



# Déploiement d'une infrastructure DNS

PAR MARVIN MANNOY

# Consignes :

## ENTREPRISE 1

- Créer un DNS qui gère le domain name technomm.be
- Créer une zone secondaire pour configurer le transfert de zone
- Tester la configuration via une machine client
- Tester la configuration via la commande nslookup

## ENTREPRISE 2

- Créer un DNS qui gère le domain name toymm.be
- Créer une zone secondaire pour configurer le transfert de zone
- Tester la configuration via une machine client
- Tester la configuration via la commande nslookup

# Définition:

- Qu'est-ce qu'un DNS ?

Exemple : `www.google.com` ↔ `142.250.179.132`  
`2a00:1450:400e:80f::2004`

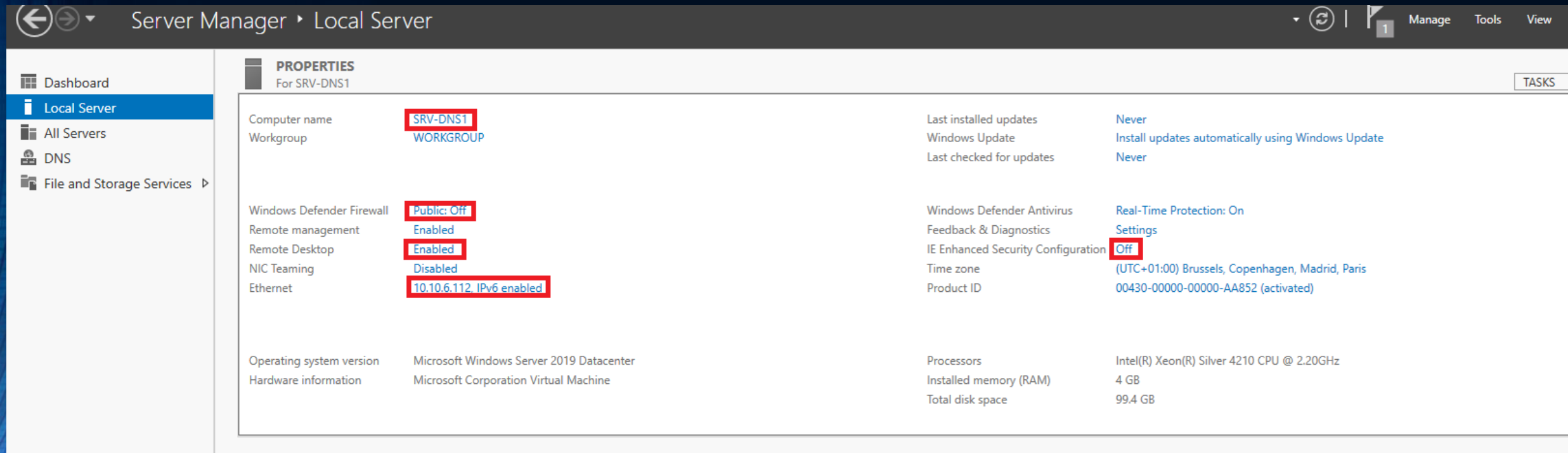
`store.toymm.be` ↔ `10.10.6.113`

- Zone primaire ( read / write )
- Zone secondaire ( read-only )

# Installation du rôle DNS

SUR WINDOWS SERVER 2019

# Bonnes pratiques (en labo) :



Server Manager ▸ Local Server

Dashboard  
Local Server  
All Servers  
DNS  
File and Storage Services ▸

**PROPERTIES**  
For SRV-DNS1

Computer name	SRV-DNS1	Last installed updates	Never
Workgroup	WORKGROUP	Windows Update	Install updates automatically using Windows Update
		Last checked for updates	Never
Windows Defender Firewall	Public: Off	Windows Defender Antivirus	Real-Time Protection: On
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Enabled	IE Enhanced Security Configuration	Off
NIC Teaming	Disabled	Time zone	(UTC+01:00) Brussels, Copenhagen, Madrid, Paris
Ethernet	10.10.6.112, IPv6 enabled	Product ID	00430-00000-00000-AA852 (activated)
Operating system version	Microsoft Windows Server 2019 Datacenter	Processors	Intel(R) Xeon(R) Silver 4210 CPU @ 2.20GHz
Hardware information	Microsoft Corporation Virtual Machine	Installed memory (RAM)	4 GB
		Total disk space	99.4 GB

# Bonnes pratiques (en labo) :

Computer Name/Domain Changes

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

Computer name:  
SRV-DNS1

Full computer name:  
SRV-DNS1

More...

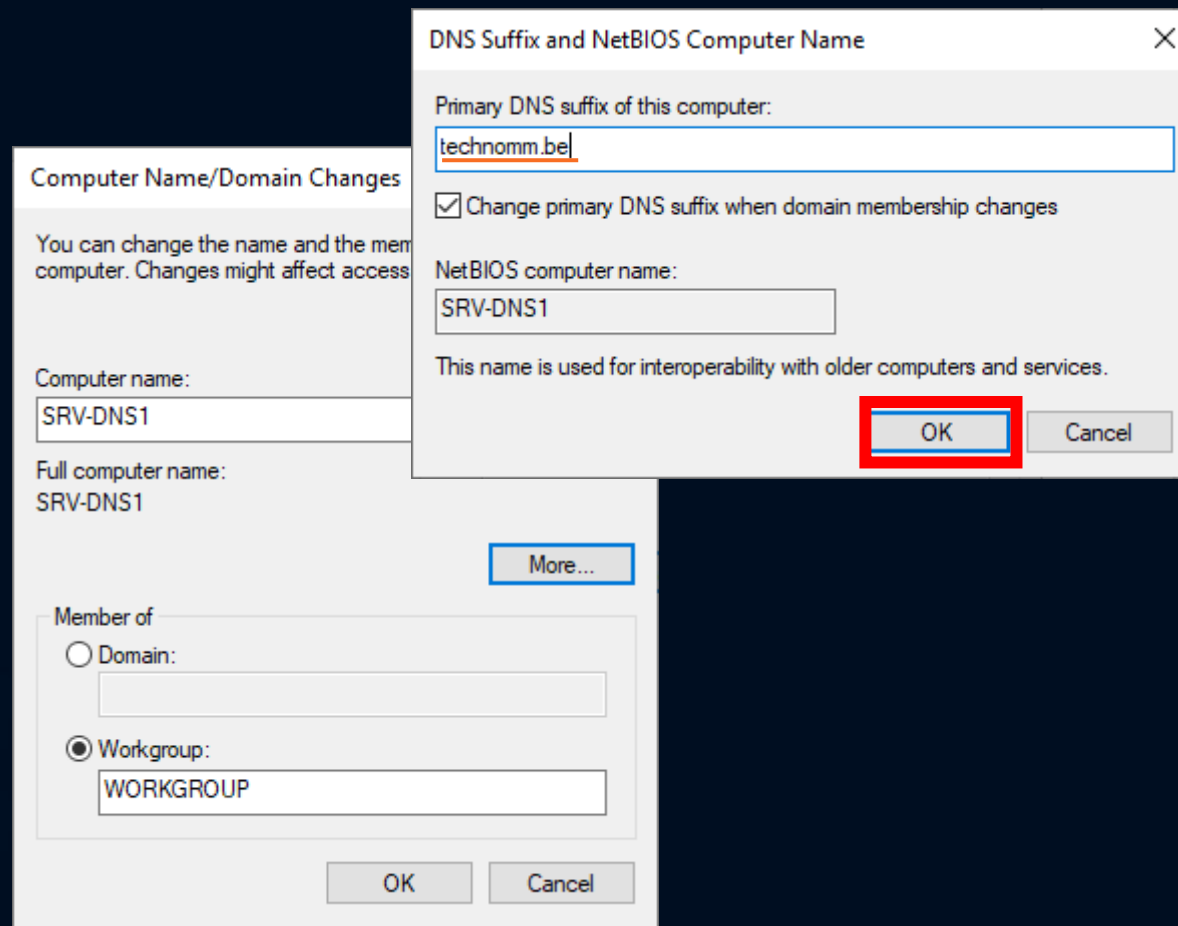
Member of

Domain:  
[Empty text box]

Workgroup:  
WORKGROUP

OK Cancel

# Bonnes pratiques (en labo) :



# Bonnes pratiques (en labo) :

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:	10 . 10 . 6 . 112
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	10 . 10 . 6 . 253

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server:	10 . 10 . 6 . 112
Alternate DNS server:	. . .

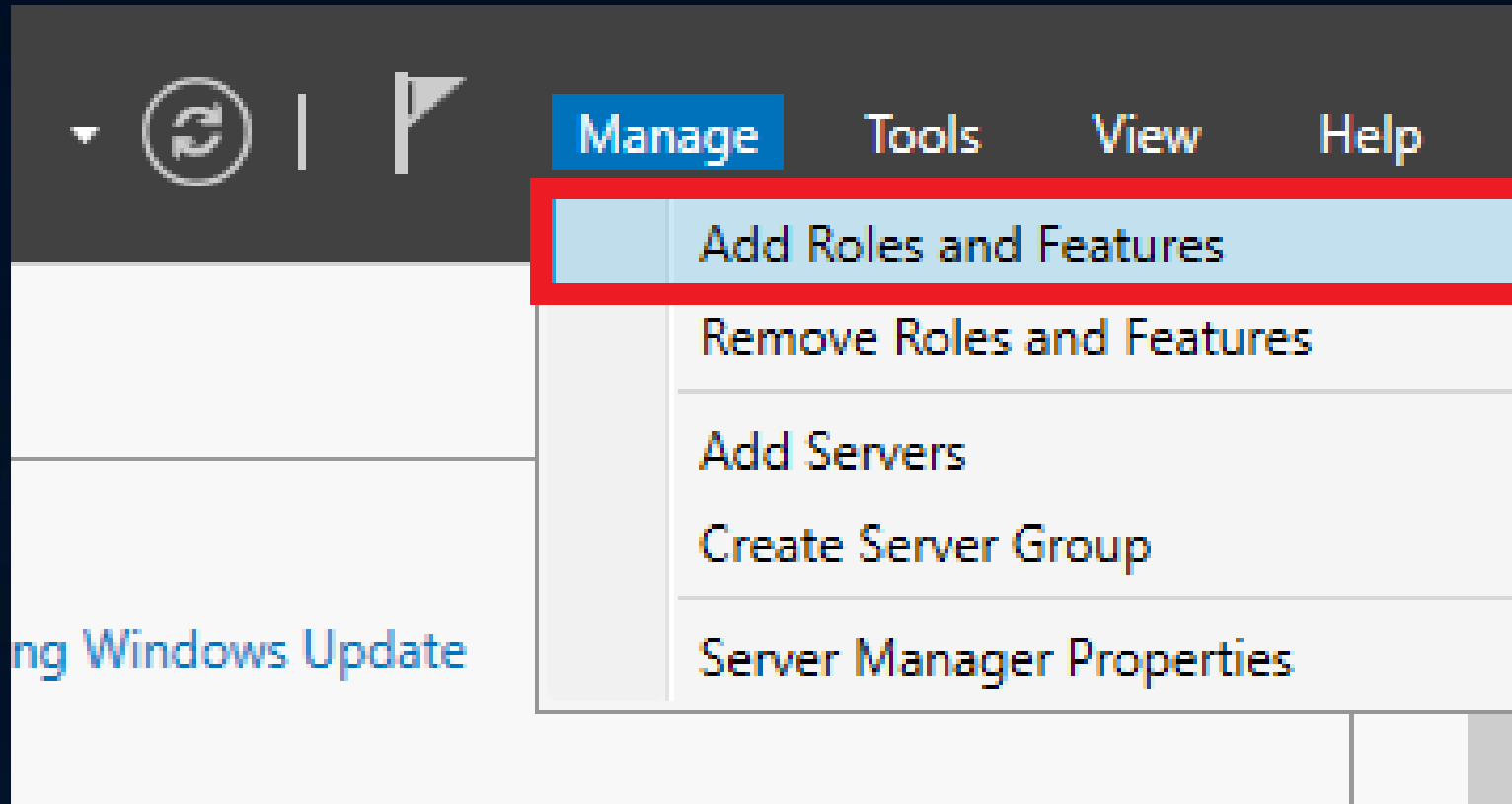
Validate settings upon exit

Advanced...

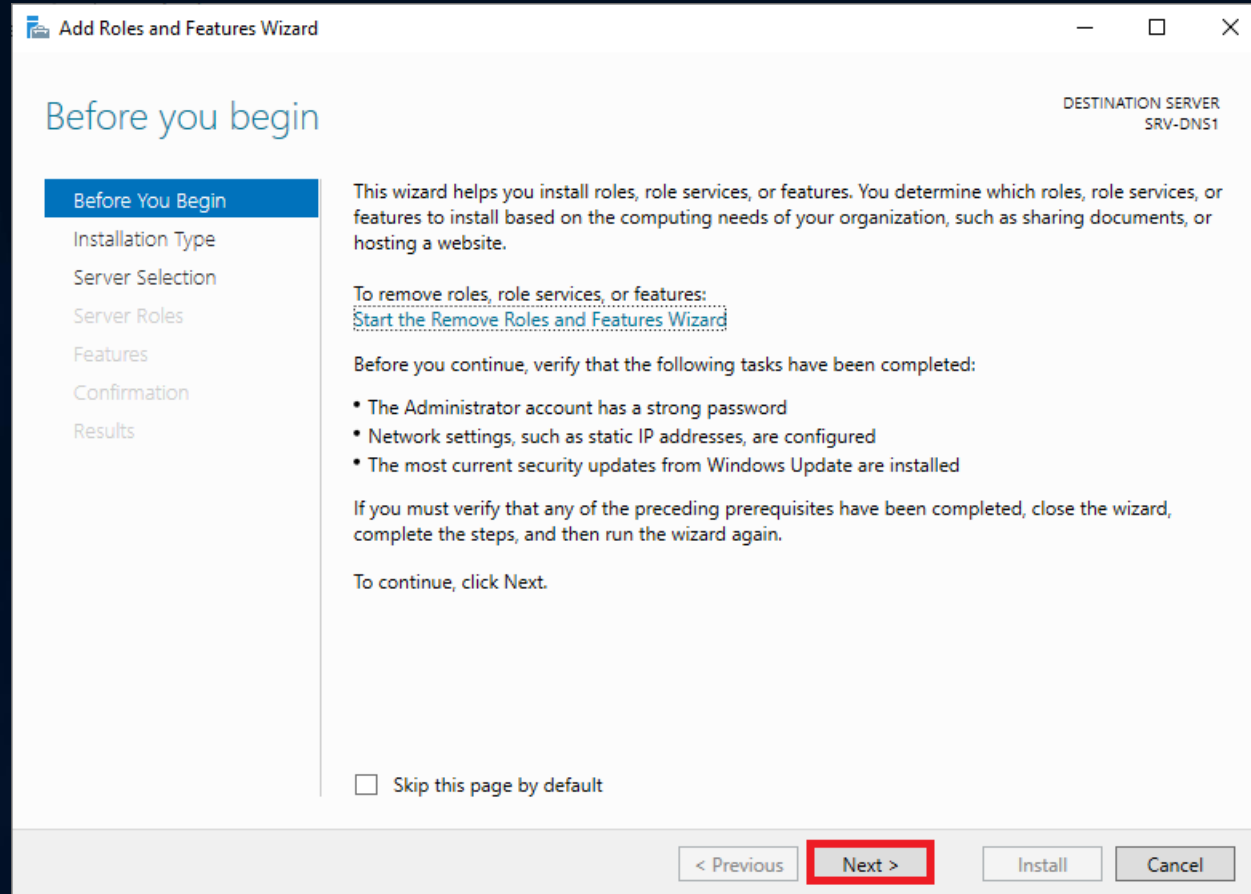
OK Cancel



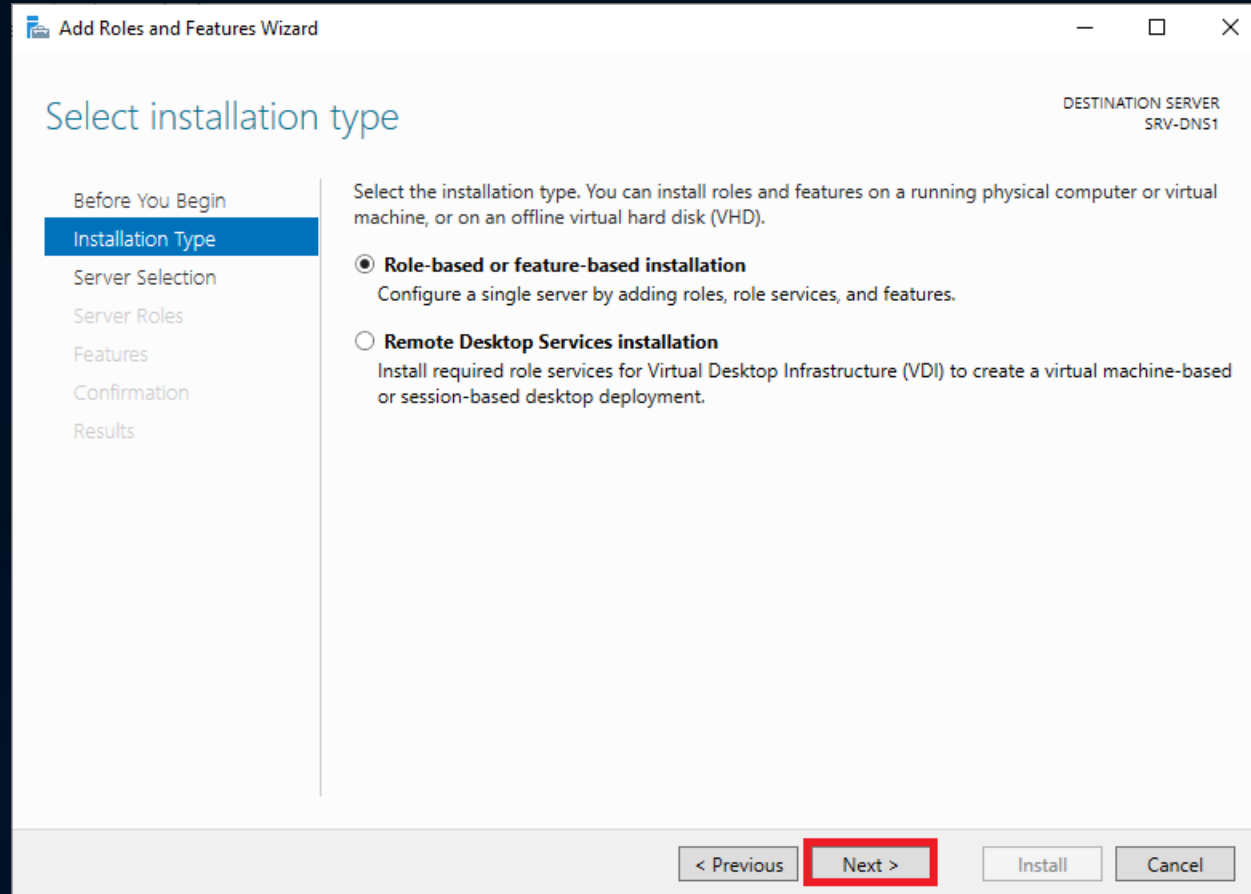
# Installation du rôle DNS:



# Installation du rôle DNS:



# Installation du rôle DNS:



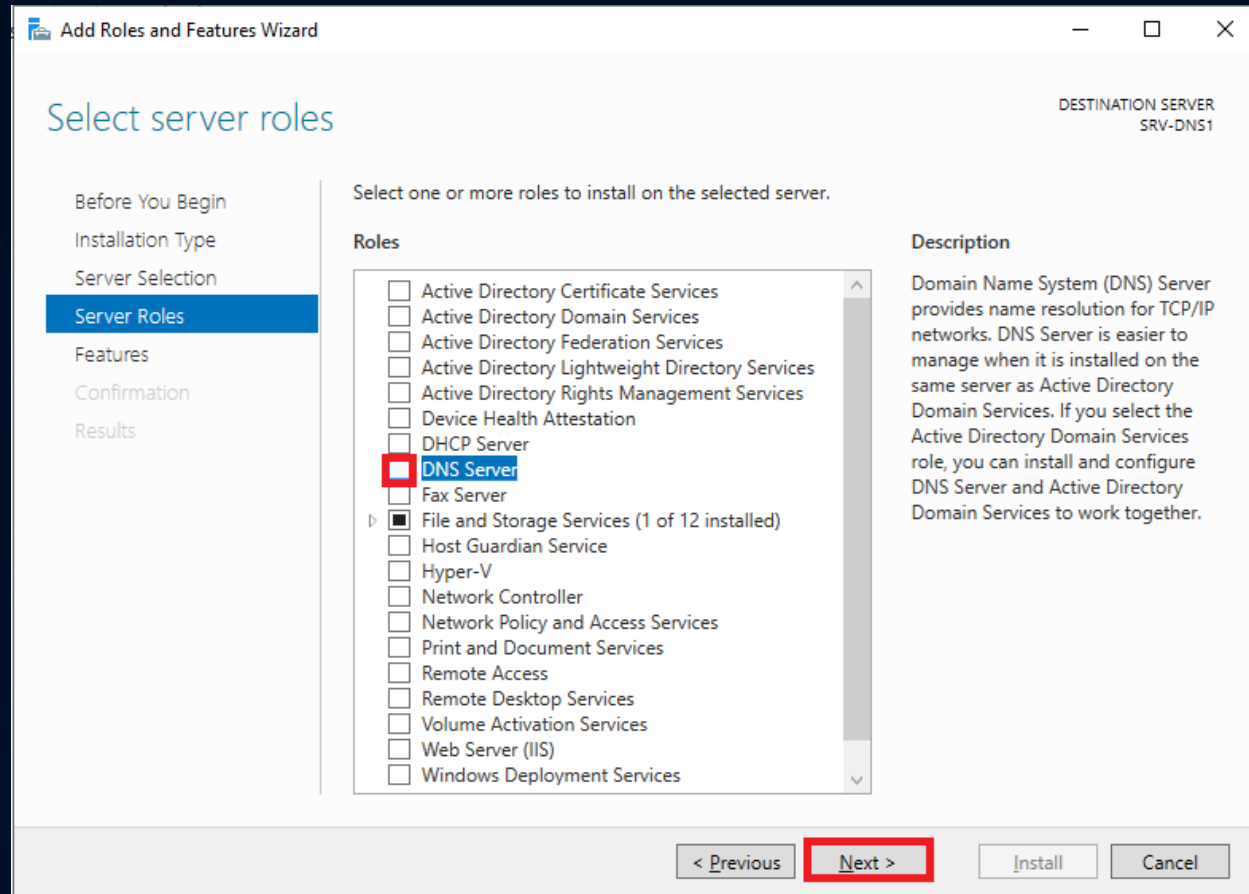
# Installation du rôle DNS:

The screenshot shows the 'Add Roles and Features Wizard' window. The title bar reads 'Add Roles and Features Wizard'. The main heading is 'Select destination server'. In the top right corner, it says 'DESTINATION SERVER SRV-DNS1'. On the left, a navigation pane lists steps: 'Before You Begin', 'Installation Type', 'Server Selection' (highlighted), 'Server Roles', 'Features', 'Confirmation', and 'Results'. The main area contains the following text: 'Select a server or a virtual hard disk on which to install roles and features.' Below this are two radio buttons: 'Select a server from the server pool' (selected) and 'Select a virtual hard disk'. Under the heading 'Server Pool', there is a 'Filter:' text box. Below the filter is a table with the following data:

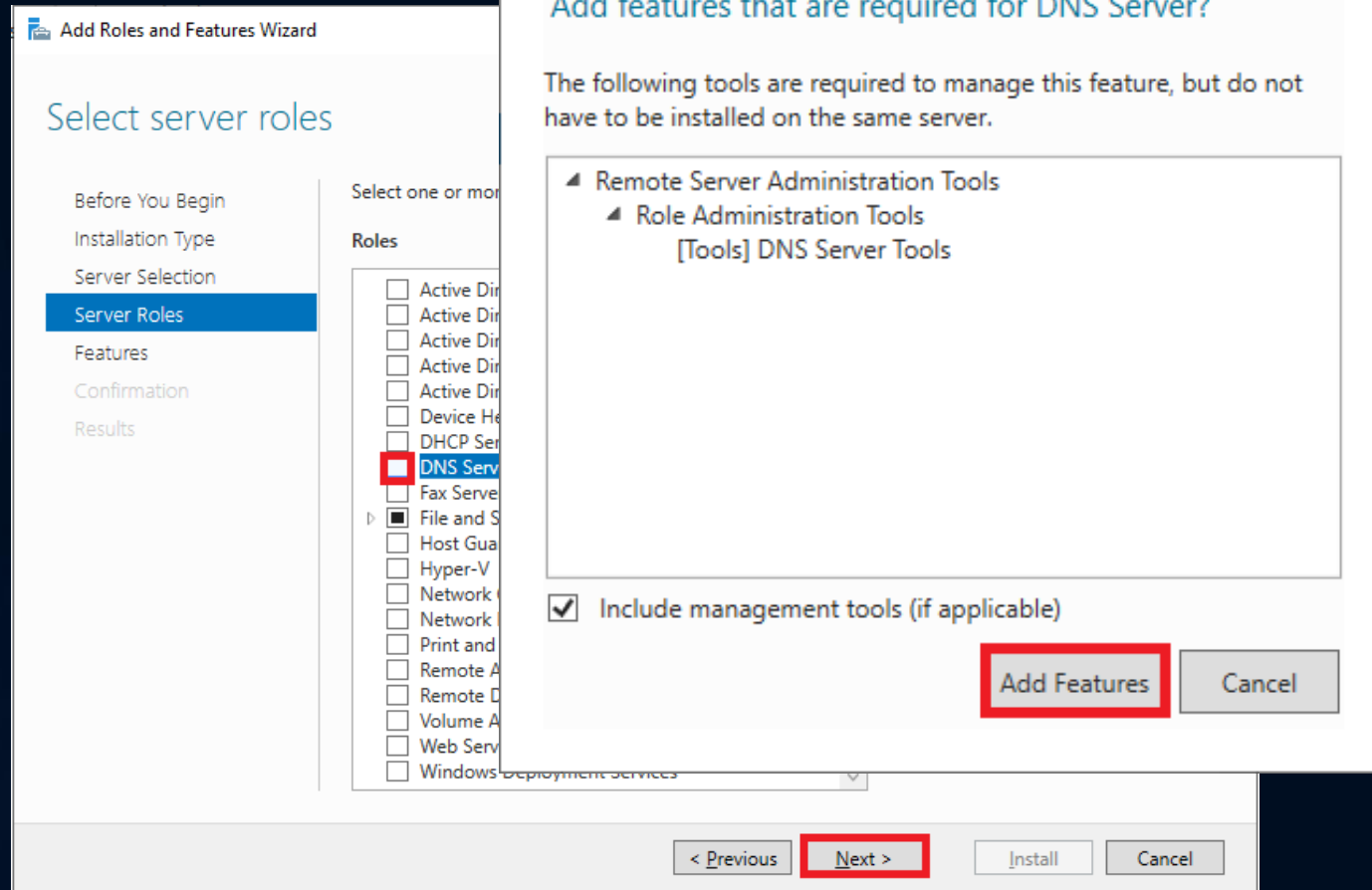
Name	IP Address	Operating System
SRV-DNS1	10.10.6.112	Microsoft Windows Server 2019 Datacenter

Below the table, it says '1 Computer(s) found'. A note at the bottom of the main area reads: '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.' At the bottom of the window, there are four buttons: '< Previous', 'Next >' (highlighted with a red box), 'Install', and 'Cancel'.

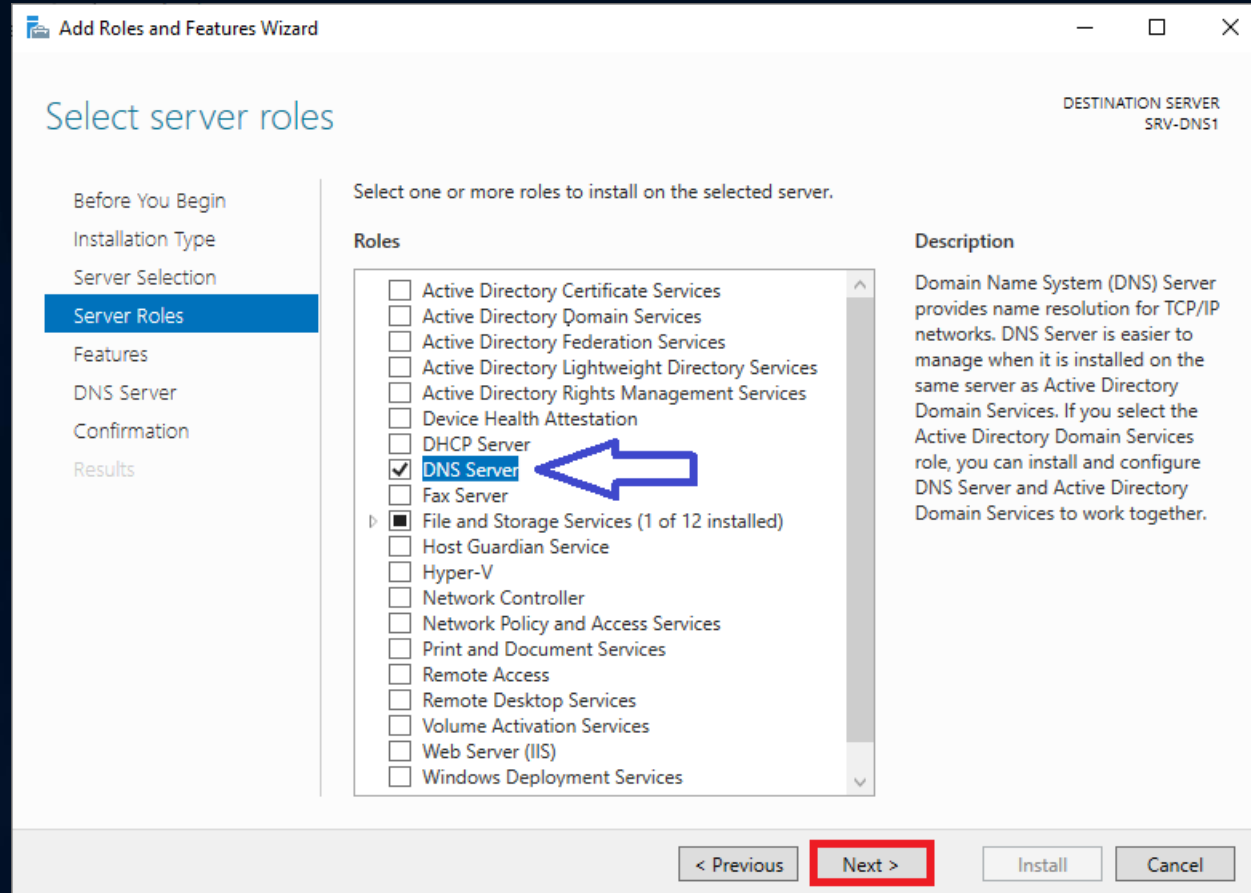
# Installation du rôle DNS:



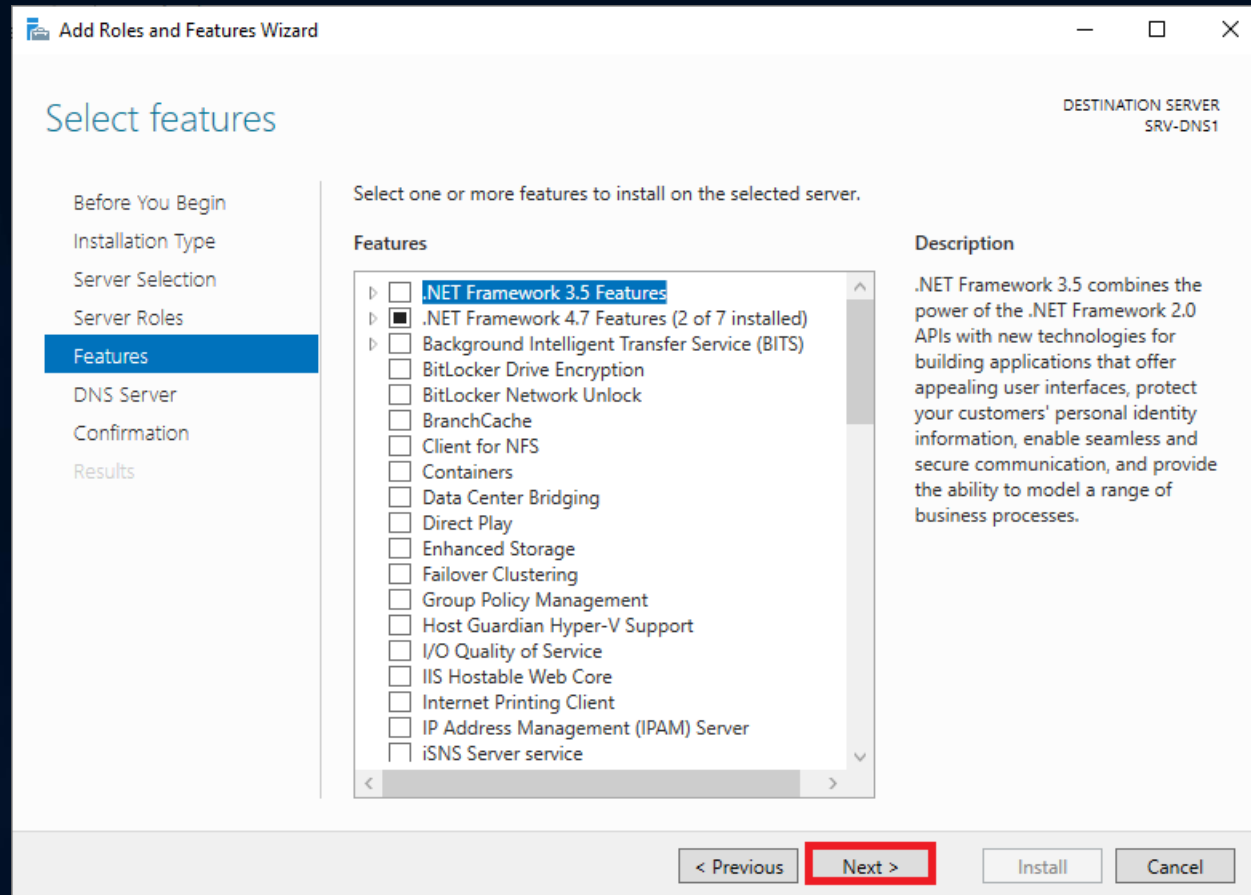
# Installation du rôle DNS:



# Installation du rôle DNS:



# Installation du rôle DNS:





# Installation du rôle DNS:

The screenshot shows the 'Add Roles and Features Wizard' window. The title bar reads 'Add Roles and Features Wizard'. The main heading is 'DNS Server'. In the top right corner, it says 'DESTINATION SERVER SRV-DNS1'. On the left side, there is a navigation pane with the following items: 'Before You Begin', 'Installation Type', 'Server Selection', 'Server Roles', 'Features', 'DNS Server' (highlighted in blue), 'Confirmation', and 'Results'. The main content area contains the following text:

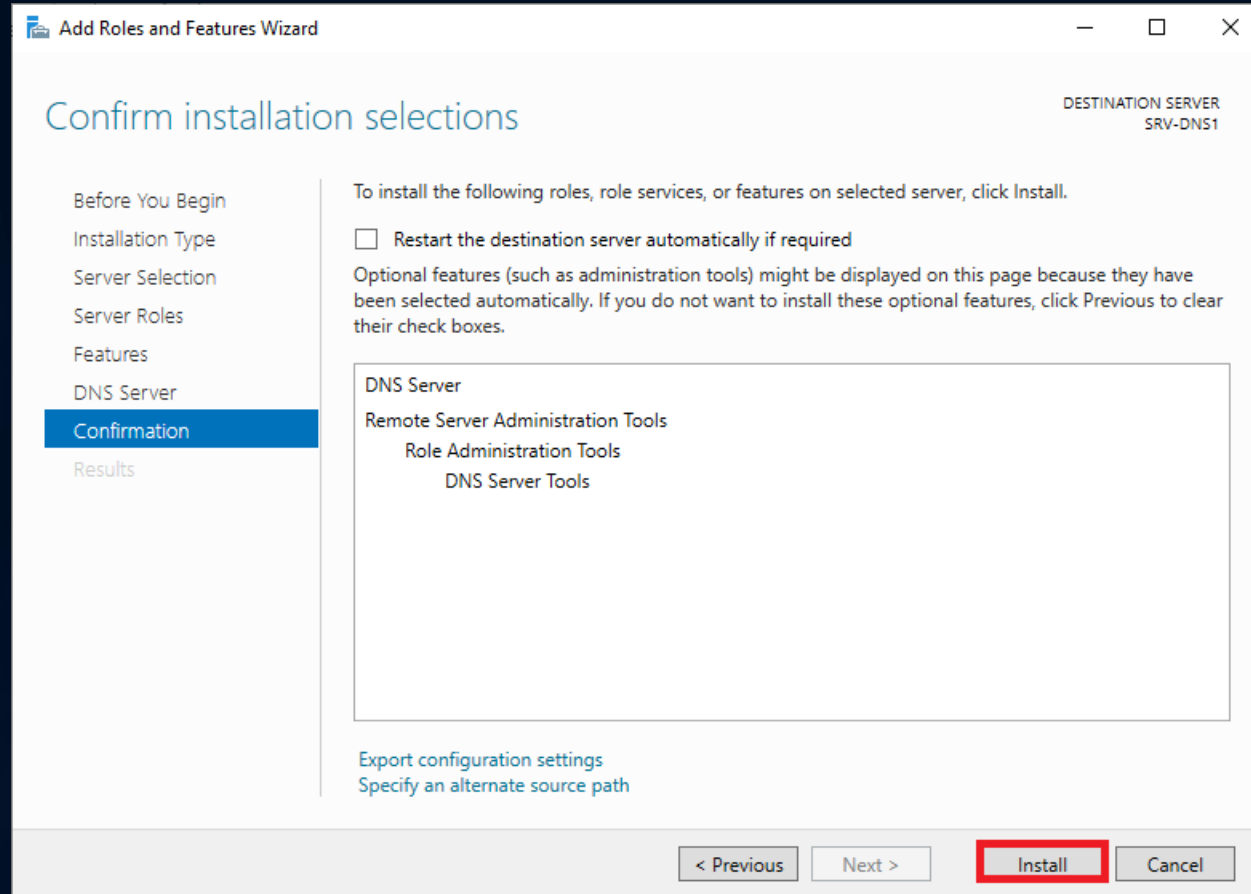
Domain Name System (DNS) provides a standard method for associating names with numeric Internet addresses. This makes it possible for users to refer to network computers by using easy-to-remember names instead of a long series of numbers. In addition, DNS provides a hierarchical namespace, ensuring that each host name will be unique across a local or wide-area network. Windows DNS services can be integrated with Dynamic Host Configuration Protocol (DHCP) services on Windows, eliminating the need to add DNS records as computers are added to the network.

Things to note:

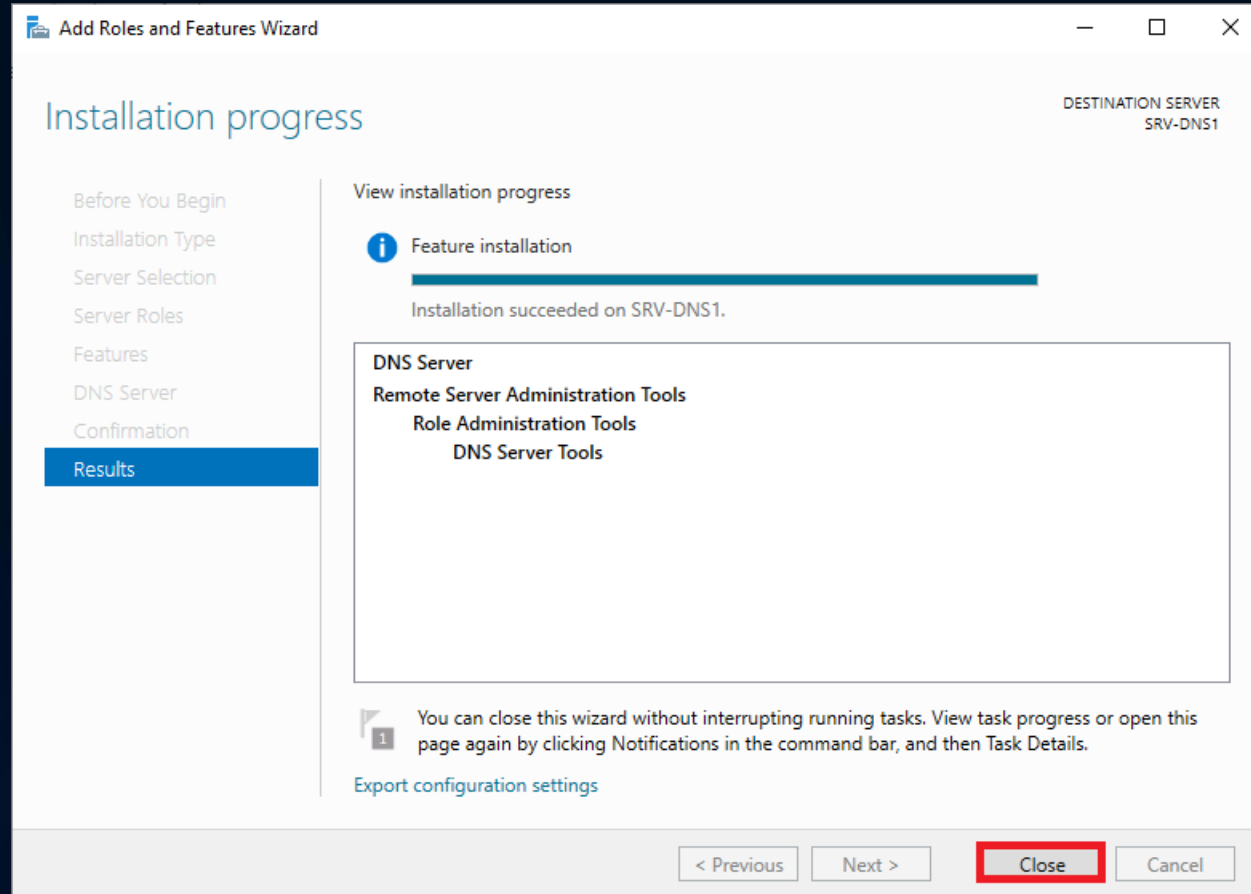
- DNS server integration with Active Directory Domain Services automatically replicates DNS data along with other Directory Service data, making it easier to manage DNS.
- Active Directory Domain Services requires a DNS server to be installed on the network. If you are installing a domain controller, you can also install the DNS Server role using Active Directory Domain Services Installation Wizard by selecting the Active Directory Domain Services role.

At the bottom of the window, there are four buttons: '< Previous', 'Next >' (highlighted with a red box), 'Install', and 'Cancel'.

# Installation du rôle DNS:



# Installation du rôle DNS:



# Vérification du DNS:

The screenshot shows the Windows Server Manager interface. The left-hand navigation pane has the 'DNS' option highlighted with a red box. The main area displays the 'SERVERS' section for 'All servers | 1 total'. Below this is a table with columns for 'Server Name', 'IPv4 Address', 'Manageability', 'Last Update', and 'Windows Activation'. The first row of the table is highlighted with a red box and contains the following data:

Server Name	IPv4 Address	Manageability	Last Update	Windows Activation
SRV-DNS1	10.10.6.112	Online - Performance counters not started	22-06-23 09:53:21	00430-00000-00000-AA852 (Activated)

# Vérification du DNS:

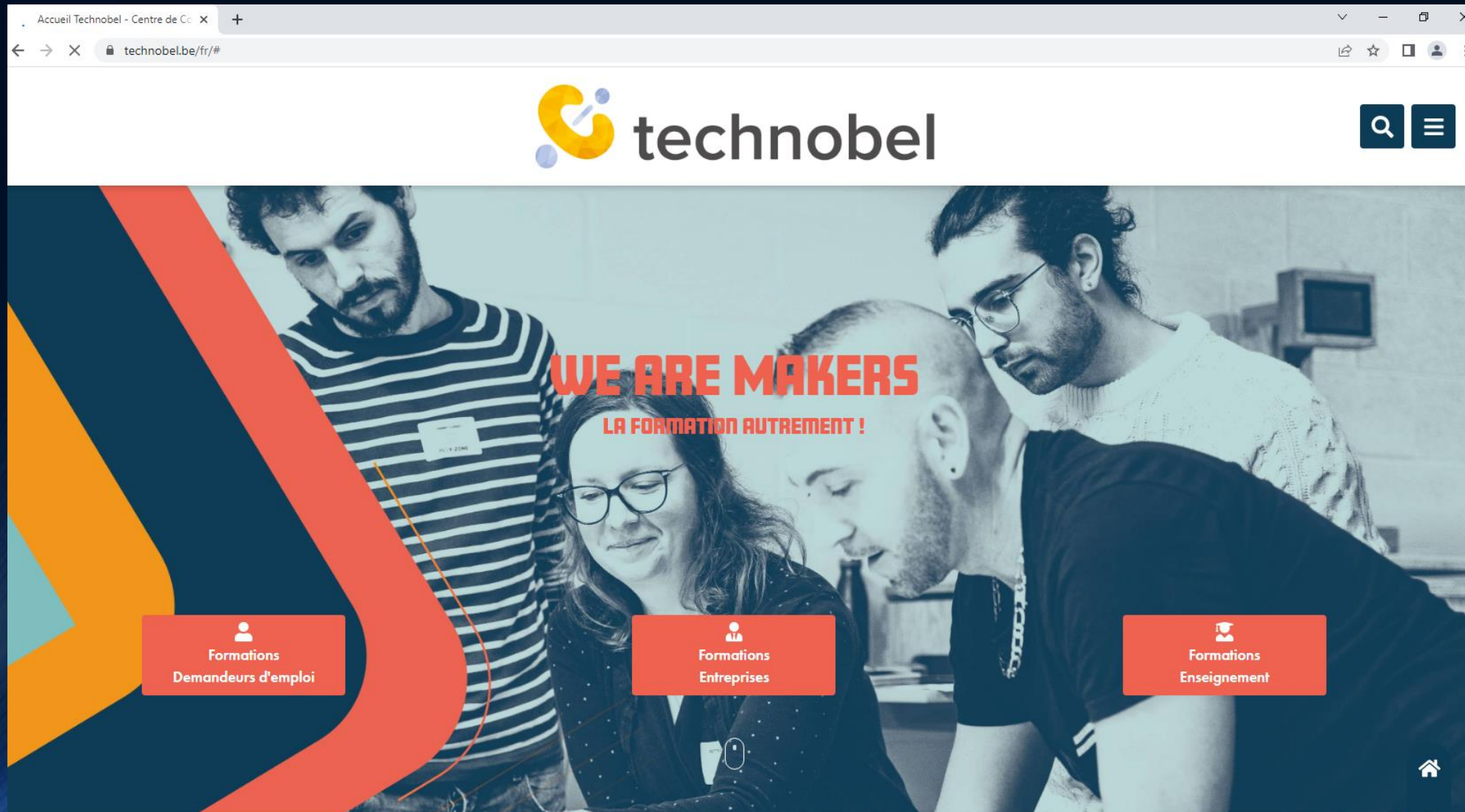
```
C:\Users\Administrator>nslookup www.technobel.be  
Server: UnKnown  
Address: 10.10.6.112
```

```
Non-authoritative answer:  
Name: www.technobel.be  
Address: 87.98.154.146
```

```
C:\Users\Administrator>nslookup store.toymm.be  
Server: UnKnown  
Address: 10.10.6.112
```

```
Name: store.toymm.be  
Address: 10.10.6.113
```

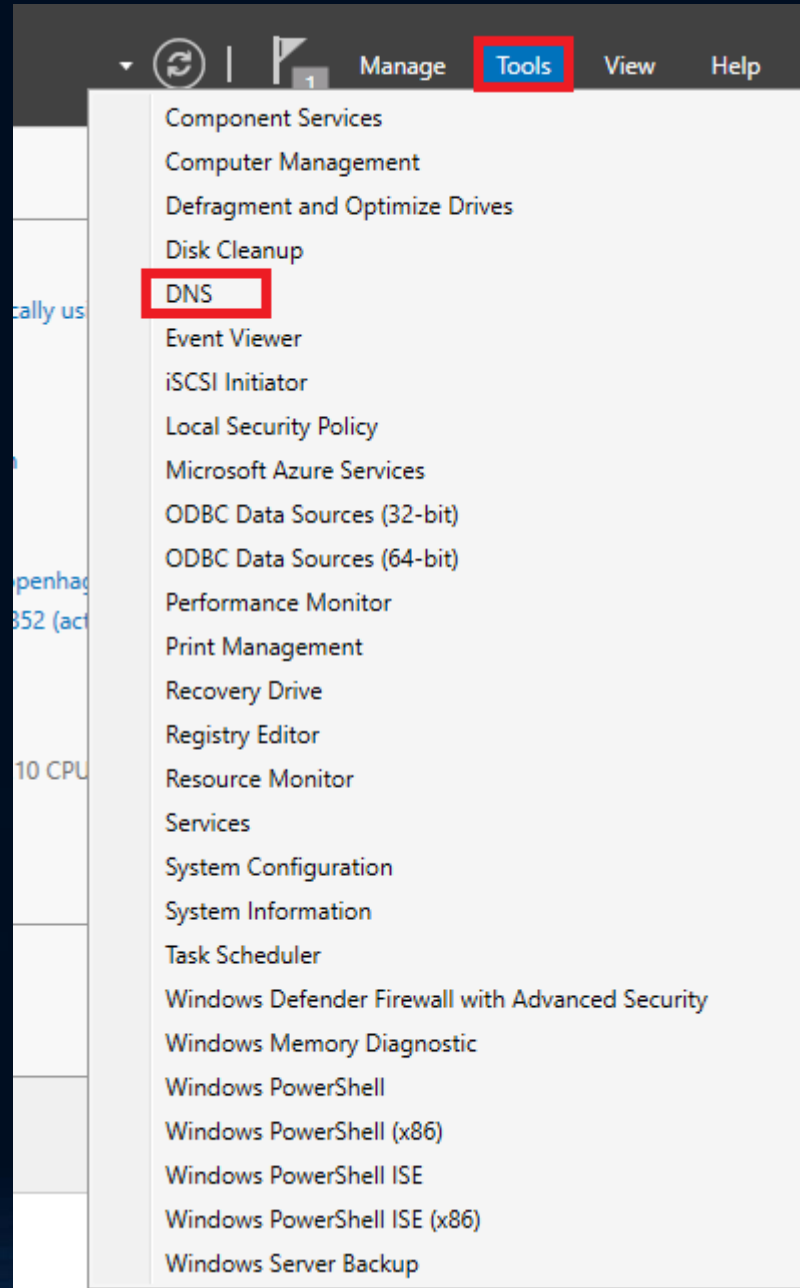
# Vérification du DNS:



# Configuration des zones

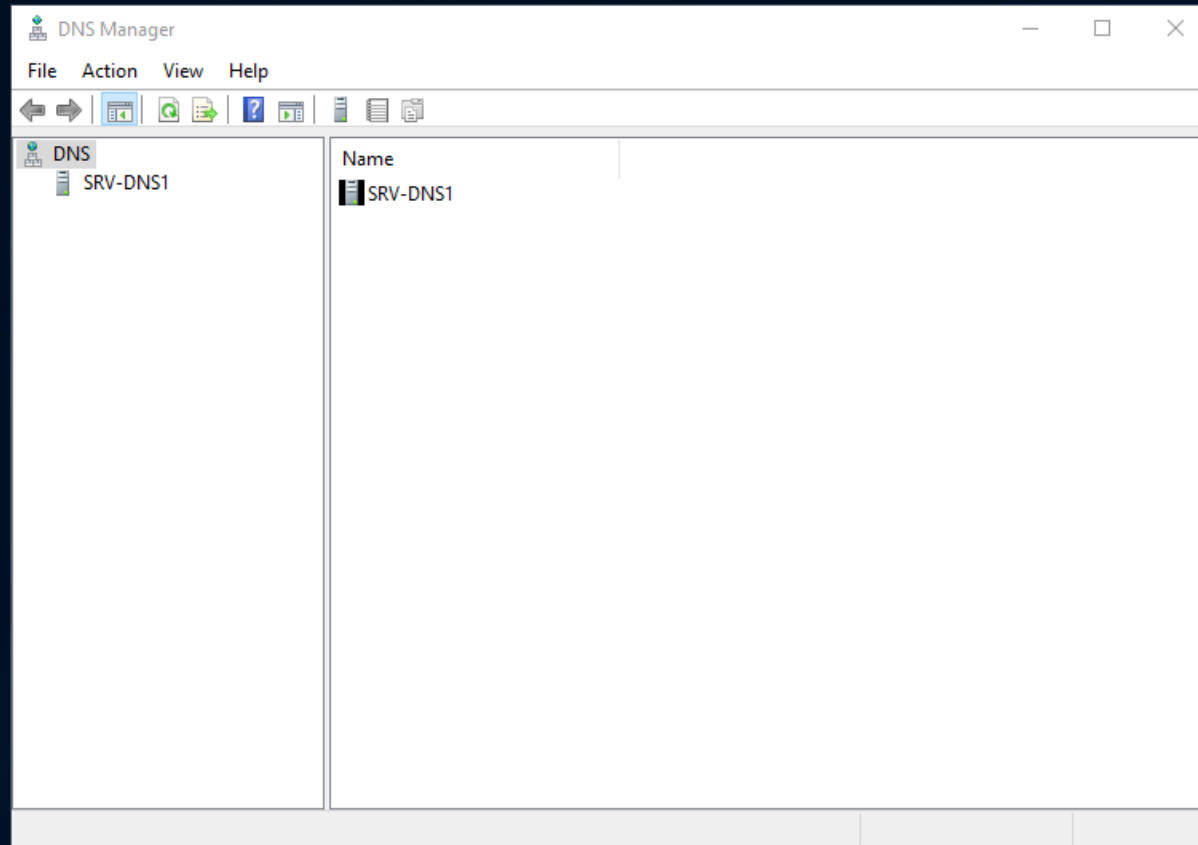
(PRIMAIRES)

# Configuration zones:

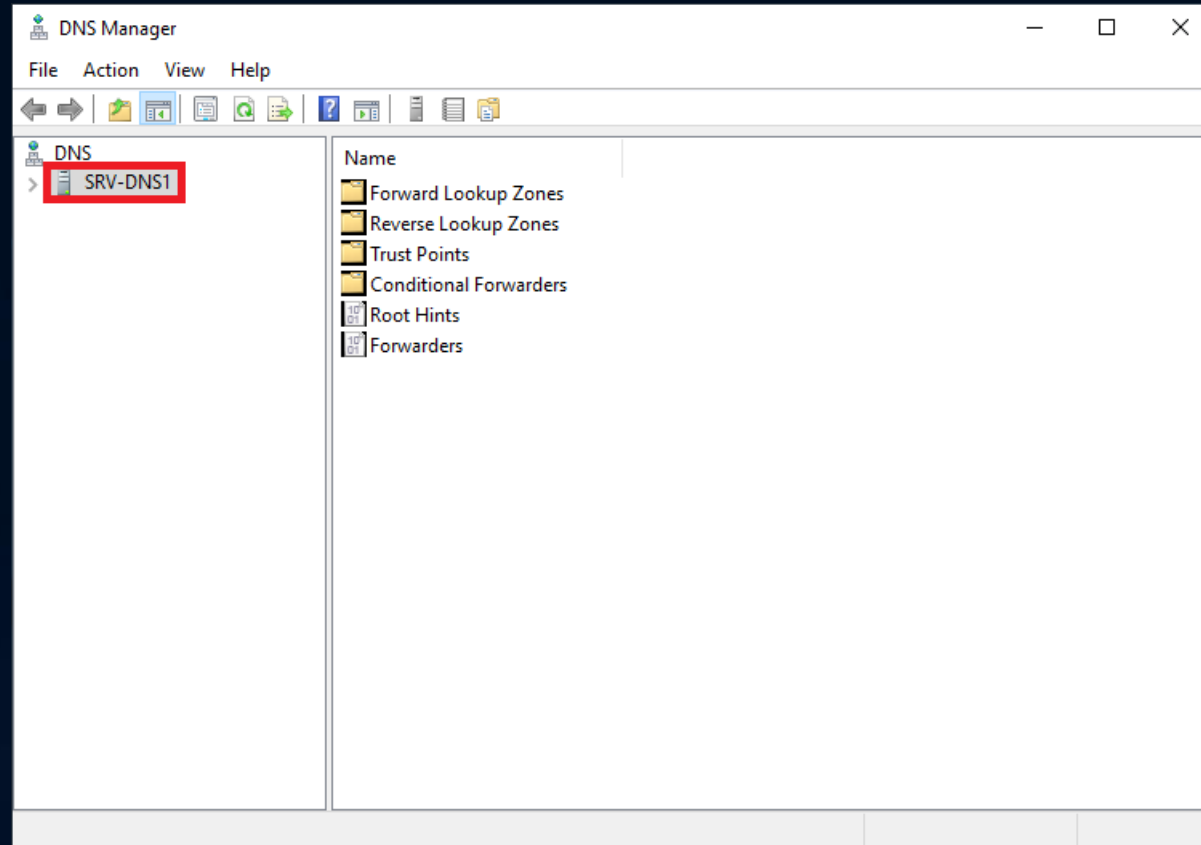




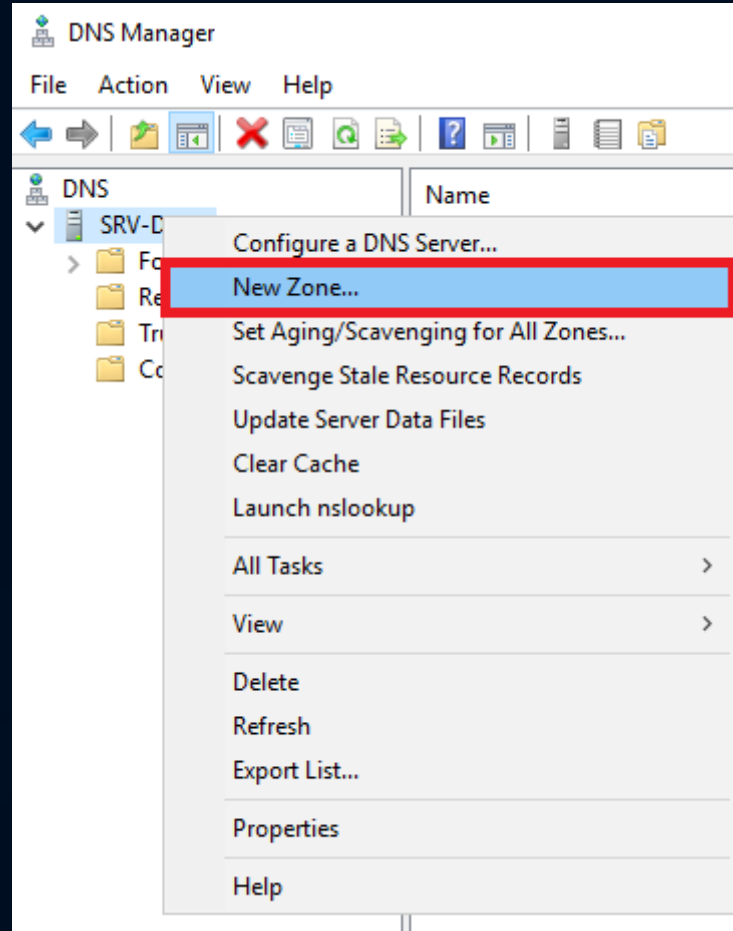
# Configuration zones:



# Configuration zones:



# Configuration zones:




# Configuration zones:



# Configuration zones:

New Zone Wizard ✕

**Zone Type**  
The DNS server supports various types of zones and storage. 

Select the type of zone you want to create:

- Primary zone  
Creates a copy of a zone that can be updated directly on this server.
- Secondary zone  
Creates a copy of a zone that exists on another server. This option helps balance the processing load of primary servers and provides fault tolerance.
- Stub zone  
Creates a copy of a zone containing only Name Server (NS), Start of Authority (SOA), and possibly glue Host (A) records. A server containing a stub zone is not authoritative for that zone.

Store the zone in Active Directory (available only if DNS server is a writeable domain controller)

< Back Next > Cancel

# Configuration zones:

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:

< Back   **Next >**   Cancel

# Configuration zones:

New Zone Wizard

**Zone File**  
You can create a new zone file or use a file copied from another DNS server.

Do you want to create a new zone file or use an existing file that you have copied from another DNS server?

Create a new file with this file name:

technomm.be.dns


Use this existing file:

To use this existing file, ensure that it has been copied to the folder %SystemRoot%\system32\dns on this server, and then click Next.

< Back **Next >** Cancel


# Configuration zones:

New Zone Wizard ✕

**Dynamic Update**  
You can specify that this DNS zone accepts secure, nonsecure, or no dynamic updates. 

Dynamic updates enable DNS client computers to register and dynamically update their resource records with a DNS server whenever changes occur.

Select the type of dynamic updates you want to allow:

- Allow only secure dynamic updates (recommended for Active Directory)  
This option is available only for Active Directory-integrated zones.
- Allow both nonsecure and secure dynamic updates  
Dynamic updates of resource records are accepted from any client.  
 This option is a significant security vulnerability because updates can be accepted from untrusted sources.
- Do not allow dynamic updates  
Dynamic updates of resource records are not accepted by this zone. You must update these records manually.

< Back **Next >** Cancel



# Configuration zones:


New Zone Wizard

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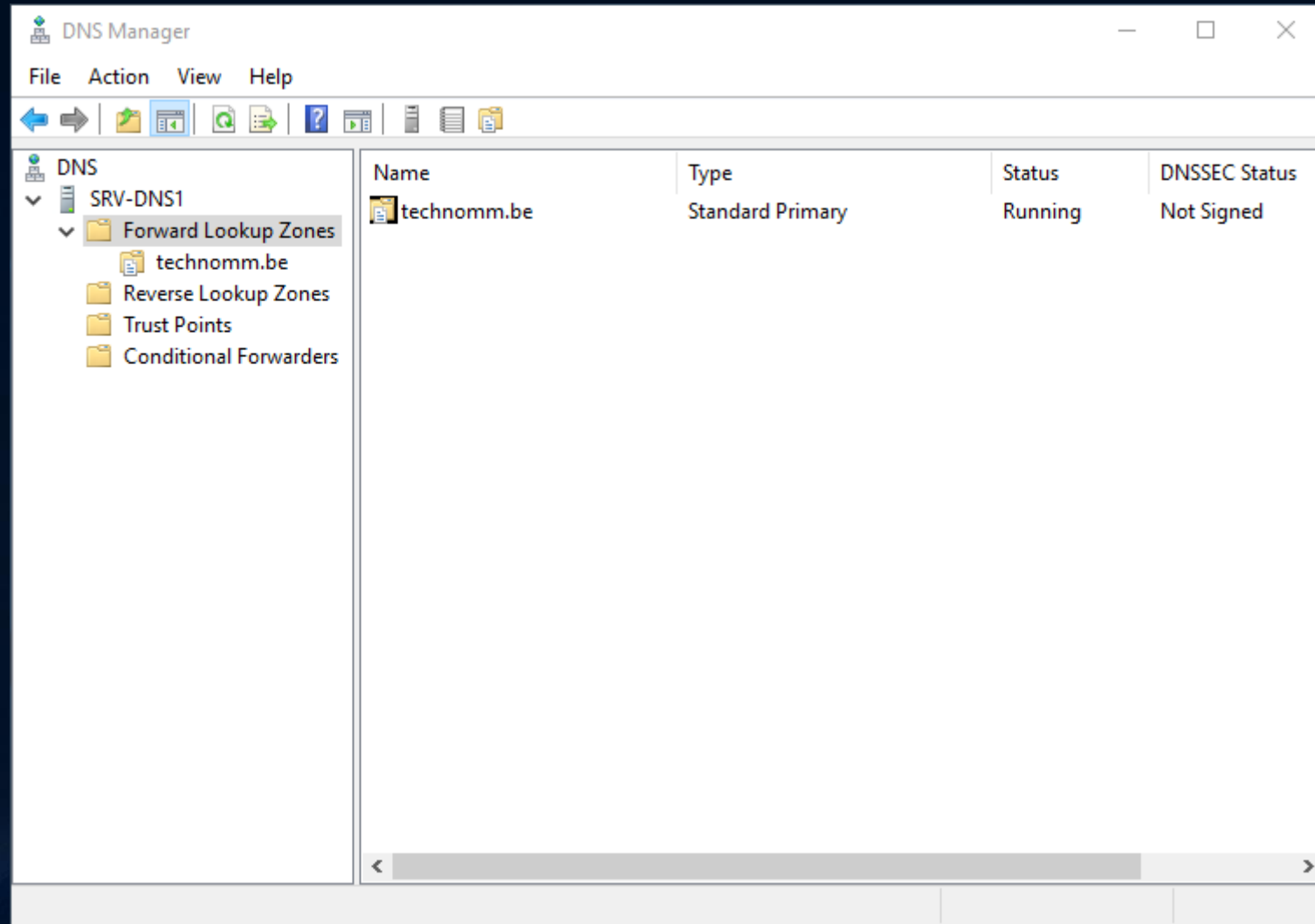
< Back   **Next >**   Cancel

technomm.be Properties

Name Servers	WINS	Zone Transfers
General		
Start of Authority (SOA)		
Status:	Running	<b>Pause</b>
Type:	Primary	Change...
Replication:	Not an Active Directory-integrated zone	Change...
Zone file name:		
technomm.be.dns		
Dynamic updates: <b>None</b>		
 Allowing nonsecure dynamic updates is a significant security vulnerability because updates can be accepted from untrusted sources.		
To set aging/scavenging properties, click Aging.		
Aging...		

OK   Cancel   Apply   Help

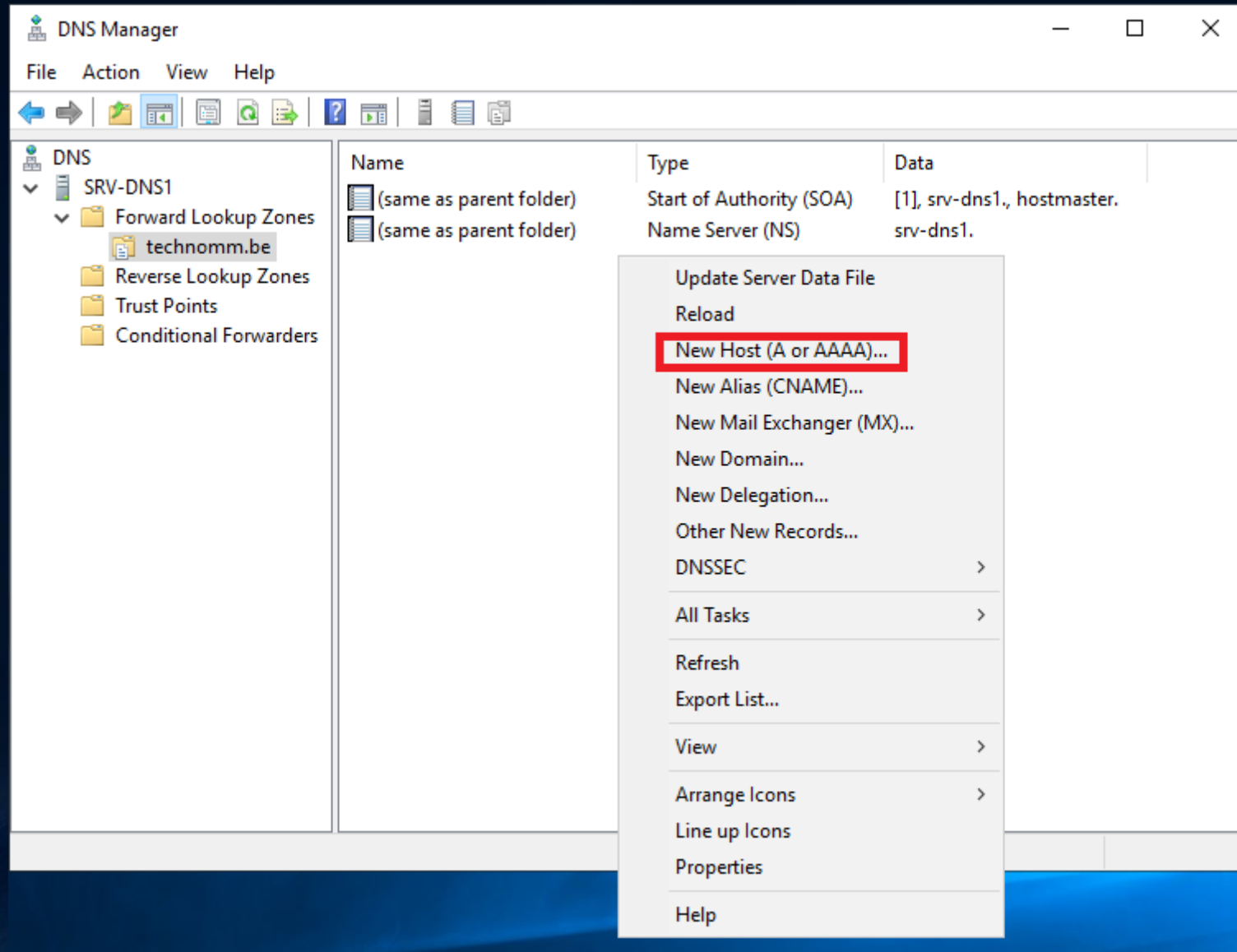
# Configuration zones:



The screenshot shows the Windows DNS Manager application. The left-hand pane displays a tree view of the DNS hierarchy. Under 'SRV-DNS1', the 'Forward Lookup Zones' folder is expanded, showing a sub-entry for 'technomm.be'. The right-hand pane displays a table with the following data:

Name	Type	Status	DNSSEC Status
technomm.be	Standard Primary	Running	Not Signed

# Configuration zones:



# Configuration zones:

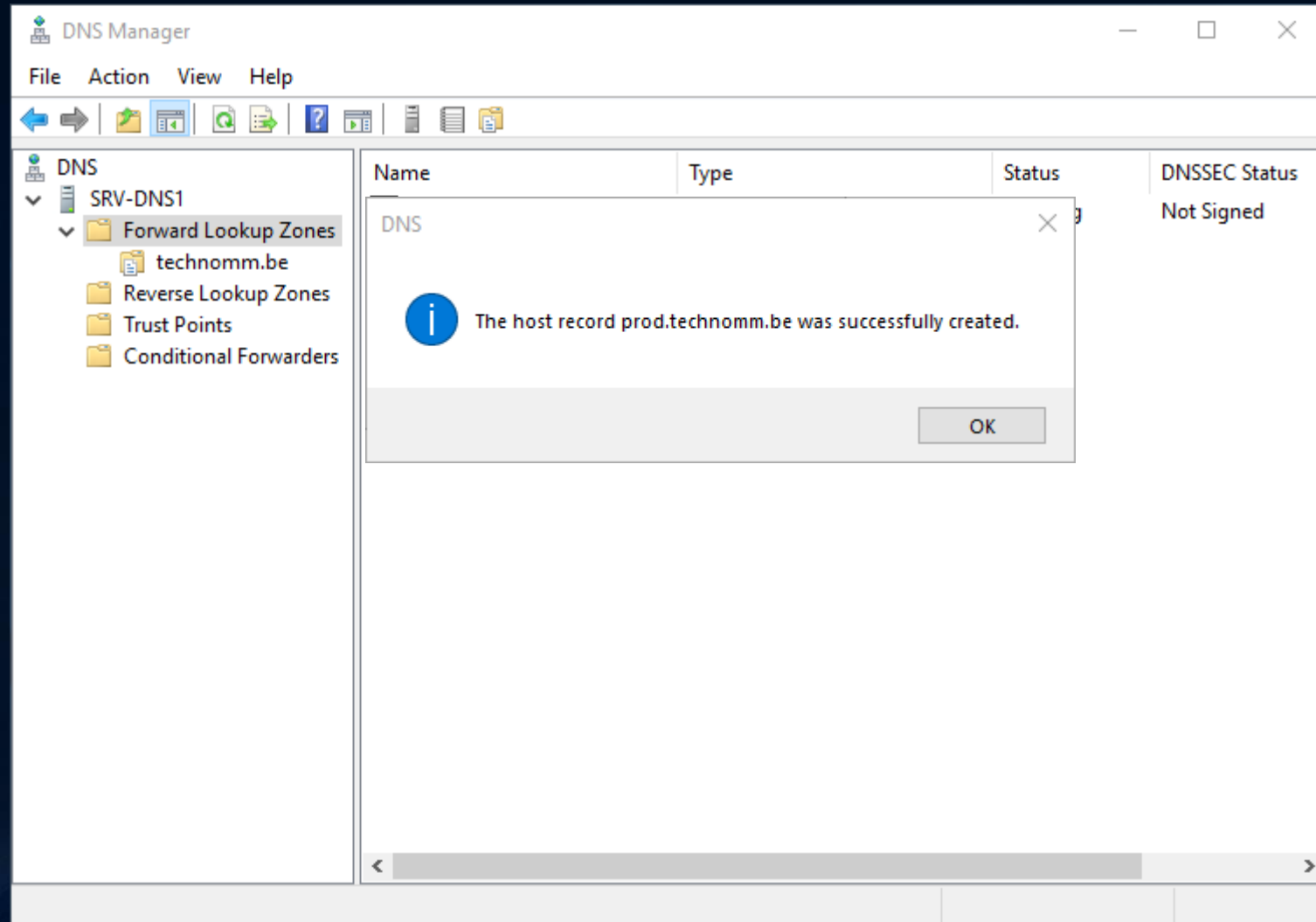
The screenshot shows the Windows DNS Manager interface. On the left, the tree view shows the hierarchy: DNS > SRV-DNS1 > Forward Lookup Zones > technomm.be. A 'New Host' dialog box is open, allowing the user to add a new host record. The dialog contains the following fields and options:

- Name (uses parent domain name if blank):** prod
- Fully qualified domain name (FQDN):** prod.technomm.be.
- IP address:** 10.10.6.112
- Create associated pointer (PTR) record

At the bottom of the dialog, there are two buttons: 'Add Host' (highlighted with a red box) and 'Cancel'. In the background, a table shows the status of the zone:

Status	DNSSEC Status
Running	Not Signed

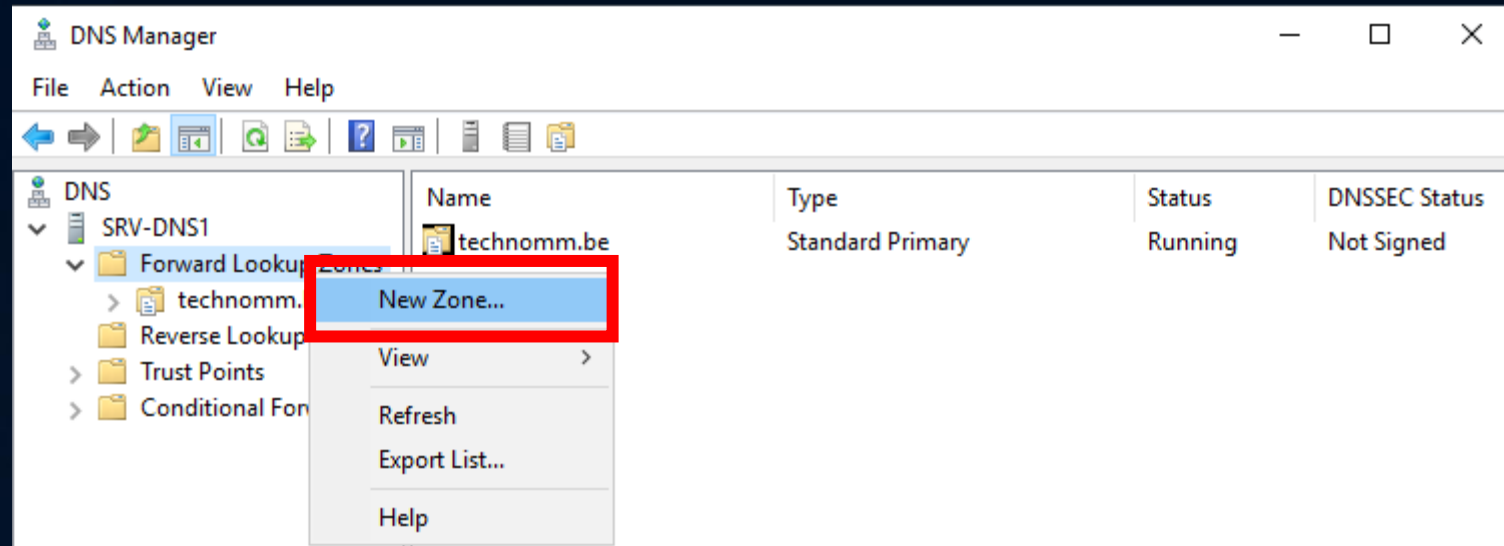
# Configuration zones:



# Configuration des zones

(SECONDAIRES)

# Configuration zones:




# Configuration zones:





# Configuration zones:

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Creates a copy of a zone that exists on another server. This option helps balance the processing load of primary servers and provides fault tolerance.

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New Zone Wizard ✕

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What is the name of the new zone? 

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Zone name:

< Back **Next >** Cancel

# Configuration zones:

New Zone Wizard ✕

**Master DNS Servers**  
The secondary zone is copied from one or more DNS servers.

Specify the DNS servers from which you want to copy the zone. Servers are contacted in the order shown.

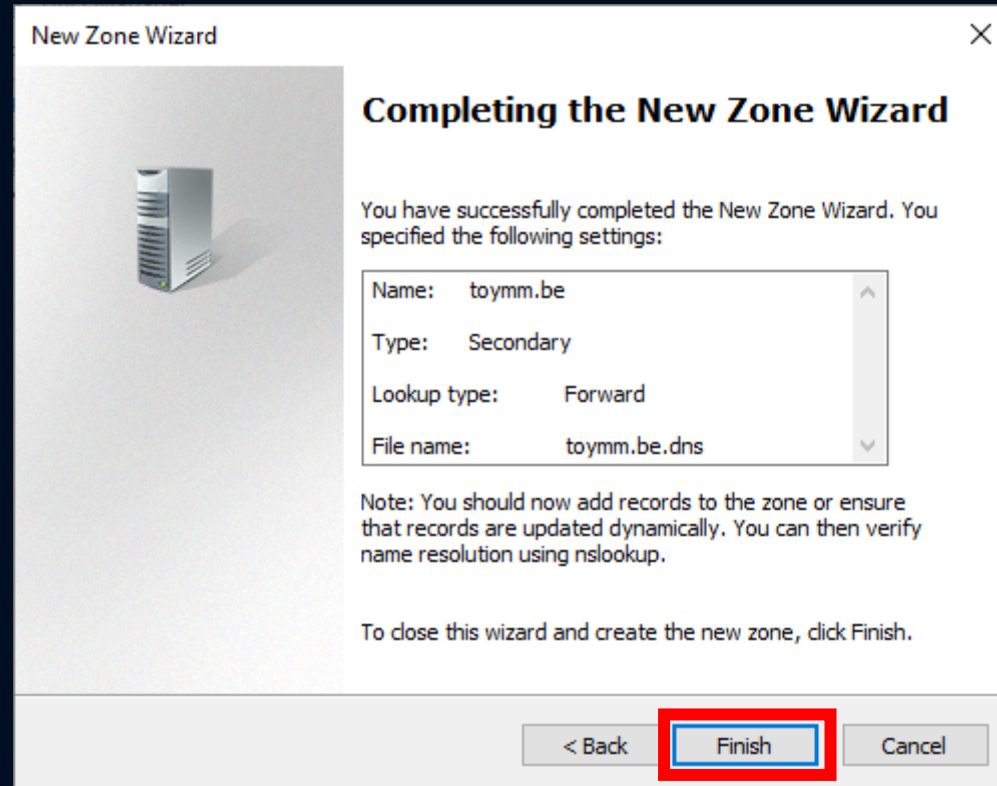
Master Servers:

IP Address	Server FQDN	Validated
<Click here to ...		
✓ 10.10.6.113	SRV-DNS-TOY	OK

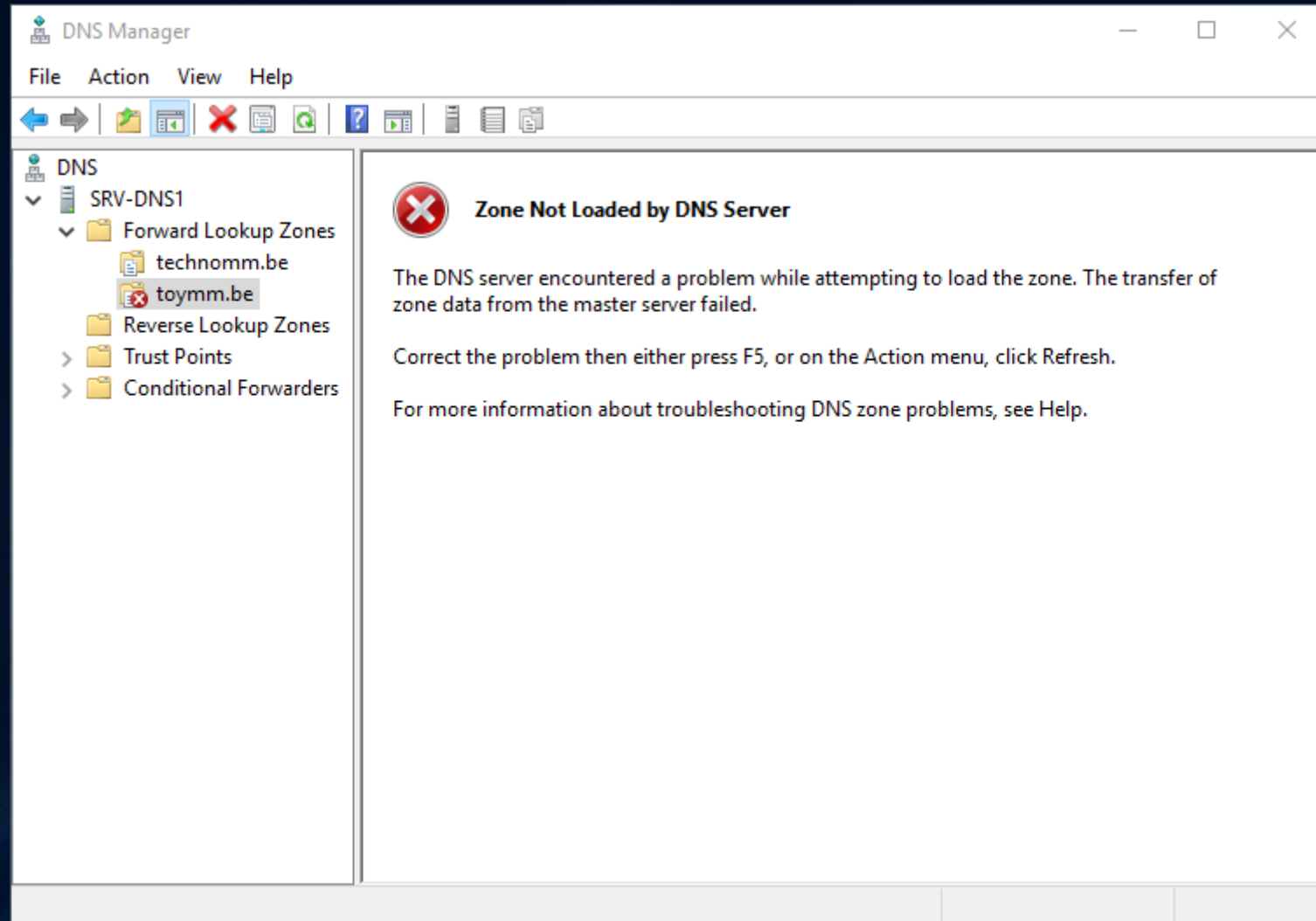
Buttons: Delete, Up, Down

Navigation: < Back, **Next >**, Cancel

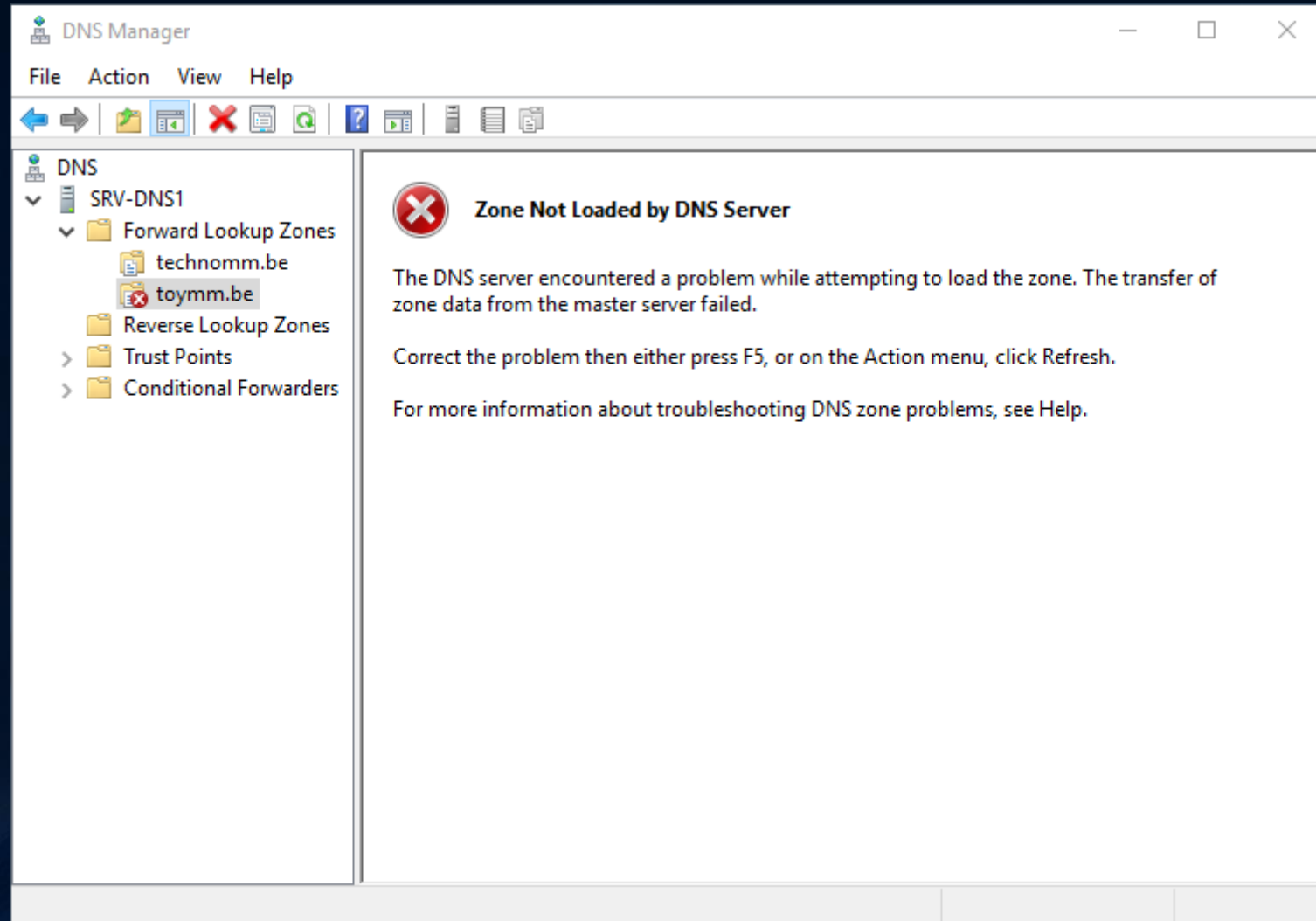
# Configuration zones:



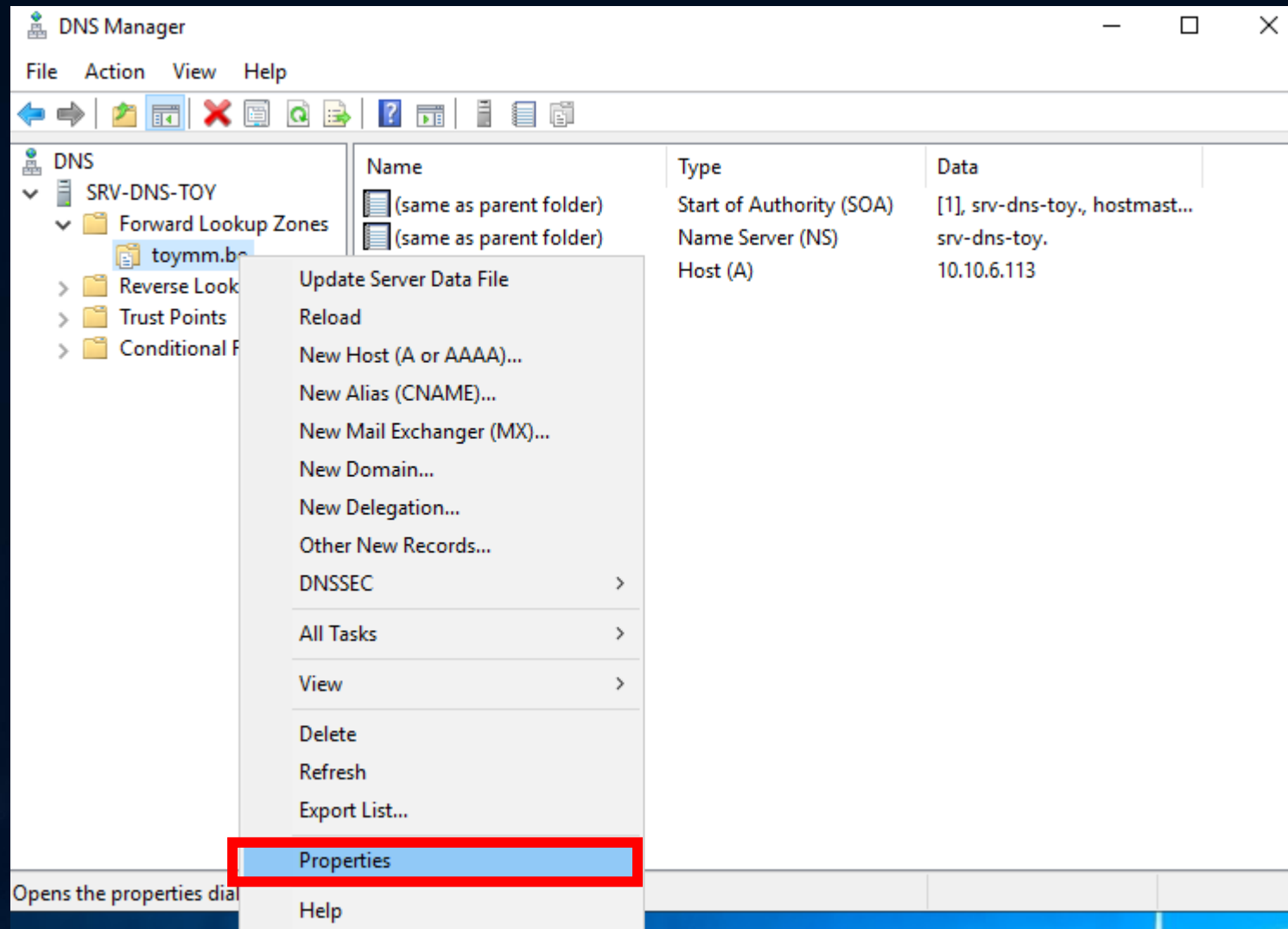
# Configuration zones:



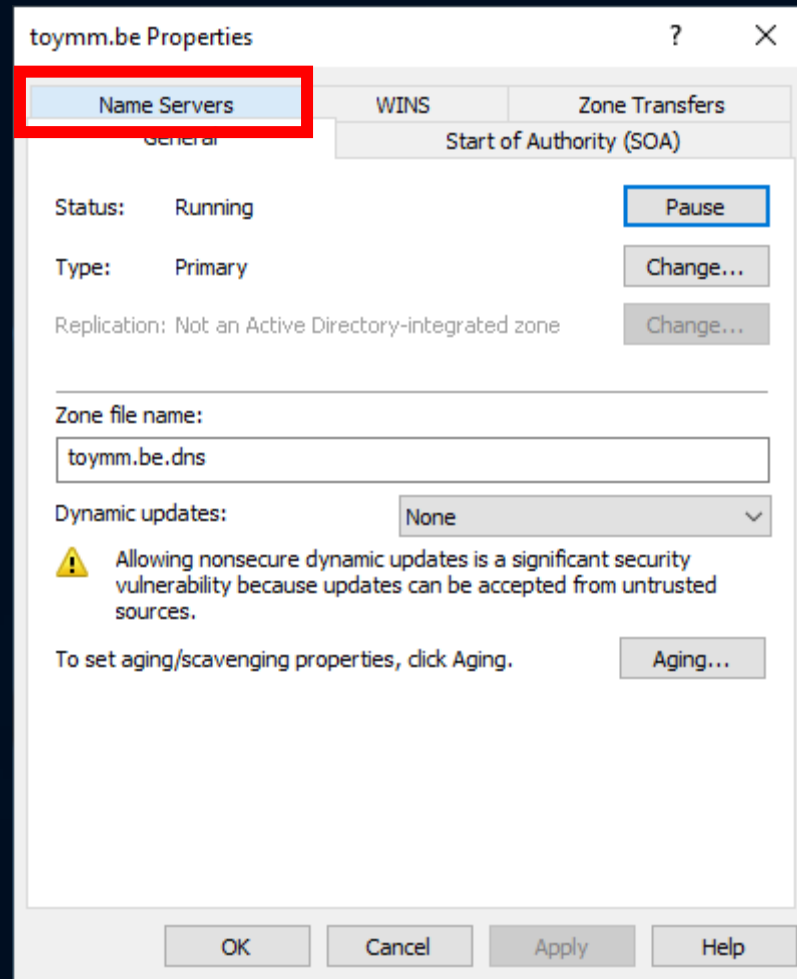
# Configuration zones:



# Transfert de zone(s):

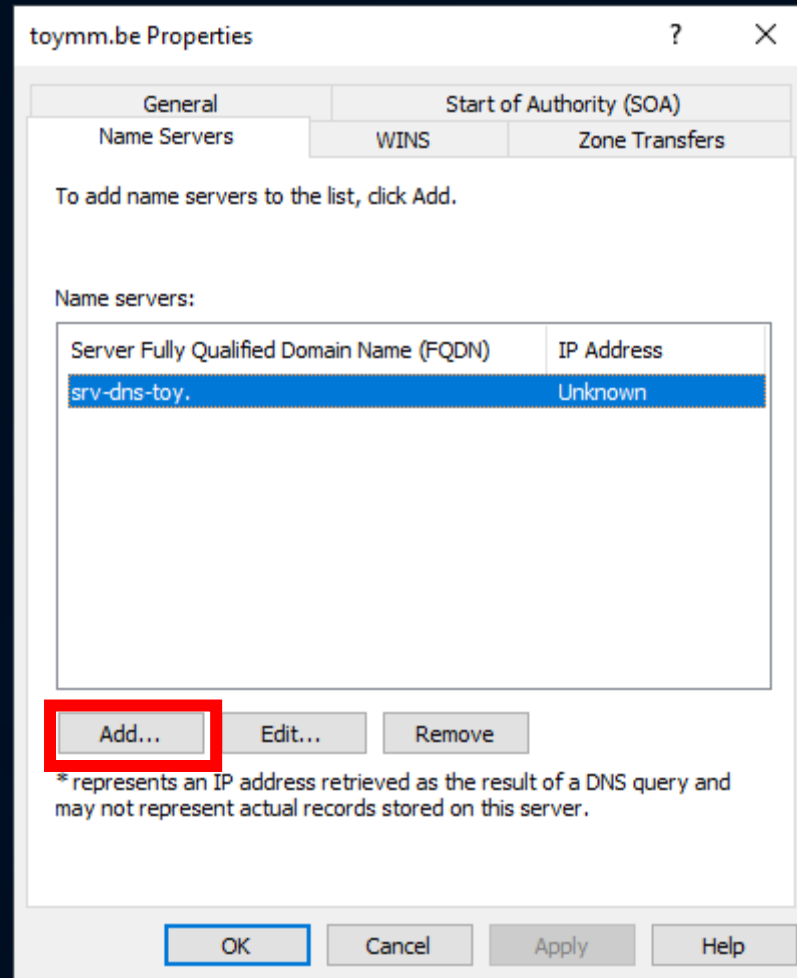


# Transfert de zone(s):





# Transfert de zone(s):



# Transfert de zone(s):

New Name Server Record ✕

Enter a server name and one or more IP addresses. Both are required to identify the name server.

Server fully qualified domain name (FQDN):

SRV-DNS1 Resolve

IP Addresses of this NS record:


IP Address	Validated
<Click here to add an IP Address>	
✓ 10.10.6.112	OK

Delete

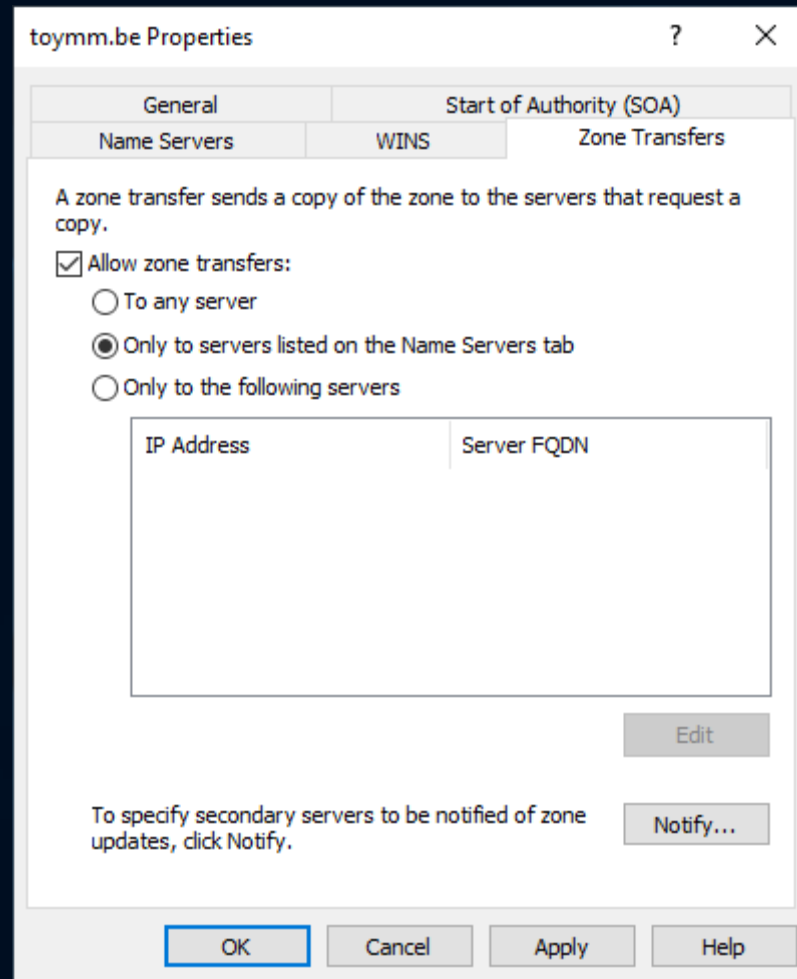
Up

Down

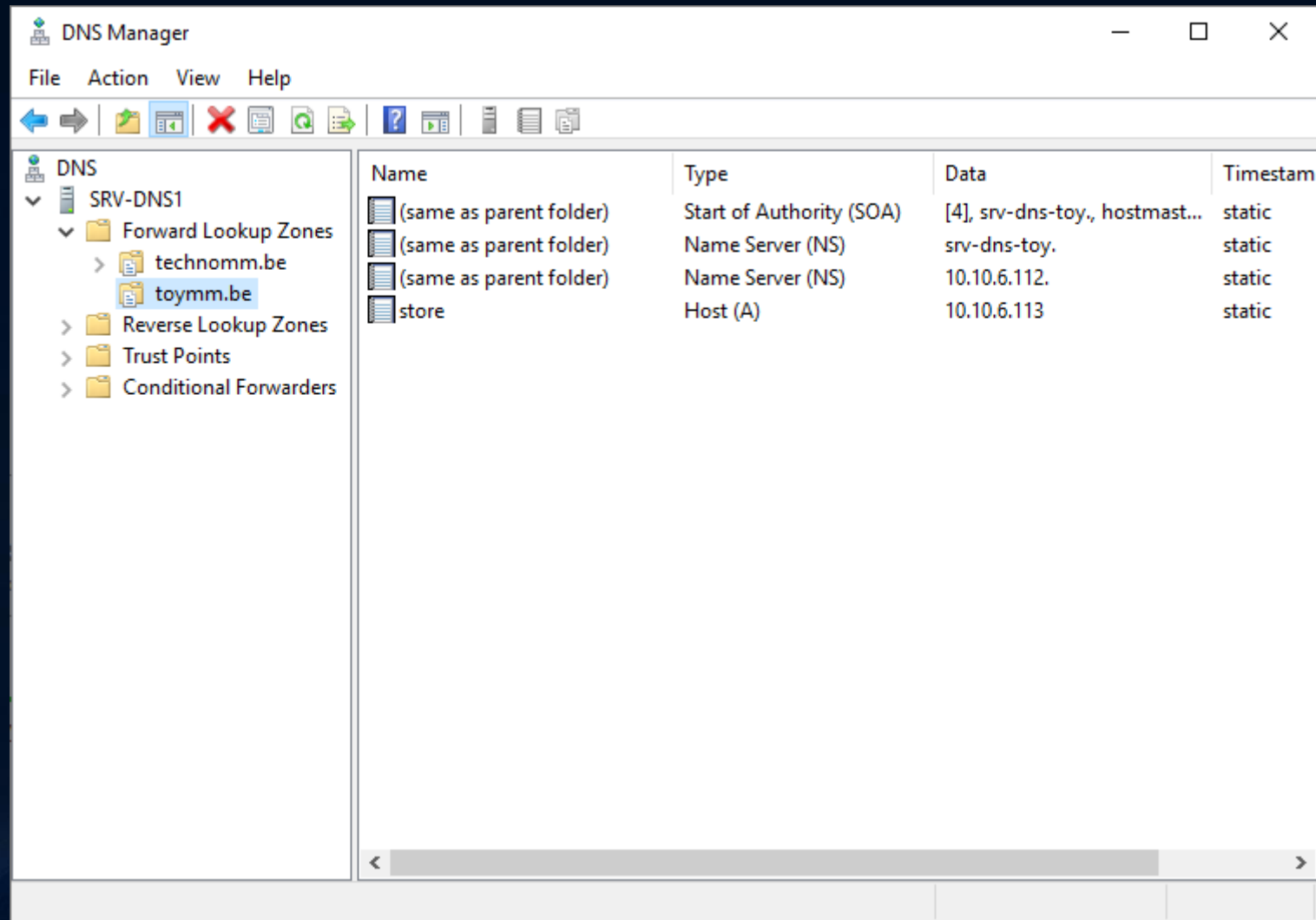
OK Cancel



# Transfert de zone(s):



# Transfert de zone(s):



The screenshot shows the Windows DNS Manager interface. The left-hand pane displays the DNS hierarchy, with the 'toymm.be' zone selected under 'Forward Lookup Zones'. The right-hand pane displays a table of records being transferred.

Name	Type	Data	Timestam
(same as parent folder)	Start of Authority (SOA)	[4], srv-dns-toy., hostmast...	static
(same as parent folder)	Name Server (NS)	srv-dns-toy.	static
(same as parent folder)	Name Server (NS)	10.10.6.112.	static
store	Host (A)	10.10.6.113	static

# Démonstration

- Transfert de zones en temps réel
- Mises à jours dynamique
- Nslookup de zones

**MERCI DE VOTRE ÉCOUTE !**

**Avez-vous des questions ?**