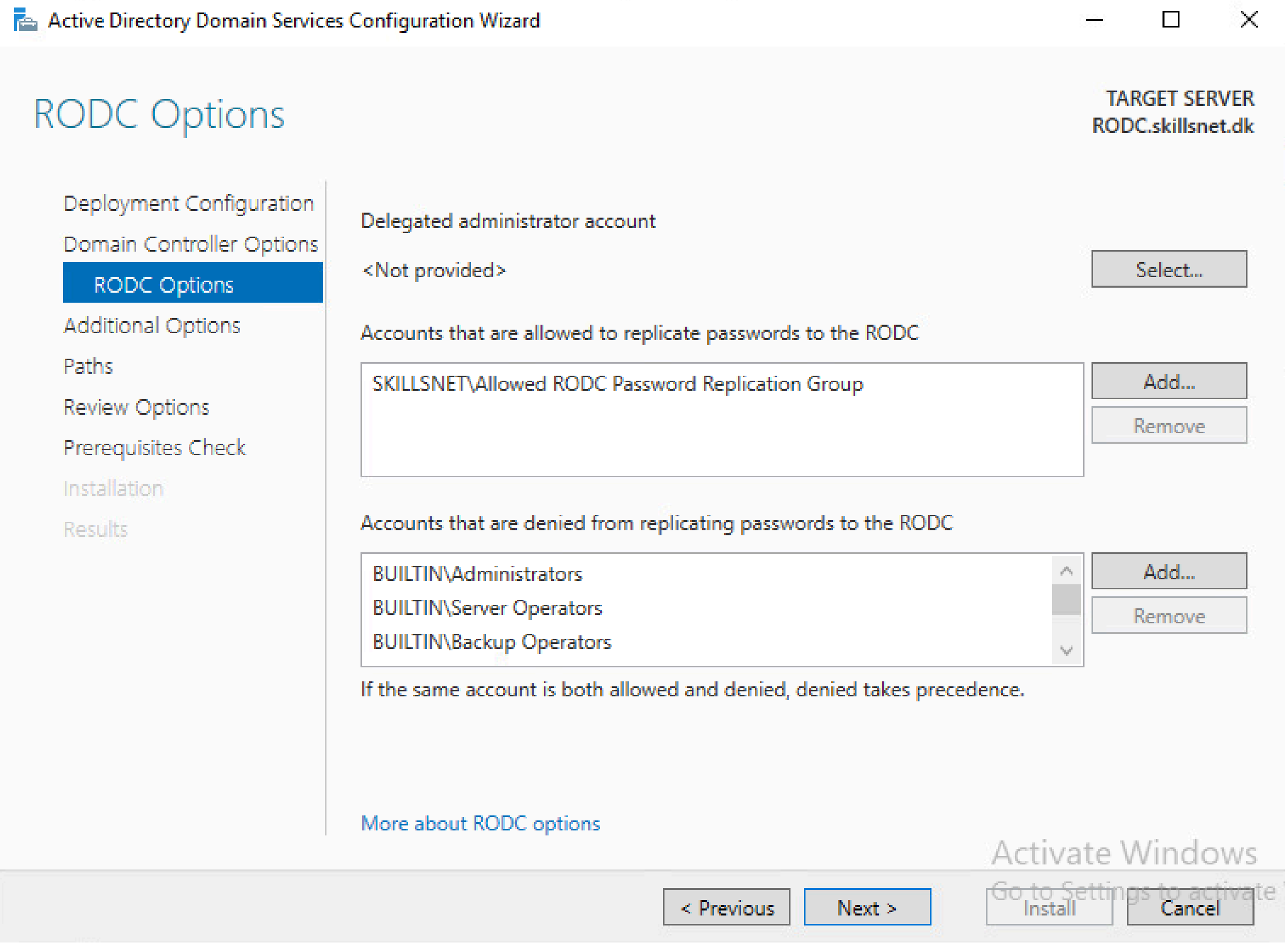
☑ Domain Name System (DNS) server
☑ Global Catalog (GC)
☑ Read only domain controller (RODC)

Site name: Aalborg

Type the Directory Services Restore Mode (DSRM) password

Password: ●●●●●●●●●
Confirm password: ●●●●●●●●●

More about domain controller options



Active Directory Domain Services Configuration Wizard

RODC Options

TARGET SERVER
RODC.skillsnet.dk

Delegated administrator account

<Not provided>

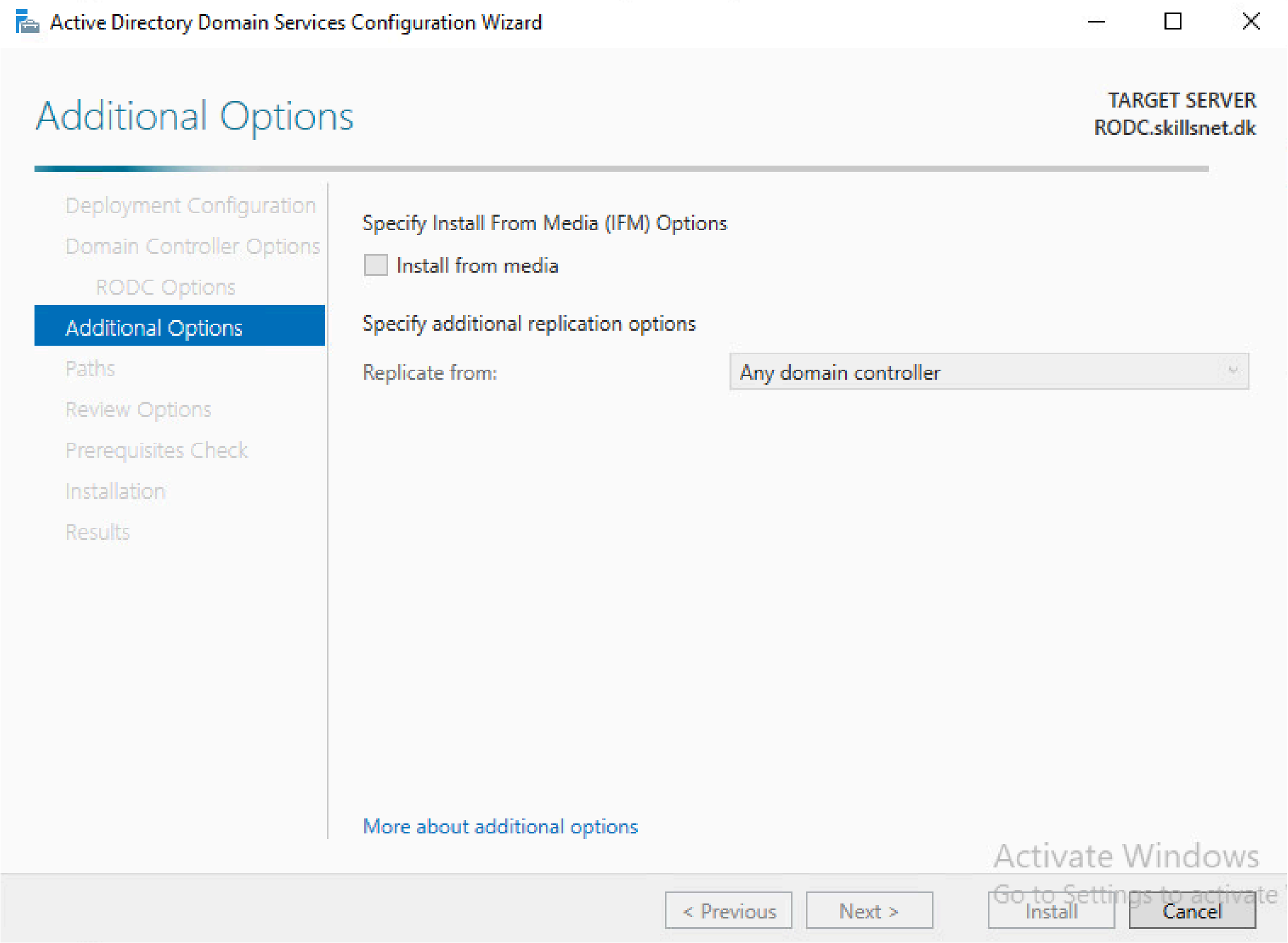
Accounts that are allowed to replicate passwords to the RODC

SKILLSNET\Allowed RODC Password Replication Group

Accounts that are denied from replicating passwords to the RODC

BUILTIN\Administrators
BUILTIN\Server Operators
BUILTIN\Backup Operators

If the same account is both allowed and denied, denied takes precedence.



Active Directory Domain Services Configuration Wizard

Additional Options

TARGET SERVER
RODC.skillsnet.dk

Specify Install From Media (IFM) Options

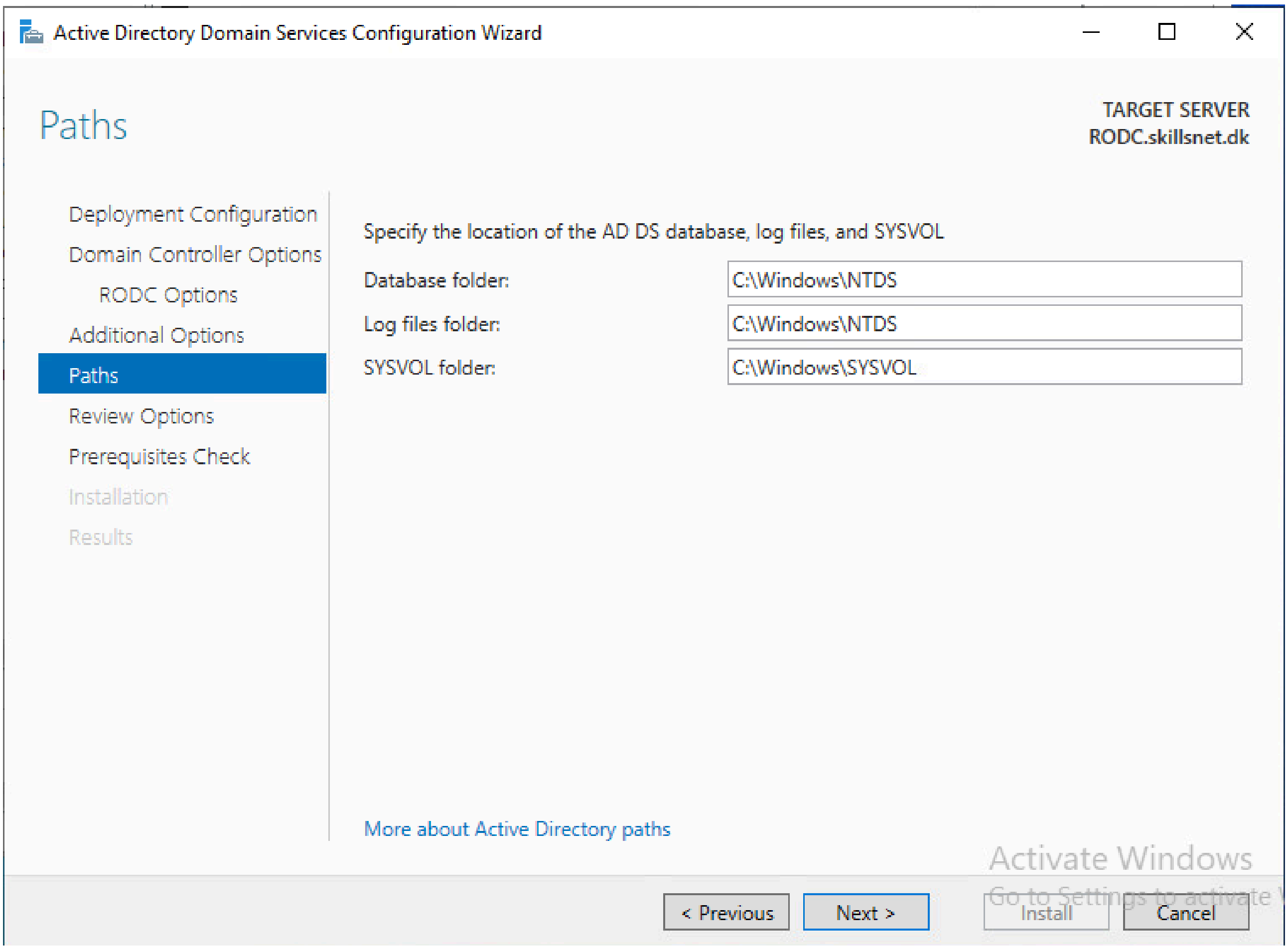
□ Install from media

Specify additional replication options

Replicate from: Any domain controller

More about additional options

Activate Windows
Go to Settings to activate



Active Directory Domain Services Configuration Wizard

Paths

TARGET SERVER
RODC.skillsnet.dk

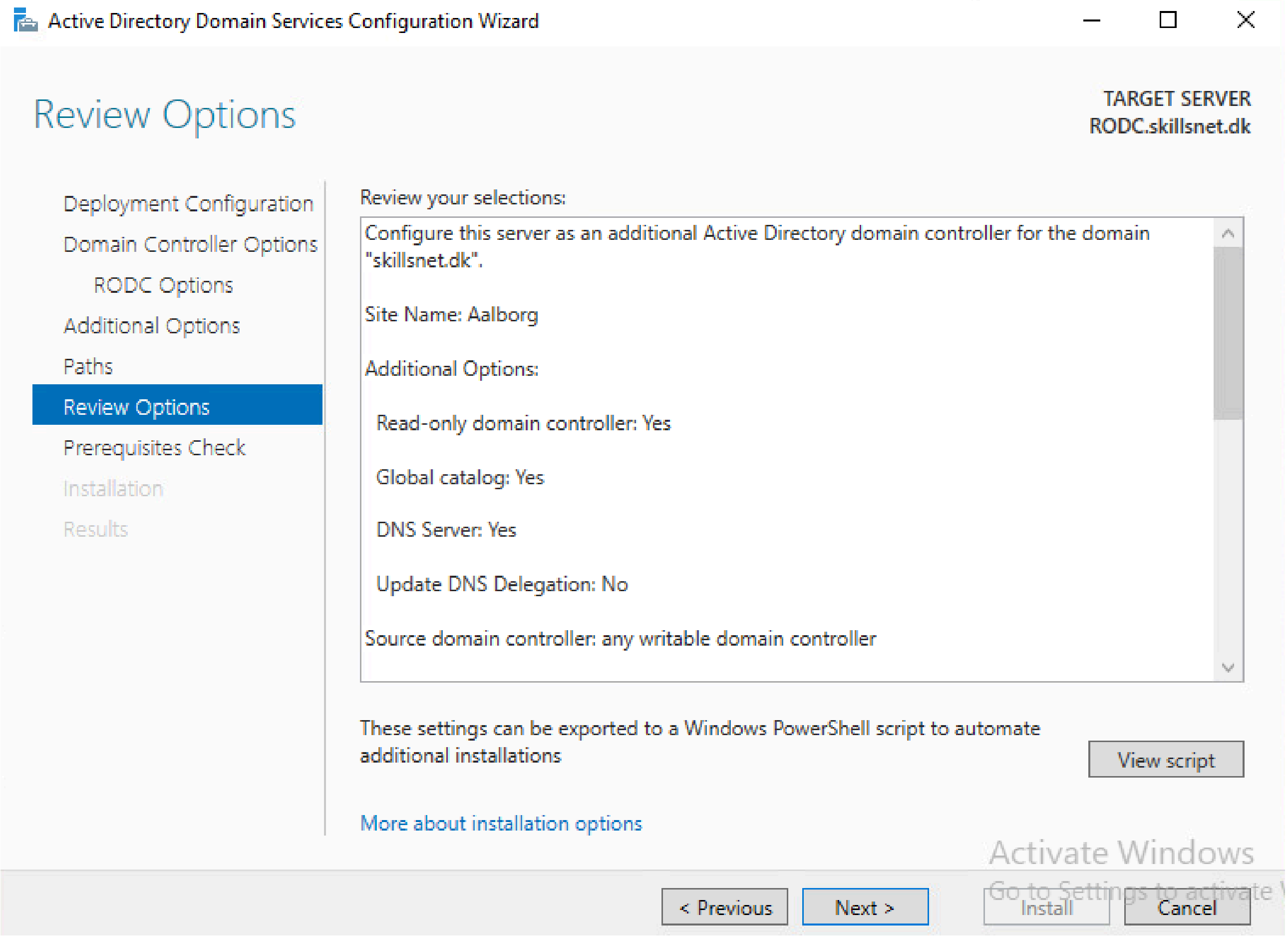
Specify the location of the AD DS database, log files, and SYSVOL

Database folder: C:\Windows\NTDS

Log files folder: C:\Windows\NTDS

SYSVOL folder: C:\Windows\SYSVOL

More about Active Directory paths


Active Directory Domain Services Configuration Wizard

Review Options

TARGET SERVER
RODC.skillsnet.dk

Review your selections:

Configure this server as an additional Active Directory domain controller for the domain "skillsnet.dk".

Site Name: Aalborg

Additional Options:

Read-only domain controller: Yes

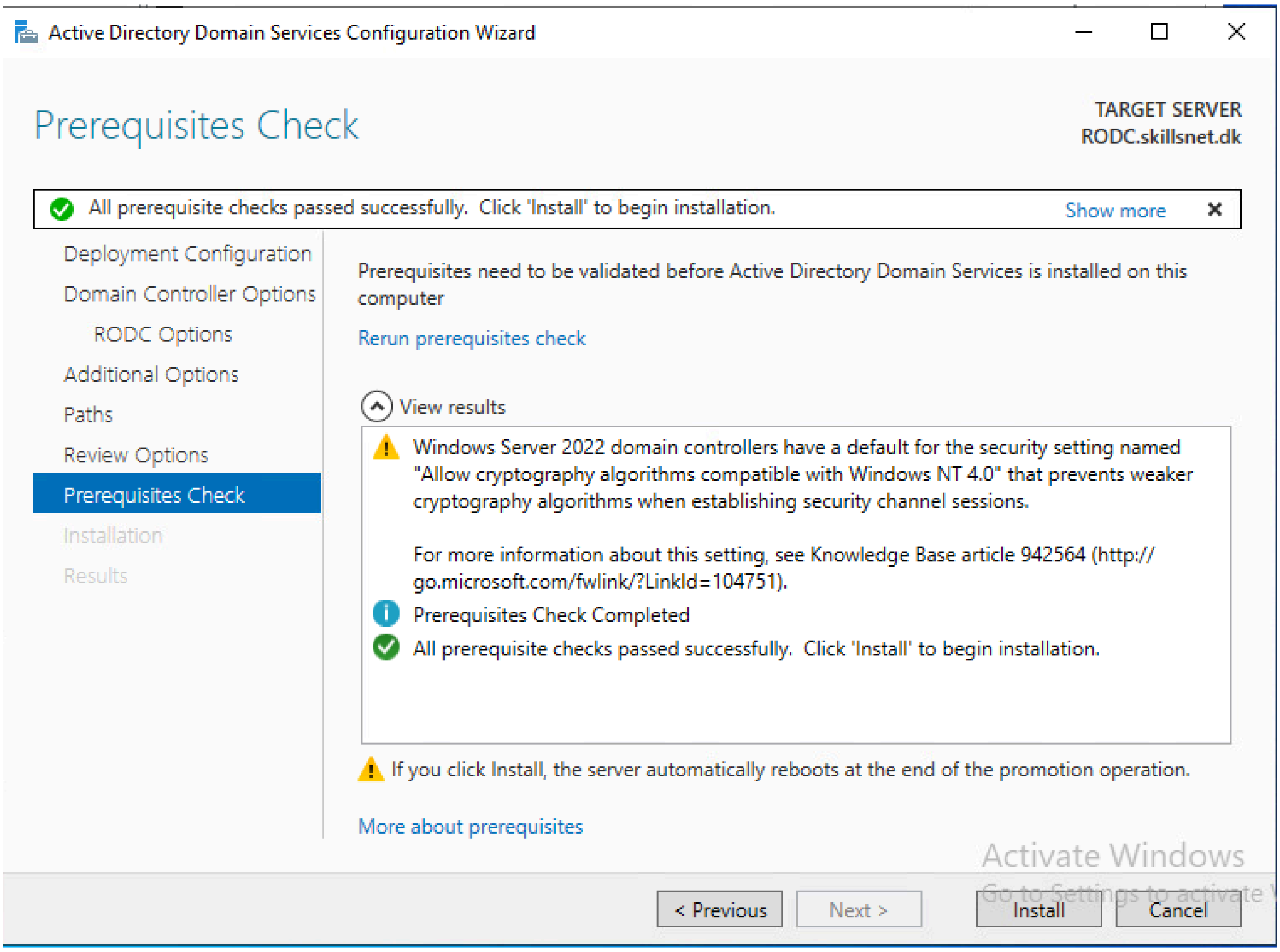
Global catalog: Yes

DNS Server: Yes

Update DNS Delegation: No

Source domain controller: any writable domain controller

These settings can be exported to a Windows PowerShell script to automate additional installations



Prerequisites Check

TARGET SERVER
RODC.skillsnet.dk

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation. Show more ✖

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

Rerun prerequisites check

View results

⚠ Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

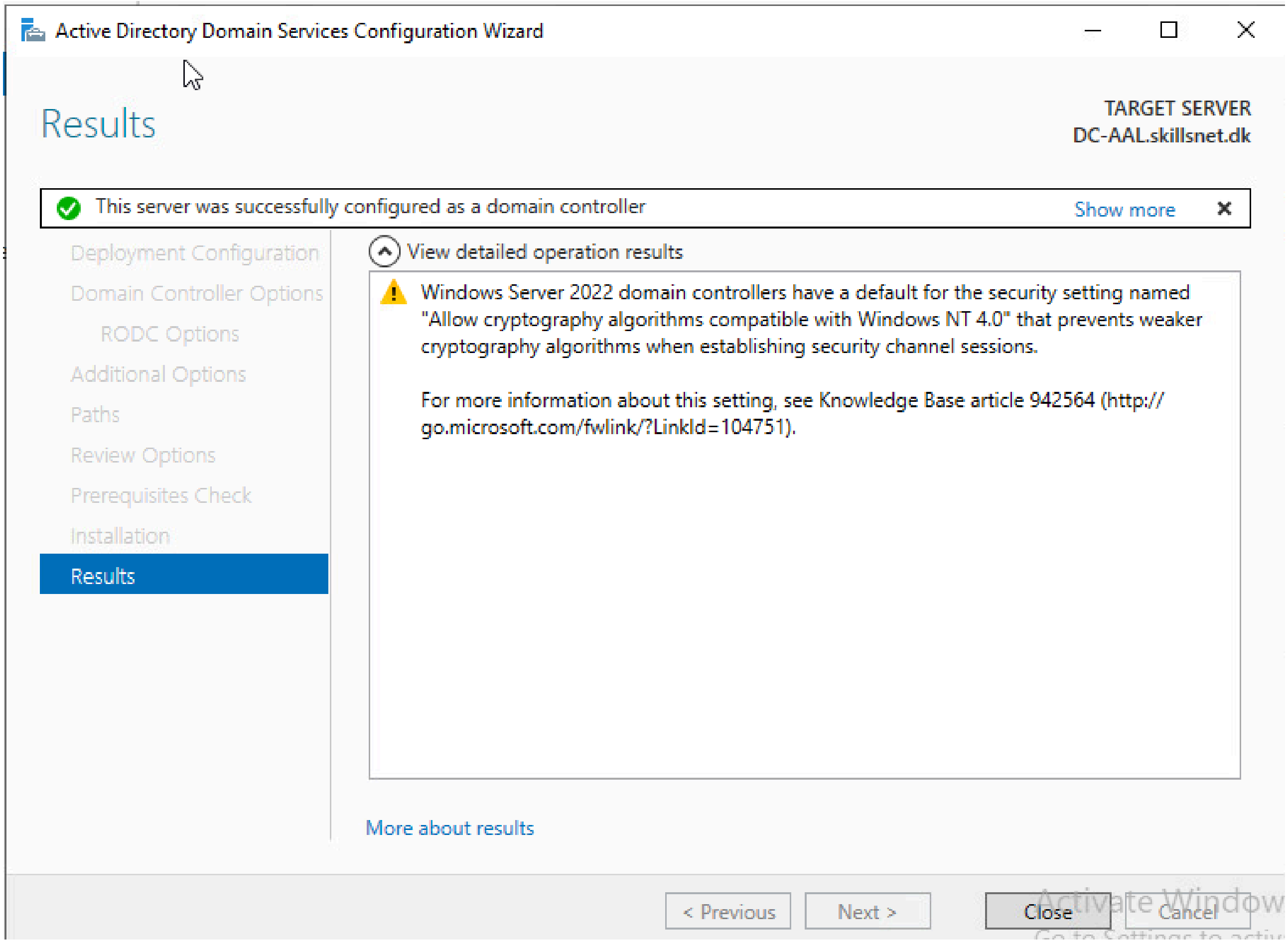
ℹ Prerequisites Check Completed

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation.

⚠ If you click Install, the server automatically reboots at the end of the promotion operation.

More about prerequisites

Problems with RODC, many errors. Reinstalled as DC-AAL



Results

TARGET SERVER
DC-AAL.skillsnet.dk

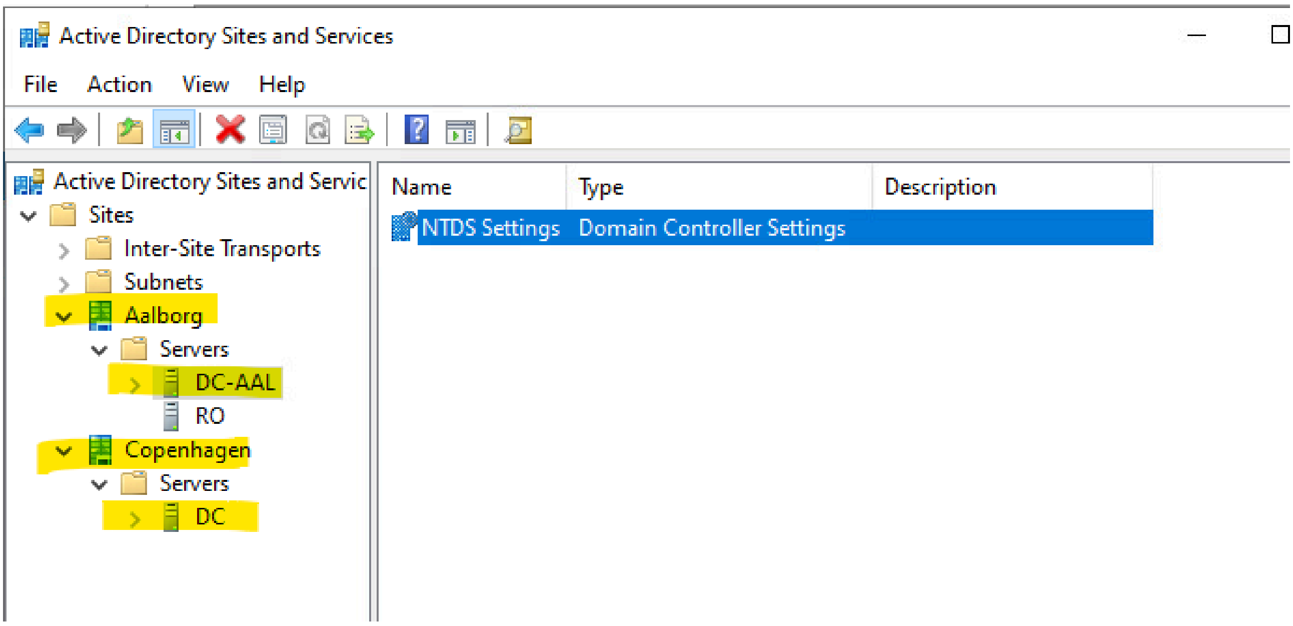
This server was successfully configured as a domain controller

View detailed operation results

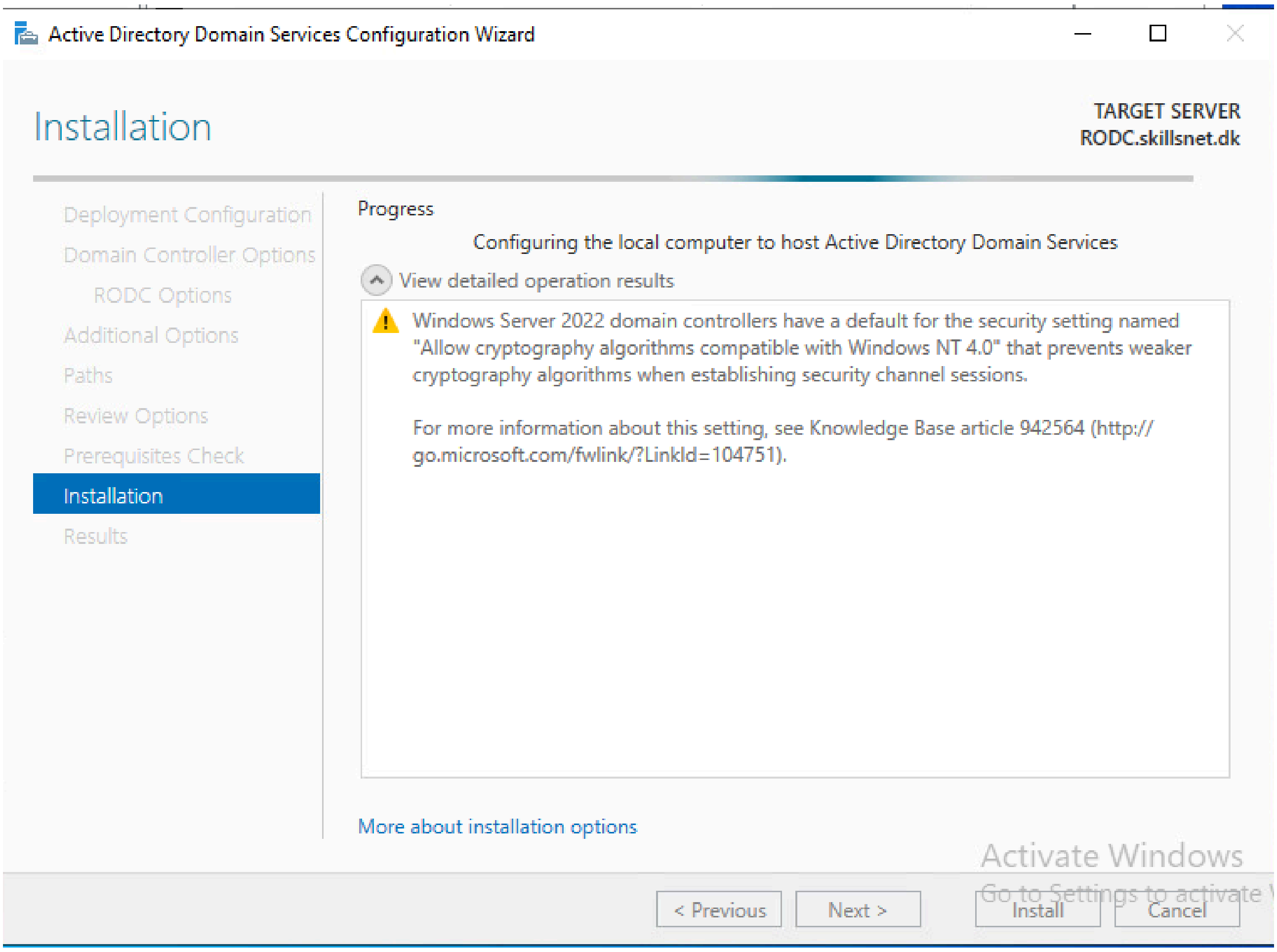
Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

AContinue Directory Sites and Services on DC:



Name	Type	Description
NTDS Settings	Domain Controller Settings	



Configuring the local computer to host Active Directory Domain Services

View detailed operation results

Windows Server 2022 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

SRV2

Role: Hosts public and internal web services, provides certificate-based authentication and SAML integration, and serves as a centralized iSCSI backup target and WEF log collector.
Tasks:

SRV2 - Task1: public web server

1. Host the **public-facing** website at www.skillsnet.dk

SRV2 - Task2: intranet

2. Configure **certificate-based authentication** for the internal site intra.skillsnet.dk

SRV2 - Task3: SAML based auth app

3. Host **SAML-based authentication** application site under app.skillsnet.dk (expected result at Appendix G)
    - 3.1. Web App code is available at C:\Resources\ClaimsApp.zip
    - 3.2. Application is preconfigured with ADFS authentication against sso.skillsnet.dk
    - 3.3. ADFS relying party identifier and endpoint is https://app.skillsnet.dk
    - 3.4. Site webroot must be **C:\inetpub\approot\**
    - 3.5. ADFS needs to provide following claims:
        - 3.5.1. Attribute: **User-Principal-Name**, Outgoing Claim: **Name ID**
        - 3.5.2. Attribute: **Surname**, Outgoing Claim: **Surname**
        - 3.5.3. Attribute: **Display-Name**, Outgoing Claim: **Name**

SRV2 - Task4: web server certificates

4. Ensure all hosted web services use **valid certificates** issued by Skillsnet CA

SRV2 - Task5: iSCSI Target

5. Deploy and configure an iSCSI Target to be used for centralized backups:
    - 5.1. Add new disk of 12 GB for storing the backups
    - 5.2. Initialize and format the disk using the **ReFS file system**, then mount it as the B: drive
    - 5.3. Create a **10 GB iSCSI virtual disk** at the following path **B:\iSCSIVirtualDisks\Skillsnet-Backup.vhdx**
    - 5.4. Configure the virtual disk as an iSCSI Target and allow access from authorized initiator DC server

SRV2 - Task6: Windows Event Forwarding

6. Configure Windows Event Forwarding
    - 6.1. Use **Source-Initiated** subscription mode
    - 6.2. Add exceptions to existing hardening guidelines only for SRV2 to make WEF work

6.3. Ensure all domain-joined computers are forwarding **Security** event logs to SRV2

SRV1 & SRV2

Role: Provide shared file services, enforce secure data storage policies, support DFS-based replication, and deliver high-availability DHCP services for internal networks.
Tasks:

SRV1 & SRV2 - Task1: SMB encryption

1. Enable **SMB encryption** on all file shares to secure data in transit

SRV1 & SRV2 - Task2: DFS shares

2. Use separate 10 GB disk on each server:
   2.1. Initialize and format the disk using NTFS, and mount it as **D:**
   2.2. This disk will serve as the data volume for all DFS shares

SRV1 & SRV2 - Task3: Bitlocker encryption

3. Configure BitLocker encryption on the D:\ volume using PowerShell, ensuring it uses TPM-based protection

SRV1 & SRV2 - Task4: Prevent writing

4. Prevent writing the following file types to shared folders: .exe, .com, .vbs, .msi

SRV1 & SRV2 - Task5: Quota for roaming profiles

5. Configure user profile folders such that each user is assigned **512 MB** quota for their roaming profile directory

SRV1 & SRV2 - Task6: DFS replication

6. Set up DFS replication for \\skillsnet.dk\DFS\Users

SRV1 & SRV2 - Task7: HA DHCP

7. Deploy a High-Availability DHCP failover pair that assigns IP addresses within the skillsdev.dk network range

SRV1 & SRV2 - Task8: DHCP reservation

8. Configure DEV-PC to obtain its IP address via DHCP, matching its currently assigned static configuration

DEV-PC

Role: Serves as the automation control node for the DEV environment; used to configure and deploy the skillsdev.dk domain and associated services via Ansible on DEV-SRV.
Tasks:

Ansible - Task1: hostname

1. **1-hostname.yaml**: Configure the **hostname** to **SRV**

Ansible - Task2: ADDS

2. **2-adds.yaml**: Set up an **AD DS environment** with the domain skillsdev.dk

Ansible - Task3: Users

3. **3-users.yaml**: Import the predefined OU structure (Appendix C), users and groups into the domain
   3.1. Source file /ansible/resources/ES2025_TP39_ModuleB_Users_Skillsdev.json
   3.2. Ensure all users are activated and have UPN defined
   3.3. Based on Department value, create unique groups
   3.4. Assign users to role groups and OUs based on their Department value
   3.5. Usernames must follow the format: **Firstname.Lastname**

Ansible - Task4: Web server

4. **4-web.yaml**: Deploy an IIS web server with static HTML homepage accessible at www.skillsdev.dk.
   4.1. Homepage must have large message "Skills Development"

Ansible - Task5: Shares

5. **5-shares.yaml**: Configure File Server based on /ansible/resources/ES2025_TP39_ModuleB_Shares.yaml

Ansible configuration notes:

1. Ansible is **preconfigured** on DEV-PC with an inventory file located at /etc/ansible/hosts
2. Connections to DEV-SRV are available via SSH using a preinstalled key
3. All required playbooks must be created and saved in the /ansible directory

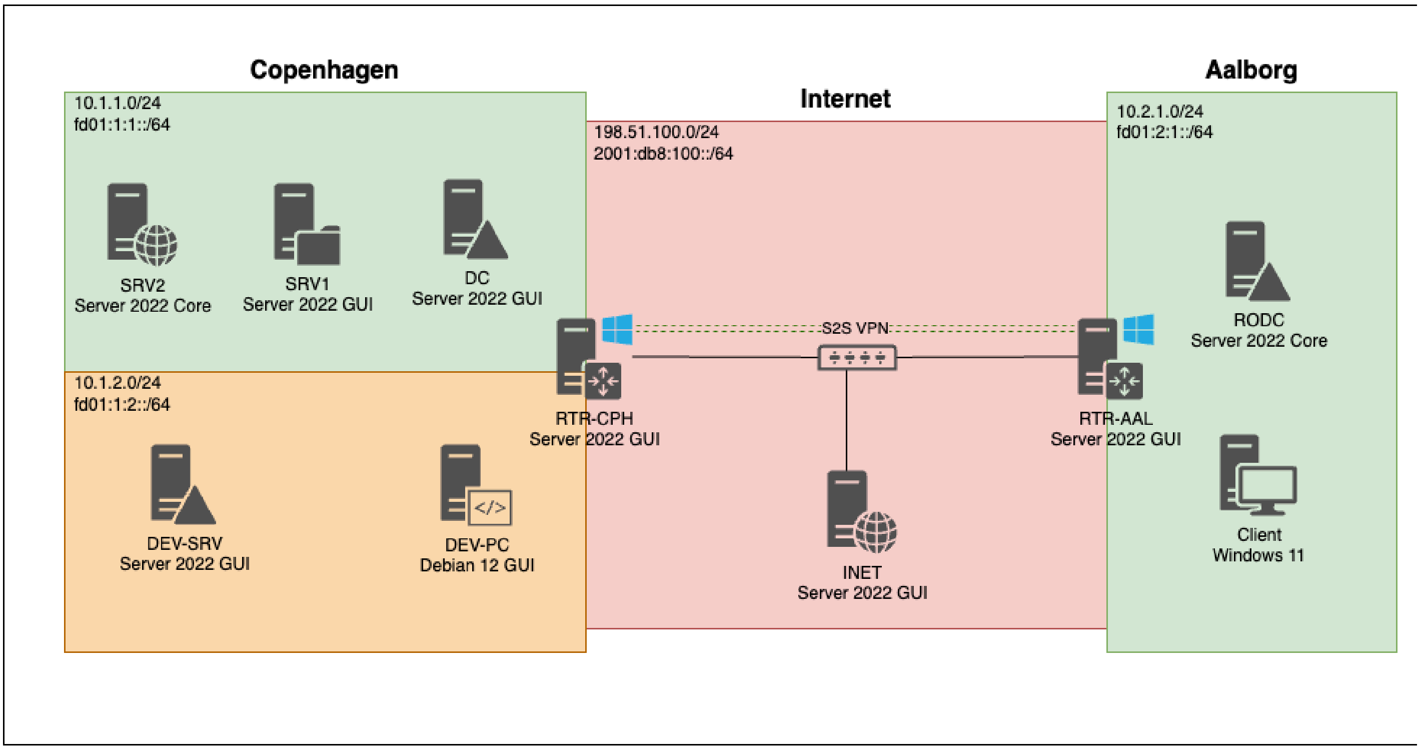
Assessment notes:

1. DEV-SRV will be restored to “Start” snapshot
2. Playbooks will be executed in sequence from the **/ansible** directory

Appendix A: Configuration table

Hostname	Domain	IPv4 Address (/24)	IPv6 Address (/64)
INET	WORKGROUP	198.51.100.1	2001:db8:100::1
RTR-CPH	WORKGROUP	INET: 198.51.100.11 INT: 10.1.1.254 DEV: 10.1.2.254	INET: 2001:db8:100::11 INT: fd01:1:1::254 DEV: fd01:1:2::254
RTR-AAL	WORKGROUP	INET: 198.51.100.12 INT: 10.2.1.254	INET: 2001:db8:100::12 INT: fd01:2:1::254
DC	SKILLSNET.DK	10.1.1.1	fd01:1:1::1
RODC	SKILLSNET.DK	10.2.1.1	fd01:2:1::1
SRV1	SKILLSNET.DK	10.1.1.2	fd01:1:1::2
SRV2	SKILLSNET.DK	10.1.1.3	fd01:1:1::3
DEV-PC	NOT APPLICABLE	10.1.2.10	fd01:1:2::10
DEV-SRV	SKILLSDEV.DK	10.1.2.1	fd01:1:2::1
CLIENT	SKILLSNET.DK	10.2.1.10	fd01:2:1::10

Appendix B: Network topology



Appendix C: OU Structure

OU Path	Description
Skills\Users\Employees	All regular non-technical users
Skills\Users\Tech	IT personnel and admins
Skills\Users\Sales	Sales department staff
Skills\Users\Finance	Finance team users
Skills\Users\Development	Software/dev team members
Skills\Users\Contractors	External/temporary workers
Skills\Groups	All security and distribution groups
Skills\Desktops	Computer objects for client PCs
Skills\Servers	Computer objects for server

Appendix D: Password Policies

Policy Name	Target	Min Length	Max Password Age	Complexity	Lockout Threshold
FGPP-Users	Regular users	12 chars	730 days	Enabled	5 attempts, 5 minutes
FGPP-Tech	Tech users	20 chars	365 days	Enabled	3 attempts, 15 minutes
FGPP-Contractors	Contractors	16 chars	90 days	Enabled	3 attempts, 30 minutes

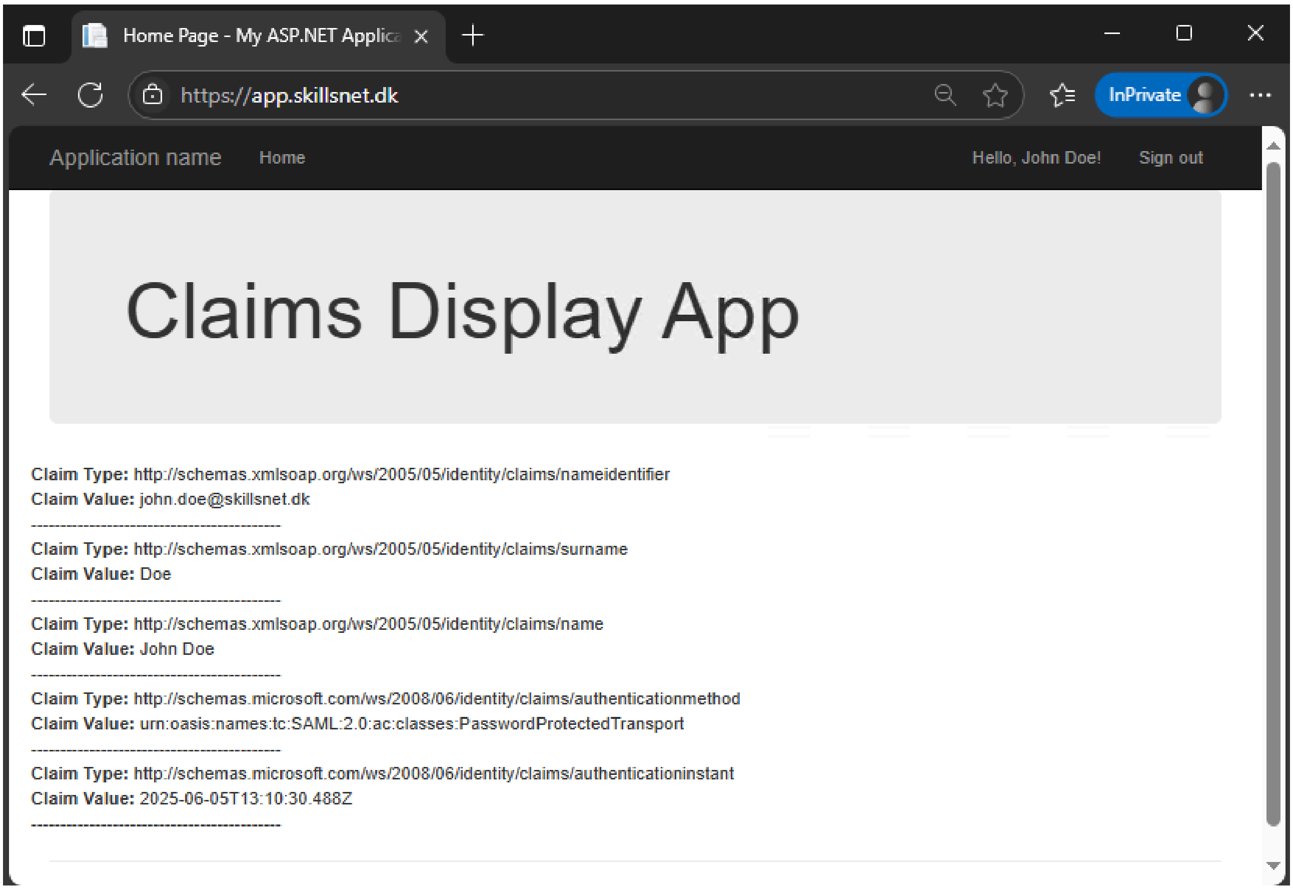
Appendix E: INET DNS records

Record Type	Name	Value
A	www.skillspublic.dk	198.51.100.11
AAAA	www.skillspublic.dk	2001:db8:100::11
A	mail.nordicbackup.net	198.51.100.1
AAAA	mail.nordicbackup.net	2001:db8:100::1
MX	nordicbackup.net	mail.nordicbackup.net

Appendix F: DNS Authoritative Servers

DNS Zone	Authoritative Server(s)
skillspublic.dk	INET
nordicbackup.net	INET
skillsnet.dk	DC, RODC
skillsdev.dk	DEV-SRV

Appendix G: ADFS successful integration



Claims Display App

Claim Type: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/nameidentifier
Claim Value: john.doe@skillsnet.dk

Claim Type: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname
Claim Value: Doe

Claim Type: http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name
Claim Value: John Doe

Claim Type: http://schemas.microsoft.com/ws/2008/06/identity/claims/authenticationmethod
Claim Value: urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport
----
Claim Type: http://schemas.microsoft.com/ws/2008/06/identity/claims/authenticationinstant
Claim Value: 2025-06-05T13:10:30.488Z
