

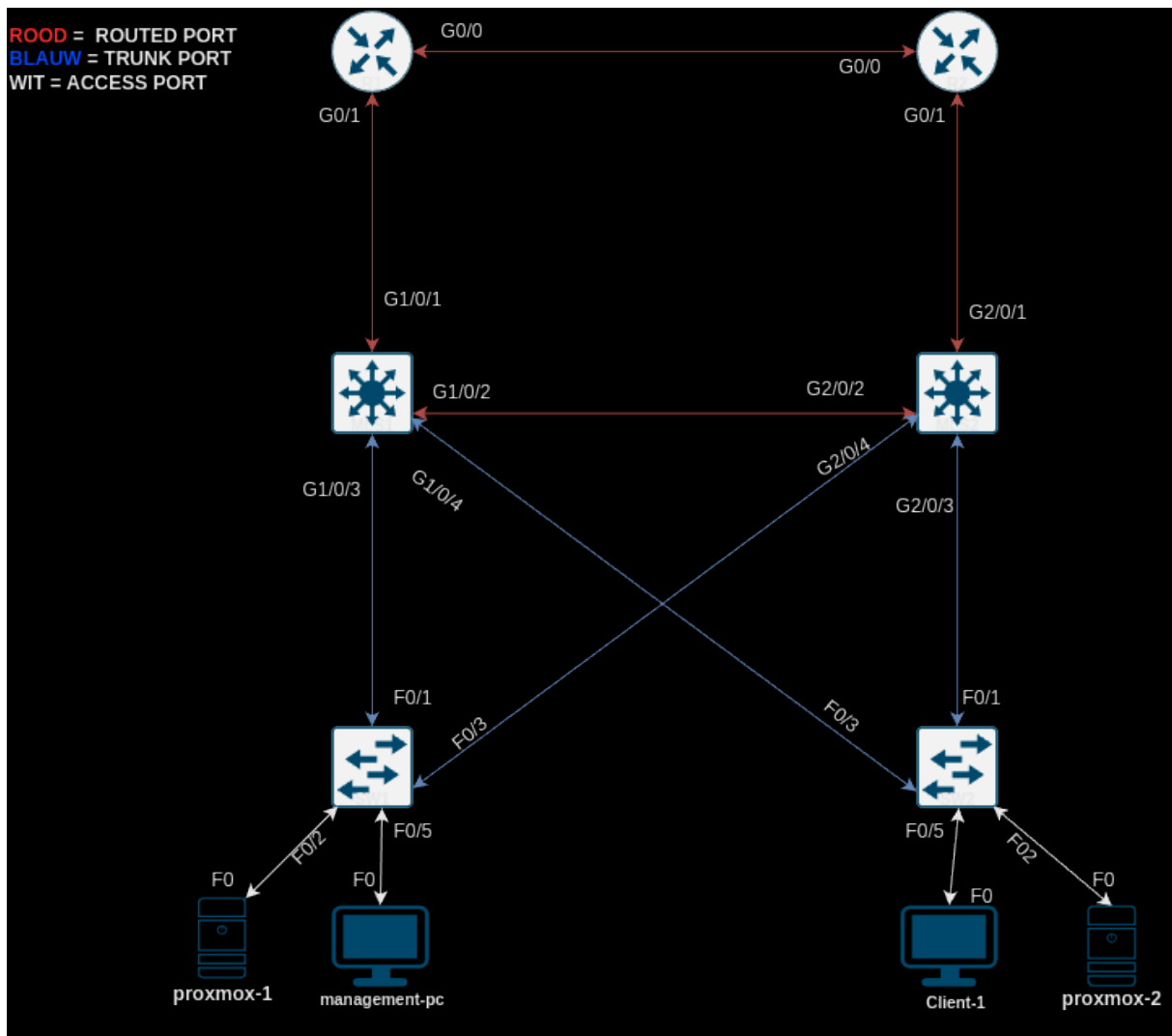
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1 Network topologie



1.1 VLAN TABEL

| Vlan id | Naam | Beschrijving | Subnet |
|---------|------------|------------------------|-----------------|
| 10 | servers | servers | 192.168.10.0/24 |
| 20 | clients | Clients & devices | 192.168.20.0/24 |
| 99 | management | management | 192.168.99.0/28 |
| 100 | native | Native network traffic | / |
| 999 | blackhole | | |

1.2 Subnets

| Subnets | Subnetmasker | Gateway | Beschrijving |
|-------------------|-----------------|----------------|-----------------------------|
| 192.168.10.0/24 | 255.255.255.0 | 192.168.10.1 | Servers vlan |
| 192.168.20.0/24 | 255.255.255.0 | 192.168.20.1 | Clients vlan |
| 192.168.99.0/28 | 255.255.255.240 | 192.168.99.0 | Management vlan |
| 192.168.101.0/30 | 255.255.255.252 | 192.168.101.1 | MLS1 <--> R1 routed port |
| 192.168.101.4/30 | 255.255.255.252 | 192.168.101.5 | MLS1 <---> MLS2 routed port |
| 192.168.101.8/30 | 255.255.255.252 | 192.168.101.9 | MLS2 <--> R2 routed port |
| 192.168.101.12/30 | 255.255.255.252 | 192.168.101.13 | R1 <--> R2 routed port |

1.3 Addresseringschema

| Device | Interface / Port | Connect ed device | IPv4 ADDRESS | Subnet Mask | Default Gateway |
|--------|------------------|-------------------|----------------|-----------------|-----------------|
| R1 | VLAN 99 | | | | |
| | G0/0 | R2 | 192.168.101.13 | 255.255.255.252 | |
| | G0/1 | MLS1 | 192.168.101.2 | 255.255.255.252 | |
| R2 | VLAN 99 | | | | |
| | G0/0 | R1 | 192.168.101.14 | 255.255.255.252 | |
| | G0/1 | MLS2 | 192.168.101.10 | 255.255.255.252 | |
| SW1 | VLAN99 | | 192.168.99.4 | 255.255.255.240 | |
| | F0/1 | MLS1 | | | |
| | F0/2 | Proxmox -1 | | | |
| | F0/3 | MLS2 | | | |
| | F0/4 | SW2 | | | |
| | F0/5 | Management-pc | | | |
| SW2 | VLAN 99 | | 192.168.99.5 | 255.255.255.240 | |
| | F0/1 | MLS2 | | | |
| | F0/2 | Proxmox -2 | | | |
| | F0/3 | MLS1 | | | |
| | F0/4 | SW1 | | | |
| | F0/5 | SW1 | | | |
| MLS1 | VLAN 99 | | 192.168.99.2 | 255.255.255.240 | |
| | VLAN 10 | | 192.168.10.254 | 255.255.255.0 | |
| | VLAN 20 | | 192.168.20.1 | 255.255.255.0 | |
| | VLAN 100 | | | | |
| | F0/1 | R1 | 192.168.101.1 | 255.255.255.252 | |

| | | | | | |
|------------------|----------|------------|----------------|-----------------|----------------|
| | F0/2 | MLS2 | 192.168.101.5 | 255.255.255.252 | |
| | F0/3 | SW1 | | | |
| | F0/4 | SW2 | | | |
| MLS2 | VLAN 99 | | 192.168.99.1 | 255.255.255.240 | |
| | VLAN 10 | | 192.168.10.253 | 255.255.255.0 | |
| | VLAN 20 | | 192.168.20.2 | 255.255.255.0 | |
| | VLAN 100 | | | | |
| | F0/1 | R2 | 192.168.101.9 | 255.255.255.252 | |
| | F0/2 | MLS1 | 192.168.101.6 | 255.255.255.252 | |
| | F0/3 | SW2 | | | |
| | F0/4 | SW1 | | | |
| Managem nt pc | F0 | SW1 | 192.168.99.8 | 255.255.255.240 | 192.168.99.3 |
| Client -1 | F0 | SW2 | 192.168.20.10 | 255.255.255.0 | 192.168.20.3 |
| Proxmox-1 | F0 | SW1 | 192.168.10.20 | 255.255.255.0 | 192.168.10.252 |
| DC-1 | | Proxmox -1 | 192.168.10.2 | 255.255.255.0 | 192.168.10.252 |
| FS-1 | | Proxmox -2 | 192.168.10.3 | 255.255.255.0 | 192.168.10.252 |
| Proxmox-2 | | SW2 | 192.168.10.21 | 255.255.255.0 | 192.168.10.252 |
| DC-2 | | Proxmox -2 | 192.168.10.5 | 255.255.255.0 | 192.168.10.252 |
| SM-backup | | Proxmox -1 | 192.168.10.4 | 255.255.255.0 | 192.168.10.252 |

1.4 HSRP schema

| Group | Interfa ce | Virtual IP | Priorit y | Preem ption | Active router | Standby router |
|-------|---------------|----------------|--------------|----------------|------------------|-------------------|
| 10 | VLAN 10 | 192.168.10.252 | 150 | Enable d | 192.168.10.254 | 192.168.10.253 |
| 20 | VLAN 20 | 192.168.20.3 | 150 | Enable d | 192.168.20.1 | 192.168.20.2 |
| 99 | VLAN 99 | 192.168.99.3 | 150 | Enable d | 192.168.99.1 | 192.168.99.2 |

1.5 VM schema

| hostname | ip-address | OS | description |
|-----------|--------------|--------|-------------------|
| DC-1 | 192.168.10.2 | WS2022 | Domain-controller |
| DC-2 | 192.168.10.5 | WS2022 | Domain-controller |
| FS-1 | 192.168.10.3 | WS2022 | File-server |
| SM-backup | 192.168.10.4 | WS2022 | Backup-server |

2 Netwerk-implementatie

2.1 Vlans aanmaken

2.1.1 Algemene configuratie

vlans is voor alle switches hetzelfde.

```
SW1 # vlan 10
SW1 (config-vlan) # name servers
SW1 # interface vlan 10
SW1(config-if) # description servers
```

```
SW1 # vlan 20
SW1 (config-vlan) # name clients
SW1 # interface vlan 20
SW1(config-if) # description clients
```

```
SW1 # vlan 99
SW1 (config-vlan) # name management
SW1 # interface Vlan 99
SW1(config-if) # description management vlan
SW1(config-if) # ip address 192.168.99.4 255.255.255.240
```

```
SW1 # vlan 100
SW1 (config-vlan) # name native
SW1 # interface vlan 100
SW1(config-if) # description native-vlan
```

```
SW1 # vlan 999
SW1 (config-vlan) # name blackhole
SW1 # interface vlan 999
SW1 # ip default-gateway 192.168.99.3
```

default-gateway & ip-address SVI is verschillend voor SW2

```
SW2 # ip default-gateway 192.168.99.3
SW2 # ip address 192.168.99.5 255.255.255.240
```

2.2 Switchports (trunk & access)

2.2.1 SW1

```
SW1 # interface FastEthernet0/1
```



```
SW1(config-if) # switchport mode trunk
SW1(config-if) # switchport trunk native vlan 100
SW1(config-if) # switchport nonegotiate
```

```
SW1 # interface FastEthernet0/2
SW1(config-if) # switchport mode access
SW1(config-if) # switchport access vlan 10
```

```
SW1 # interface FastEthernet0/3
SW1(config-if) # switchport mode trunk
SW1(config-if) # switchport trunk native vlan 100
SW1(config-if) # switchport nonegotiate
```

```
SW1 # interface FastEthernet0/5
SW1(config-if) # switchport mode access
SW1(config-if) # switchport access vlan 99
```

```
SW1 # interface range F0/6 - 24
SW1(config-if) # switchport mode access
SW1(config-if) # switchport access vlan 999
```

```
SW1 # interface F0/4
SW1(config-if) # switchport mode access
SW1(config-if) # switchport access vlan 999
```

```
SW1 # interface range G0/1 - 2
SW1(config-if) # switchport mode access
SW1(config-if) # switchport access vlan 999
```

2.2.2SW2

```
SW2 # interface FastEthernet0/1
SW2(config-if) # switchport mode trunk
SW2(config-if) # switchport trunk native vlan 100
SW2(config-if) # switchport nonegotiate
```

```
SW2 # interface FastEthernet0/2
SW2(config-if) # switchport mode access
SW2(config-if) # switchport access vlan 10
```

```
SW2 # interface FastEthernet0/3
SW2(config-if) # switchport mode trunk
SW2(config-if) # switchport trunk native vlan 100
SW2(config-if) # switchport nonegotiate
```

```
SW2 # interface FastEthernet0/5
SW2(config-if) # switchport mode access
SW2(config-if) # switchport access vlan 20
```

```
SW2 # interface range F0/6 - 24
SW2(config-if) # switchport mode access
SW2(config-if) # switchport access vlan 999
SW2 # interface F0/4
SW2(config-if) # switchport mode access
SW2(config-if) # switchport access vlan 999
```

```
SW2 # interface range G0/1 - 2
```

```
SW2(config-if) # switchport mode access
SW2(config-if) # switchport access vlan 999
```

2.2.3 MLS1

```
MLS1 # interface G1/0/3
MLS1(config-if)#switchport trunk encapsulation dot1q
MLS1(config-if) # switchport mode trunk
MLS1(config-if) # switchport trunk native vlan 100
MLS1(config-if) # switchport nonegotiate
```

```
MLS1 # interface G1/0/4
MLS1(config-if)#switchport trunk encapsulation dot1q
MLS1(config-if) # switchport mode trunk
MLS1(config-if) # switchport trunk native vlan 100
MLS1(config-if) # switchport nonegotiate
```

```
MLS1 # interface range F0/5 - 28
MLS1(config-if-range) # switchport mode access
MLS1(config-if-range) # switchport access vlan 999
```

2.2.4 MLS2

```
MLS2 # interface G2/0/3
MLS2(config-if) # switchport mode trunk
MLS2(config-if) # switchport trunk native vlan 100
MLS2(config-if) # switchport nonegotiate
```

```
MLS2 # interface G2/0/4
MLS2(config-if) # switchport mode trunk
MLS2(config-if) # switchport trunk native vlan 100
MLS2(config-if) # switchport nonegotiate
```

```
MLS2 # interface range G2/0/5 - 28
MLS2(config-if-range) # switchport mode access
MLS2(config-if-range) # switchport access vlan 999
```

2.3 Intervlan routing

2.3.1 MLS1

```
MLS1 # interface Vlan20
MLS1(config-if) # ip address 192.168.20.1 255.255.255.0
```

```
MLS1 # interface Vlan99
MLS1(config-if) # ip address 192.168.99.1 255.255.255.240
```

```
MLS1 # interface Vlan10
MLS1(config-if) # ip address 192.168.10.254 255.255.255.0
MLS1(config) # ip routing
```

2.3.2 MLS2

```
MLS2 # interface vlan 99
MLS2(config-if) # ip address 192.168.99.1 255.255.255.240
MLS2(config) # ip routing
```

2.4 Routed ports

2.4.1 MLS1

```
MLS1 # interface G1/0/1
MLS1(config-if) # no switchport
MLS1(config-if) # ip address 192.168.101.1 255.255.255.252
```

```
MLS1 # interface G2/0/2
MLS1(config-if) # no switchport
MLS1(config-if) # ip address 192.168.101.5 255.255.255.252
```

2.4.2 MLS2

```
MLS2 # interface G1/0/1
MLS2(config-if) # no switchport
MLS2(config-if) # ip address 192.168.101.9 255.255.255.252
```

```
MLS2 # interface G2/0/2
MLS2(config-if) # no switchport
MLS2(config-if) # ip address 192.168.101.6 255.255.255.252
```

2.4.3 R1

```
R1 # interface GigabitEthernet0/0
R1(config-if) # ip address 192.168.101.13 255.255.255.252
```

```
R1 # interface GigabitEthernet0/1
R1(config-if) # ip address 192.168.101.2 255.255.255.252
```

2.4.4 R2

```
R2 # interface GigabitEthernet0/0
R2(config-if) # ip address 192.168.101.14 255.255.255.252
```

```
R2 # interface GigabitEthernet0/1
R2(config-if) # ip address 192.168.101.10 255.255.255.252
```

2.5 HSRP

2.5.1 MLS1

```
MLS1 (config)# interface vlan 10
MLS1 (config-if)# standby version 2
MLS1 (config-if)# standby 10 ip 192.168.10.252
MLS1 (config-if)# standby 10 priority 150
MLS1 (config-if)# standby 10 preempt
```

```
MLS1 (config)# interface vlan 99
MLS1 (config-if)# standby version 2
MLS1 (config-if)# standby 99 ip 192.168.99.3
```

```
MLS1 (config)# interface vlan 20
MLS1 (config)# standby version 2
MLS1 (config-if)# standby 20 ip 192.168.20.3
```

2.5.2 MLS2

```
MLS2 (config)# interface vlan 10
MLS2 (config-if)# standby version 2
MLS2 (config-if)# standby 10 ip 192.168.10.252
```

```
MLS2 (config)# interface vlan 99
MLS2 (config-if)# standby version 2
MLS2 (config-if)# standby 99 ip 192.168.99.3
MLS2 (config-if)# standby 99 priority 150
MLS2 (config-if)# standby 99 preempt
```

```
MLS2 (config)# interface vlan 20
MLS2 (config-if)# standby version 2
MLS2 (config-if)# standby 20 ip 192.168.20.3
```

2.6 Remote management & Security instellen

2.6.1 Algemene configuratie

```
SW1 # hostname SW1
SW1 # enable secret ****
SW1 # ip domain-name servermaffia.test
SW1 # crypto key generate rsa general-keys modulus 2048
SW1 # username servermaffia secret ****
SW1 # line vty 0 15
SW1(config-line) # password ****
SW1(config-line) # login
SW1(config-line) # login local
SW1(config-line) # transport input ssh
SW1 # line console 0
SW1(config-line) # password ****
SW1(config-line) # login
SW2 # service password-encryption
SW2 # banner motd Unauthorized access is forbidden!
SW2 copy running-config startup-config
Deze configuratie is voor elk netwerk device hetzelfde
```

2.7 Network testing (packet-tracer)

2.7.1.1 Algemene testen

Met het commando 'show mac address-table' kunnen we zien als het mactabel geupdate en aangevuld is. Als de tabel leeg zou zijn dan zou het betekenen dat er iets mis is en dat de toestel niet bereikbaar is.

```
SW1#show mac address-table
Mac Address Table
-----
```

| Vlan | Mac Address | Type | Ports |
|------|----------------|---------|-------|
| 1 | 0002.1613.4803 | DYNAMIC | Fa0/1 |
| 1 | 00d0.ffe4.e004 | DYNAMIC | Fa0/3 |
| 1 | 00e0.f71e.4804 | DYNAMIC | Fa0/4 |
| 10 | 0002.4ac5.86bc | DYNAMIC | Fa0/4 |
| 10 | 0007.eca8.1801 | DYNAMIC | Fa0/3 |
| 10 | 0050.0f40.2901 | DYNAMIC | Fa0/1 |
| 20 | 0000.0c9f.f014 | DYNAMIC | Fa0/1 |
| 20 | 0007.eca8.1802 | DYNAMIC | Fa0/3 |
| 20 | 0050.0f40.2902 | DYNAMIC | Fa0/1 |
| 20 | 0060.3e10.3201 | DYNAMIC | Fa0/4 |
| 99 | 0007.eca8.1803 | DYNAMIC | Fa0/3 |
| 99 | 0050.0f40.2903 | DYNAMIC | Fa0/1 |

```
SW1#
```

Met het commando 'show interfaces' kunnen we zien als elke interface UP en connected is of niet en ook als er problemen zijn op die interface.

```
SW1#show interfaces
FastEthernet0/1 is up, line protocol is up (connected)
Hardware is Lance, address is 0030.f2eb.2d01 (bia 0030.f2eb.2d01)
BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s
input flow-control is off, output flow-control is off
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:08, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  2357 packets output, 263570 bytes, 0 underruns
    0 output errors, 0 collisions, 10 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out

FastEthernet0/2 is up, line protocol is up (connected)
Hardware is Lance, address is 0030.f2eb.2d02 (bia 0030.f2eb.2d02)
BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s
input flow-control is off, output flow-control is off
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:08, output 00:00:05, output hang never
Last clearing of "show interface" counters never
```

Met het commando 'show cdp neighbors' kunnen we zien welke andere toestellen zoals switches en routers er verbonden zijn met deze toestel. Als er niks word weergegeven dan weten we dat er een probleem is met het toestel waarop we bezig zijn of als er een toestel toch verbonden is en we krijgen het niet te zien in deze lijst dan weten we dat er op die interface een probleem is.

```
SW1#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID        Local Intrfce    Holdtme    Capability    Platform    Port ID
MLS2             Fas 0/3             134                3560         Fas 0/4
MLS1             Fas 0/1             134                3560         Fas 0/3
SW2              Fas 0/4             134                S            2960         Fas 0/4
SW1#
```

Ping

Met het ping commando kunnen we vanuit andere toestellen een icmp packet sturen naar het toestel die we willen bereiken. Als we een icmp packet terug krijgen dan betekent dat het bereikbaar is anders niet.

```
C:\>ping 192.168.99.4

Pinging 192.168.99.4 with 32 bytes of data:

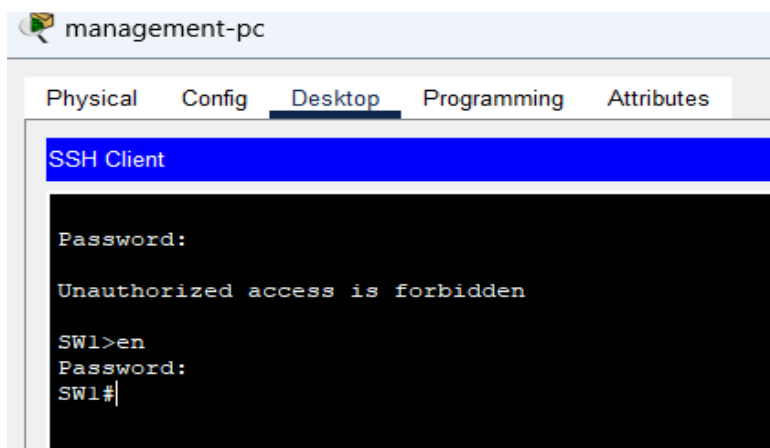
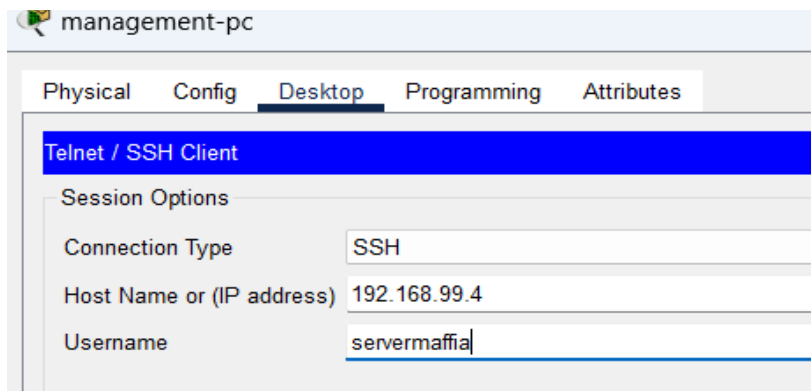
Reply from 192.168.99.4: bytes=32 time<1ms TTL=255
Reply from 192.168.99.4: bytes=32 time<1ms TTL=255
Reply from 192.168.99.4: bytes=32 time<1ms TTL=255
Reply from 192.168.99.4: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.99.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Ik heb een ping gedaan vanuit de management pc naar Switch 1 en ik kreeg een reply terug.

ssh



De SSH test voor switch1 was successvol.

We kunnen alle instellingen ook controleren met het commando
show-running config

De testen hierboven werden uitgevoerd op alle toestellen behalve op de servers, daar werd enkel het ping getest

2.7.1.2 HSRP test

MLS1 :

```
interface Vlan10
description servers
mac-address 0050.0f40.2901
ip address 192.168.10.254 255.255.255.0
standby version 2
standby 10 ip 192.168.10.252
standby 10 priority 150
standby 10 preempt
!
interface Vlan20
description clients
mac-address 0050.0f40.2902
ip address 192.168.20.1 255.255.255.0
standby version 2
standby 20 ip 192.168.20.3
standby 20 priority 150
standby 20 preempt
!
interface Vlan99
description management
mac-address 0050.0f40.2903
ip address 192.168.99.2 255.255.255.240
standby version 2
standby 99 ip 192.168.99.3
!
interface Vlan100
description native
mac-address 0050.0f40.2905
no ip address
```

MLS1 is het hoofd gateway voor vlan 10 en vlan 20.

MLS2 :

```
interface Vlan10
description server
mac-address 0007.eca8.1801
ip address 192.168.10.253 255.255.255.0
standby version 2
standby 10 ip 192.168.10.252
!
interface Vlan20
description servers
mac-address 0007.eca8.1802
ip address 192.168.20.2 255.255.255.0
standby version 2
standby 20 ip 192.168.20.3
!
interface Vlan99
description management
mac-address 0007.eca8.1803
ip address 192.168.99.1 255.255.255.240
standby version 2
standby 99 ip 192.168.99.3
standby 99 priority 150
standby 99 preempt
standby 0 preempt
```


MLS2 is het hoofd gateway van vlan 99.

Als we pingen van de Management pc naar 1 van de servers , zien we dat het verkeer naar het hoofd gateway van de management vlan 99 word verstuurd namelijk de 192.168.99.1 (MLS2)

```
C:\>tracert 192.168.10.20

Tracing route to 192.168.10.20 over a maximum of 30 hops:

  1  0 ms    0 ms    0 ms    192.168.99.1
  2  0 ms    0 ms    0 ms    192.168.10.20

Trace complete.

C:\>
```

Na het verwijderen van MLS2 en hetzelfde test opnieuw uit te voeren zien we dat MLS1 (192.168.99.2) de gateway word van vlan99.

```
C:\>tracert 192.168.10.20

Tracing route to 192.168.10.20 over a maximum of 30 hops:

  1  0 ms      1 ms      0 ms      192.168.99.2
  2  0 ms      0 ms      0 ms      192.168.10.20

Trace complete.

C:\>
```

Daarna heb ik MLS2 terug toegevoegd en kan er bevestigd worden dat het de rol als gateway terug opneemt voor vlan99.

```
C:\>tracert 192.168.10.20

Tracing route to 192.168.10.20 over a maximum of 30 hops:

  1  *          2 ms      0 ms      192.168.99.1
  2  *          0 ms      0 ms      192.168.10.20

Trace complete.
```

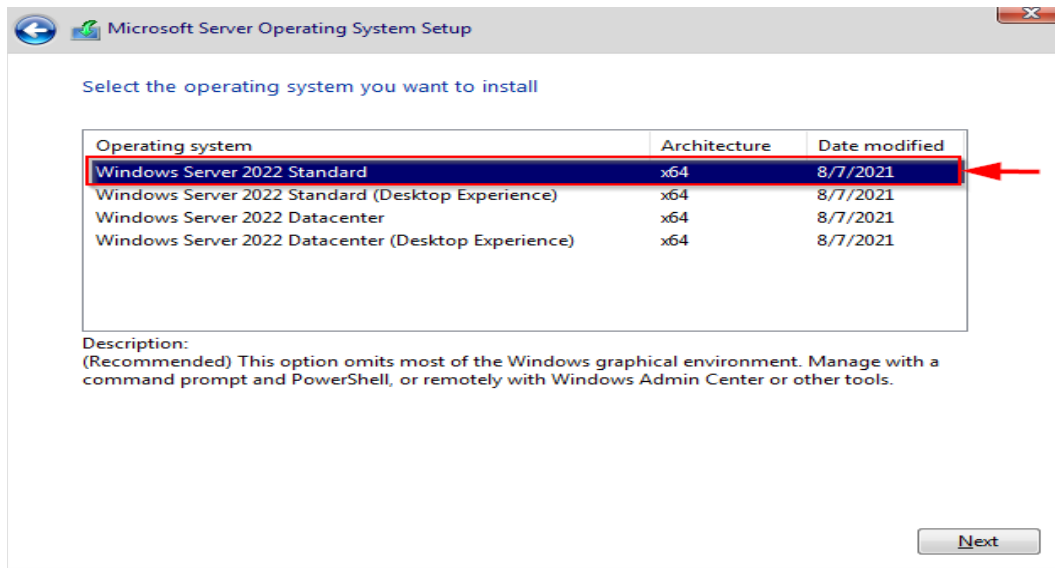
Er kan bevestigd worden dat HSRP werkt.

3 Windows-implementatie

3.1 Domain-controllers

3.1.1 DC1-installatie

Wij kiezen voor Windows Server 2022 Standard (Geen Desktop Experience)



Timezone veranderen

Set-TimeZone -Name "Romance Standard Time"

```
Id                : Romance Standard Time
DisplayName        : (UTC+01:00) Brussels, Copenhagen, Madrid, Paris
StandardName      : Romance Standard Time
DaylightName      : Romance Daylight Time
BaseUtcOffset     : 01:00:00
SupportsDaylightSavingTime : True
```

Hostname veranderen

rename-computer -newname "DC-1" -restart (dat is de eerste DC)

```
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:              DC-1
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:
```

Fixed ip adres

**new-netipaddress -interfaceindex 4 -ipaddress 192.168.10.2 -prefixlength 24
defaultgateway 192.168.10.254**

DNS

set-dnsclientserveraddress -interfaceindex 4 -serveraddress ("127.0.0.1")

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

Windows IP Configuration

Host Name . . . . . : DC-1
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-29-0B-3C-F8
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::8d19:c299:c461:626b%5(Preferred)
IPv4 Address. . . . . : 192.168.10.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.10.254
DHCPv6 IAID . . . . . : 100666409
DHCPv6 Client DUID. . . . . : 00-01-00-01-2E-7F-EF-0B-00-0C-29-0B-3C-F8
DNS Servers . . . . . : 127.0.0.1
NetBIOS over Tcpip. . . . . : Enabled

PS C:\Users\Administrator>
```

Promoveren als Domain controller:

**Install-windowsfeature -name ad-domain-services -includemanagementtools
Install-ADDSForest -DomainName "ServerMafia.test" -ForestMode WinThreshold -
DomainMode WinThreshold -installdns**

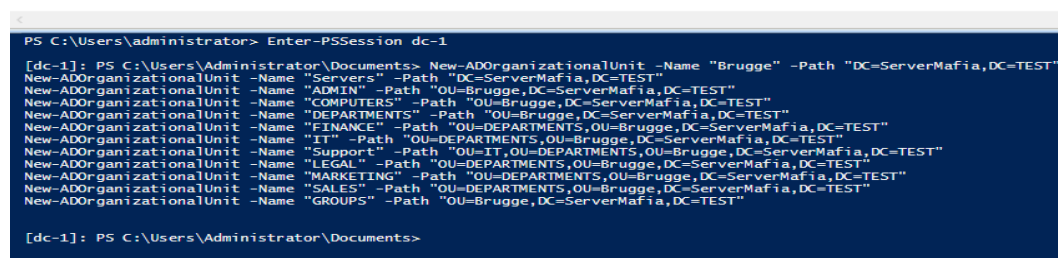
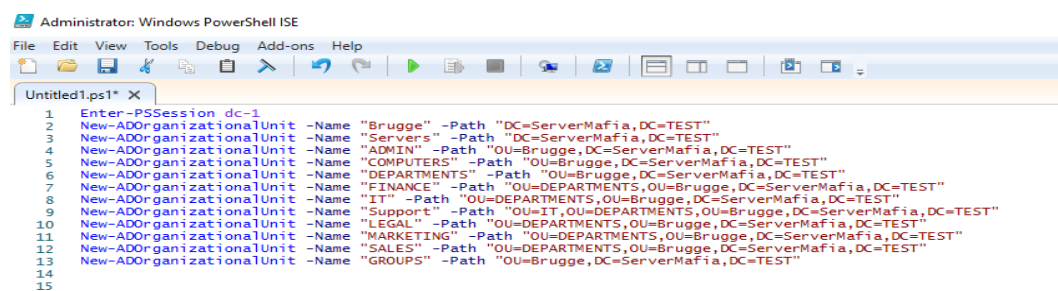
3.1.2 Dc1 - Rechten & shares

3.1.2.1 OU's aanmaken

Powershell ISE uitvoeren als administrator

Enter-PSSession dc-1

```
New-ADOrganizationalUnit -Name "Brugge" -Path "DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "Servers" -Path "DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "ADMIN" -Path "OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "COMPUTERS" -Path "OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "DEPARTMENTS" -Path "OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "FINANCE" -Path "OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "IT" -Path "OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "Support" -Path "OU=IT,OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "LEGAL" -Path "OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "MARKETING" -Path "OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "SALES" -Path "OU=DEPARTMENTS,OU=Brugge,DC=ServerMafia,DC=TEST"
New-ADOrganizationalUnit -Name "GROUPS" -Path "OU=Brugge,DC=ServerMafia,DC=TEST"
```



3.1.2.2 Global-security groups aanmaken

Global group aanmaken: Powershell ISE uitvoeren als administrator en dan de volgende script uitvoeren:

List of global group names to be created

```
$globalGroups = @(
    "GL_Admin",
```

```

    "GL_Developers",
    "GL_Support",
    "GL_Finance",
    "GL_HR",
    "GL_IT",
    "GL_Legal",
    "GL_Management",
    "GL_R&D",
    "GL_Sales",
    "GL_Marketing",
    "GL_Admins" # Added closing quote here
)
# Define the Organizational Unit (OU) path where the global groups will be created
$ouPath = "OU=GROUPS,OU=Brugge,DC=servermafia,DC=test"
# Loop through each group name and create the global group if it doesn't already
exist
foreach ($group in $globalGroups) {
    # Check if the group already exists
    if (-not (Get-ADGroup -Filter { Name -eq $group })) {
        # Create the new group in the specified OU
        New-ADGroup -Name $group -GroupScope Global -Path $ouPath -Description
"Global Group for $group" -GroupCategory Security
        Write-Host "Created global group: $group"
    } else {
        Write-Host "Global group already exists: $group"
    }
}
}

```

The screenshot shows a PowerShell script in a window titled 'Untitled1.ps1'. The script defines an array of group names, sets an organizational unit path, and uses a foreach loop to create global groups. Comments indicate where closing quotes were added. The output shows the successful creation of 12 global groups: GL-Algemeen, GL-Finance, GL-HR, GL-IT, GL-Legal, GL-Management, GL-R&D, GL-Sales, GL-Marketing, GL-Network admins, and GL-System admins.

```

1 # List of global group names to be created
2 $globalGroups = @(
3     "GL-Algemeen",
4     "GL-Finance",
5     "GL-HR",
6     "GL-IT",
7     "GL-Legal",
8     "GL-Management",
9     "GL-R&D",
10    "GL-Sales",
11    "GL-Marketing", # Added missing comma here
12    "GL-Network admins",
13    "GL-System admins" # Added closing quote here
14 )
15
16 # Define the Organizational Unit (OU) path where the global groups will be created
17 $ouPath = "OU=GROUPS,OU=Brugge,DC=servermafia,DC=test"
18
19 # Loop through each group name and create the global group if it doesn't already exist
20 foreach ($group in $globalGroups) {
21     # Check if the group already exists
22     if (-not (Get-ADGroup -Filter { Name -eq $group })) {
23         # Create the new group in the specified OU
24         New-ADGroup -Name $group -GroupScope Global -Path $ouPath -Description "Global Group for $group" -GroupCategory Security
25         Write-Host "Created global group: $group"
26     } else {
27         Write-Host "Global group already exists: $group"
28     }
29 }
30
New-ADGroup -Name $group -GroupScope Global -Path $ouPath -Description "Global Group for $group" -GroupCategory Security
Write-Host "Created global group: $group"
} else {
    Write-Host "Global group already exists: $group"
}
}
Created global group: GL-Algemeen
Created global group: GL-Finance
Created global group: GL-HR
Created global group: GL-IT
Created global group: GL-Legal
Created global group: GL-Management
Created global group: GL-R&D
Created global group: GL-Sales
Created global group: GL-Marketing
Created global group: GL-Network admins
Created global group: GL-System admins
[dc-1]: PS C:\Users\Administrator\Documents>

```

3.1.2.3 Domain-local group aanmaken

via powershell ISE, uitvoeren als administrator en dan de volgende script uitvoeren:

```

# Create groups for the folders
# Enkel domain local group
Import-Module ActiveDirectory
# List of group names to be created
$groups = @(
    "DL_Algemeen_R",
    "DL_Algemeen_RW",

```

```

"DL_Finance_R",
"DL_Finance_RW",
"DL_HR_R",
"DL_HR_RW",
"DL_IT_RW",
"DL_IT_R",
"DL_Legal_R",
"DL_Legal_RW",
"DL_Management_R",
"DL_Management_RW",
"DL_R&D_R",
"DL_R&D_RW",
"DL_Sales_R",
"DL_Sales_RW",
"DL_Marketing_R",
"DL_Marketing_RW",
"DL_Developers_R",
"DL_Developers_RW",
"DL_Support_R",
"DL_Support_RW"
)
# Define the Organizational Unit (OU) path where the groups will be created

$souPath = "OU=GROUPS,OU=Brugge,DC=servermafia,DC=test"
# Loop through each group name and create the domain local group if it doesn't
already exist
foreach ($group in $groups) {
    # Check if the group already exists
    if (-not (Get-ADGroup -Filter { Name -eq $group })) {
        # Create the new group in the specified OU
        New-ADGroup -Name $group -GroupScope DomainLocal -Path $souPath -
Description "Domain Local Group for $group" -GroupCategory Security
        Write-Host "Created group: $group"
    } else {
        Write-Host "Group already exists: $group"
    }
}
}

```

Active Directory Users and Computers

File Action View Help

Active Directory Users and Com

Saved Queries

ServerMafia.test

Brugge

ADMIN

COMPUTERS

DEPARTMENTS

GROUPS

Builtin

Computers

Domain Controllers

ForeignSecurityPrincipal

Keys

LostAndFound

Managed Service Accoun

Program Data

Servers

System

Users

NTFS Quotas

TPM Devices

| Name | Type | Description |
|----------------------|-------------------|---|
| DL_Algemeen_R | Security Group... | Domain Local Group for DL_Algemeen_R |
| DL_Algemeen_RW | Security Group... | Domain Local Group for DL_Algemeen_RW |
| DL_Finance_R | Security Group... | Domain Local Group for DL_Finance_R |
| DL_Finance_RW | Security Group... | Domain Local Group for DL_Finance_RW |
| DL_HR_R | Security Group... | Domain Local Group for DL_HR_R |
| DL_HR_RW | Security Group... | Domain Local Group for DL_HR_RW |
| DL_IT_R | Security Group... | Domain Local Group for DL_IT_R |
| DL_IT_RW | Security Group... | Domain Local Group for DL_IT_RW |
| DL_Legal_R | Security Group... | Domain Local Group for DL_Legal_R |
| DL_Legal_RW | Security Group... | Domain Local Group for DL_Legal_RW |
| DL_Management_R | Security Group... | Domain Local Group for DL_Management_R |
| DL_Management_RW | Security Group... | Domain Local Group for DL_Management_RW |
| DL_Marketing_R | Security Group... | Domain Local Group for DL_Marketing_R |
| DL_Marketing_RW | Security Group... | Domain Local Group for DL_Marketing_RW |
| DL_Network_Admins_R | Security Group... | Domain Local Group for DL_Network_Admins_R |
| DL_Network_Admins_RW | Security Group... | Domain Local Group for DL_Network_Admins_RW |
| DL_R&D_R | Security Group... | Domain Local Group for DL_R&D_R |
| DL_R&D_RW | Security Group... | Domain Local Group for DL_R&D_RW |
| DL_Sales_R | Security Group... | Domain Local Group for DL_Sales_R |
| DL_Sales_RW | Security Group... | Domain Local Group for DL_Sales_RW |
| DL_Support_R | Security Group... | Domain Local Group for DL_Support_R |
| DL_Support_RW | Security Group... | Domain Local Group for DL_Support_RW |
| DL_System_Admins_R | Security Group... | Domain Local Group for DL_System_Admins_R |
| DL_System_Admins_RW | Security Group... | Domain Local Group for DL_System_Admins_RW |
| GL_Algemeen | Security Group... | Global Group for GL_Algemeen |
| GL_Finance | Security Group... | Global Group for GL_Finance |
| GL_HR | Security Group... | Global Group for GL_HR |
| GL_IT | Security Group... | Global Group for GL_IT |
| GL_Legal | Security Group... | Global Group for GL_Legal |
| GL_Management | Security Group... | Global Group for GL_Management |
| GL_Marketing | Security Group... | Global Group for GL_Marketing |
| GL_Network admins | Security Group... | Global Group for GL_Network admins |
| GL_R&D | Security Group... | Global Group for GL_R&D |
| GL_Sales | Security Group... | Global Group for GL_Sales |
| GL_System admins | Security Group... | Global Group for GL_System admins |

3.1.2.4 Users aanmaken

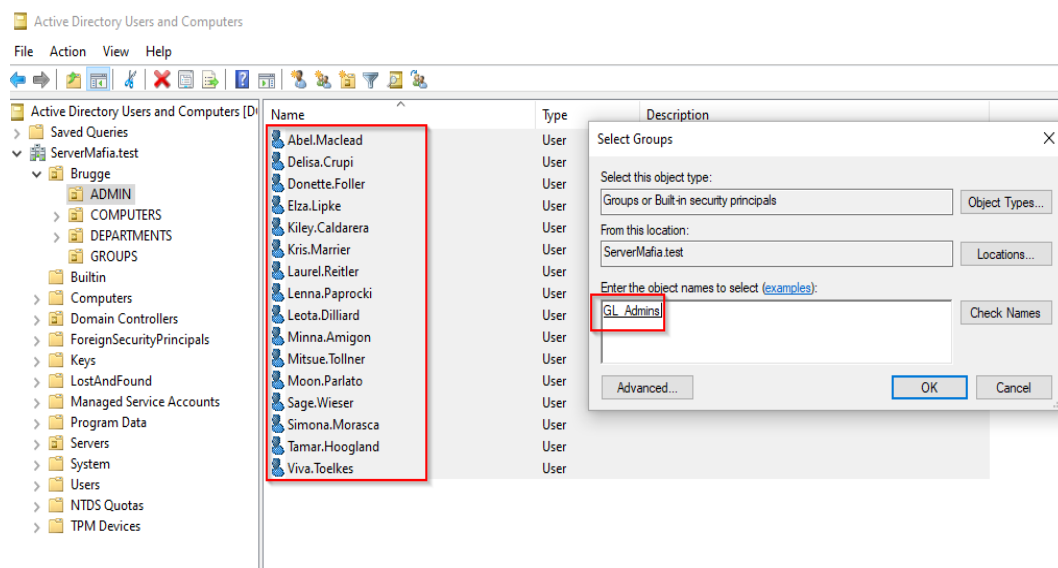
Users aanmaken via powershell script

Eerste libreoffice downloaden en installeren op de client machine. En dan de User bulk in \\dc-1\SYSVOL\ServerMafia.test\scripts plaatsen

En dan de volgende script uitvoeren:

```
Enter-PSSession -ComputerName dc-1
cd \\dc-1\SYSVOL\ServerMafia.test\scripts\
Import-Module ActiveDirectory
$csvUserPath = "\\dc-1\SYSVOL\ServerMafia.test\scripts\User bulk.csv"
$userList = Import-Csv -Path $csvUserPath -Delimiter ';'
# Output the contents of $userList to see if the data is imported correctly
$userList | ForEach-Object { Write-Host "Firstname: $($_.Firstname), Lastname: $($_.Lastname), OU: $($_.OU)" }
foreach ($user in $userList) {
    if ([string]::IsNullOrEmpty($user.Firstname) -or
        [string]::IsNullOrEmpty($user.Lastname) -or [string]::IsNullOrEmpty($user.OU)) {
        Write-Host "Skipping user due to missing information: Firstname or Lastname or OU is null."
        continue
    }
    $displayName = "($($user.Firstname).$($user.Lastname))"
    $userParams = @{
        SamAccountName      = "$($user.Firstname.ToLower()).$($user.Lastname.ToLower())"
        UserPrincipalName    = "$($user.Firstname.ToLower()).$($user.Lastname.ToLower())@local.test"
        Name                = $displayName
        GivenName            = $user.Firstname
        Surname              = $user.Lastname
        DisplayName          = $displayName
        EmailAddress         = $user.Email
        Path                 = $user.OU
        AccountPassword      = (ConvertTo-SecureString -AsPlainText "Test123!" -Force)
        Enabled              = $true
        ChangePasswordAtLogon = $true
    }
    if (-not (Get-ADUser -Filter "UserPrincipalName -eq '$($userParams.UserPrincipalName)'" )) {
        try {
            New-ADUser @userParams
            Write-Host "Gebruiker wordt gecreëerd : $($displayName)"
        } catch {
            Write-Host "Error creating user: $($displayName). Error: $_"
        }
    } else {
        Write-Host "Gebruiker bestaat al: $($displayName)"
    }
}
Write-Host "Gebruikers zijn geïmporteerd."
```

De user's toevoegen aan de GL groups: active directory users and computers selecteer de users in bepaalde OU(hier bijvoorbeeld ou Admins) rechter muis klikken add to group GL_Admins

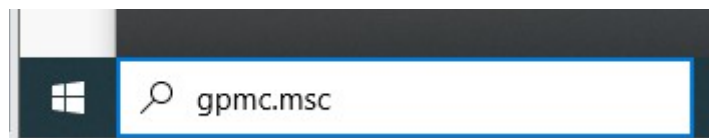


Het zelfde stap herhalen voor alle OU's

3.1.3DC-1-Policies

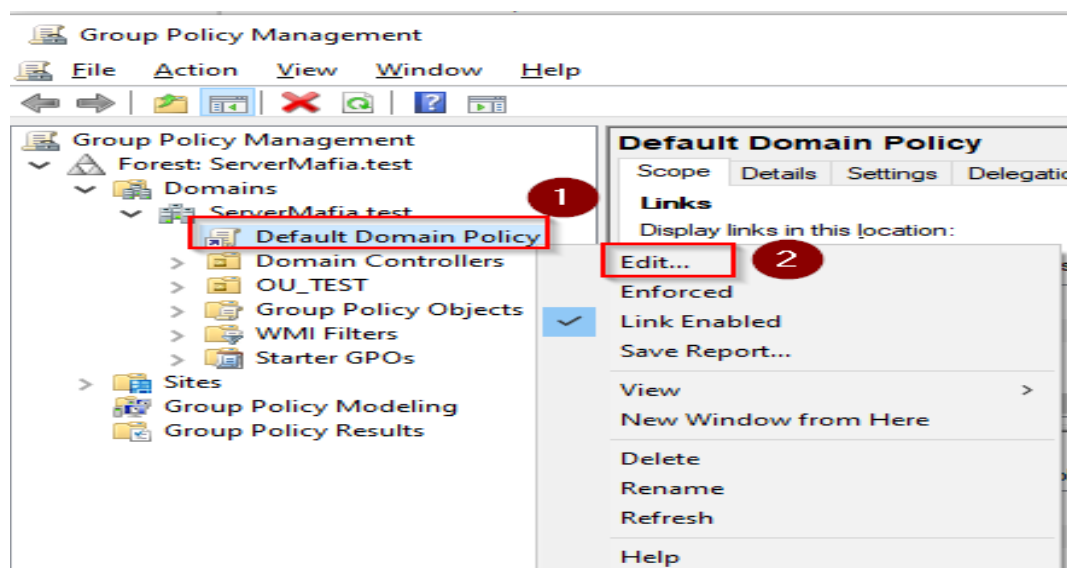
3.1.3.1 Password policy

Om het paswoord te veranderen via onze mgmt laptop moeten we Win + R, typ gpmmc.msc en druk op Enter.

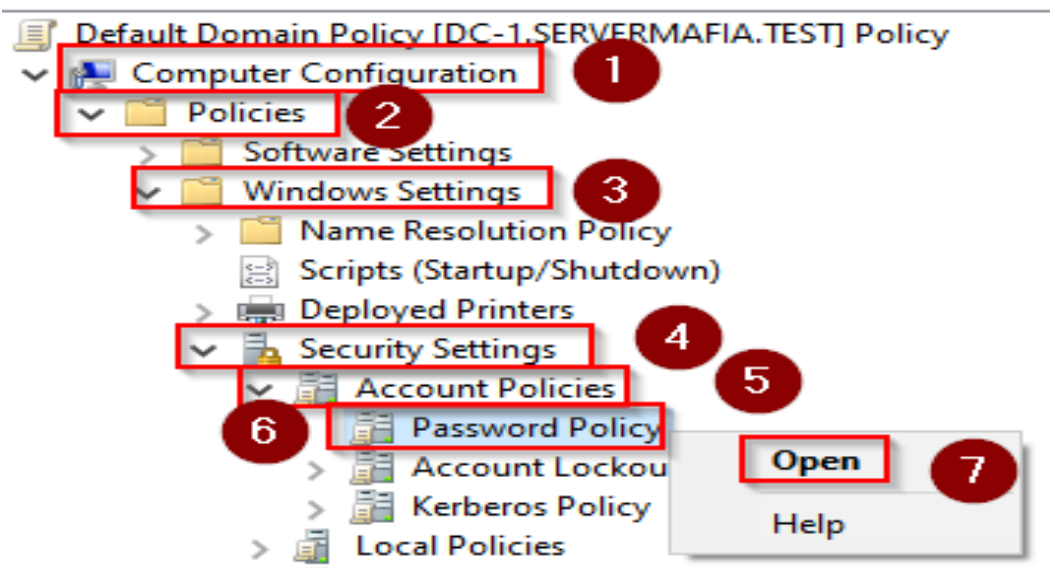


Nu komen we in de Group Policy Management

Hier gaan we naar ons domain, waar we bij Default Domain Policy(1) op de rechtermuisknop drukken en daar Edit...(2) kiezen



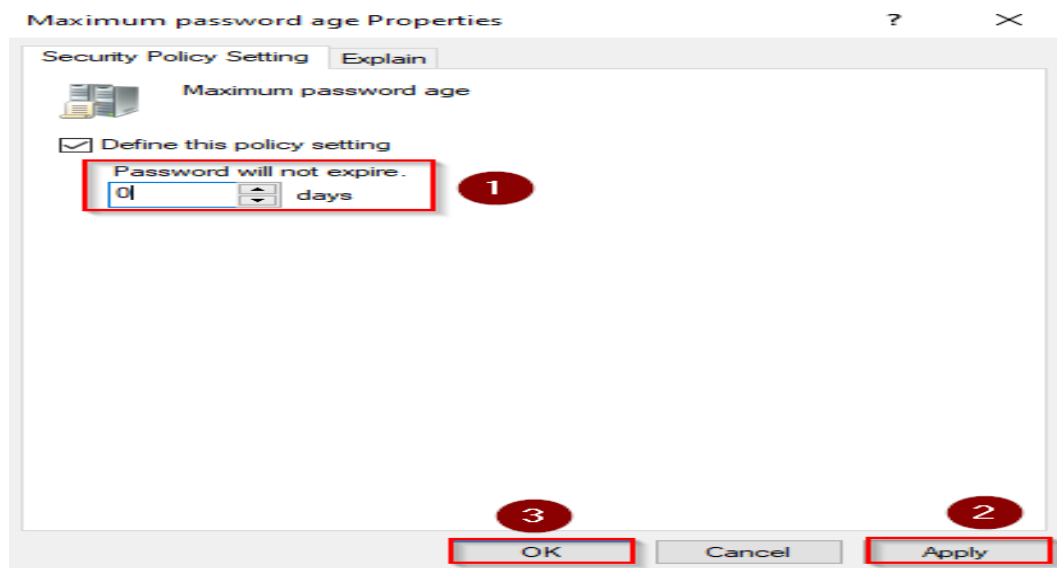
Ga naar Computer Configuration(1) > Policies(2) > Windows Settings(3) > Security Settings(4) > Account Policies(5) > Password Policy(6) > Open(7).



Nu krijgen we alle password opties te zien aan de rechterkant. We selecteren Maximum password age(1)

| Policy | Policy Setting |
|---|-------------------------|
| Enforce password history | 24 passwords remembered |
| Maximum password age | 42 days |
| Minimum password age | 1 days |
| Minimum password length | 7 characters |
| Minimum password length audit | Not Defined |
| Password must meet complexity requirements | Enabled |
| Relax minimum password length limits | Not Defined |
| Store passwords using reversible encryption | Disabled |

De standaard tijd voor password age is 42 dagen, dit veranderen we naar 0 dagen(1), drukken op apply(2) en daarna op ok(3).

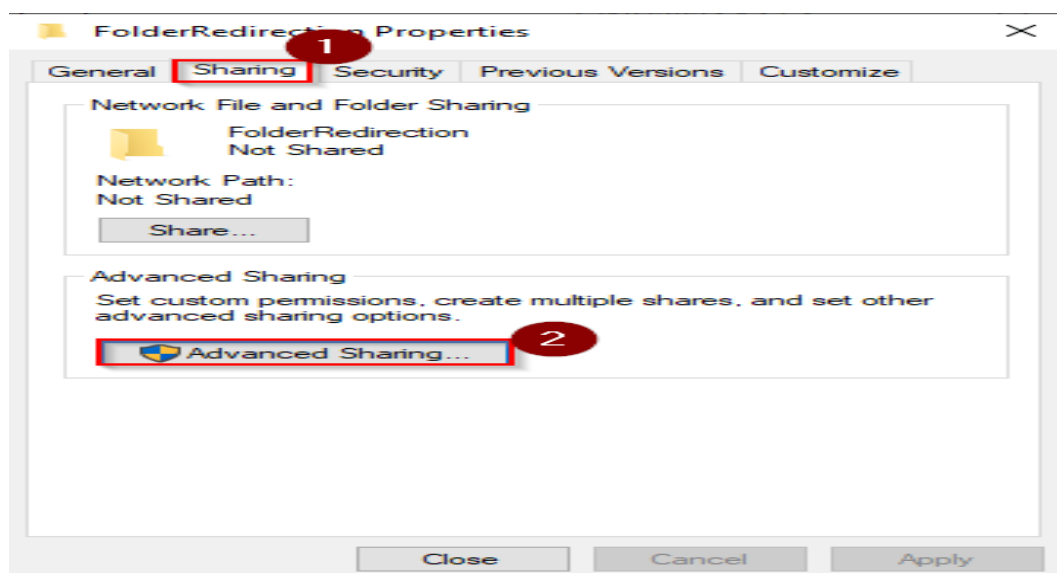


3.1.3.2 Folder Redirection

We maken een nieuwe map FolderRedirection aan op de Fileserver.

Nu gaan we via rechtermuisknop de properties van de map opvragen.

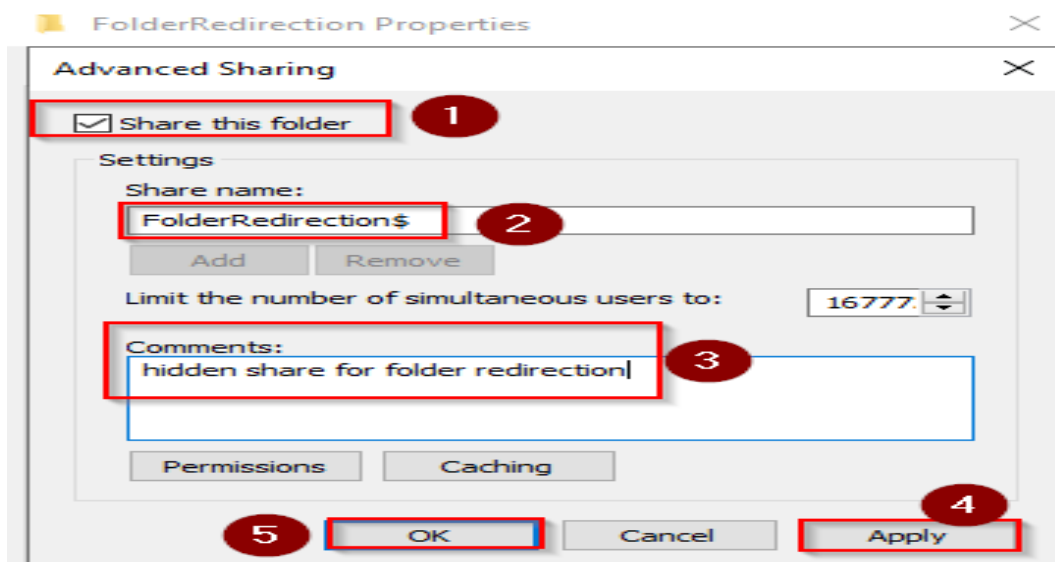
Nu gaan we naar het Tabblad Sharing(1) en kiezen daar voor Advanced Sharing...(2).



We vinken Share this Folder(1) aan. Nu kunnen we bij share name de naam meegeven die we wensen(2).

Let op: als we een hidden share willen maken moeten we een \$ teken plaatsen na de benaming.

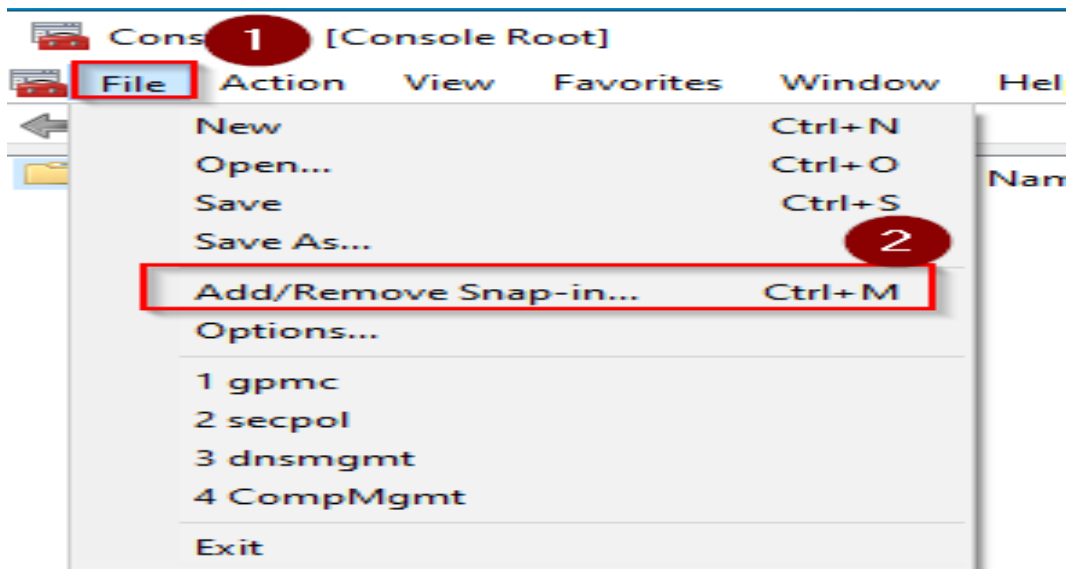
Bij comments (3) kunnen we wat uitleg geven over de share, daarna drukken we op apply(4) en op ok(5).



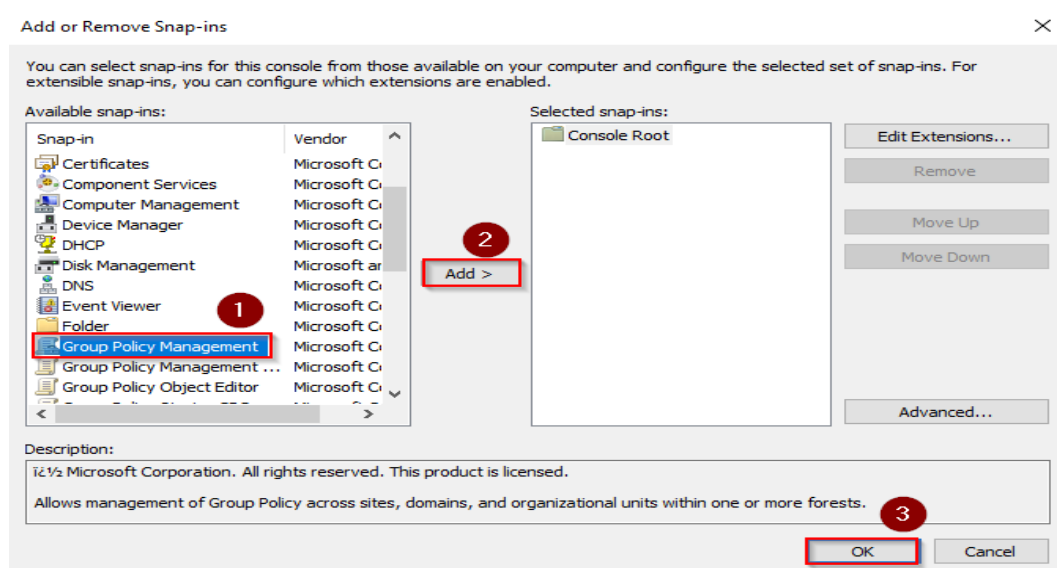
3.1.3.3 Group-policy management MMC

e voeren MMC.exe uit als administrator

Bij File(1) selecteren we Add/Remove Snap-in(2).

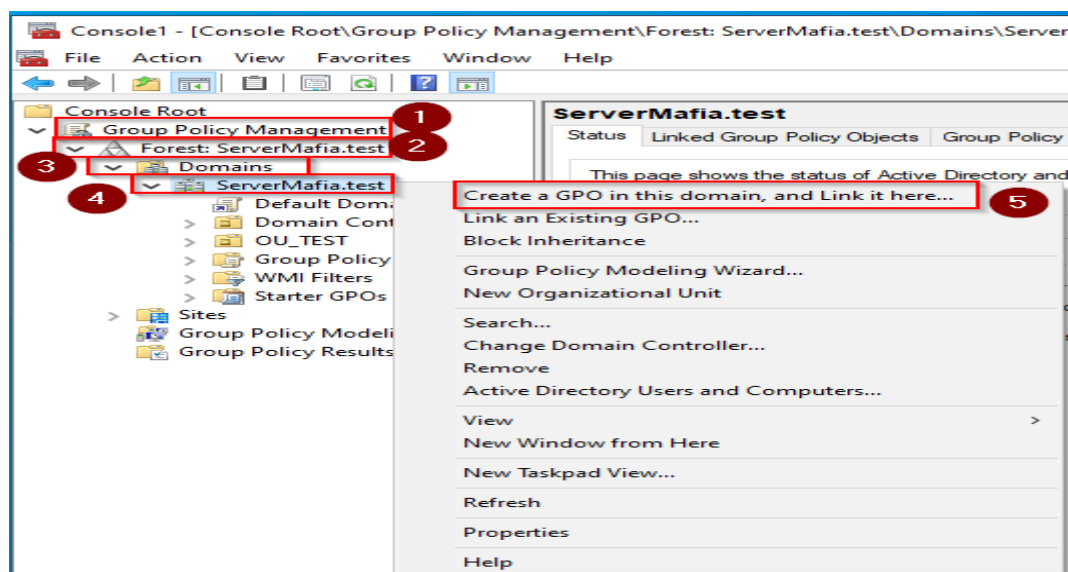


We selecteren Group Policy Management(1) drukken op add(2) waarna we zien dat de snap-in nu in de rechterkolom bijgevoegd is. Nu drukken we op ok(3) en kunnen we beginnen aanpassen.

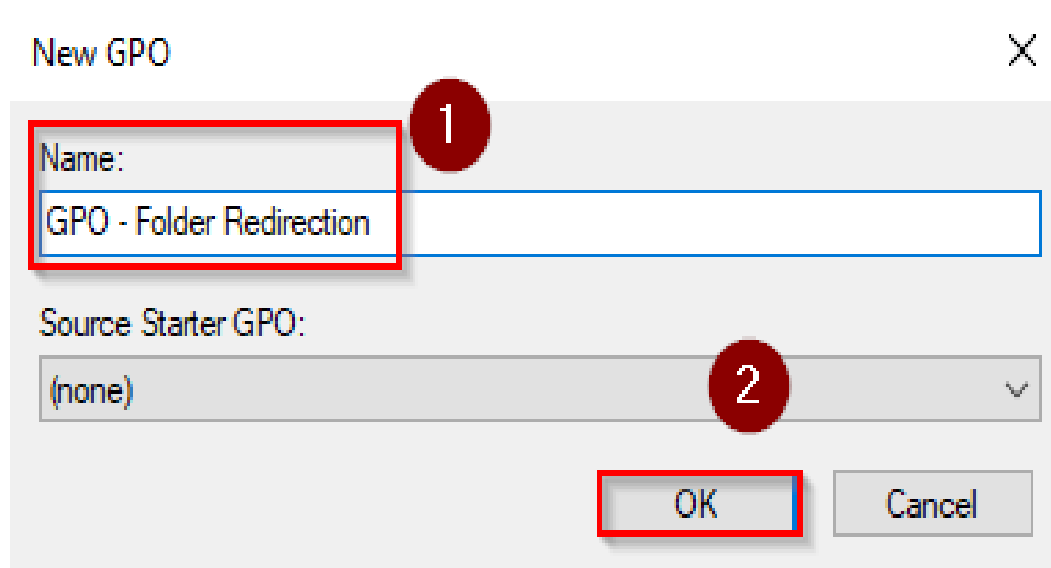


u zien we dat Group Policy Management(1) werd toegevoegd aan de console.

We klikken Group Policy Management(1) open en zien daar onze Forest: ServerMaffia.test(2) staan. We klikken verder Domains(3) open, waarna we ons domain, servermaffia.test(4) zien staan. Nu gaan we via rechtermuisknop kiezen voor Create a GPO in this domain, and Link it here...(5) .



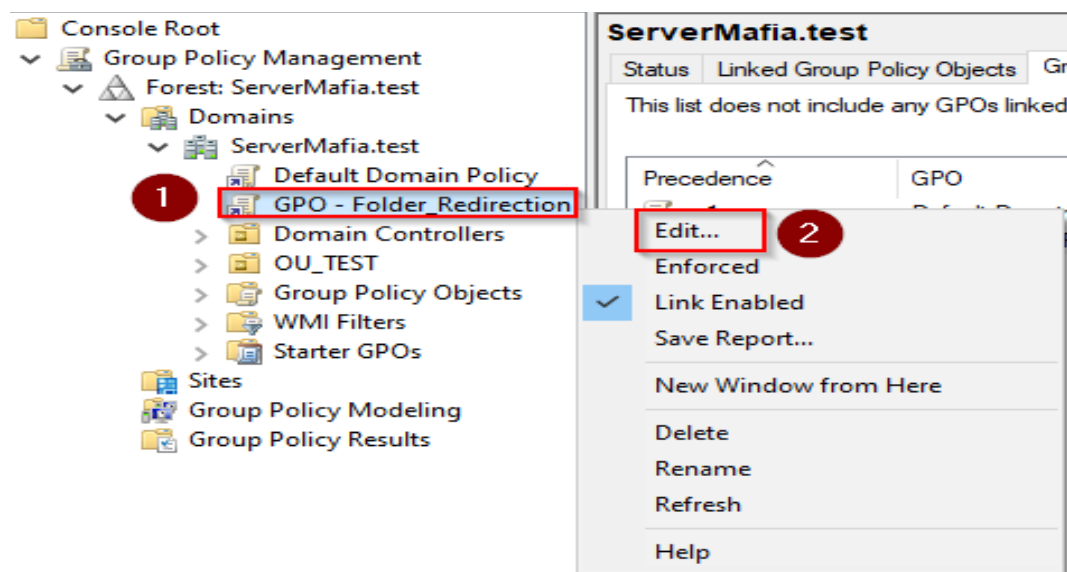
Nu geven we de nieuwe GPO een naam(1) en drukken op OK(2).



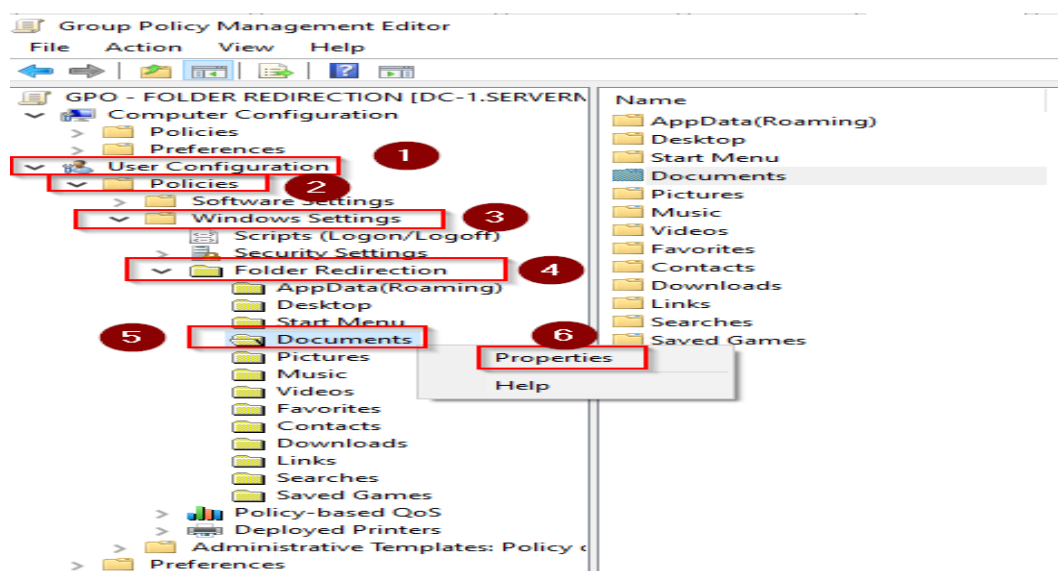
3.1.3.4 GPO folder-redirection

u zien we dat onze nieuw aangemaakte GPO werd toegevoegd aan de lijst(1).

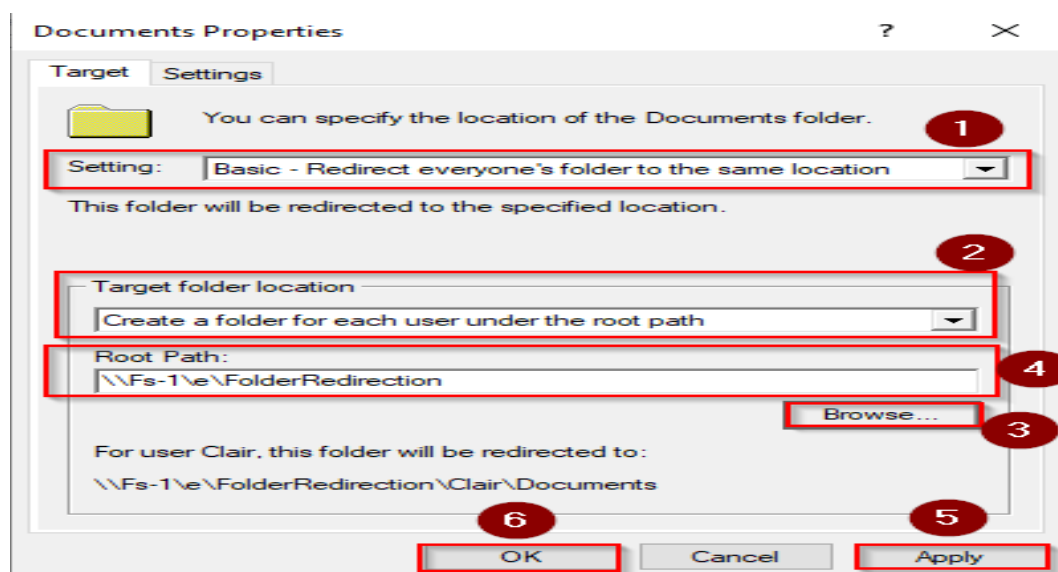
We gaan de nu GPO nu instellen, hiervoor drukken we op rechtermuisknop en kiezen voor edit...(2).



We klikken User Configuration(1) open, daarna Policies(2) > Windows settings(3) > Folder Redirections(4) > dan doen we rechtermuisknop op Documents(5) en selecteren Properties(6).



Nu krijgen we de Documents properties, hier stellen we bij Setting: Basic – Redirect everyone’s folder tot he same location(1). Bij Target Folder location(2) zetten we create a folder for each user under the root path. Daarna kunnen we via de browse(3) knop het root path(4) instellen op de fileserver op de hidden share die we eerder aangemaakt hebben. We klikken op apply(5) en ok(6).



We krijgen nog een waarschuwing dat de gpo niet zal toegepast worden op oudere systemen, we drukken op yes.

We herhalen bovenstaande ook voor pictures.

Nu is de gpo klaar om aan ou's gelinkt te worden.

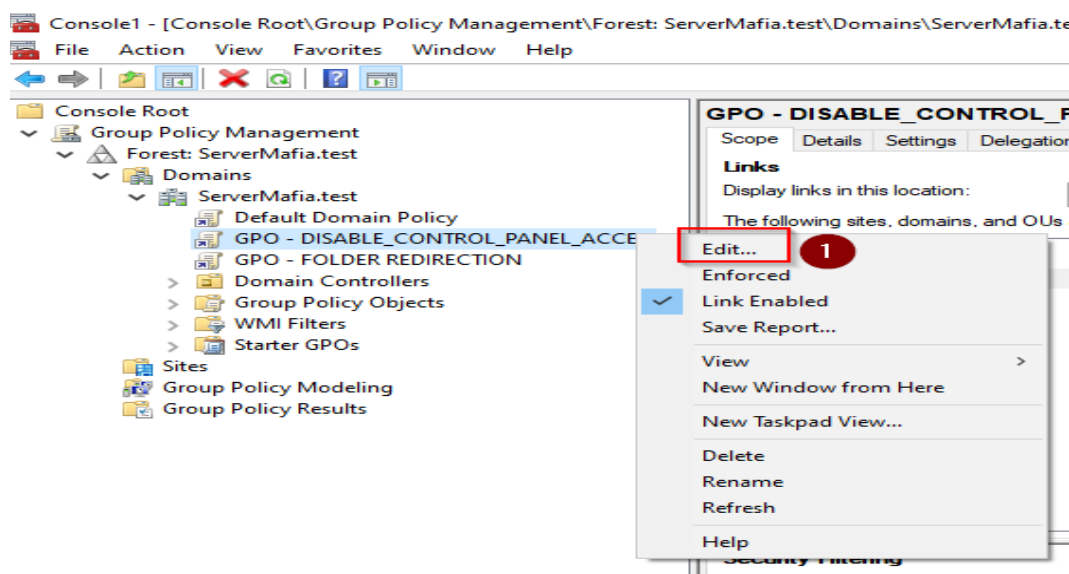
3.1.3.5 GPO Control-panel

Create new gpo

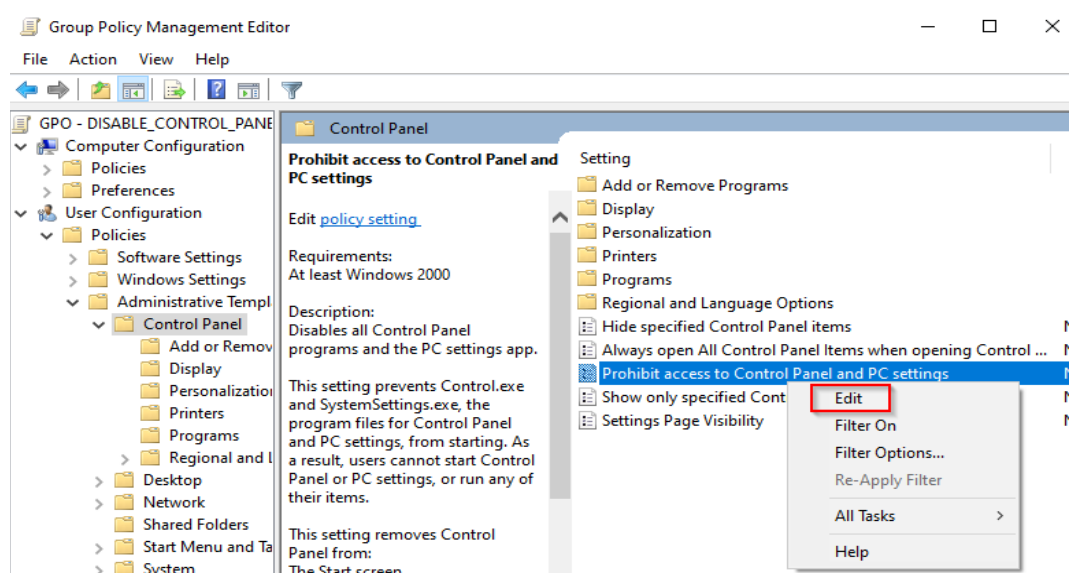
We maken een nieuwe gpo aan op dezelfde manier als we voor [folder redirection](#) hebben gedaan.

Instellen gpo Control Panel

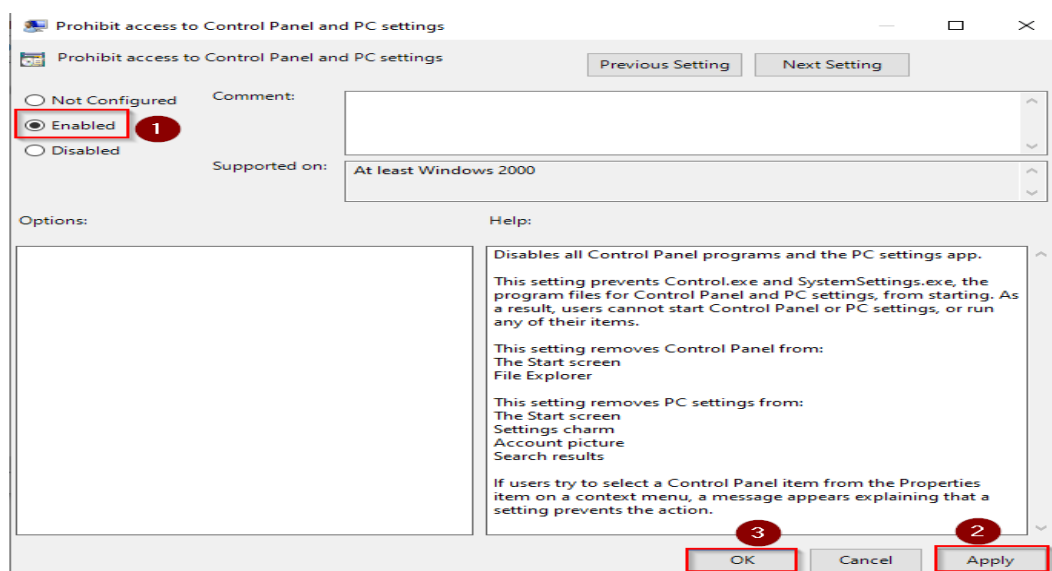
Via rechtermuisknop gaan we opnieuw edit(1) nemen.



Onder user configuration > Administrative Templates > control panel klikken we rechtermuisknop op Prohibit acces to Control Panel en Pc settings en kiezen we voor edit(1).



We zien de uitleg wat deze instelling doet. We vinken enabled(1), drukken op apply(2) en ok(3).



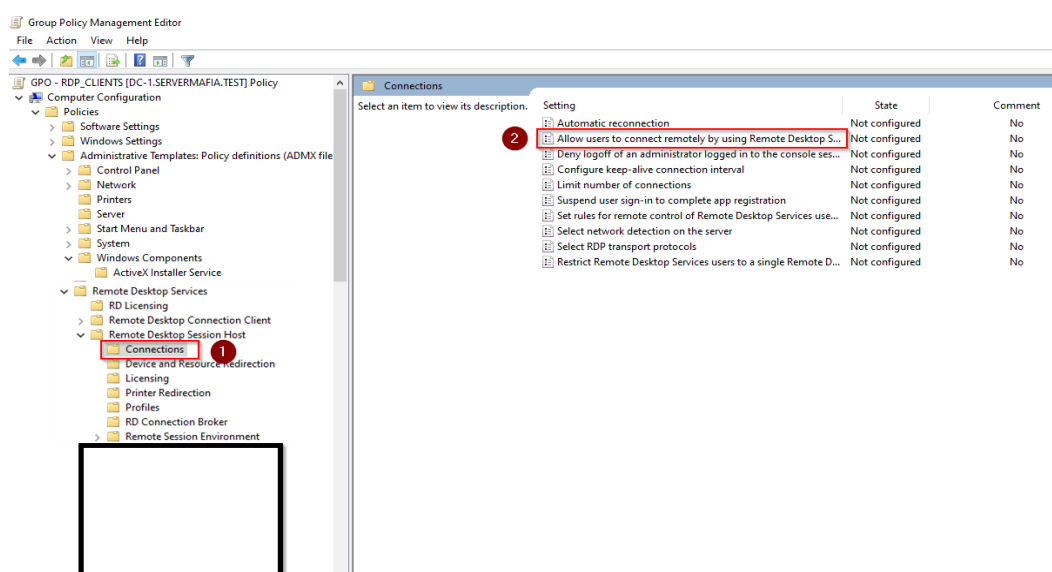
Nu kunnen we de gpo linken aan de ou's waarop we dit wensen toe te passen.

3.1.3.6 GPO RDP-clients

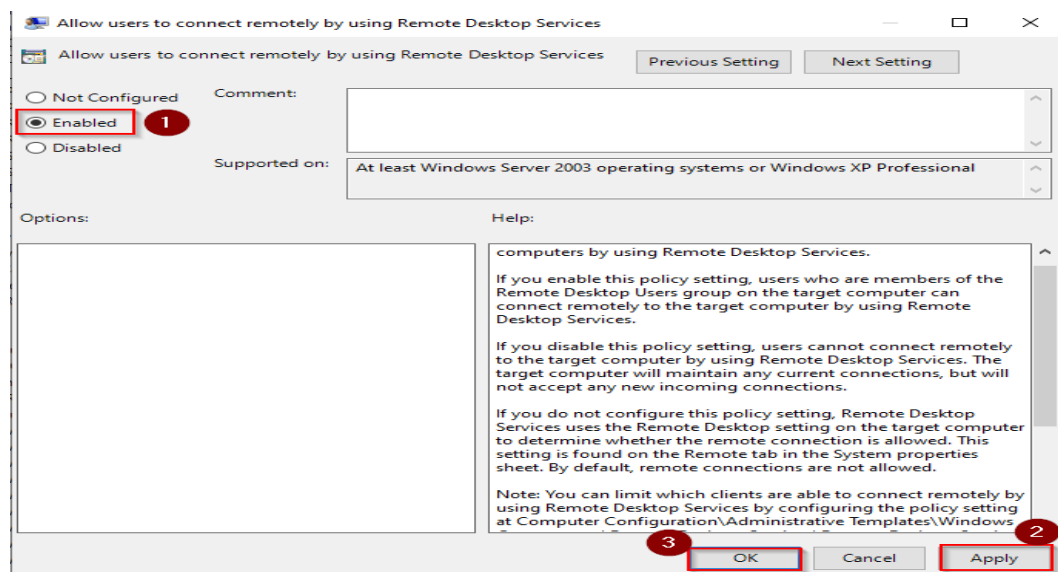
We maken een nieuwe gpo aan op dezelfde manier als we voor folder-redirection hebben gedaan

Instellen gpo RDP

Onder Computer Configuration > Policies > Administrative Templates > Remote Desktop Services > Remote Desktop Session Host > dubbelklikken Connections(1). Dan rechtermuisknop op het rechterpaneel Allow users to connect remotely by using remote Desktop Services(2) > edit

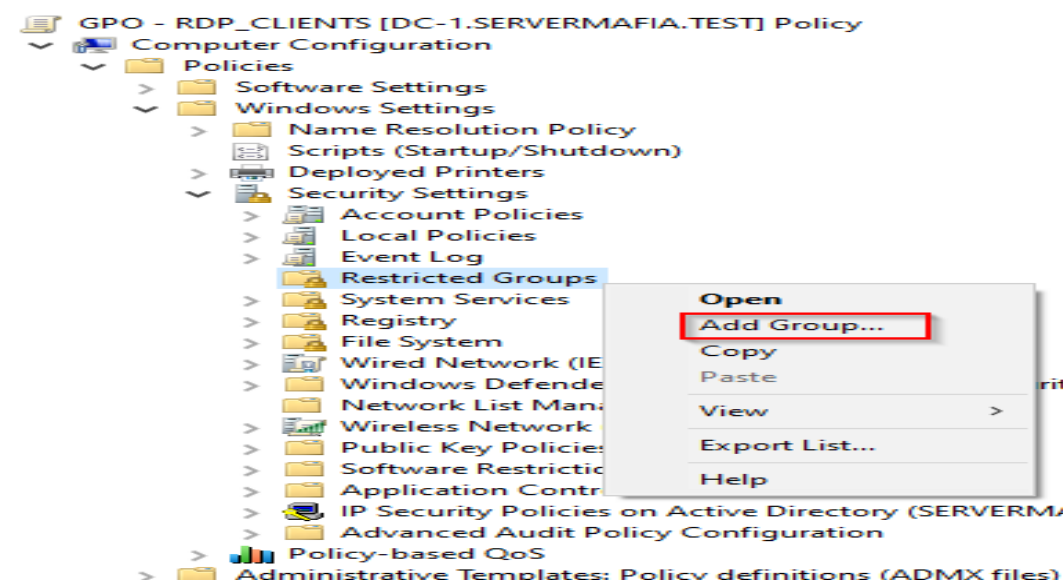


We zien de uitleg wat deze instelling doet. We vinken enabled(1), drukken op apply(2) en ok(3).

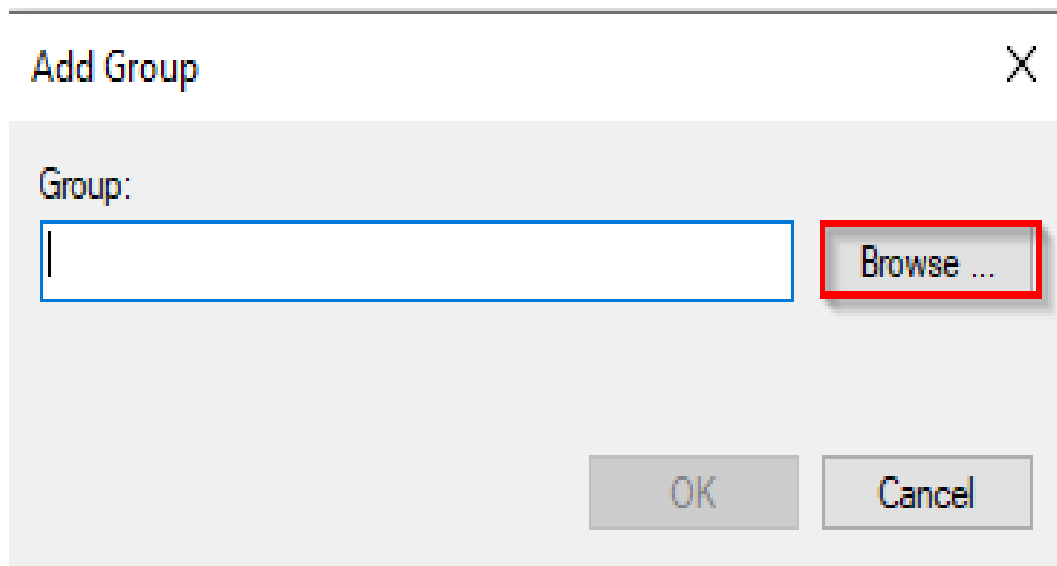


Nu moeten we restricties aan deze GPO verbinden zodat niet iedereen gebruik kan maken van Remote Desktop.

In dezelfde GPO gaan we naar computer Configuration > Windows Settings > Security Settings > rechtermuisknop op Restrict Groups > add group...(1).

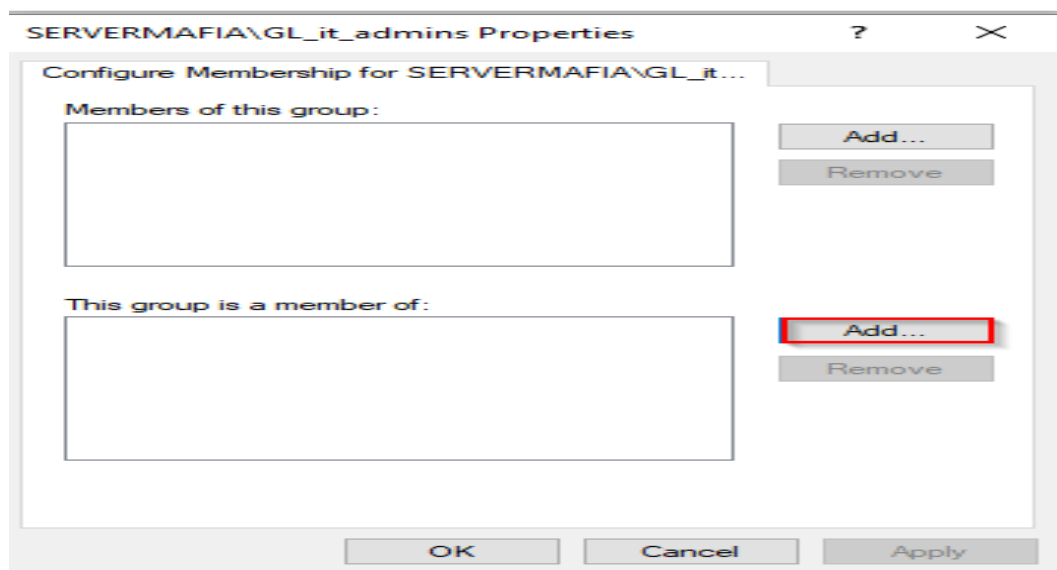


We krijgen nu een klein kadertje, we klikken op browse

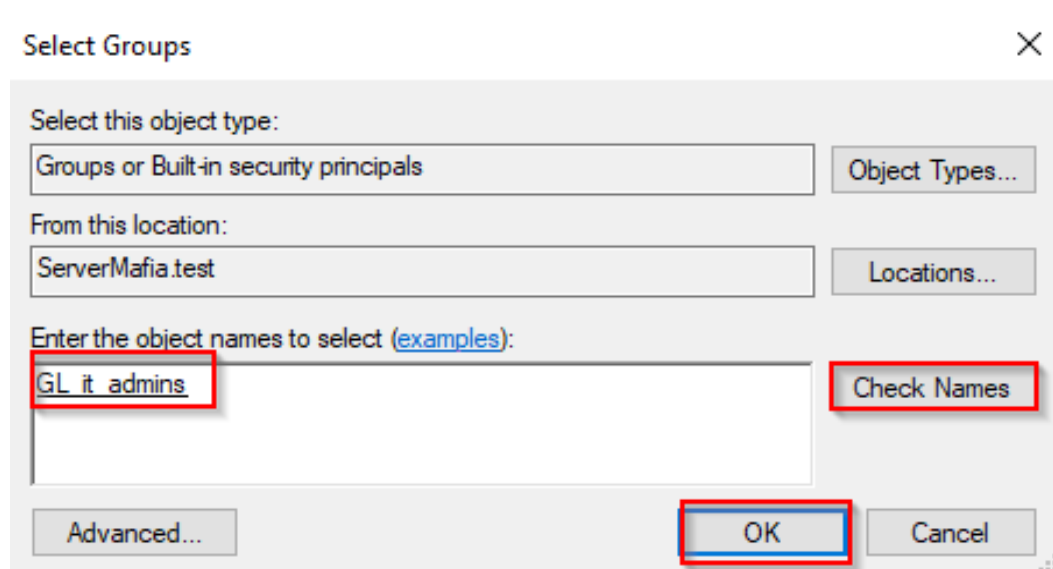


Bij Enter the object names to select geven we de eerste letters in. GL(1) en klikken dan op Check Names(2). Nu wordt automatisch onze GL group it admins toegevoegd. We kunnen nu gewoon op ok(1) klikken.

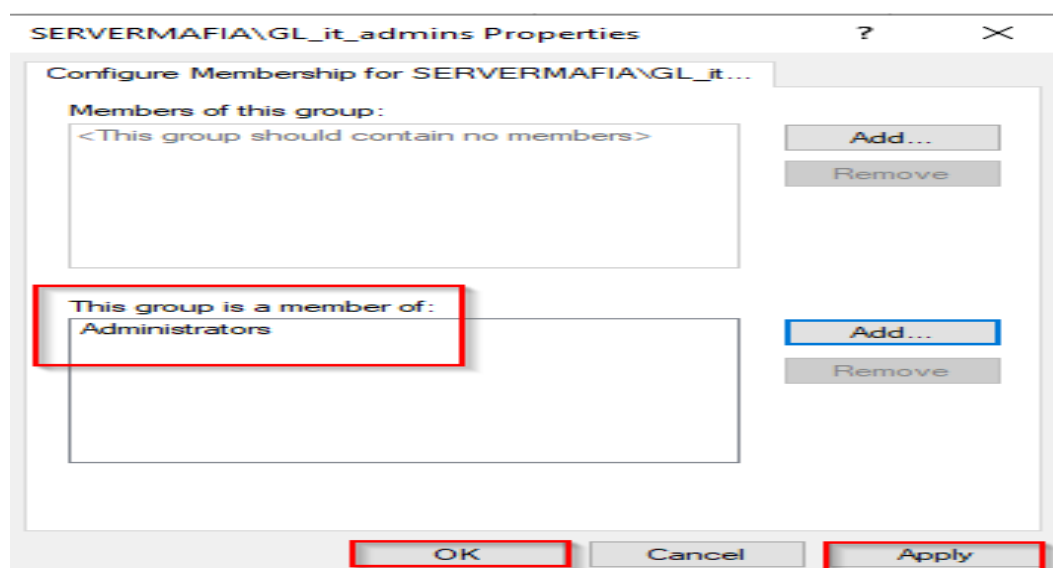
We voegen de groep nog eens toe aan, This group is a member of via add > browse



Via Enter the object names to select en check names kunnen we de groep administrators toevoegen en drukken dan op ok



Nu zien we de groep staan en kunnen we op ok drukken

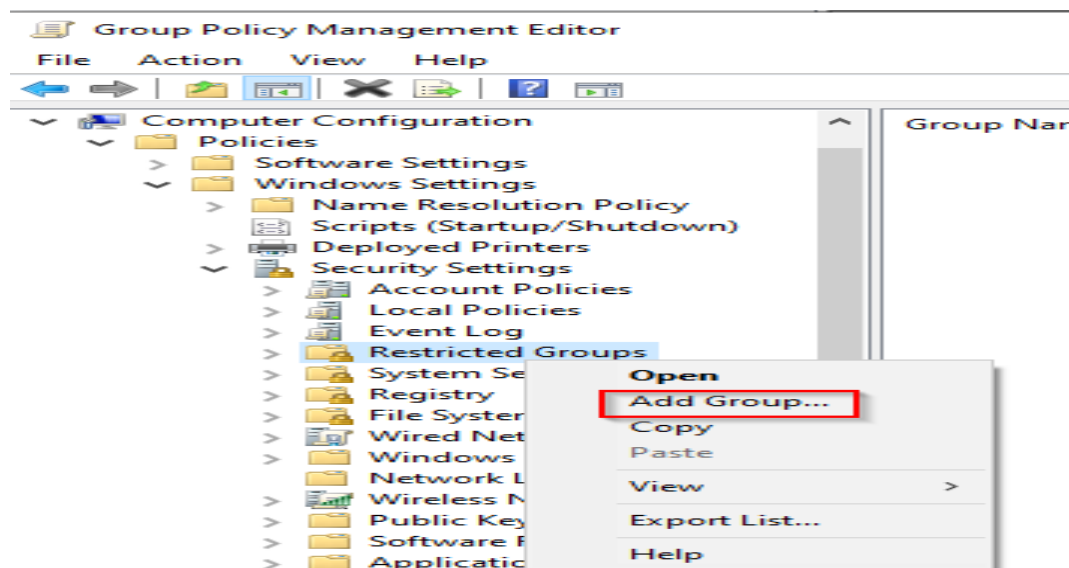


3.1.3.7 GPO Admin

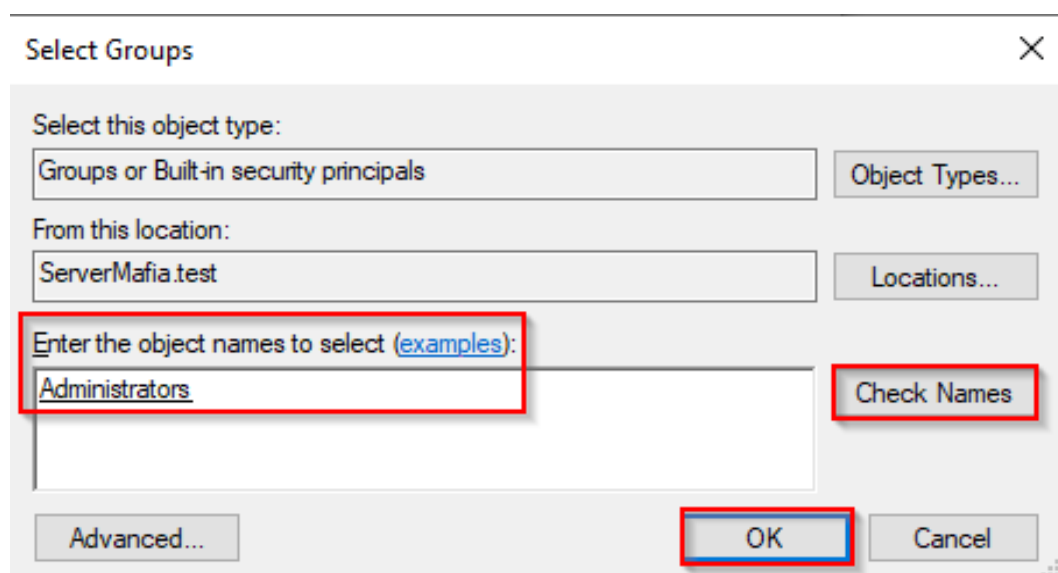
We maken een nieuwe gpo aan op dezelfde manier als we voor folder-redirection hebben gedaan

Instellen GPO Admin on client

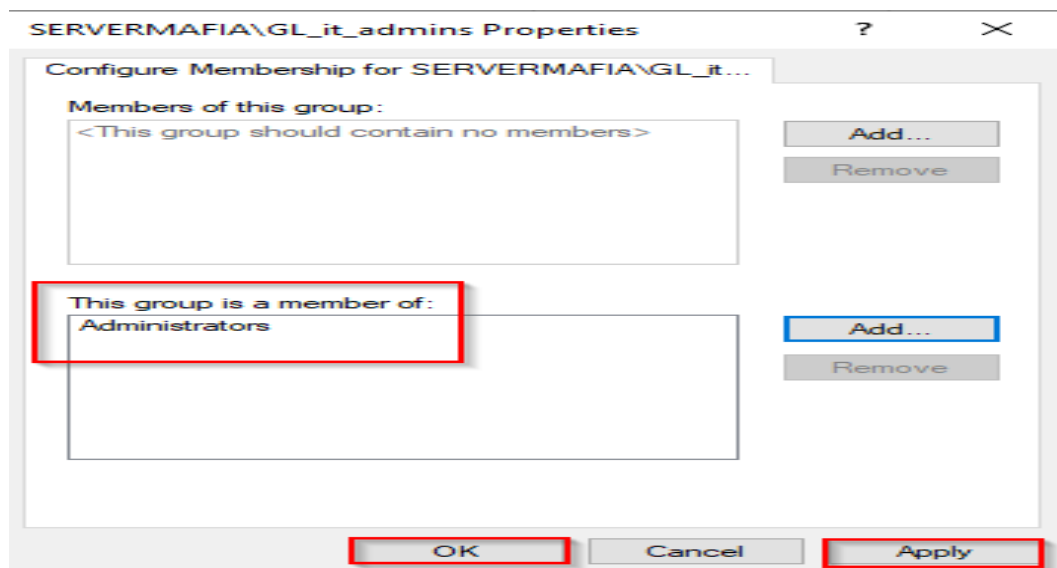
We klikken op computer configuration > Windows settings > Security settings > rechtermuisknop Restricted groups > add group



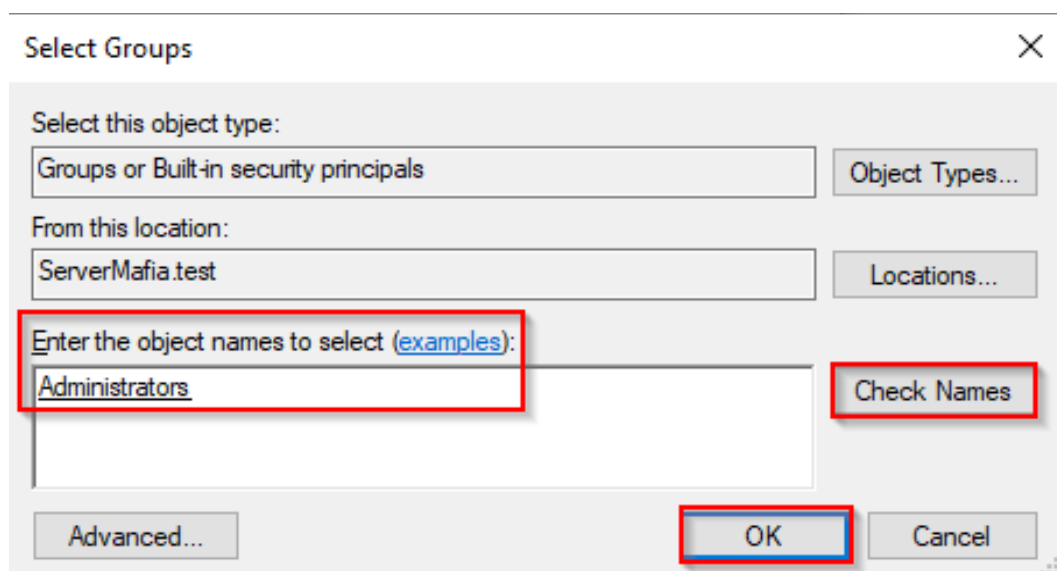
We klikken op browse en via Enter the object names to select(1) voeren we een stuk van de naam in, via check names(2) kunnen we dit completen, en dan klikken we op ok(3).



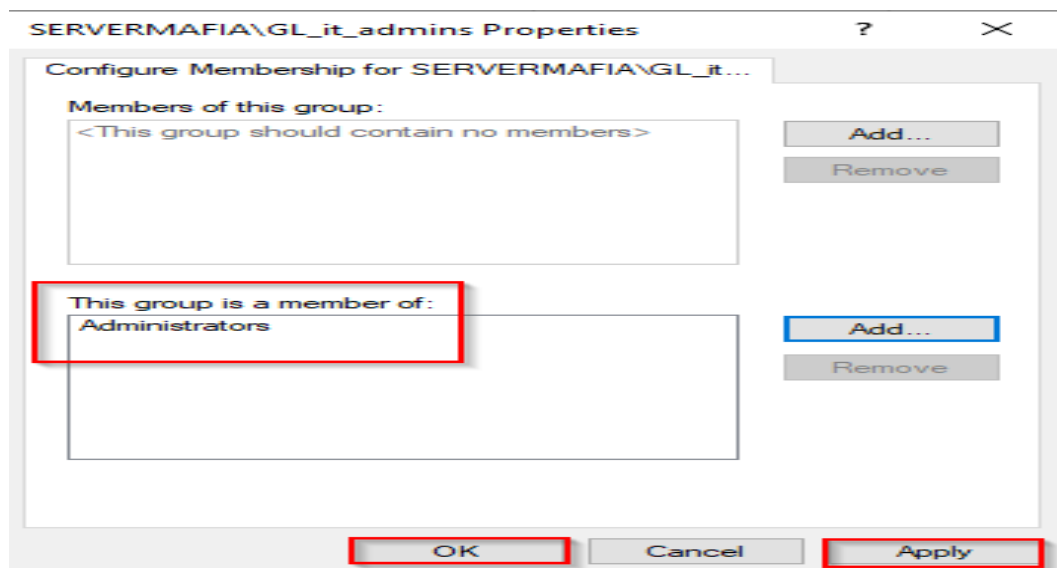
Daarna voeren we bij This group is a member of > add de naam van de group administrators nog eens toe.



Via browse kunnen we opnieuw enter the object names to select > check names en ok doen.



We klikken op apply en bevestigen nogmaals via ok



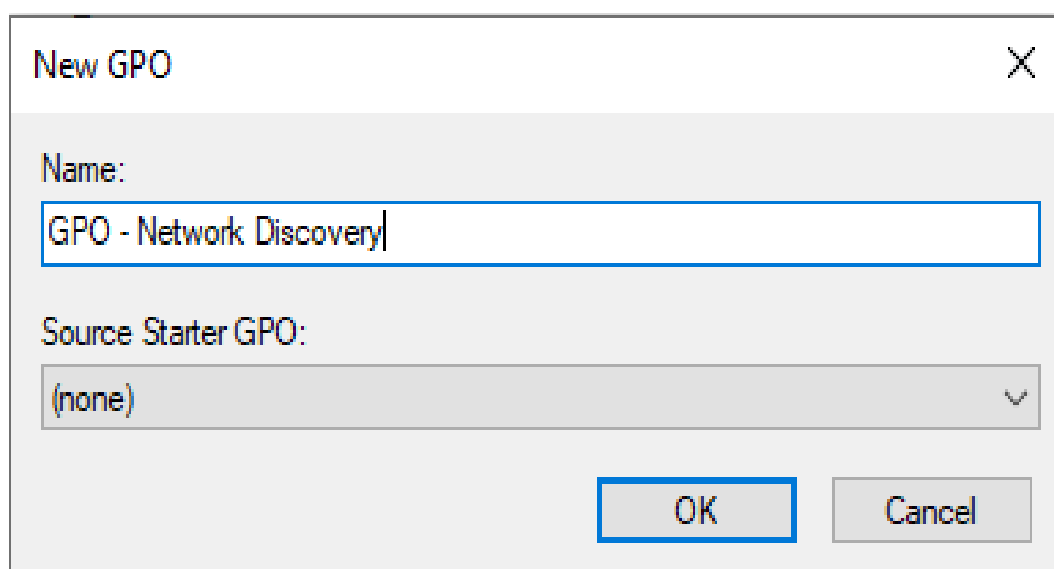
We selecteren nu de aangemaakte gpo, en gaan bij details zetten we GPO status op user configuration settings disabled.

Nu kunnen we de gpo toepassen op de ou van de client computers.

Bron: https://www.youtube.com/watch?v=RCx-3icSfds&ab_channel=theSysadminChannel

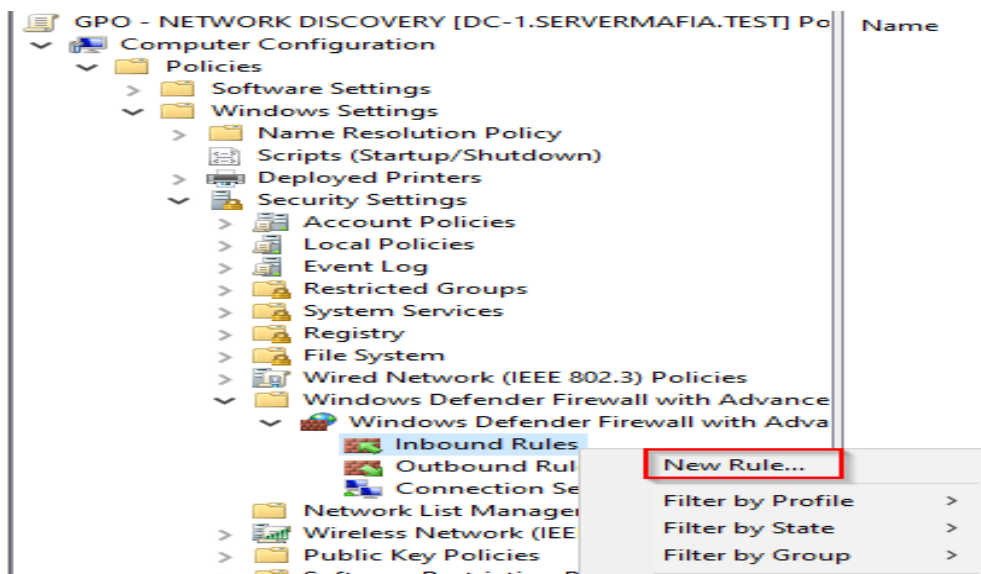
3.1.3.8 Network discovery policy

Nieuwe policy zoals hierboven vermeld, met naam GPO - Network Discovery

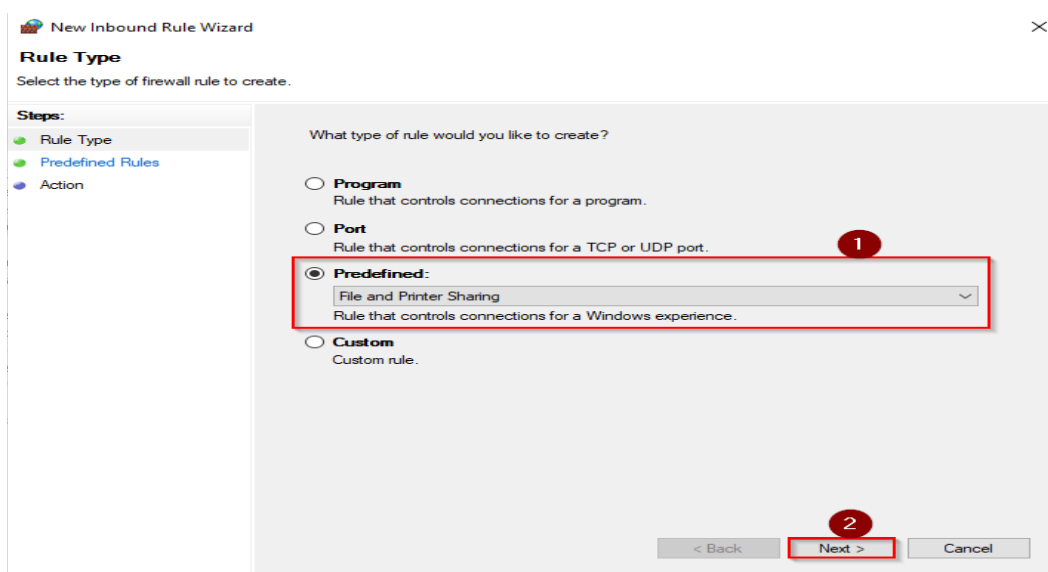


1. Instellen icmpv4 allow rule

Via edit gaan we naar Computer configuration > windows settings > windows defender > inbound Rules > rechtermuisknop > New Rule



Nu Predefined: File and Printer Sharing(1) selecteren en next(2).



Alles afvinken met uitzondering van File and Printer Sharing (Echo Request - ICMPv4-In)(1) en dan next(2).

New Inbound Rule Wizard

Predefined Rules

Select the rules to be created for this experience.

Steps:

- Rule Type
- Predefined Rules
- Action

Which rules would you like to create?

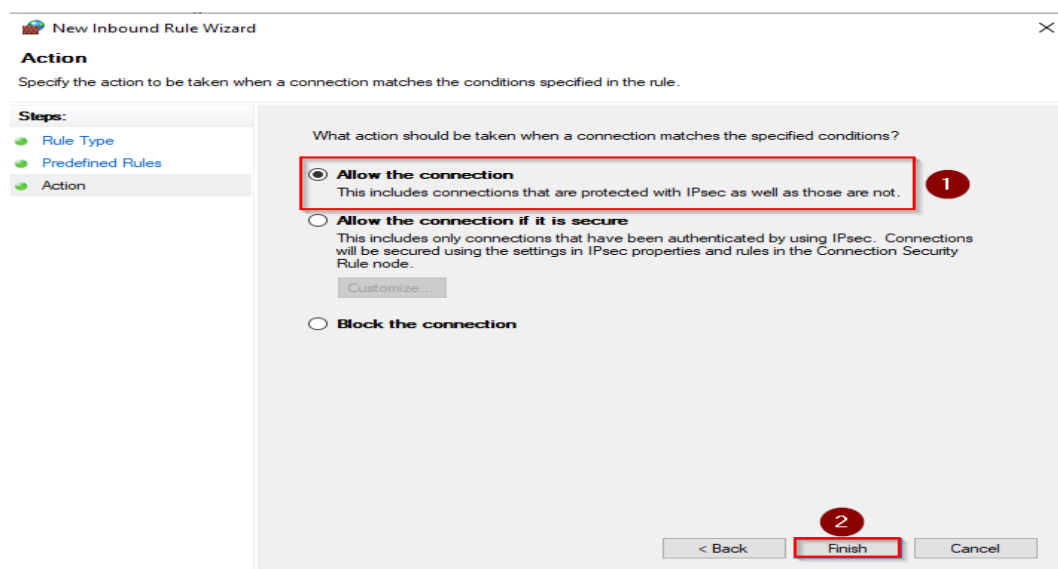
The following rules define network connectivity requirements for the selected predefined group. Rules that are checked will be created. If a rule already exists and is checked, the contents of the existing rule will be overwritten.

Rules:

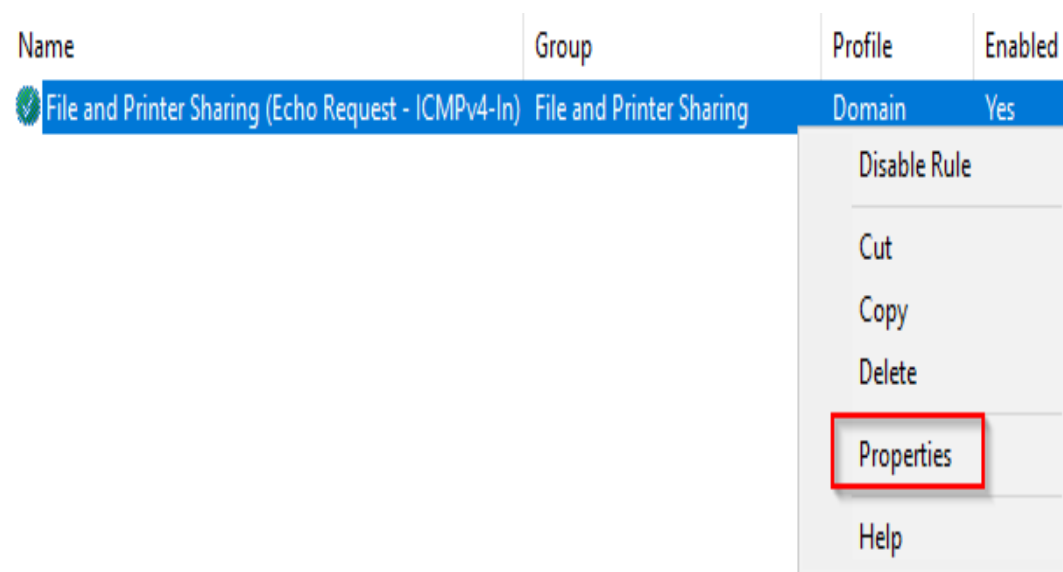
| Name | Rule Exists | Profi |
|---|-------------|-------|
| <input type="checkbox"/> File and Printer Sharing (LLMNR-UDP-In) | No | All |
| <input type="checkbox"/> File and Printer Sharing (Echo Request - ICMPv6-In) | No | Priv2 |
| <input checked="" type="checkbox"/> File and Printer Sharing (Echo Request - ICMPv4-In) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (Spooler Service - RPC-EPMAP) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (Spooler Service - RPC) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (NB-Datagram-In) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (NB-Name-In) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (SMB-In) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (NB-Session-In) | No | Priv2 |
| <input type="checkbox"/> File and Printer Sharing (Echo Request - ICMPv6-In) | No | Priv2 |

< Back Next > Cancel

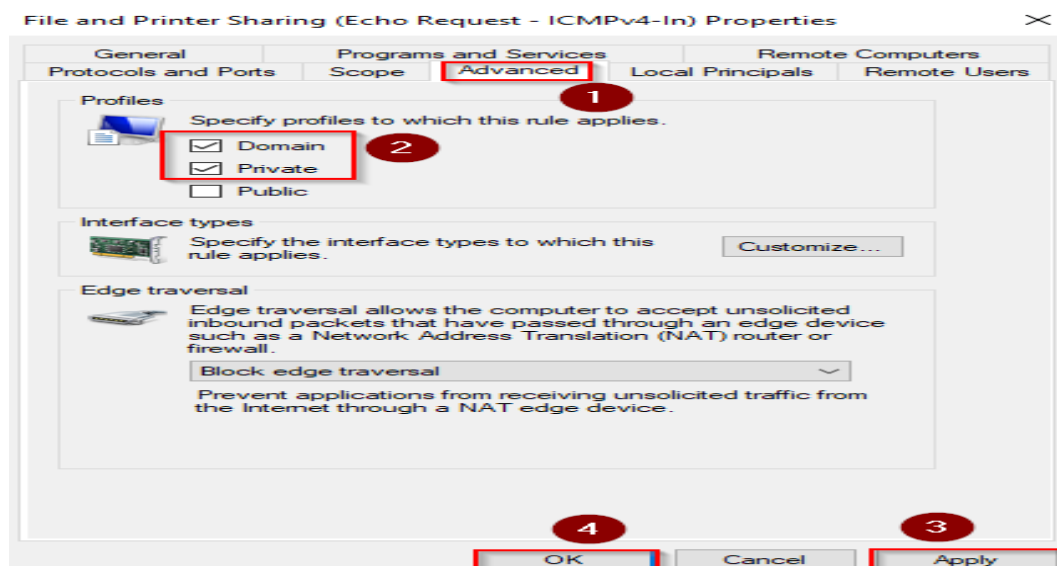
Allow the connection(1) moet aangevinkt staan en daarna drukken op Finish(2).



Bij het opvragen van de properties via rechtermuisnop op de aangemaakte regel kunnen we instellen op welke Firewall Profiles dit moet toegepast worden.

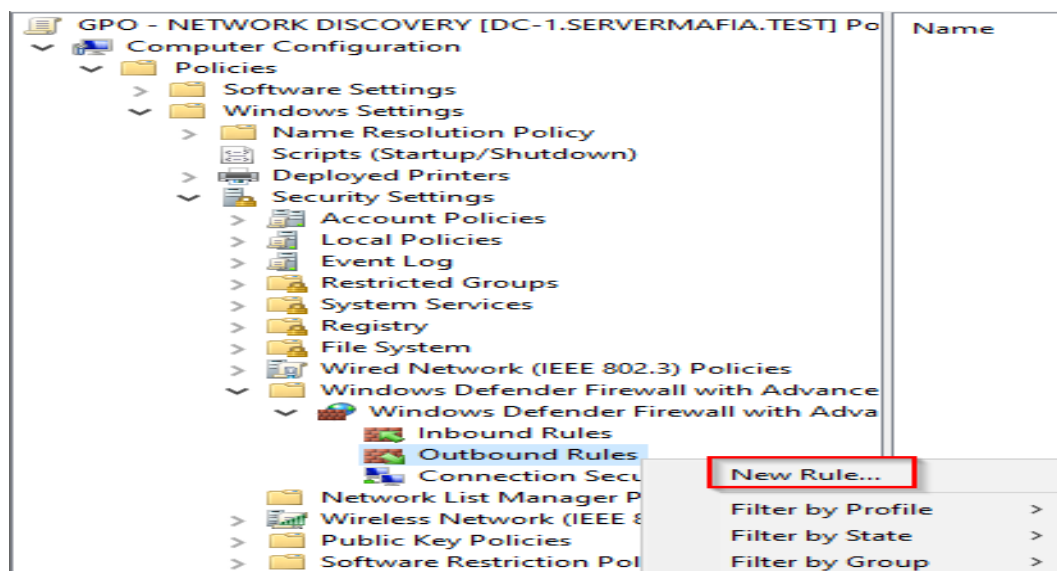


Tabblad Advanced(1) en hier Private en Domain(2) inschakelen. Public wensen we niet gepingd te kunnen worden. Daarna drukken op apply(3) en OK(4).

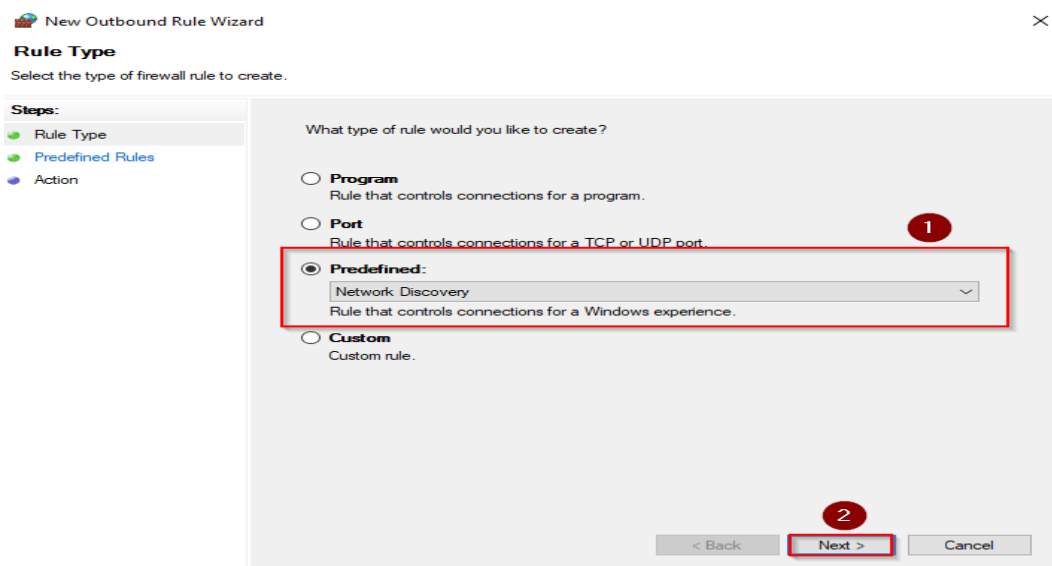


2. Instellen network discovery rule

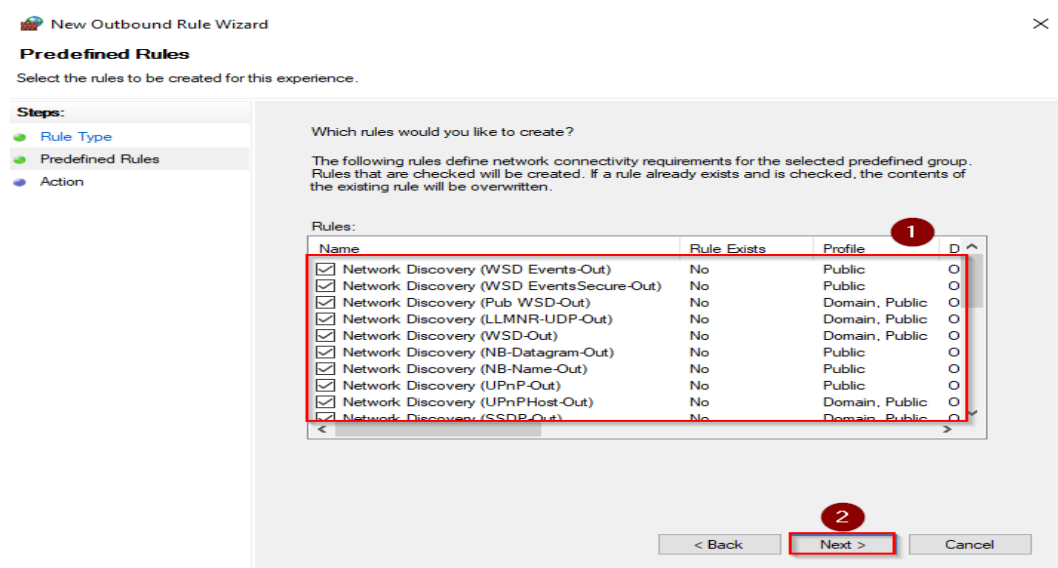
Bij outbound rules een New Rule aanmaken



Predefined > Network Discovery(1) en next(2).



Alles mag aangevinkt blijven(1) en next(2).



Aanvinken Allow the connection(1) en dan Finish(2).

Nu toevoegen aan de nodige ou's

3.1.4 DC2-installatie

Van stap 1 tot stap 4 hetzelfde als DC-1

Hostname aanpassen

```
rename-computer -newname "dc-2 -restart
```

Fixed ip adres:

```
new-netipaddress -interfaceindex 2 -ipaddress 192.168.10.5-prefixlength 24
defaultgateway 192.168.10.254
```

DNS

```
set-dnsclientserveraddress -interfaceindex 2 -serveraddress
("192.168.10.2,127.0.0.1")
Install ad domain services: Install-WindowsFeature -Name AD-Domain-Services -
IncludeManagementTools
```

Toevoegen aan de eerste DC:

```
Install-addsdomaincontroller -domainname "ServerMafia.test" -credential (get-
credential "ServerMafia\administrator")
```

3.1.5 Client-installatie

Alle nodige updates uitvoeren

RSAT is enkel voor management client.

Hostname veranderen:

```
rename-computer -newname "management-pc" -restart
|
```

p adres geven om te kunnen toevoegen aan domain:

```
New-netipaddress -InterfaceIndex 5 -IPAddress "192.168.99.8" -PrefixLength 28 -
DefaultGateway "192.168.10.254"
```

DNS:

```
Set-DnsClientServerAddress -Interfaceindex 5 -ServerAddresses "192.168.10.2",
"192.168.10.5"
```

Toevoegen aan domain

```
Add-computer -domainname "ServerMafia.test" -restart
```

RSAT toevoegen via powershell:

```
Add-WindowsCapability -Name RSAT.ActiveDirectory.DS-LDS.Tools~~~~0.0.1.0 -Online
Add-WindowsCapability -Name RSAT.DHCP.Tools~~~~0.0.1.0 -Online
Add-WindowsCapability -Name RSAT.DNS.Tools~~~~0.0.1.0 -Online
Add-WindowsCapability -Name RSAT.GroupPolicy.Management.Tools~~~~0.0.1.0 -Online
Get-WindowsCapability -Name RSAT* -Online | Where-Object State -EQ 'Installed'
```

3.2 File-server

3.2.1 FS-1 installatie

Voor de Fileserver kiezen we voor een gui versie ipv de core versie. De installatie verloopt verder hetzelfde.

Eerst en vooral zetten we de tijdzone juist om latere problemen te vermijden.

Date & time

Current date and time

16:04, zondag 22 september 2024

Set time automatically

☒ On

Set time zone automatically

☐ Off

Set the date and time manually

Change

Synchronize your clock

Last successful time synchronization: 22/09/2024 16:03:12

Time server: time.windows.com

Sync now

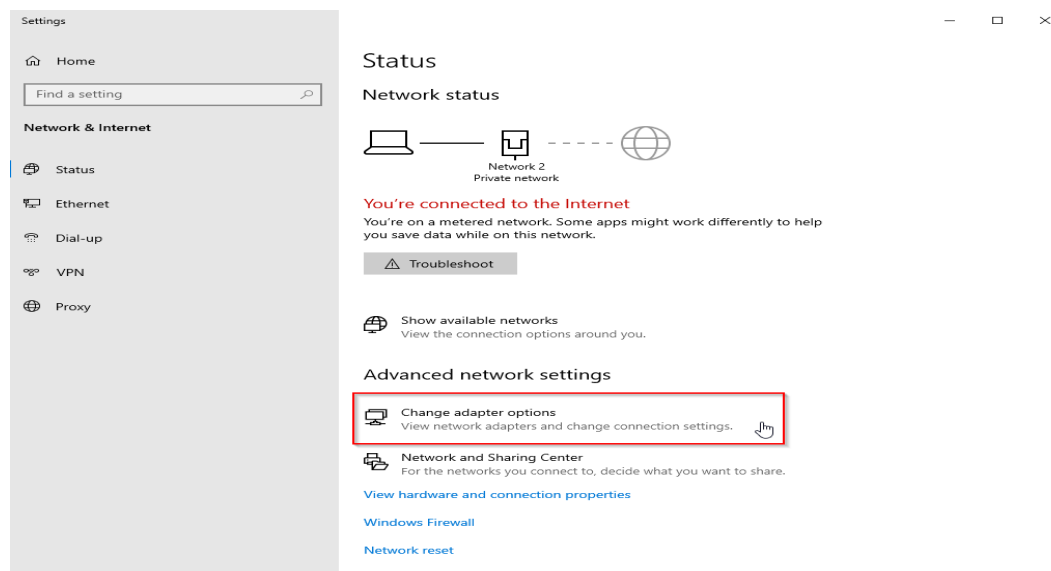


Time zone

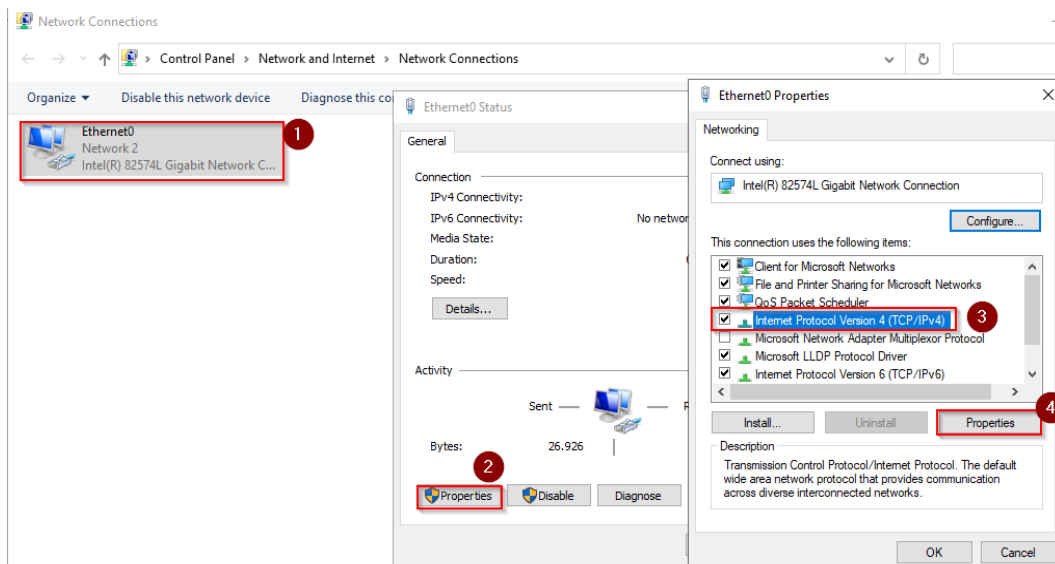
(UTC+01:00) Brussels, Copenhagen, Madrid, Paris

Adjust for daylight saving time automatically

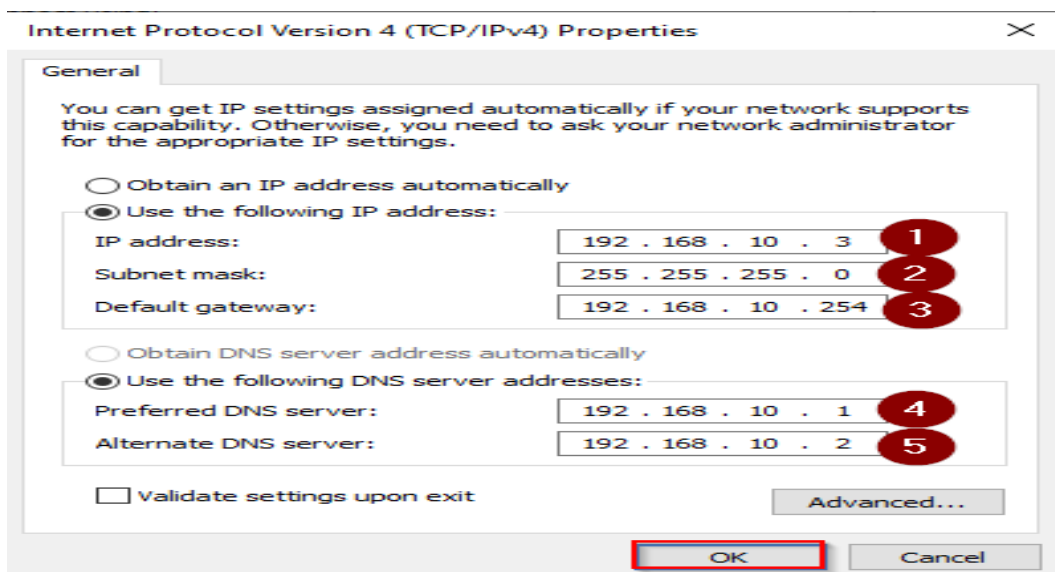
3.2.1.1 *Netwerkinstellingen*



Via ethernet0(1) > properties(2) > Internet Protocol Version 4(3) > properties(4) kunnen we het netwerk van de FS wijzigen.

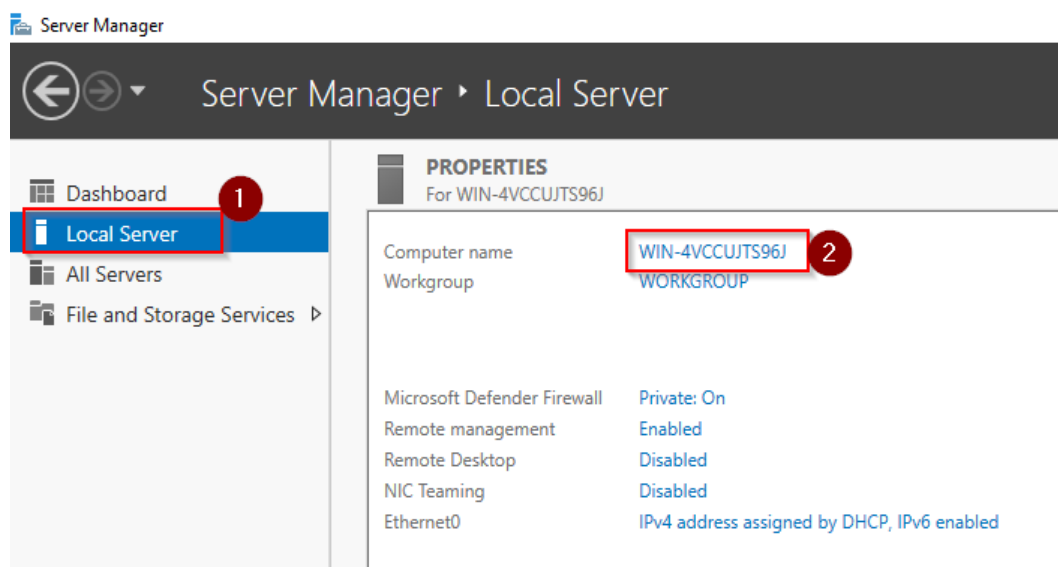


We geven een vast ip adres 192.168.10.3(1) in , het subnetmask(2) wordt automatisch aangevuld. De default gateway(3) is het ip adres van onze pfSense en we voeren het ip adres van DC 1 in bij preferred DNS(4) en van DC 2 bij alternate DNS(5) en bevestigen met ok

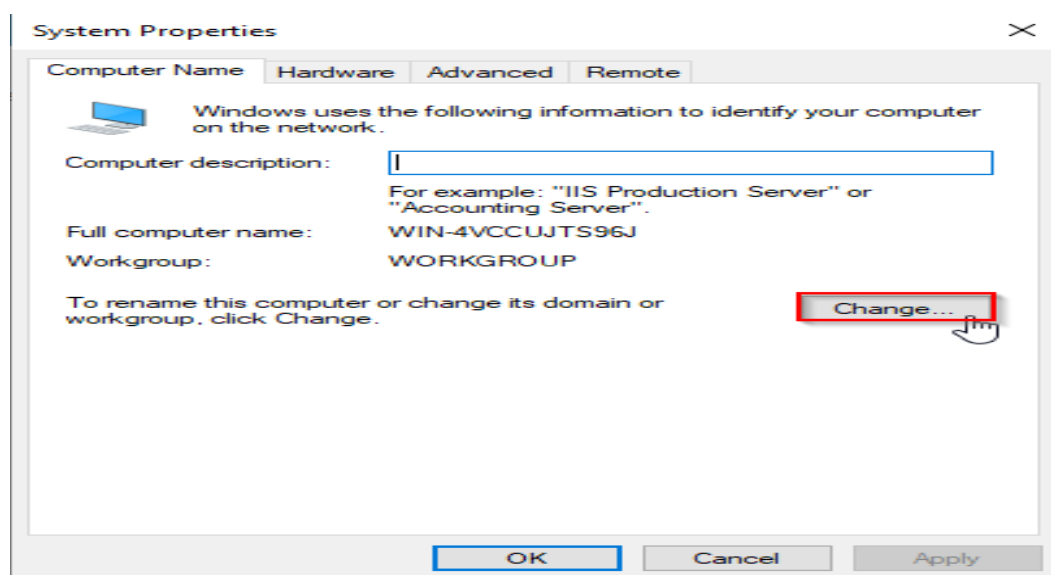


3.2.1.2 toevoegen aan domain

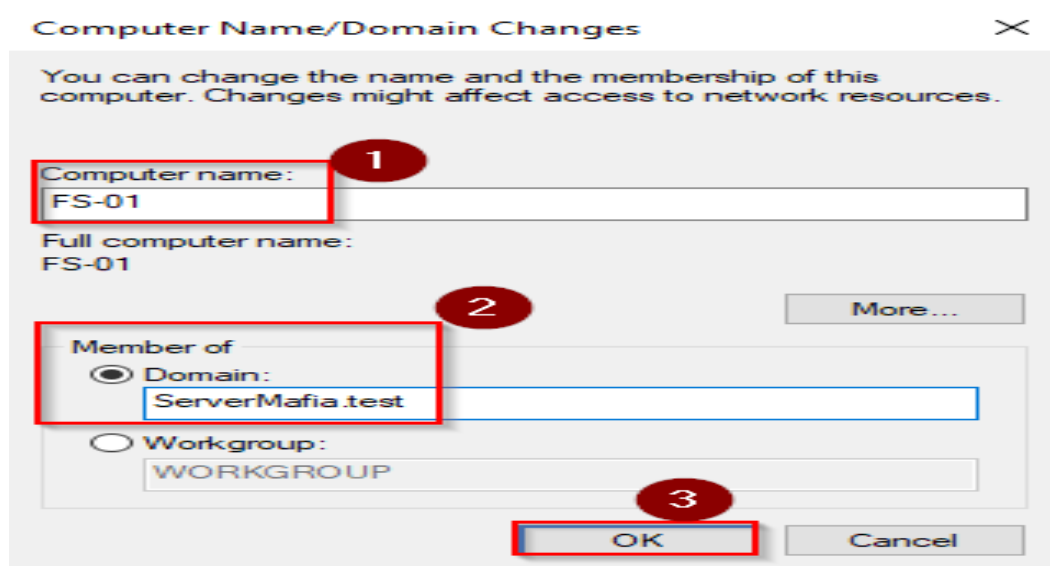
Onder de tab Local Server(1) kiezen klikken we op Computer Name(2)



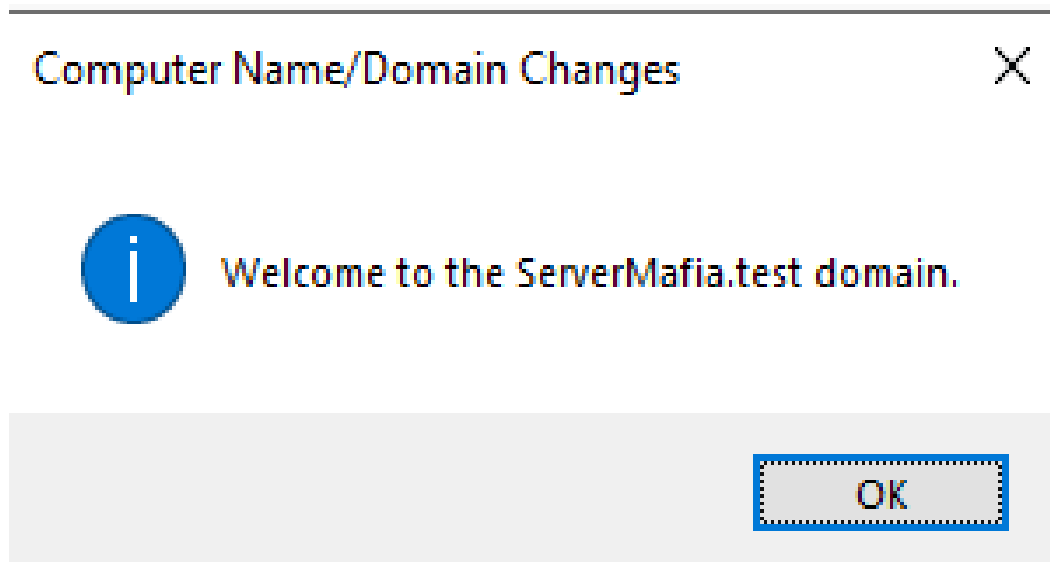
Daarna klikken we op change om het domain meteen mee te veranderen.



Hier kunnen we de Computer Name(1) wijzigen en de server toevoegen aan het domain(2). Nu kunnen we dit bevestigen met ok(3)



We bevestigen met credentials van een AD admin. Als het gelukt is krijgen we een melding



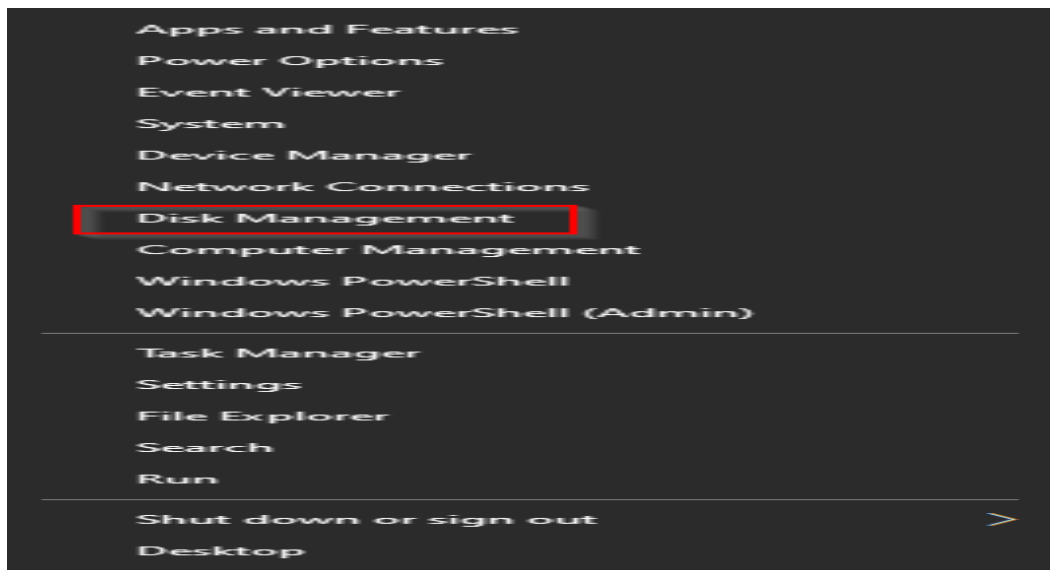
We moeten herstarten om de wijzigingen door te voeren.

3.2.1.3 Dataschijf toevoegen

Bij de settings voegen we de disk toe op dezelfde manier als we die bij het aanmaken van de vm hebben gedaan.

Naar disk management gaan

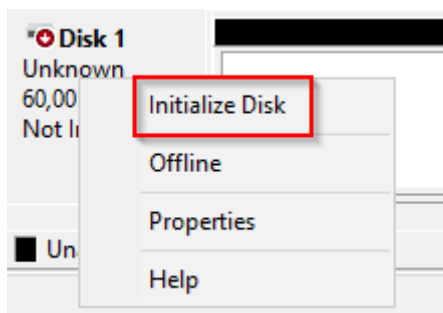
windowsknop +x en dan disk management(1).



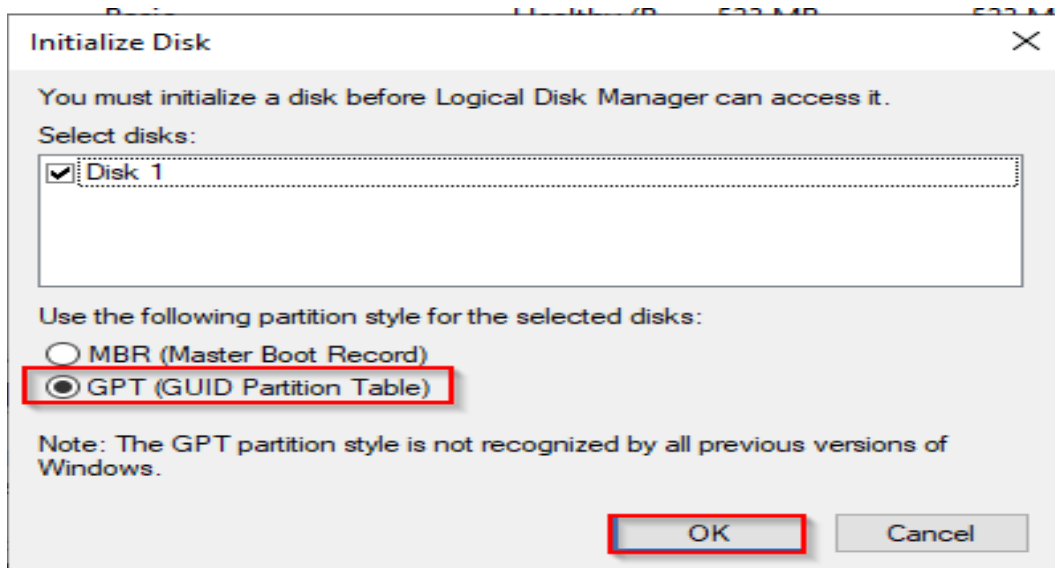
Schijf online zetten + initialize Disk

Via rechtermuisknop op de disk met het rode pijltje kunnen we de disk online zetten.

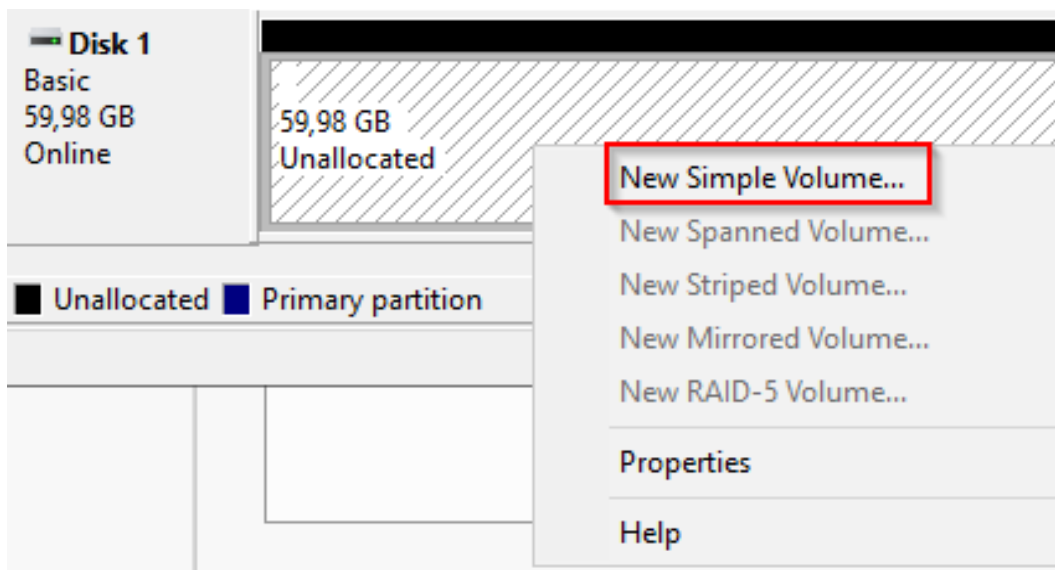
Daarna opnieuw rechtermuisknop en Initialize disk nemen.



We laten het op de standaard instellingen (GPT) staan en klikken op ok.



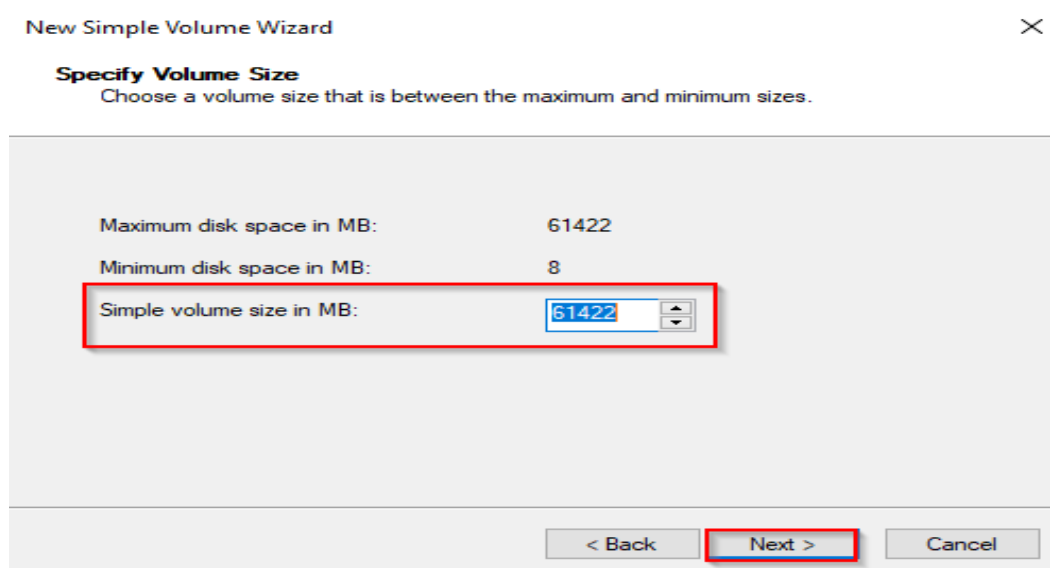
Daarna drukken we opnieuw op rechtermuisknop en nemen we New Simple Volume...



We klikken next >



Alloceren alle volume die we net hebben aangemaakt en drukken next.



New Simple Volume Wizard

Specify Volume Size
Choose a volume size that is between the maximum and minimum sizes.

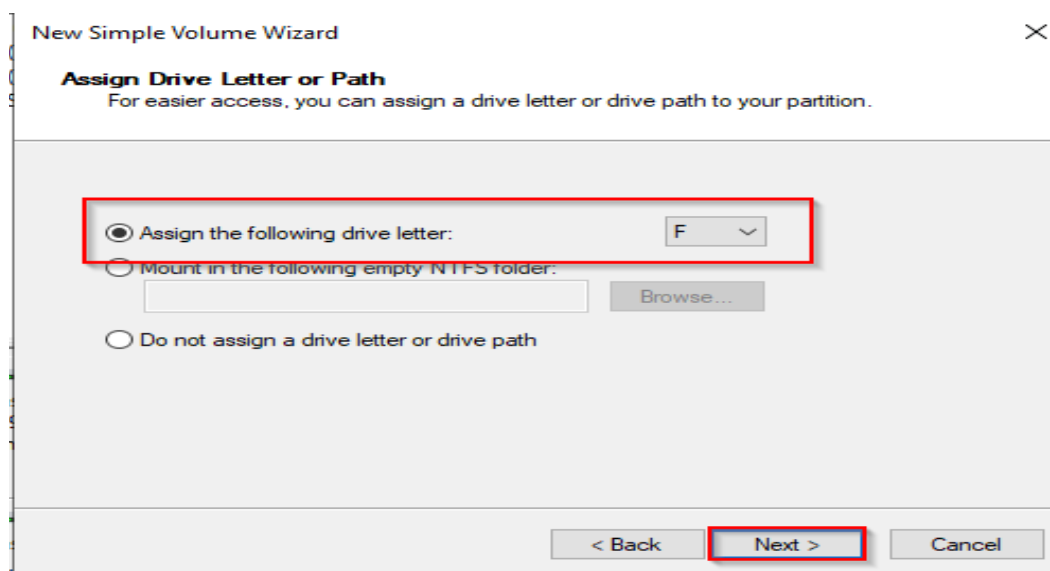
Maximum disk space in MB: 61422

Minimum disk space in MB: 8

Simple volume size in MB: 61422

< Back Next > Cancel

We kiezen een drive letter die we wensen toe te kennen en next.



New Simple Volume Wizard

Assign Drive Letter or Path
For easier access, you can assign a drive letter or drive path to your partition.

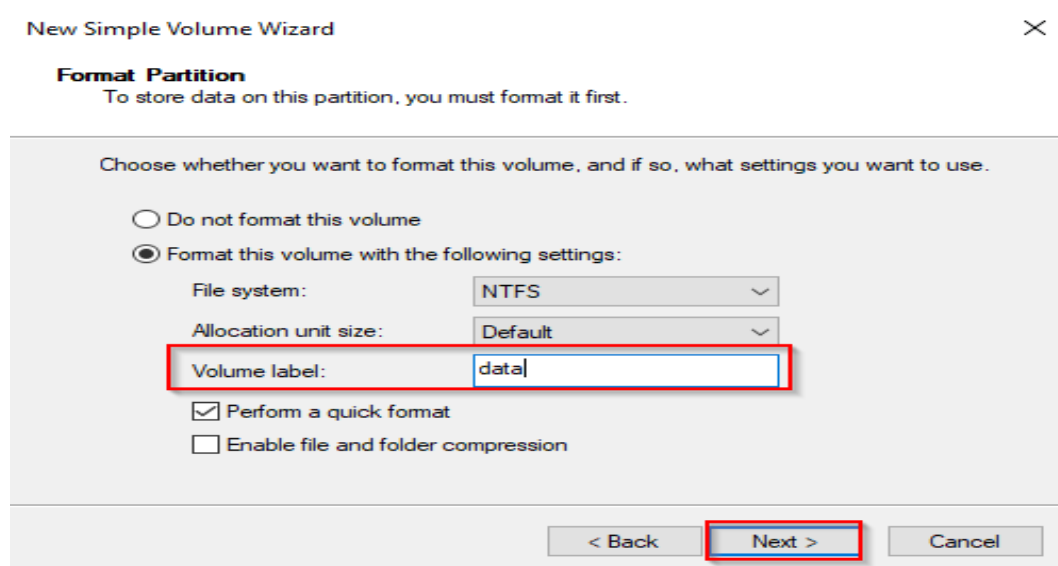
☒ Assign the following drive letter: F

☐ Mount in the following empty NTFS folder: Browse...

☐ Do not assign a drive letter or drive path

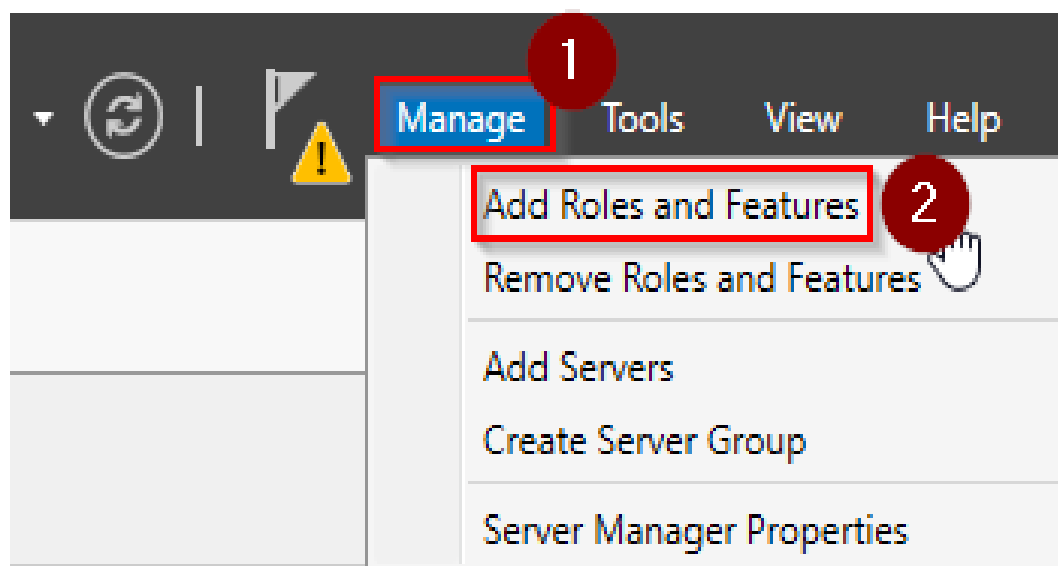
< Back Next > Cancel

Dan kennen we een naam toe via volume label > next en dan finish op het volgende kader.

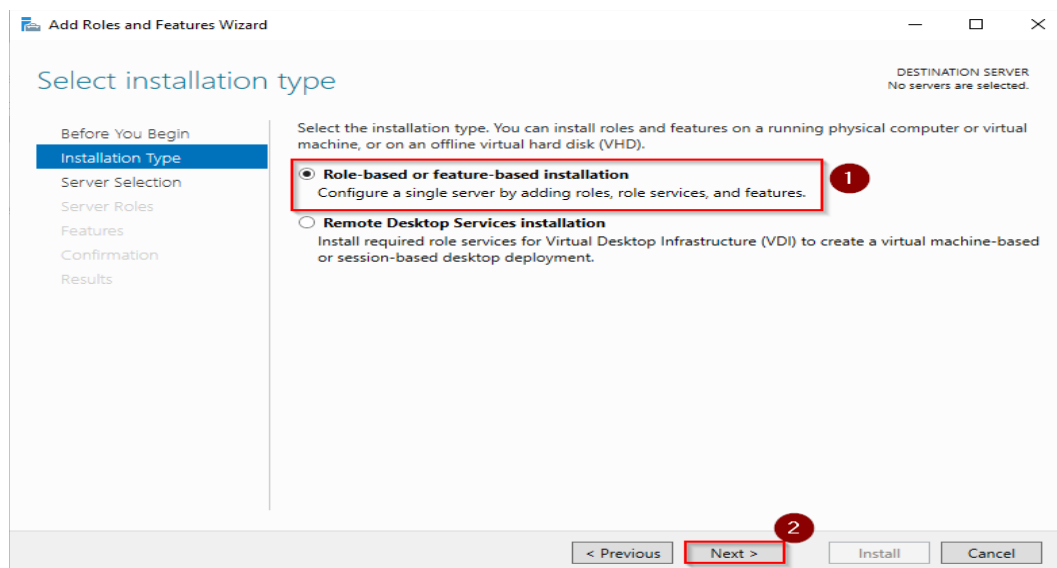


3.2.1.4 Rol installeren

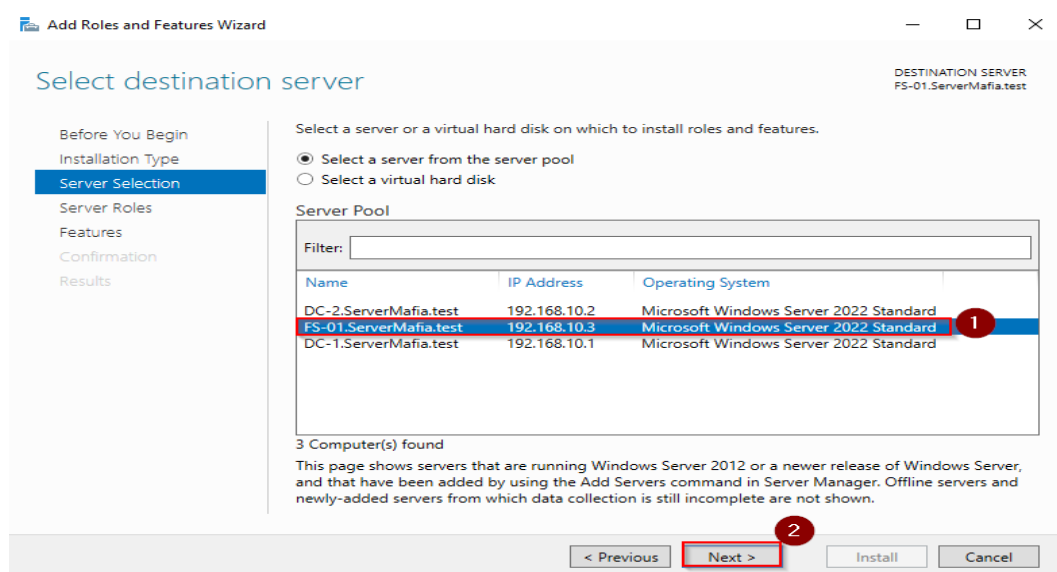
We klikken op Manage(1) en Add Roles and Features(2)



We kiezen voor Role-based(1) en gaan verder(2)

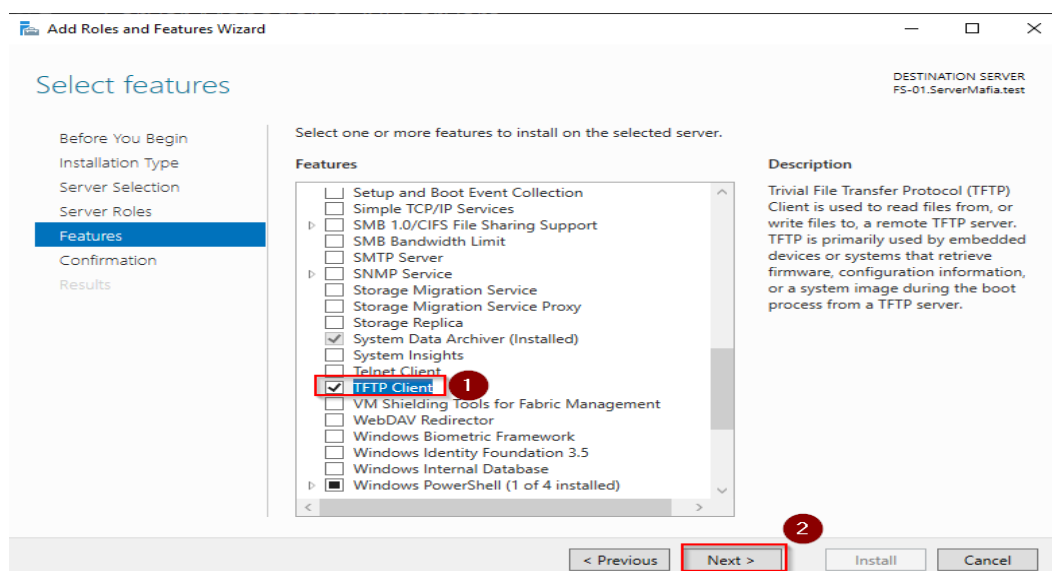


We selecteren de juiste server(1) waarop we een rol willen installeren en gaan verder(2) in ons geval is dit FS-01

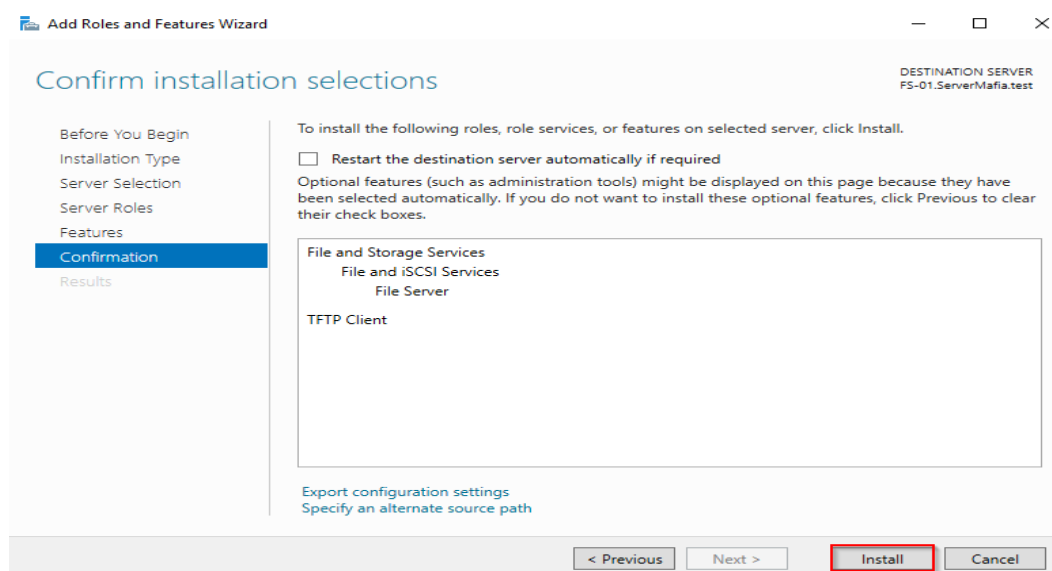


Bij server Roles drukken we gewoon op next en dan komen we bij de Features, hier moeten we een aantal dingen selecteren.

We hebben we TFTP(1) nodig om daar de netwerkbackups op te slaan en gaan verder(2).



In het volgende scherm klikken we op installeren



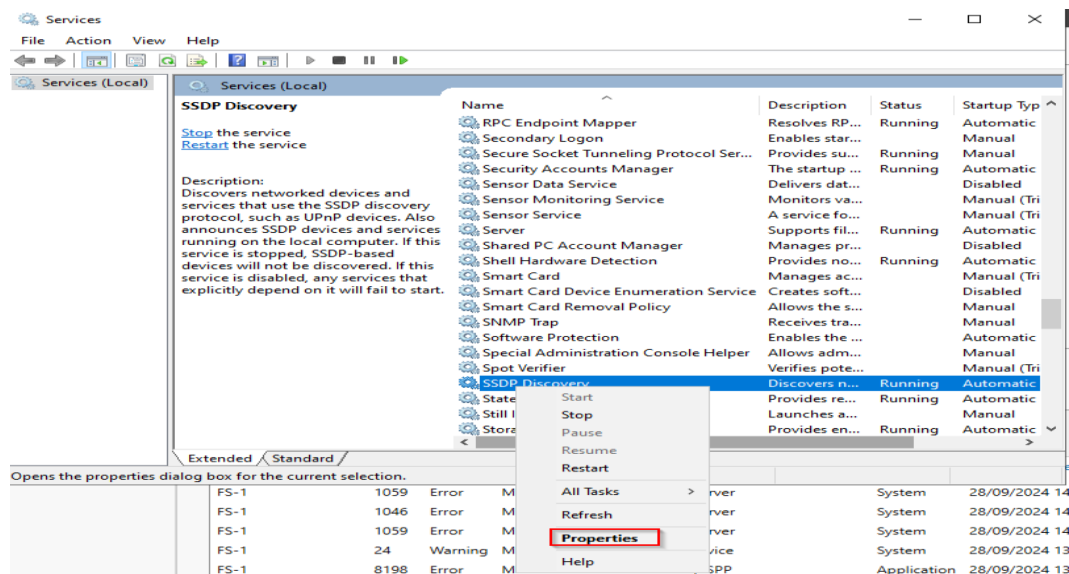
We moeten nu nog enkele services activeren.

Druk Windowsknop + r en typ dan services.msc + enter

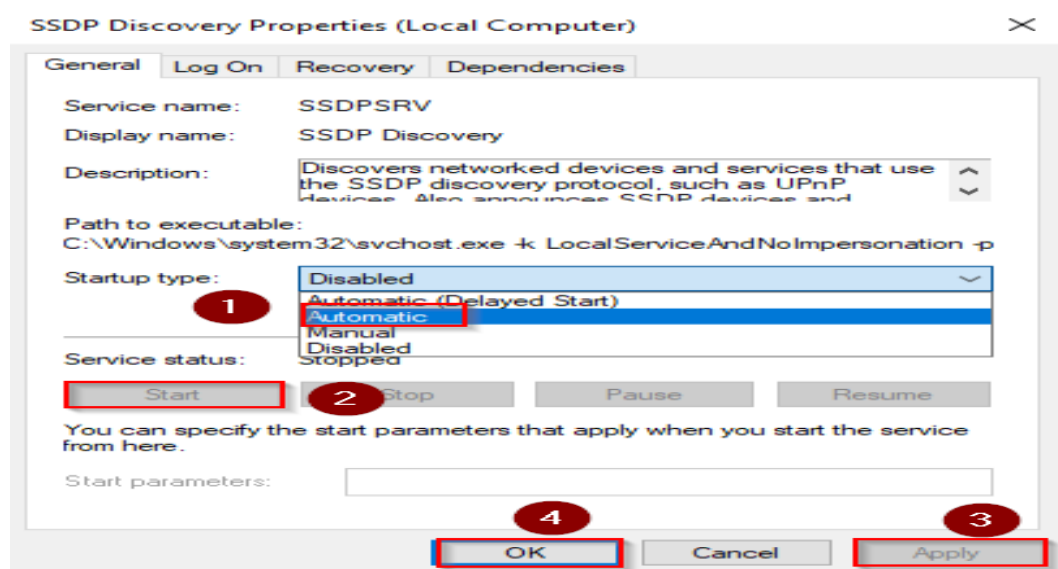
Zoek naar onderstaande services.

- Function discovery resource publication (server en gedeelde resources zichtbaar maken op het netwerk)
- SSDP Discovery (Universal plug and play (UPnP) devices zichtbaar maken op het netwerk, dit zorgt voor automatisch vinden en communiceren)
- UpnP device host (ondersteund UPnP apparaten)

We vragen telkens de properties op, hier kunnen we de service opstarten en het automatisch inschakelen bij startup activeren.

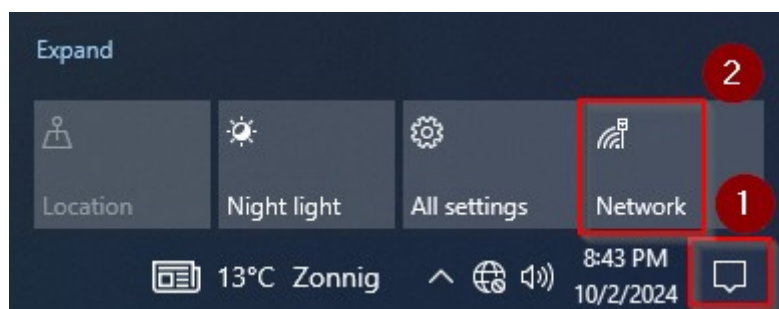


We selecteren automatic(1) en drukken op apply(2). Daarna drukken we op start(3) en kunnen via ok(4) de properties verlaten .



3.2.1.5 Firewall settings aanpassen

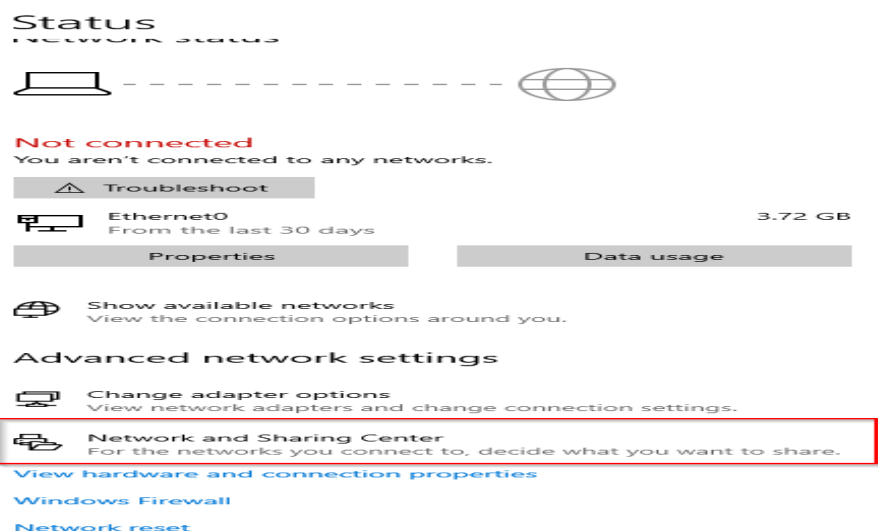
We drukken op het tekstkadertje(1) en selecteren Network(2).



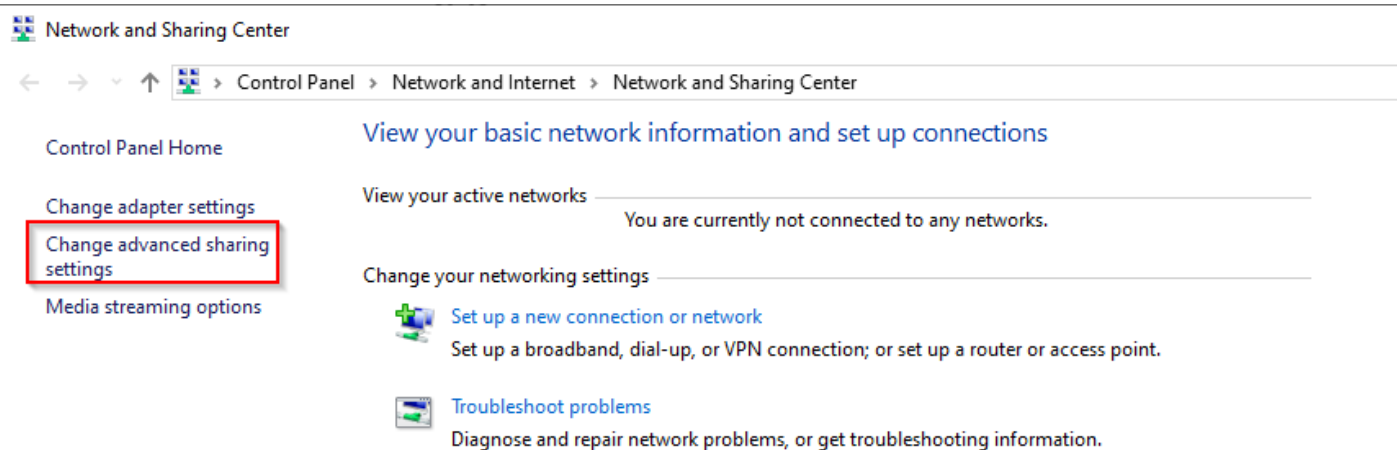
We klikken op Network & Internet Settings



We kiezen voor Network and Sharing Center



En dan kiezen we voor Change Advanced Sharing settings



Hier schakelen we Turn on network discovery en Turn on file and printer sharing in en drukken op save changes

3.2.1.6 Mapstructuur

Powershell ISE uitvoeren als administrator en dan het volgende script uitvoeren: # Define the base directory (E:\) and the list of subfolders to be created

```
$baseDirectory = "E:\"
$folders = @("algemeen", "IT", "Sales", "R&D", "Management", "Legal", "Marketing",
"Finance", "HR")

# Define subfolders for the IT folder
$itSubFolders = @("Support", "Developers")

# Loop through each folder name and create the directory if it doesn't already
exist
foreach ($folder in $folders) {
    $fullPath = Join-Path $baseDirectory $folder
    # Check if the folder exists
    if (-not (Test-Path -Path $fullPath)) {
        # Create the folder if it doesn't exist
        New-Item -Path $fullPath -ItemType Directory
        Write-Host "Created folder: $fullPath"
    } else {
        Write-Host "Folder already exists: $fullPath"
    }

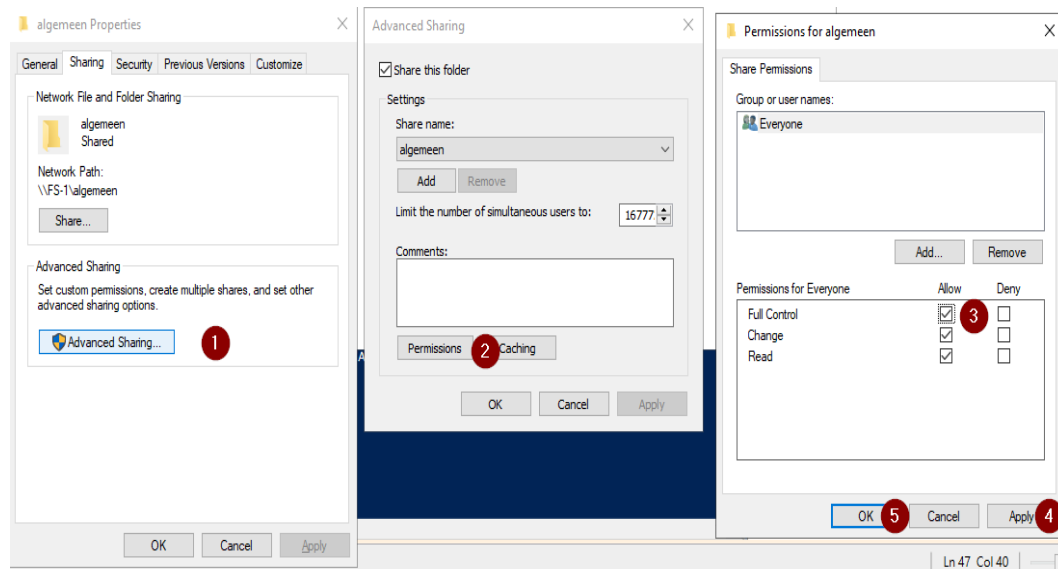
    # If the folder is IT, create its subfolders
    if ($folder -eq "IT") {
        foreach ($subFolder in $itSubFolders) {
            $subFolderPath = Join-Path $fullPath $subFolder
            # Check if the subfolder exists
            if (-not (Test-Path -Path $subFolderPath)) {
                # Create the subfolder if it doesn't exist
                New-Item -Path $subFolderPath -ItemType Directory
                Write-Host "Created subfolder: $subFolderPath"
            } else {
                Write-Host "Subfolder already exists: $subFolderPath"
            }
        }
    }
}
Write-Host "Folder structure creation complete!"
```

| Name | Date modified | Type |
|------------|-----------------|-------------|
| algemeen | 28/09/2024 0:44 | File folder |
| Finance | 28/09/2024 0:44 | File folder |
| HR | 28/09/2024 0:44 | File folder |
| IT | 28/09/2024 0:44 | File folder |
| Legal | 28/09/2024 0:44 | File folder |
| Management | 28/09/2024 0:44 | File folder |
| Marketing | 28/09/2024 0:44 | File folder |
| R&D | 28/09/2024 0:44 | File folder |
| Sales | 28/09/2024 0:44 | File folder |

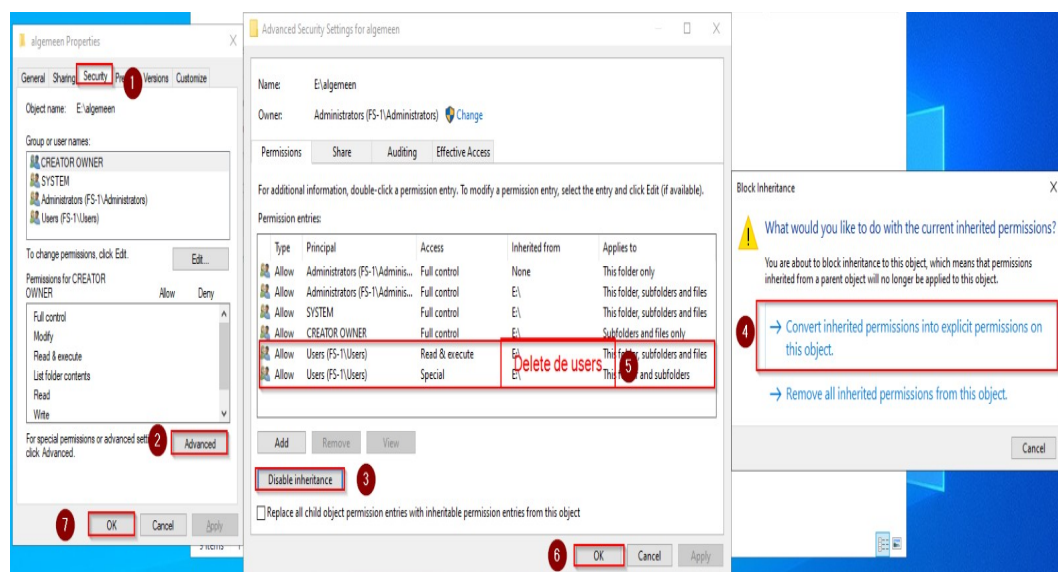
3.2.1.7 Shares

Sharing:

Rechter muis klikken op de folder properties sharing advanced sharing permissions everyone full control apply ok



Domain local group toevoegen aan de security.

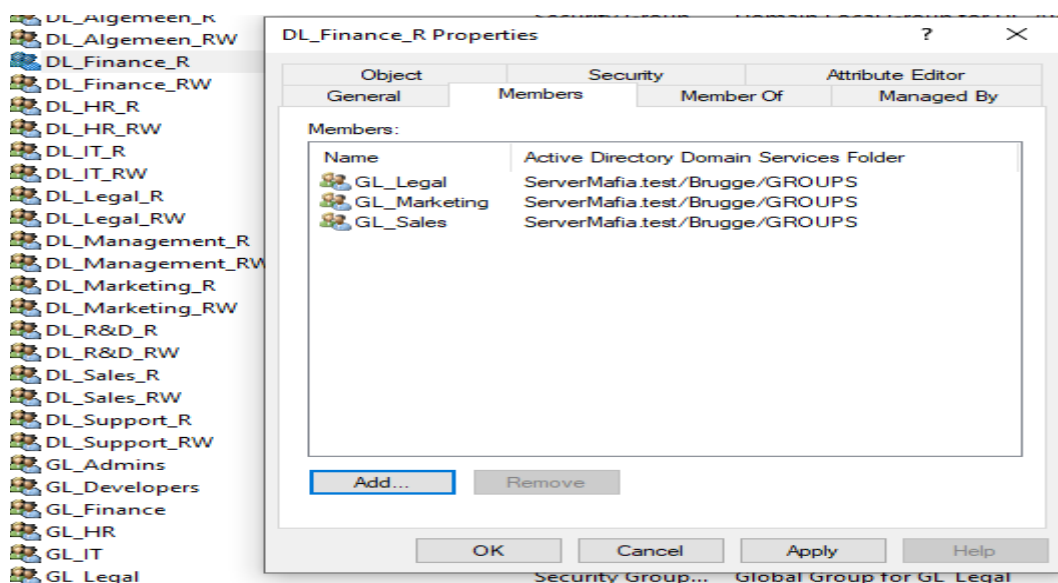


Herhaal deze stap bij elke bestand

Bij DL_Algemeen_RW moeten alle GL groups toegevoegd worden, aangezien dat iedereen RW rechten heeft.

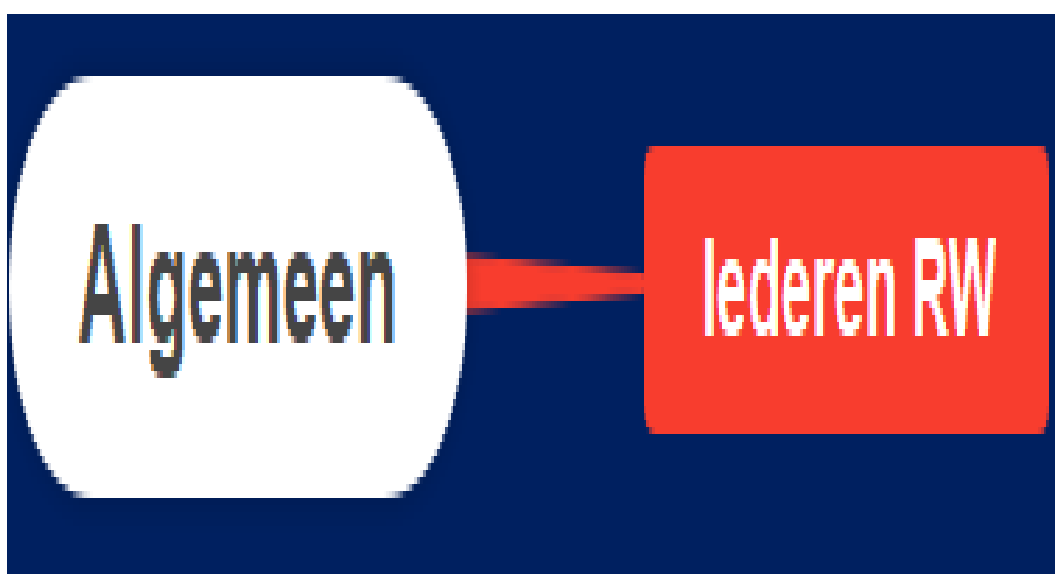
in Finance_R hebben GL groepen enkel Read rechten nodig

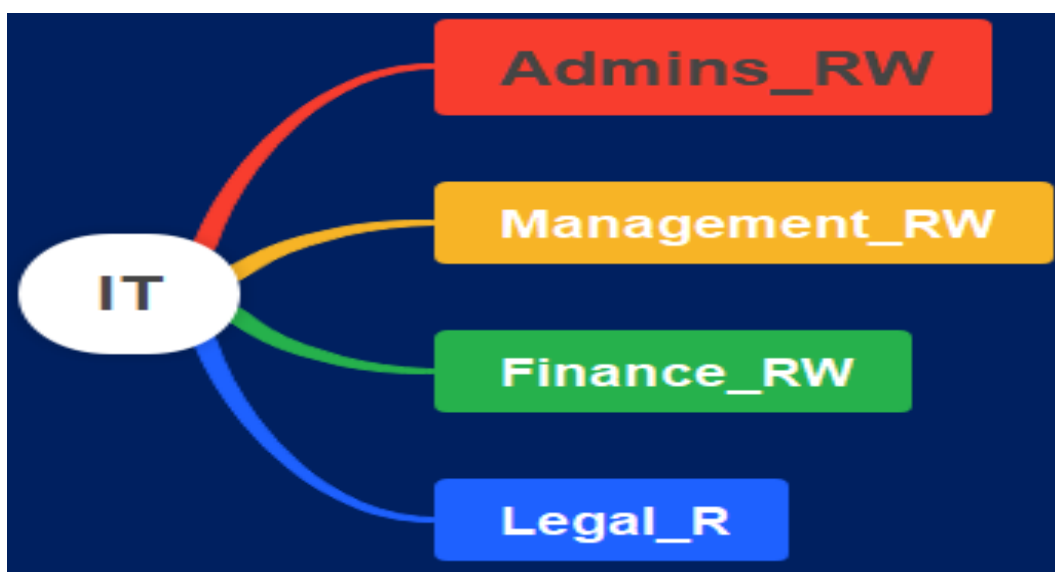
Dit principe geldt voor alle domain-local groups.

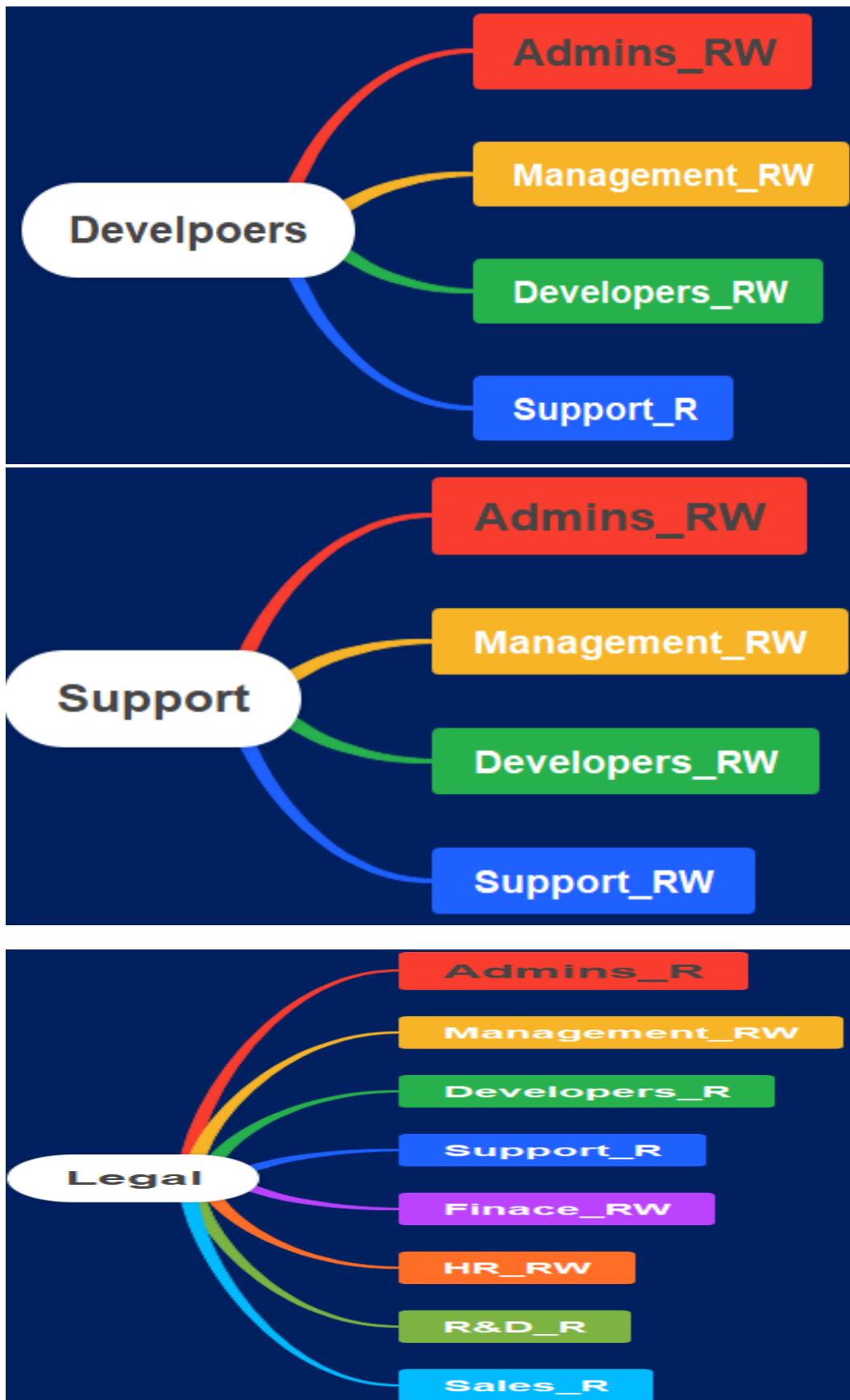


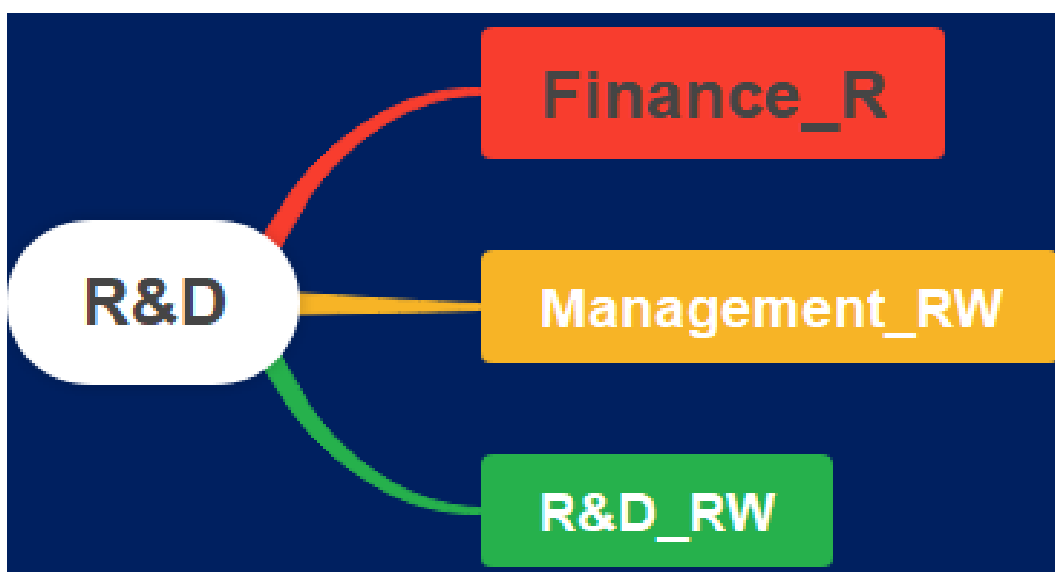
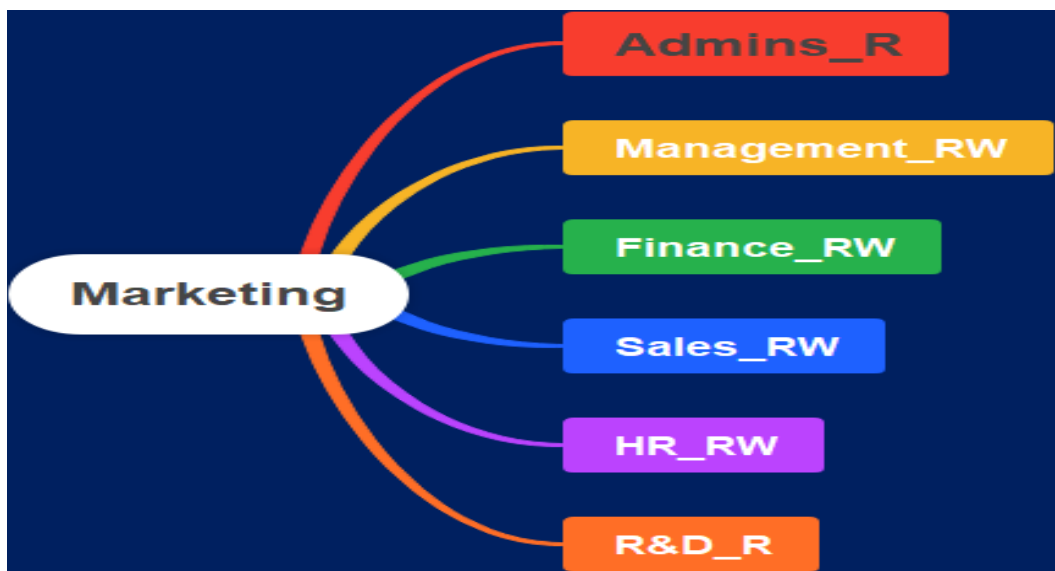
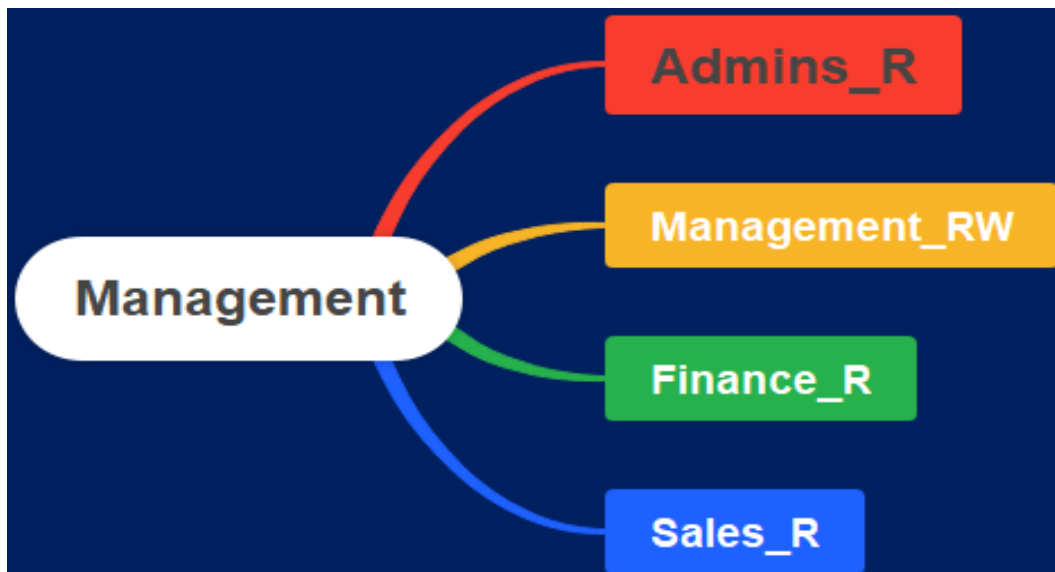
Voeg de Domain local group voor de nodige bestanden in file server. Het zal volgens de volgende structuur:

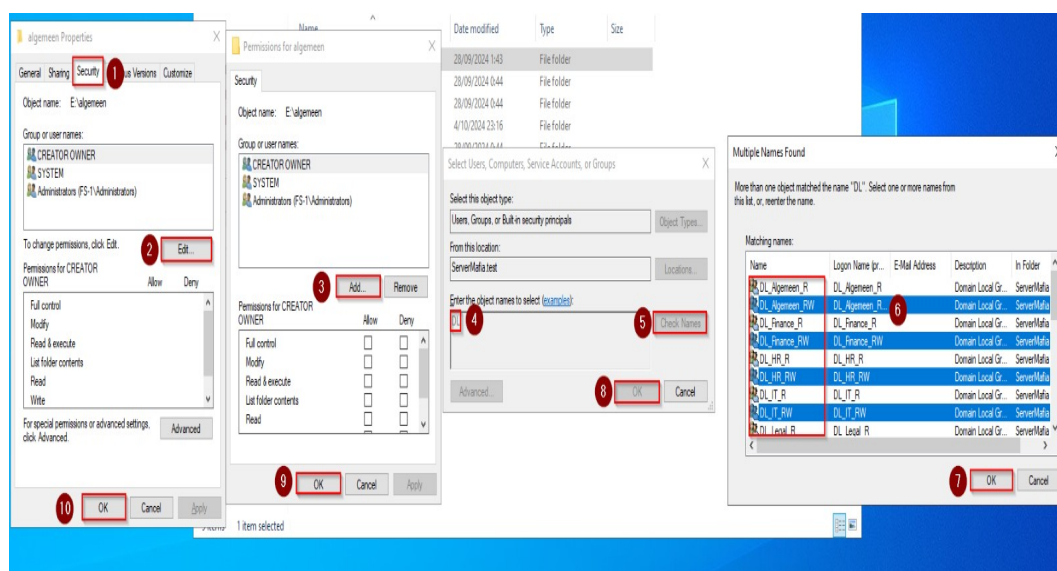
Rechten structuur





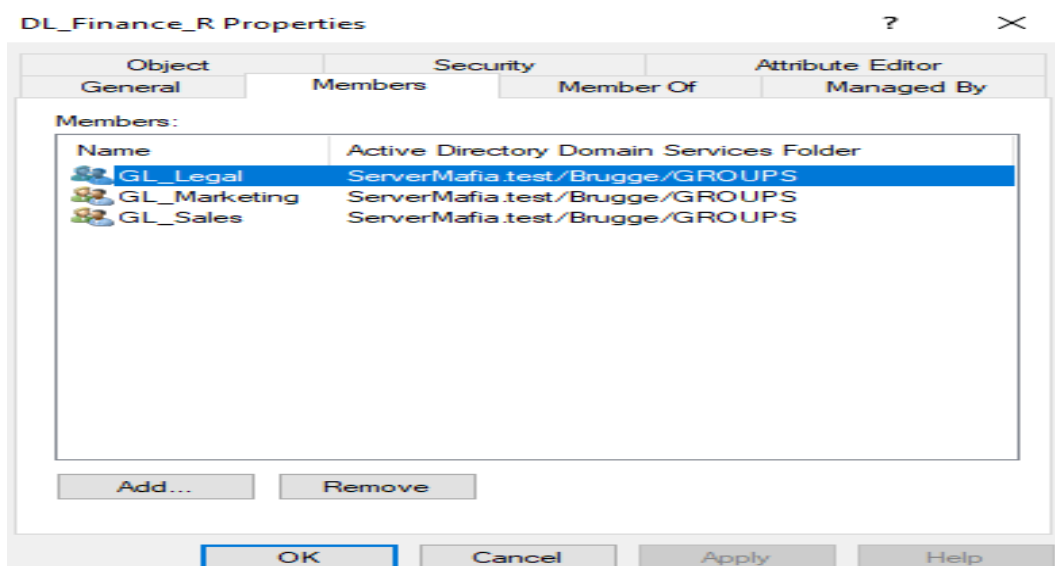
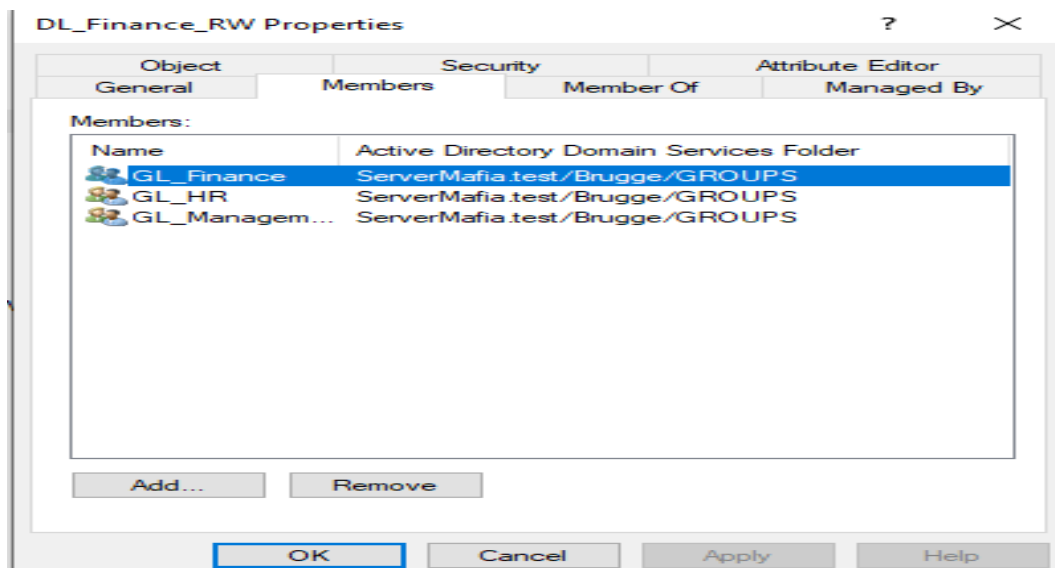




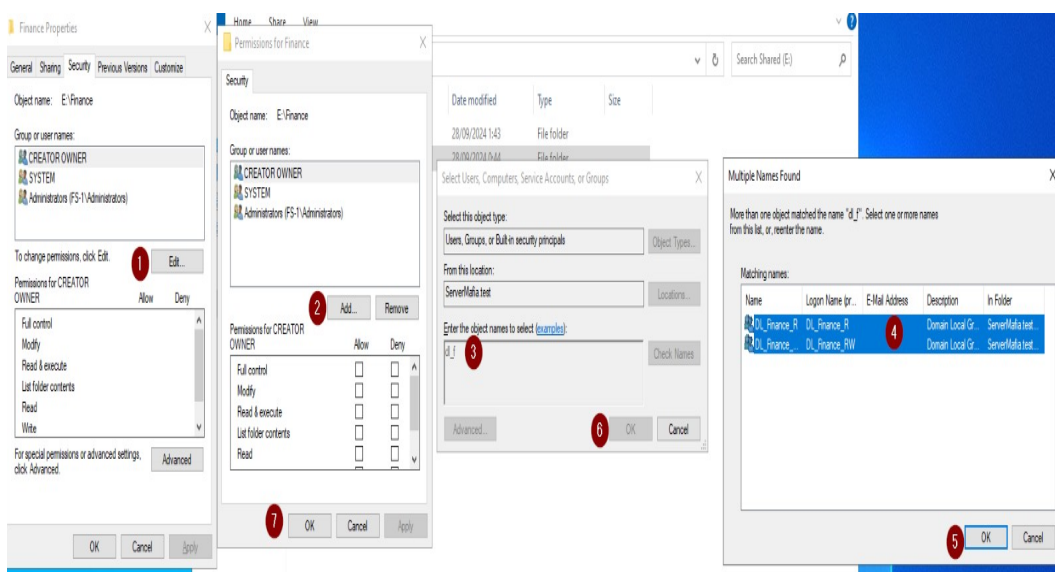


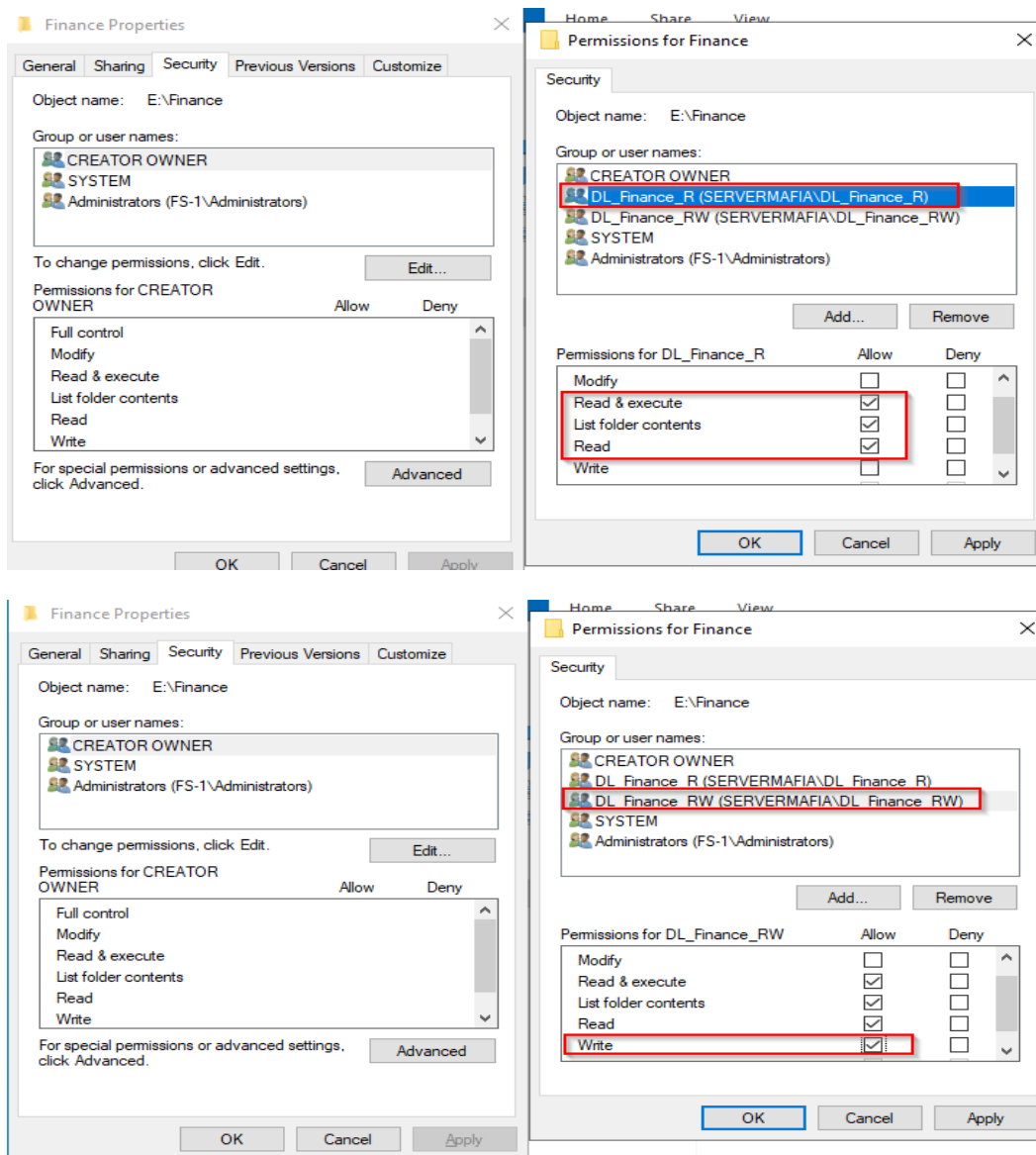
Herhalen bij elke bestand

Dan moeten alle GL groups toegevoegd worden aan de DL groups volgens de bestand structuur



En dan bij de bestand zelf de rechten aanpassen



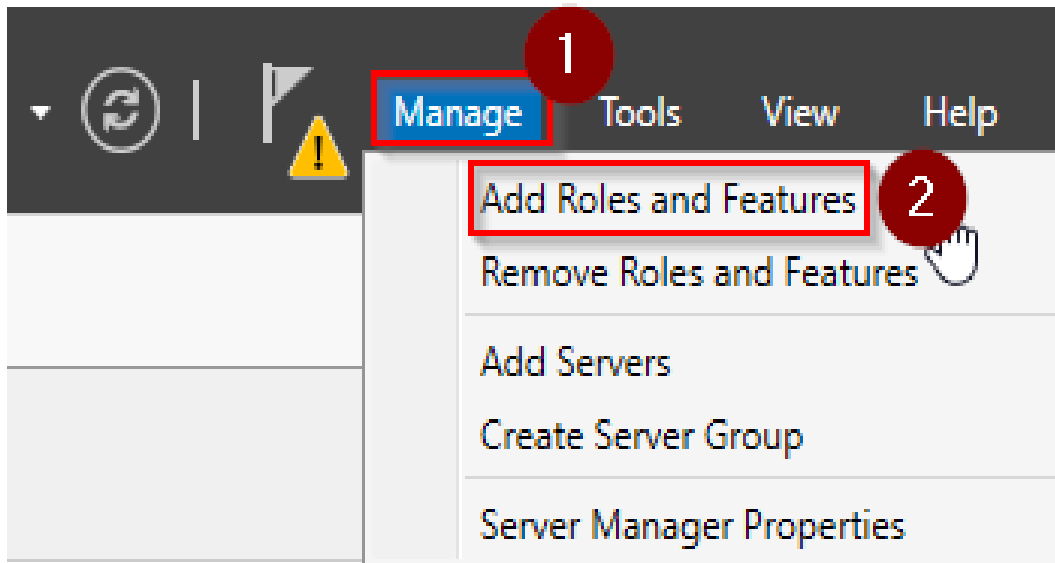


Hetzelfde doen voor de rest van de bestanden.

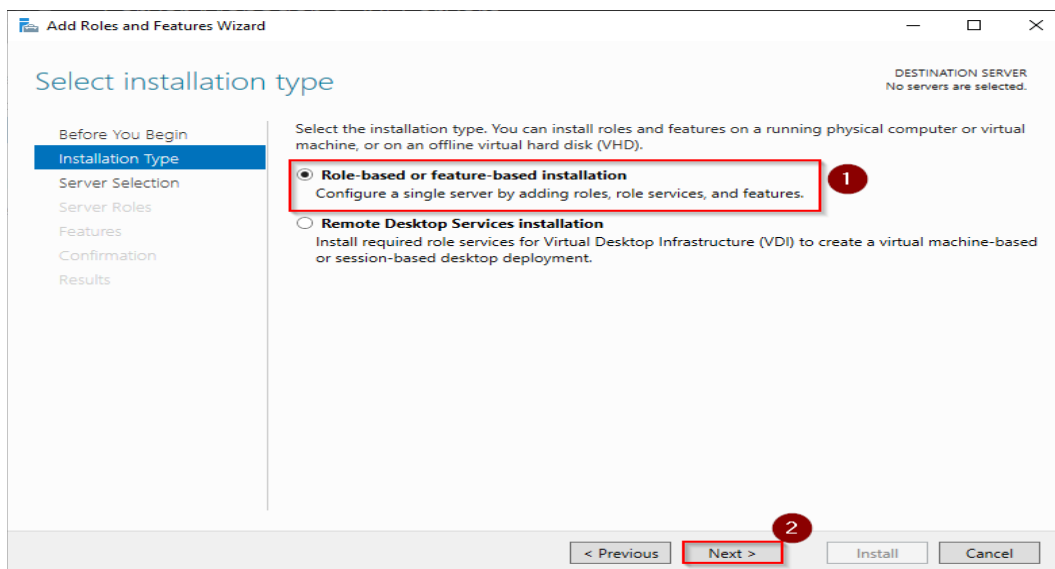
3.2.2 DHCP-server installeren

3.2.2.1 Rol installeren op de FS

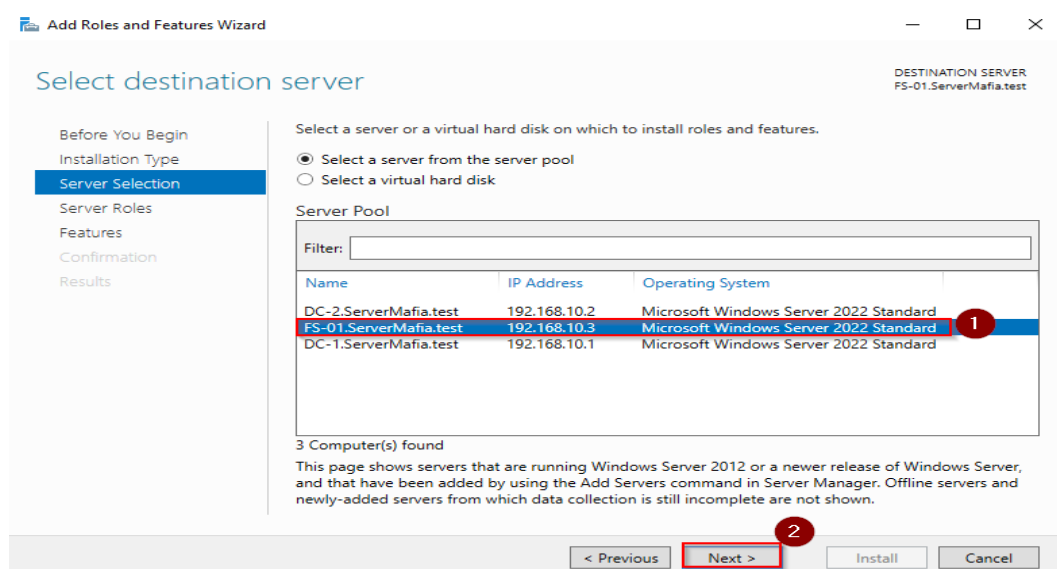
We klikken op Manage(1) en Add Roles and Features(2)



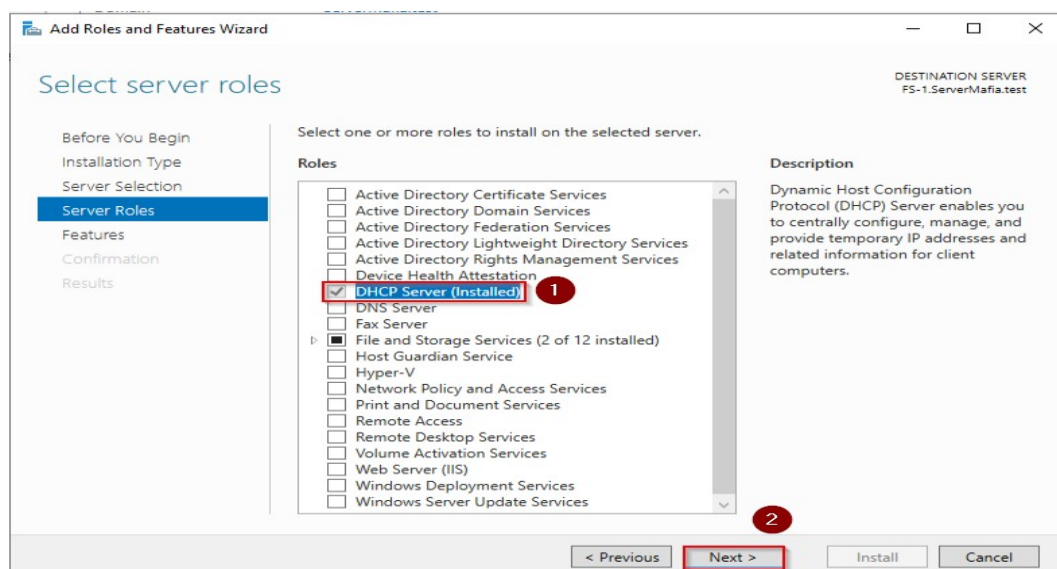
We kiezen voor Role-based(1) en gaan verder(2)



We selecteren de juiste server(1) waarop we een rol willen installeren en gaan verder(2) in ons geval is dit FS-01



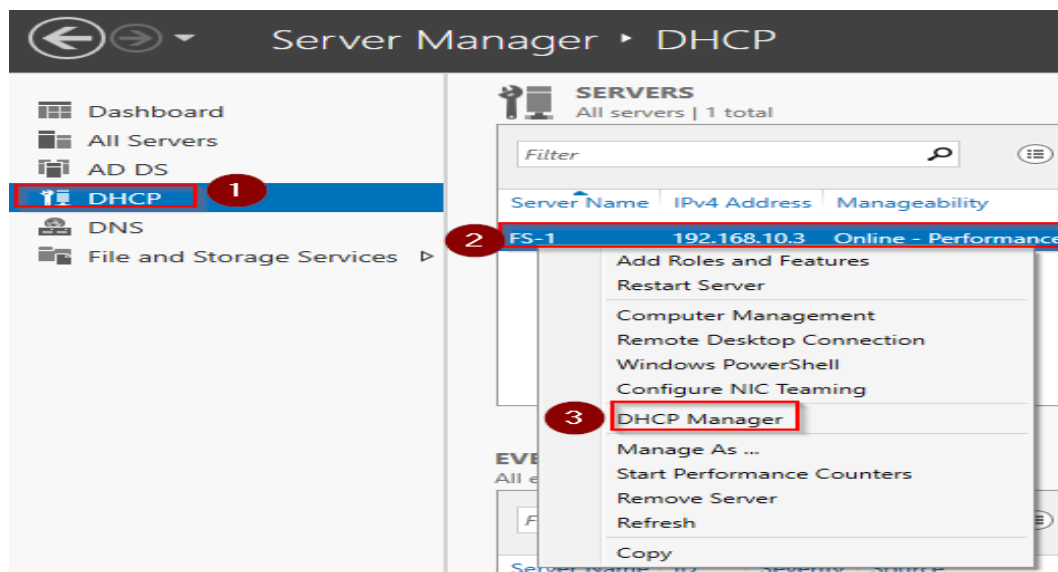
Bij server Roles drukken we gewoon op next en dan komen we bij de Features, hier moeten we een aantal dingen selecteren.



Bij het vlaggetje moeten we nog eens inloggen met de credentials van de domain controller admin om te bevestigen dat de dhcp mag opgenomen worden in het domain.

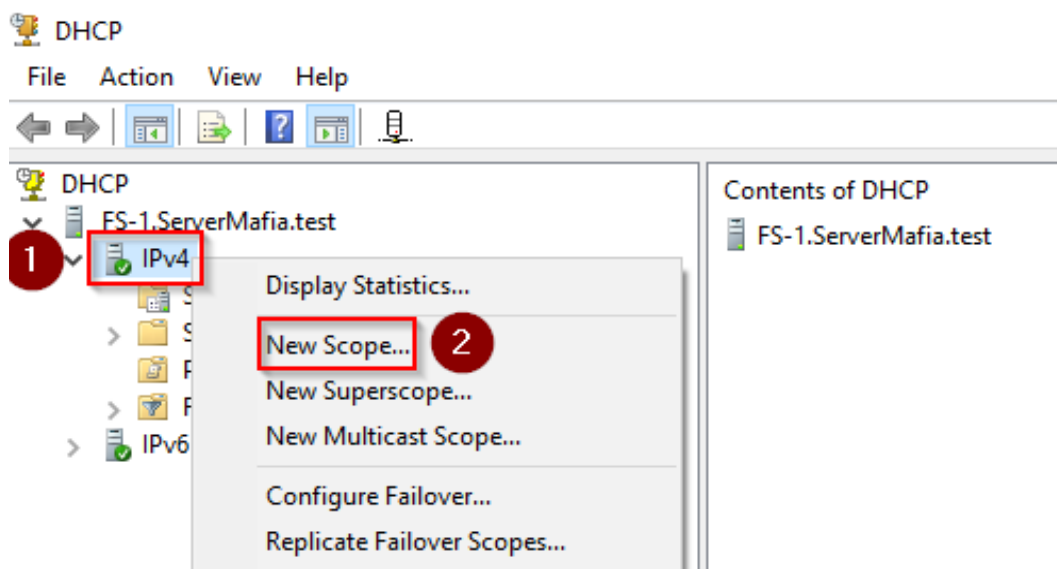
3.2.2.2 DHCP scope aanmaken

Om een dhcp scope aan te maken, moeten we in onze server manager op DHCP(1) klikken en dan rechtermuisknop op de dhcp server(2) en DHCP Manager(3).



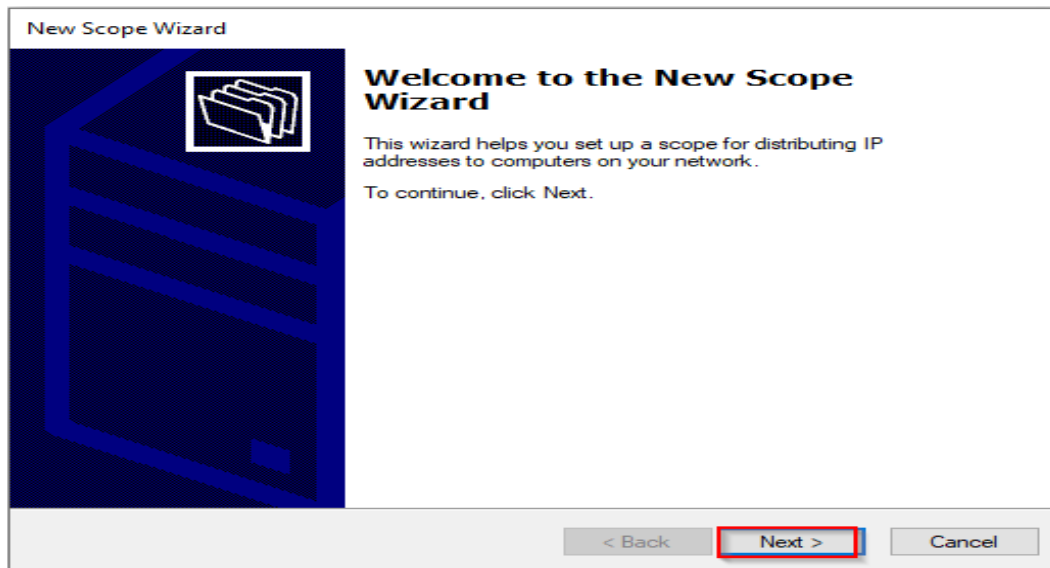
DHCP Scope wizard openen

Rechtermuisknop op Ipv4(1) en dan op New Scope...(2) klikken

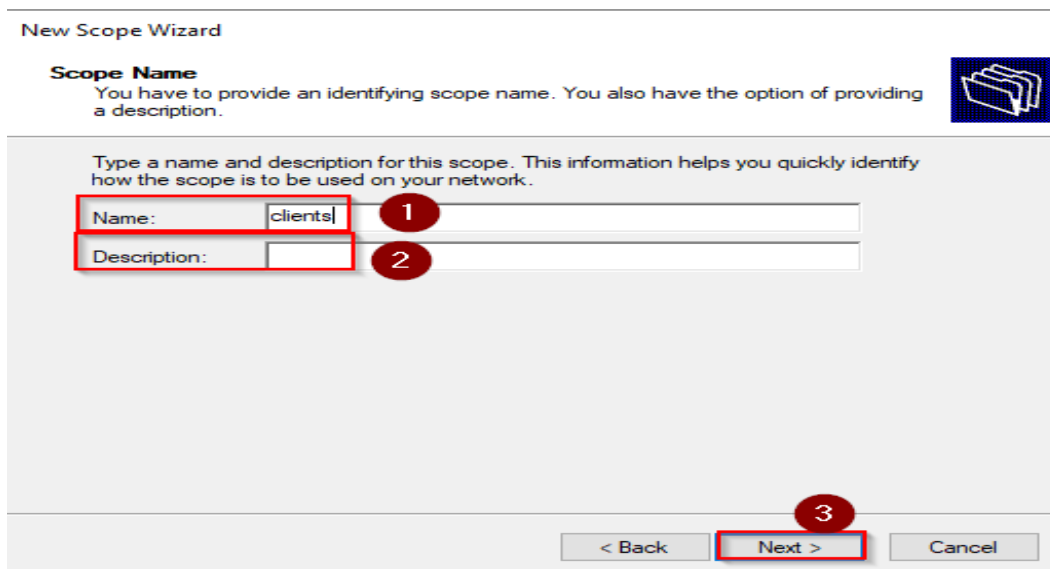


DHCP Scope aanmaken met wizard

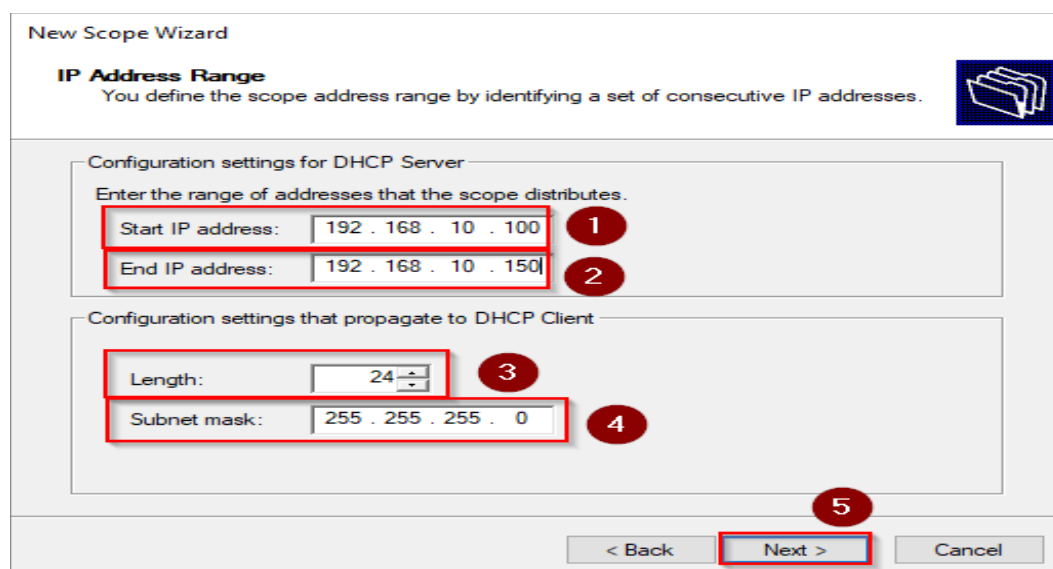
Het eerste scherm heet ons welkom en kunnen we dus gewoon overslaan



Dan moeten we een naam(1) ingeven van de scope, eventueel aangevuld door een korte uitleg(2) waarna we op next(3) klikken.



Nu gaan we de range ingeven. We geven een start IP adres(1) en een eind ip adres(2) op. Eventueel kunnen we de prefixlenght(3) & het subnet mask(4) aanpassen indien waar nodig. Daarna drukken we op next(5).



New Scope Wizard

IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.

Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address: 192 . 168 . 10 . 100 (1)

End IP address: 192 . 168 . 10 . 150 (2)

Configuration settings that propagate to DHCP Client

Length: 24 (3)

Subnet mask: 255 . 255 . 255 . 0 (4)

(5)

< Back Next > Cancel

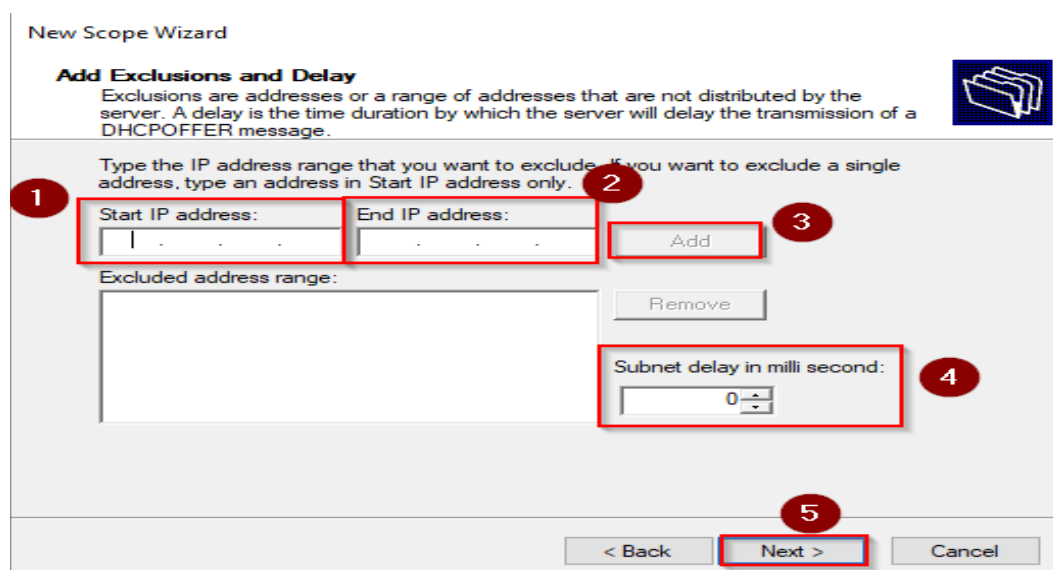
In het volgende scherm kunnen we bepaalde adressen of range uit de opgegeven range halen, die niet mag gebruikt worden voor DHCP.

Voor een enkel ip adres geven we enkel het start adres(1) in en klikken op add(3)

Voor een range geven we het start adres(1) en het eind adres(2) in en drukken dan op add(3).

We hebben ook nog de optie, subnet delay in mili second(4). Dit dient om een vertraging in te stellen qua tijd waarin de DHCP server zijn DHCP OFFER verzendt na het ontvangen van een DHCP DISCOVER bericht. Dit kan nuttig zijn wanneer 2 DHCP servers dezelfde scope aanbieden, zodat ze niet in conflict komen met elkaar.

Daarna gaan we naar het volgende(5)



New Scope Wizard

Add Exclusions and Delay
Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.

Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only. (1)

Start IP address: (1) End IP address: (2)

Add (3)

Excluded address range:

Remove

Subnet delay in milli second: 0 (4)

(5)

< Back Next > Cancel

Bij de Lease Duration kunnen we instellen hoeveel dagen, uren en minuten(1) de lease mag toegekend worden aan een toestel. Deze instellingen zijn een beetje

afhankelijk van het netwerk waarvoor de scope wordt toegekend. Daarna drukken we op next(2).

New Scope Wizard

Lease Duration
The lease duration specifies how long a client can use an IP address from this scope.

Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days: Hours: Minutes:

< Back Next > Cancel

3.2.2.3 Extra DHCP opties

We kiezen ervoor dat we de extra opties wensen te configureren(1) en drukken op next(2).

New Scope Wizard

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

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

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

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

☒ Yes, I want to configure these options now

☐ No, I will configure these options later

< Back Next > Cancel

Default gateway

We geven het IP adres(1) in van onze default gateway en drukken op add(2), nu verschijnt de default gateway eronder en kunnen we op next(3) klikken.

New Scope Wizard

Router (Default Gateway)
You can specify the routers, or default gateways, to be distributed by this scope.

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

IP address:

192.168.10.254

2 Add Remove Up Down

3 < Back Next > Cancel

Domain Name en DNS servers

Hier wordt alles normaal gezien automatisch ingevuld. We controleren wel nog eens de domain name en de IP adressen van de DNS servers. Drukken daarna gewoon op next.

New Scope Wizard

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

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

Parent domain:

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

Server name:

IP address:

192.168.10.1
192.168.10.2

Resolve Add Remove Up Down

< Back Next > Cancel

Wins servers zijn voor oude netwerken, dit is hedendaags vervangen door DNS. We mogen dit vak dan ook gewoon overslaan.

New Scope Wizard

WINS Servers
Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.

Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.

Server name: IP address:

To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

We krijgen de keuze of we de scope nu onmiddellijk willen gaan gebruiken, of deze voorlopig willen opslaan om dan in de toekomst te implementeren.

New Scope Wizard

Activate Scope
Clients can obtain address leases only if a scope is activated.

Do you want to activate this scope now?

☒ Yes, I want to activate this scope now! 1

☐ No, I will activate this scope later

2

Nu kunnen we op finish drukken en is de DHCP scope aangemaakt.

3.3 VEEAM backup-server

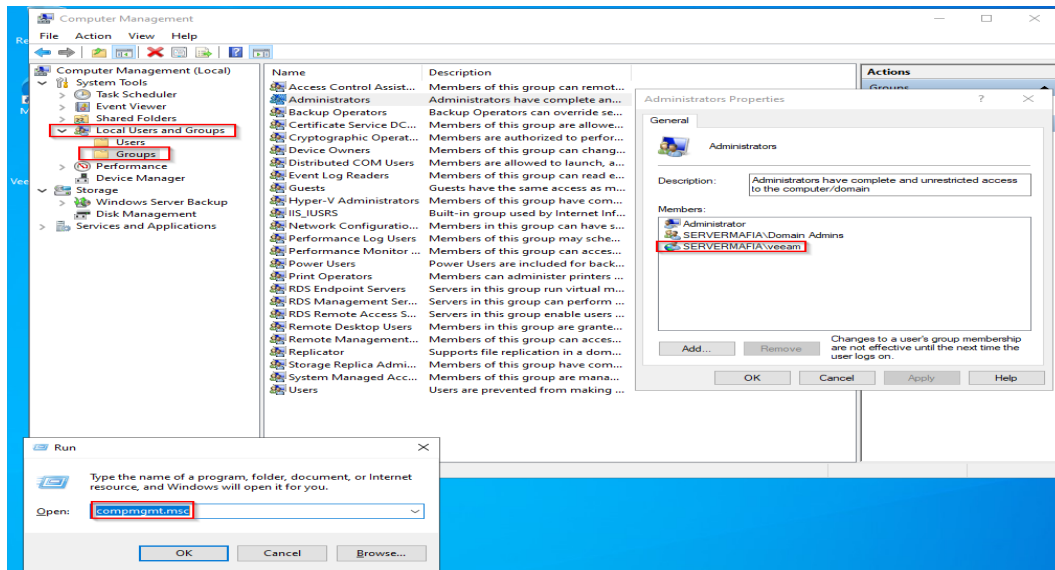
3.3.1 Installatie

Eerste een user aanmaken in AD met naam Veeam

Dan de user Veeam toevoegen aan group administrator op SM-Backup server:

Win+R → compmgmt.msc → local users and groups → administrator → de user Veeam toevoegen

Dan aanmelden met Veeam user aan SM-Backup server



WS-Core configureren.

Set-TimeZone -Name "Romance Standard Time"

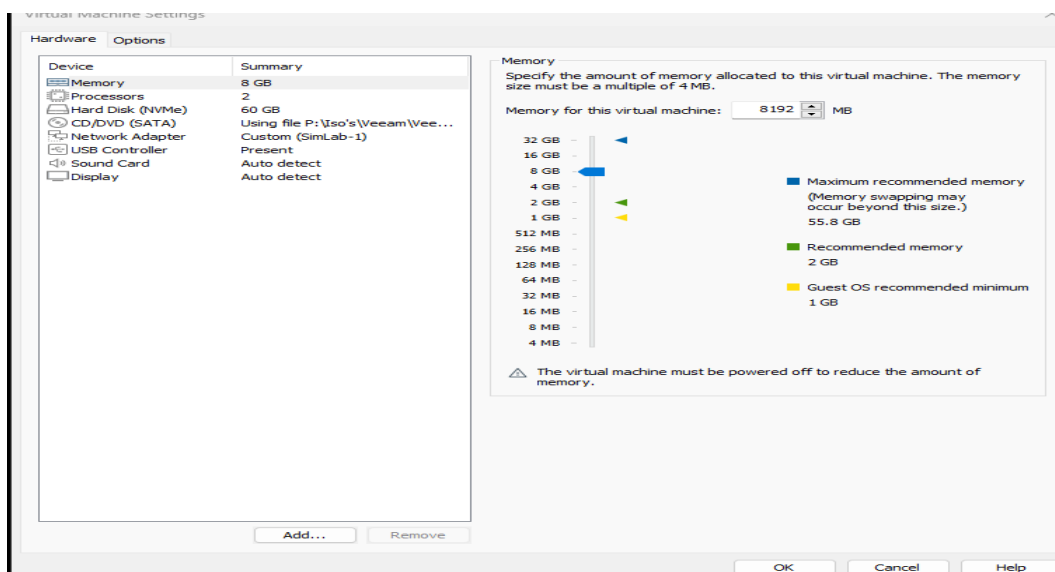
rename-computer -newname "SM-Backup" -restart

**new-netipaddress -interfaceindex 4 -ipaddress 192.168.10.4 -
prefixlength 24 defaultgateway 192.168.10.254**


**set-dnsclientserveraddress -interfaceindex 4 -serveraddress
("192.168.10.1,192.168.10.2")**

Add-computer -domainname "ServerMafia.test" -restart

De iso van veeam toevoegen




Tijdens de installatie moet ik de gebruiker Veeam kiezen

 Veeam Backup & Replication


Service Account
Specify account for Veeam Backup & Replication.

☐ LOCAL SYSTEM account (Recommended)


☒ The following user account:

User name:
  [Choose...](#)

Type in the user name in the DOMAIN\USERNAME format.
The specified user account must have local administrator privileges on this server.

Password:
 

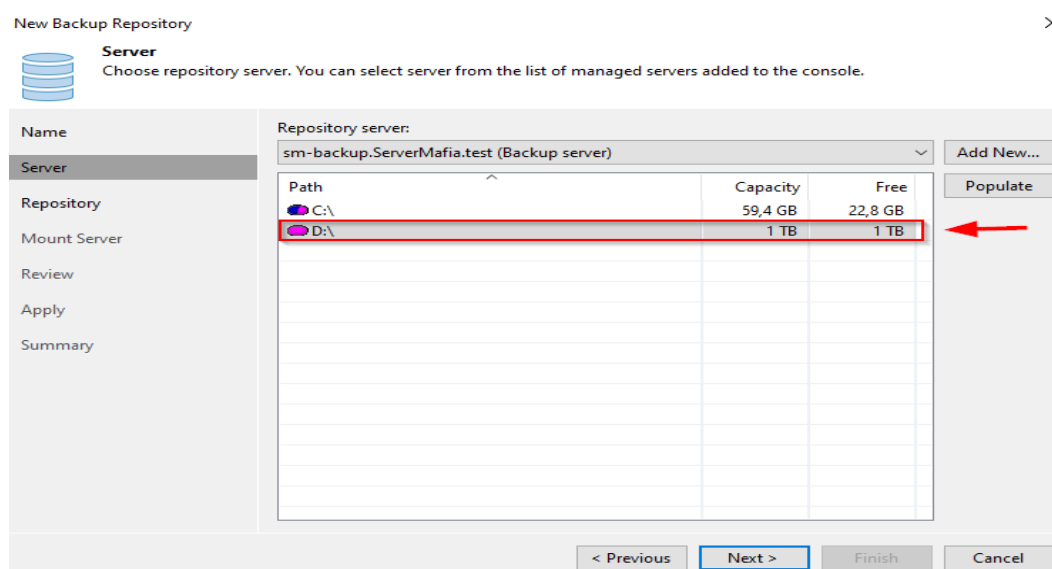
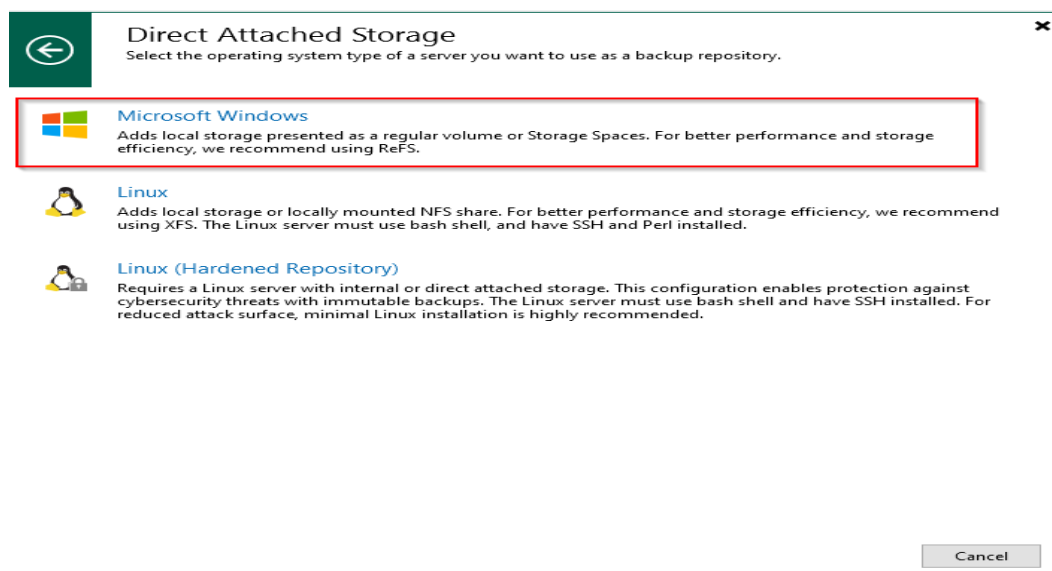
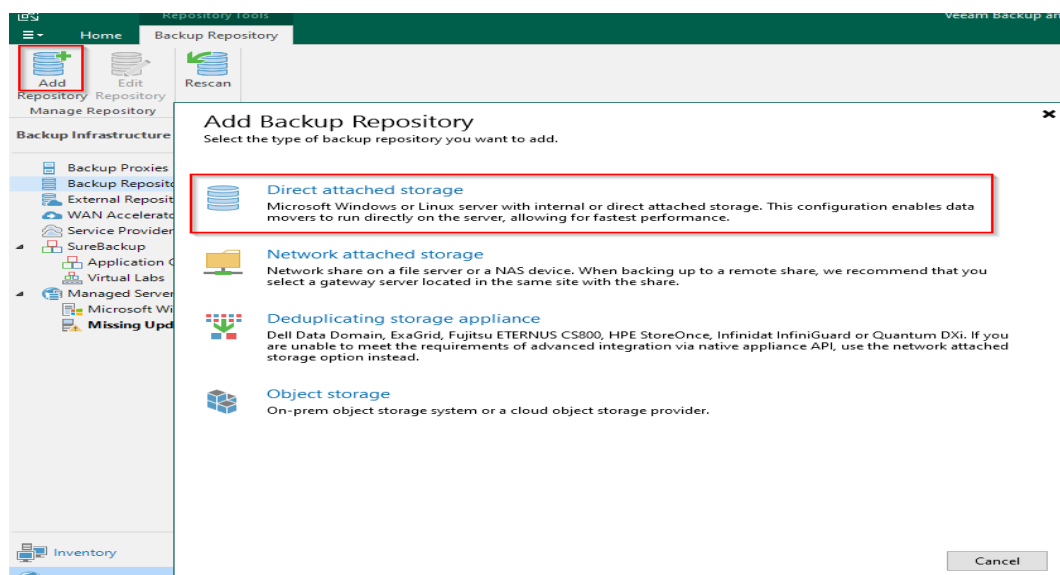
3.3.1.1 Veeam opstarten

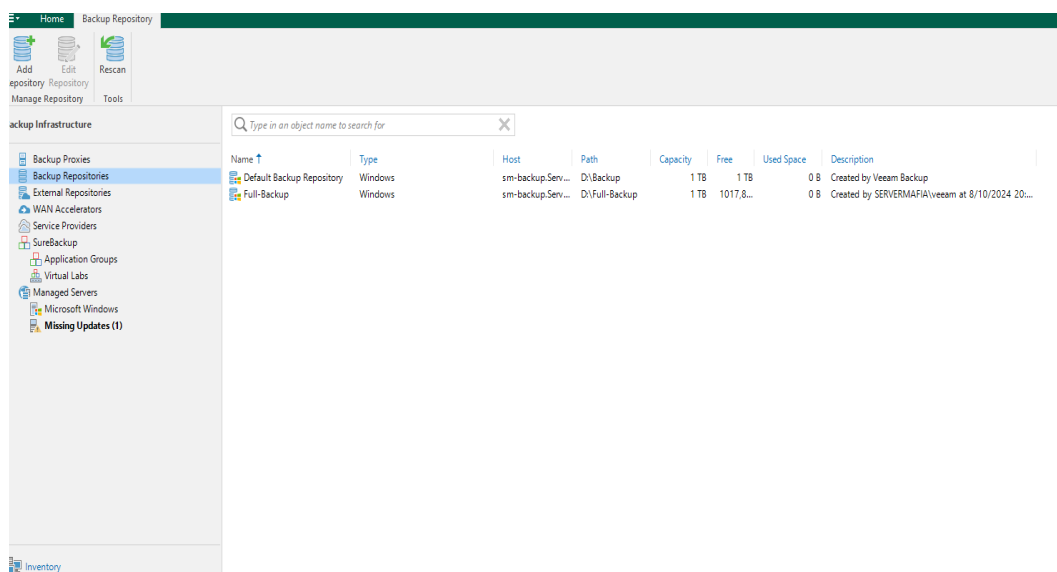
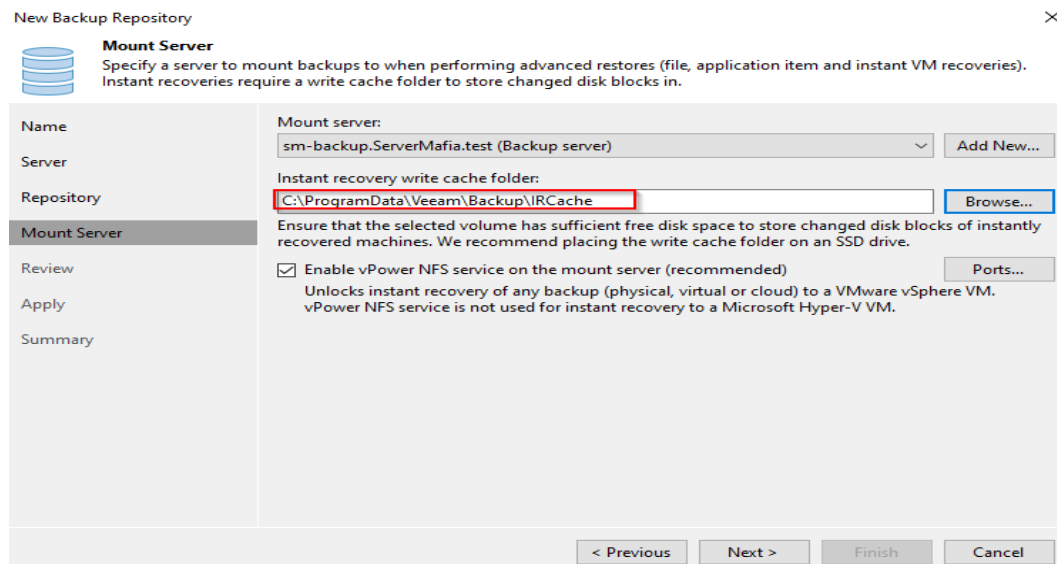
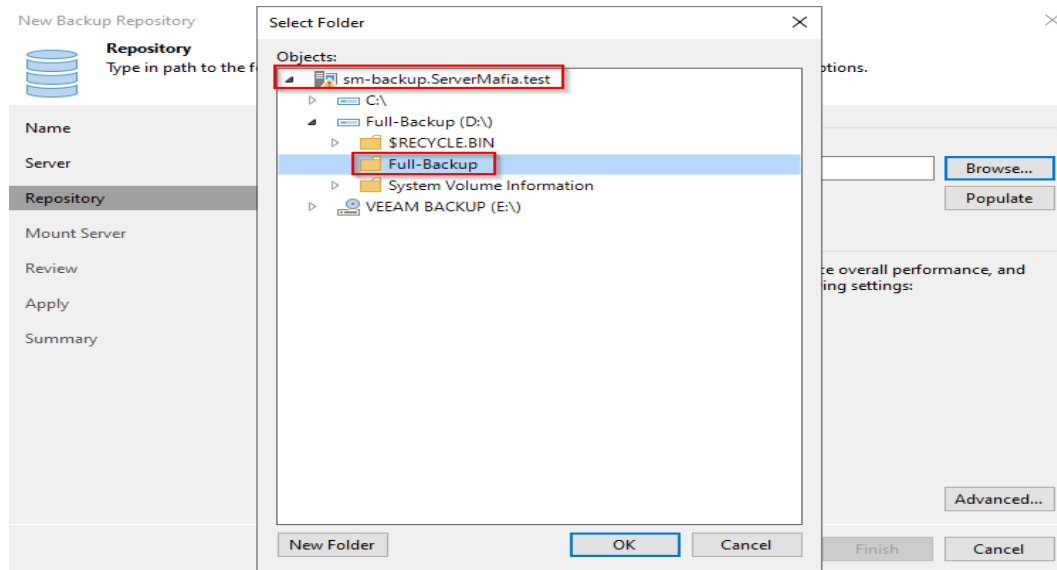
 **Veeam Backup & Replication 12**

Type in a backup server name or IP address, backup service port number, and user credentials to connect with.

☒ Use Windows session authentication

[Save shortcut](#)





3.3.1.2 Protection group

Inventory → physical infrastructure → create protection group → Logische naam geven aan de group (in deze geval is PG server's)

New Protection Group ×

Name
Type in a name and description for this protection group.

Name:
File-server

Description:
Created by SERVERMAFIA\veeam at 16/10/2024 20:23.

< Previous **Next >** Finish Cancel

In volgende stap voeg ik een Active Directory-account toe aan de back-up configuratie. ik voert de inloggegevens van een account met administratieve rechten in (hier servermafia\administrator) om toegang te krijgen tot de ServerMafia.test Active Directory-domeincontroller. Nadat ik de gebruikersnaam en het wachtwoord hebt ingevoerd, klik ik op Add om het account toe te voegen voor de configuratie van de bescherming van objecten in Active Director

New Protection Group ×

Type
Choose how you want to populate this protection group with computers.

Name:

Type:

This protection group will contain:

- ☐ **Individual computers**
Static protection scope with one or more individual computers via IP address or DNS name. Recommended for smaller environments without an Active Directory.
- ☒ **Microsoft Active Directory objects**
Dynamic protection scope defined by Active Directory containers such as organizational units or security groups, and exclusion rules.
- ☐ **Computers from CSV file**
Dynamic protection scope defined by the content of a comma-separated values (.csv) file with computer names that is hosted on a file share. Recommended for larger environments without Active Directory, or for CMDB integration.
- ☐ **Computers with pre-installed backup agents**
This protection group will catch all computers with a backup agent deployed from a custom installation package specific to this group. Computers will appear in the protection group upon establishing their first connection to the backup server.
- ☐ **Cloud machines**
Dynamic protection scope for Amazon EC2 instances and Microsoft Azure VMs. Discovery and backup agents deployment is performed using cloud-native APIs without requiring a direct network connection.

< Previous **Next >** Finish Cancel

Create Protection Group
Protection group for individual computers

Create Job or Policy
Agent-based protection managed by the backup periods (such as weekly)

Perform Restore
To perform Bare Metal restore, simple item restore, simple

New Protection Group

Active Directory
Specify Microsoft Active Directory containers and objects to include in this protection group.

Name: [Empty]
Type: Active Directory

Search for objects in this domain: ServerMafia.test [Change...]

Selected objects:

| Object | Type |
|--------|------|
| | |

[Add...]
[Remove]

Credentials

Username: servermafia/administrator [Browse...]
Password: [Masked]
Description: servermafia/administrator

[OK] [Cancel]

Specify Domain

Domain controller or domain DNS name: DC-1.ServerMafia.test Port: 389
Account: servermafia/administrator (servermafia/administrator, la: [Dropdown]) [Add...]
[Manage accounts]
[OK] [Cancel]

< Previous [Next >] Finish [Cancel]

New Protection Group

Type
Choose how you want to populate this protection group with computers.

Name: [Empty]
Type: [Selected]

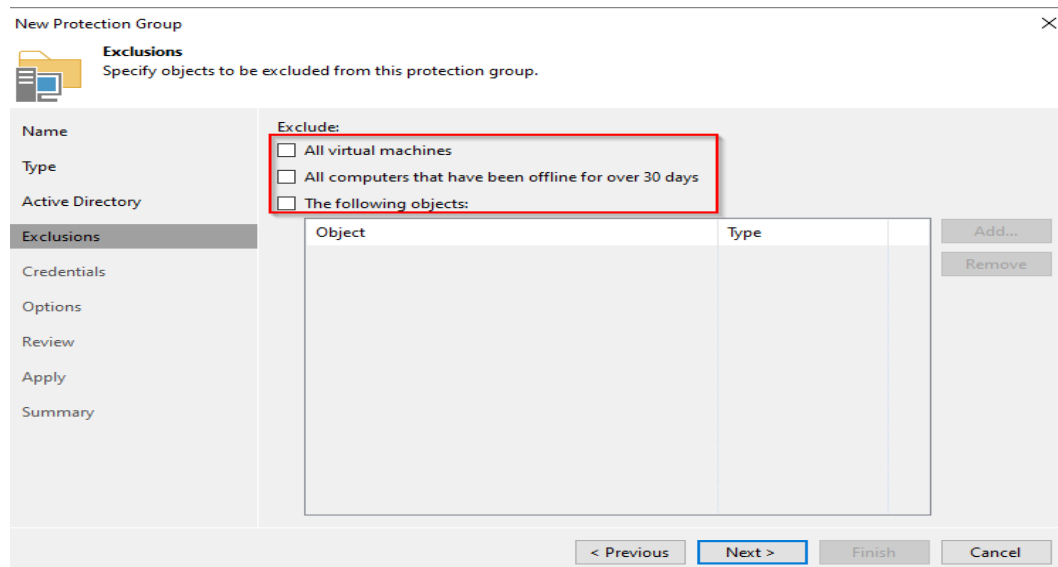
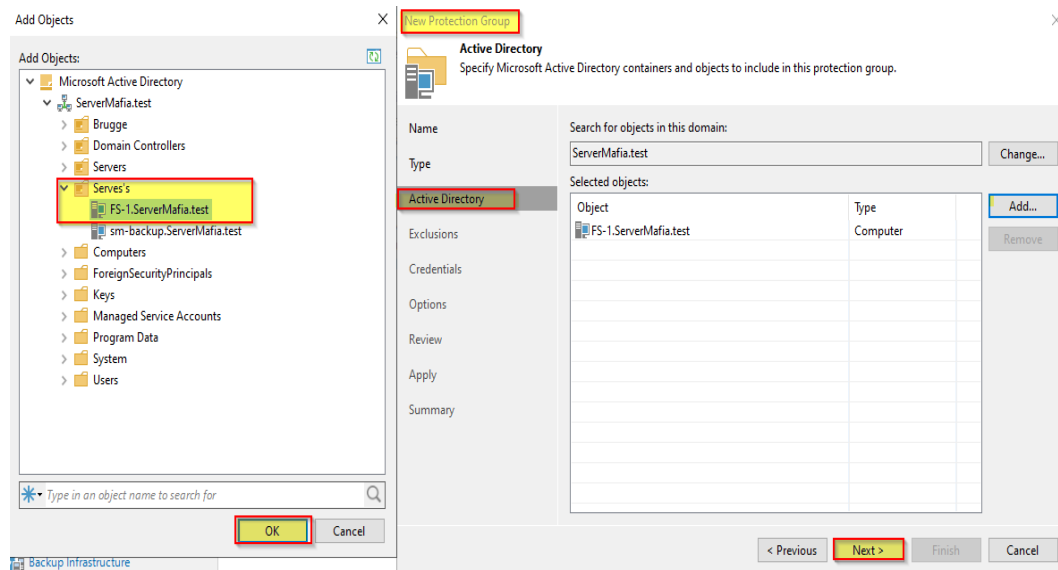
Active Directory
Exclusions
Credentials
Options
Review
Apply
Summary

This protection group will contain:

- ☐ **Individual computers**
Static protection scope with one or more individual computers via IP address or DNS name. Recommended for smaller environments without an Active Directory.
- ☒ **Microsoft Active Directory objects**
Dynamic protection scope defined by Active Directory containers such as organizational units or security groups, and exclusion rules.
- ☐ **Computers from CSV file**
Dynamic protection scope defined by the content of a comma-separated values (.csv) file with computer names that is hosted on a file share. Recommended for larger environments without Active Directory, or for CMDB integration.
- ☐ **Computers with pre-installed backup agents**
This protection group will catch all computers with a backup agent deployed from a custom installation package specific to this group. Computers will appear in the protection group upon establishing their first connection to the backup server.
- ☐ **Cloud machines**
Dynamic protection scope for Amazon EC2 instances and Microsoft Azure VMs. Discovery and backup agents deployment is performed using cloud-native APIs without requiring a direct network connection.

< Previous [Next >] Finish [Cancel]

Hier kies ik de server of de OU die ik wil een protection group maken waar de servers staan.



Hier geef ik de credential van ServerMafia\administrator

New Protection Group

×

Credentials

Specify the master account for all hosts in this protection group. You can also customize credentials for individual computers. The specified account must have Local Administrator privileges on the protected computers.

Name

Type

Active Directory

Exclusions

Credentials

Options

Review

Apply

Summary

Master account:

servermafia\administrator (servermafia\administrator, last edited: less than a d

Add...

Manage accounts

☐ Use custom credentials for the following objects:

| Object | Account |
|-----------------------|------------------|
| FS-1.ServerMafia.test | <Master account> |

Add...

Edit...

Remove

Default

Click Test Now to validate the specified credentials.

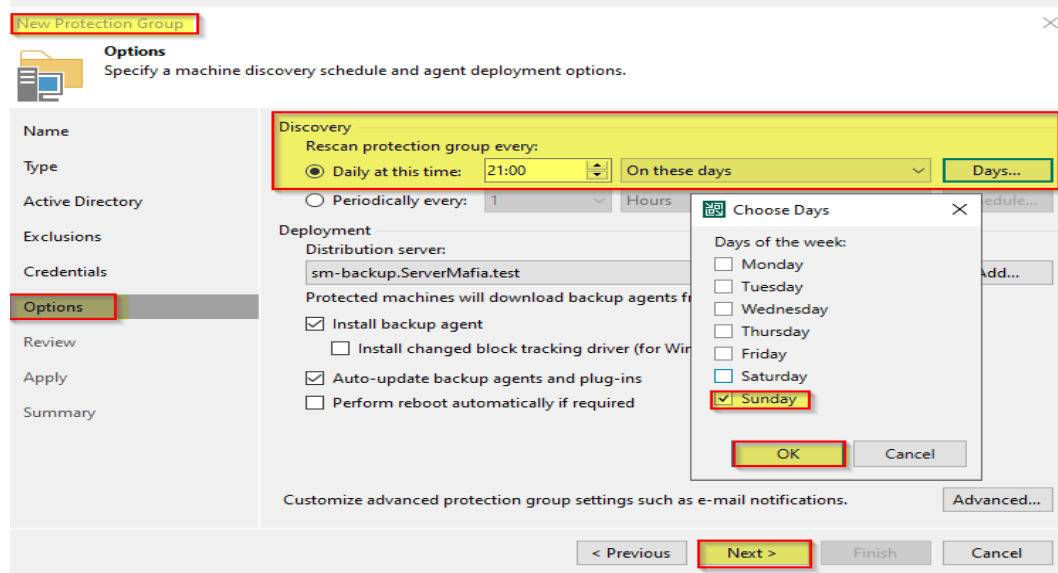
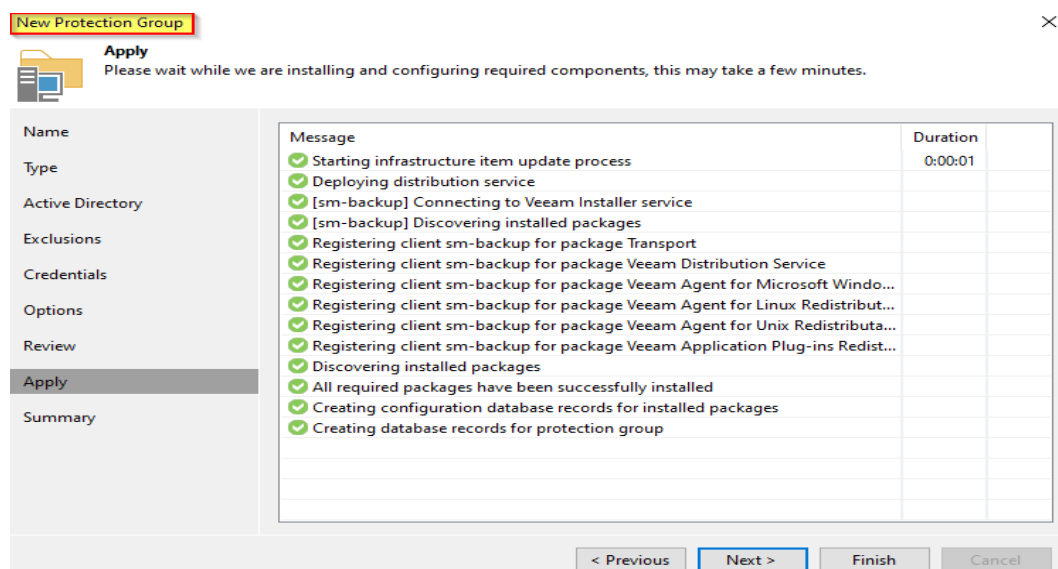
Test Now

< Previous

Next >

Finish

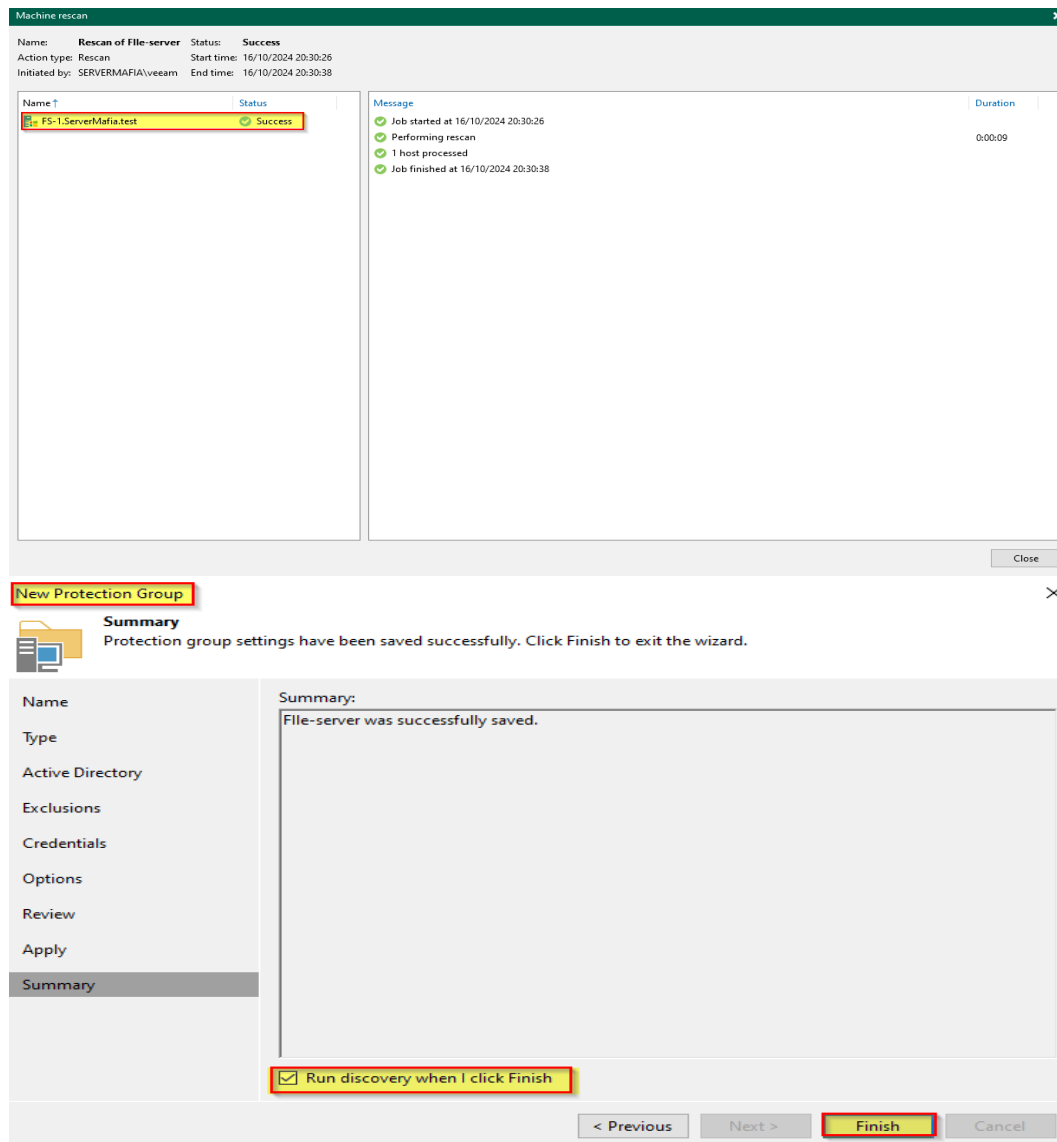
Cancel



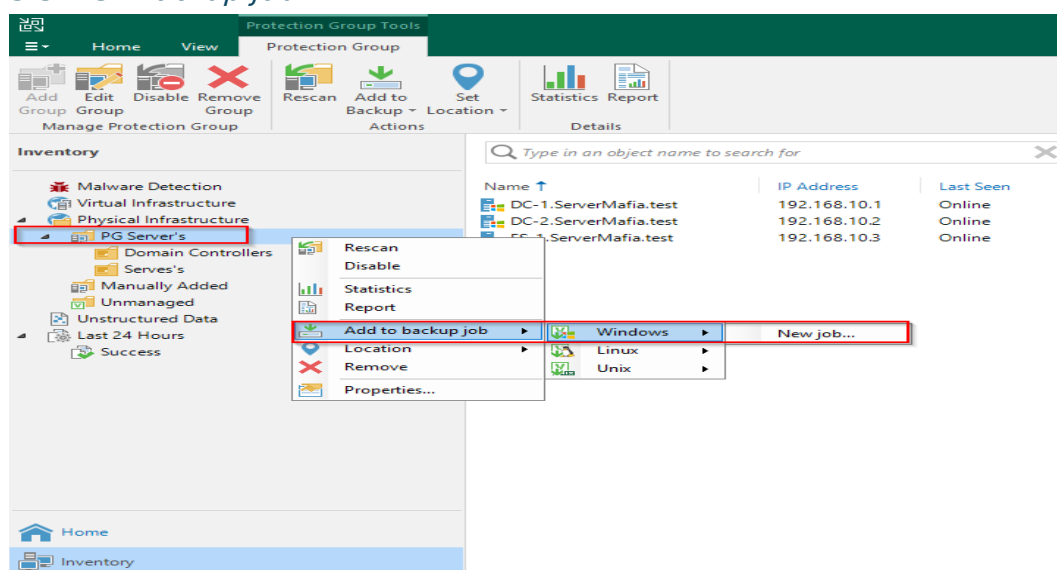
De Job

laten draaien elke Zondag om 21:00

De job zal automatische opgestart wanneer ik op finish druk



3.3.1.3 Backup job



New Agent Backup Job ✕

Name
Type in a name and description for this agent backup job.

Job Mode

Name

Computers

Backup Mode

Destination

Local Storage

Guest Processing

Schedule

Summary

Name: File-server

Description:
Created by SERVERMAFIA\veeam at 16/10/2024 20:31.

< Previous Next > Finish Cancel

New Agent Backup Job ✕

Backup Mode
Choose what data you want to back up from selected computers.

Job Mode

Name

Computers

Backup Mode

Destination

Local Storage

Guest Processing

Schedule

Summary

☒ **Entire computer**
Back up entire computer image for fast recovery on any level. Deleted, temporary and page files are automatically excluded from the image to reduce the backup size.
☐ Include external USB drives

☐ **Volume level backup**
Back up images of specified volumes, for example only data volumes. Deleted, temporary and page files are automatically excluded from the image to reduce the backup size.

☐ **File level backup (slower)**
Back up selected files and directories only. This mode still produces an image-based backup, but only with protected file system objects included in the image.

< Previous Next > Finish Cancel

New Agent Backup Job ✕

Computers
Select protection groups or individual machines to back up. Protection groups provide a dynamic selection scope that automatically updates the list of protected machines as new ones are discovered.

Job Mode

Name

Computers

Backup Mode

Destination

Local Storage

Guest Processing

Schedule

Summary

Protected computers:

| Name | Type |
|-------------|-----------------|
| File-server | Protection g... |

Add... Remove

Up Down


< Previous Next > Finish Cancel

Kiezen
voor de aangemaakte protection group (File-server) in deze stap en dat betekend

dat de doel machine is de File Server want ik het eerder toegevoegd aan de production group.

Ik kies hier ook voor de repository die heb ik eerder gemaakt

New Agent Backup Job ✕

 **Destination**
Choose where you want to backup data to.

Job Mode
Name
Computers
Backup Mode
Destination
Backup Server
Storage
Backup Cache
Guest Processing
Schedule
Summary

☐ **Local storage**
Choose this option to back up to a locally attached storage device such as USB, Firewire or eSATA external hard drive. Backing up to internal hard drives is not recommended.


☐ **Shared folder**
Choose this option to back up to an SMB (CIFS) share on a Network Attached Storage (NAS) device, or on a regular file server.

☒ **Veeam backup repository**
Choose this option to back up to a backup repository managed by Veeam Backup & Replication server.

☐ **Veeam Cloud Connect repository**
Choose this option to back up to a cloud repository managed by Veeam Cloud Connect service provider.

< Previous **Next >** Finish Cancel

New Agent Backup Job ✕

 **Backup Server**
Specify Veeam Backup & Replication management server connection parameters.

Job Mode
Name
Computers
Backup Mode
Destination
Backup Server
Storage
Backup Cache
Guest Processing
Schedule
Summary

DNS name or external IP address:

The specified DNS name must resolve to the external IP address of your backup server, as remote backup agents need to be able to establish network connection to this endpoint.

< Previous **Next >** Finish Cancel

New Agent Backup Job

Storage

Specify a backup repository to store the backup files produced by the backup job and customize advanced job settings if required.

Job Mode

Name

Computers

Backup Mode

Destination

Backup Server

Storage

Backup Cache

Guest Processing

Schedule

Summary

Backup repository:

Full-Backup (Created by SERVERMAFIA\veeam at 8/10/2024 20:07.)

1017,8 GB free of 1 TB

Retention policy: 7 days

☐ Keep certain full backups longer for archival purposes

GFS retention policy is not configured

☐ Configure secondary destinations for this job

Copy backups produced by this job to another backup repository, or tape. We recommend to make at least one copy of your backups to a different storage device that is located off-site.

Advanced job settings include backup mode, compression and deduplication, block size, notification settings, automated post-job activity and other settings.

< Previous

Next >

Finish

Cancel

New Agent Backup Job

Guest Processing

Choose application processing options.

Job Mode

Name

Computers

Backup Mode

Destination

Backup Server

Storage

Backup Cache

Guest Processing

Schedule

Summary

☒ Enable application-aware processing

Detects and prepares applications for consistent backup, performs transaction logs processing, and configures the OS to perform required application restore steps upon first boot.

Customize application handling options for individual machines and applications

Applications...

☐ Enable guest file system indexing

Indexing enables global file search and restore functionality in a web-based restore portal.

Customize advanced guest file system indexing options for individual machines

Indexing...

< Previous

Next >

Finish

Cancel

New Agent Backup Job

Backup Cache

Local backup cache allows backups to continue on schedule even if remote backup target is temporarily unavailable.

Job Mode

Name

Computers

Backup Mode

Destination

Backup Server

Storage

Backup Cache

Guest Processing

Schedule

Summary

☐ Enable backup cache

Whenever a connection to the backup target cannot be established, the cache folder will be used instead. Cached backups are uploaded to the target as soon as it becomes reachable.

Maximum size: 10 GB

Location:

☒ Automatic selection (recommended)
We will pick a suitable volume with most free disk space available on every protected machine.

☐ Manual selection (specified volume must exist on every machine)
Folder:

< Previous

Next >

Finish

Cancel

New Agent Backup Job

Schedule

Specify the scheduling options. If you do not set the schedule, the job will need to be controlled manually.

Job Mode

Name

Computers

Backup Mode

Destination

Backup Server

Storage

Backup Cache

Schedule

Summary

☒ Run the job automatically

☒ Daily at this time: 22:00 On these days Days...

☐ Monthly at this time: 22:00 Fourth Saturday Months...

☐ Periodically every: 1 Hours Schedule...

☒ Automatic retry

☒ Retry failed items processing: 3 times

Wait before each retry attempt for: 10 minutes

☐ Backup window

☐ Terminate job outside of the backup window

Prevent long-running or accidentally started job from infrastructure during the busy hours.

Choose Days

Days of the week:

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☒ Sunday

OK Cancel

< Previous

Apply

Finish

Cancel

New Agent Backup Job

Summary

The job's settings have been saved successfully. Click Finish to exit the wizard.

Job Mode

Name

Computers

Backup Mode

Destination

Backup Server

Storage

Backup Cache

Guest Processing

Schedule

Summary

Summary:

Configuration has been successfully saved.

Name: File-server

Description: Created by SERVERMAFIA\veeam at 16/10/2024 20:31.

Type: server

Mode: managed by agent

Protected computers:

File-server

Backup mode: entire computer

Destination: Veeam backup repository

Target storage: Full-Backup

Retention policy: 7 days

Application-aware processing is enabled

Backup is scheduled to run automatically

< Previous

Next >

Finish

Cancel

The screenshot displays the Veeam Backup & Replication console interface. On the left, a navigation pane shows the 'Jobs' section expanded, with 'Backups' selected. The main area shows a table of backup jobs. The job 'File-server' is highlighted, showing it is a 'Windows Agent Policy' job with 1 object, enabled status, and completed 24 minutes ago. Below the table, a detailed view of the job is shown, including a summary, data, and status section. The summary indicates 1 assigned, 1 configured, and 0 disconnected jobs. The data section shows 410 GB processed, 17.3 GB read, and 10 GB transferred. The status section shows 1 success, 0 warnings, and 0 errors. A list of actions performed during the backup is shown at the bottom, including getting the list of local users, reading system partitions, saving guest members, finalizing, truncating transaction logs, creating the full backup, collecting recovery media files, saving the recovery media, and processing finished at 16/10/2024 21:28:10.

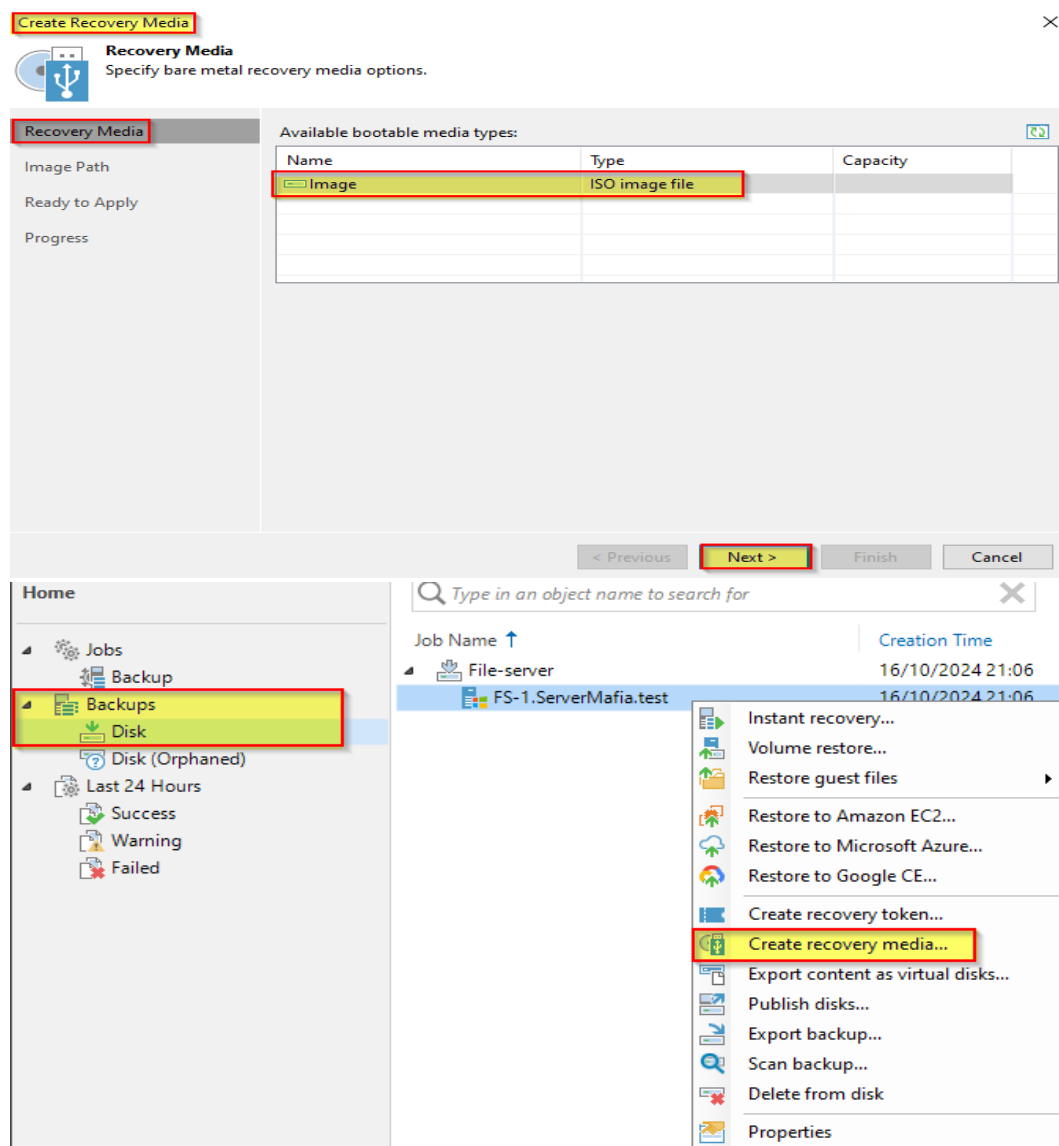
| Name | Type | Objects | Status | Last Run | Last Result | Next Run |
|-------------|----------------------|---------|---------|----------------|-------------|----------|
| File-server | Windows Agent Policy | 1 | Enabled | 24 minutes ago | N/A | N/A |

| SUMMARY | | DATA | | STATUS | |
|---------------|---|--------------|--------------|-----------|---|
| Assigned: | 1 | Processed: | 410 GB | Success: | 1 |
| Configured: | 1 | Read: | 17,3 GB | Warnings: | 0 |
| Disconnected: | 0 | Transferred: | 10 GB (1,7x) | Errors: | 0 |

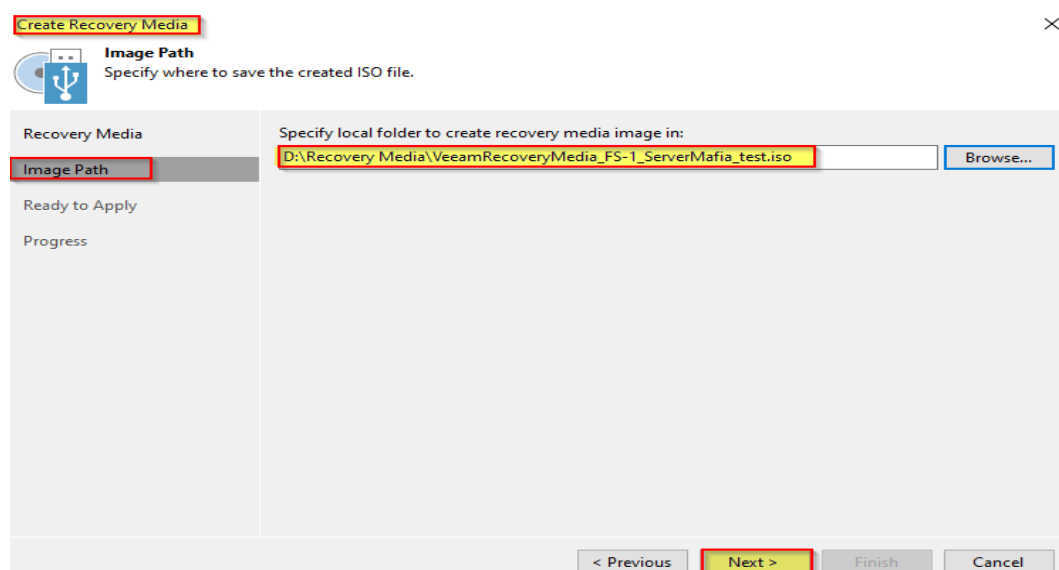
| Host | Last backup | Action | Duration |
|-----------------------|---------------|--|----------|
| FS-1 ServerMafia.t... | 23 minutes... | Getting list of local users | 00:00 |
| | | EFI system partition (disk 0) (100,0 MB) 100,0 MB read at 8 MB/s | 00:24 |
| | | (C:) (59,4 GB) 16,7 GB read at 15 MB/s | 19:04 |
| | | Shared (E:) (350,0 GB) 104,0 MB read at 104 MB/s | 00:01 |
| | | Recovery partition (disk 0) (523,0 MB) 437,3 MB read at 15 MB/s | 00:13 |
| | | Saving GuestMembers.xml | 00:00 |
| | | Finalizing | 01:16 |
| | | Truncating transaction logs | 00:01 |
| | | Full backup created | |
| | | Collecting recovery media files | 01:12 |
| | | Saving VeeamRecoveryMedia.zip | 00:08 |
| | | Processing finished at 16/10/2024 21:28:10 | |

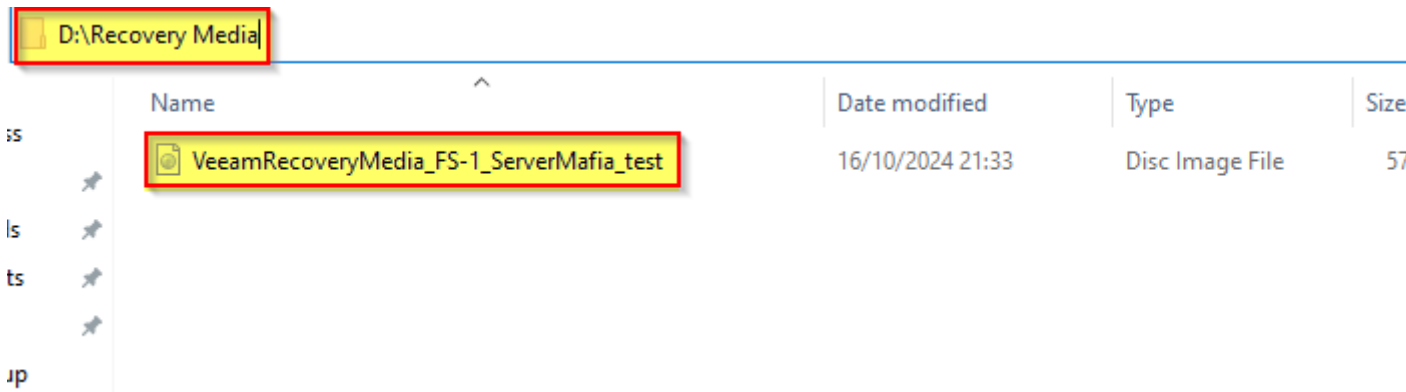
3.3.1.4 Recovery media maken

Als ik een recovery media wil maken dan moet ik de volgende stappen volgen:



Veeam console opstarten → Home → Backups → Disk → Rechter muis klikken op de doel machine → Create recovery media → Recovery media → Next → Path kiezen en dan next → Finish

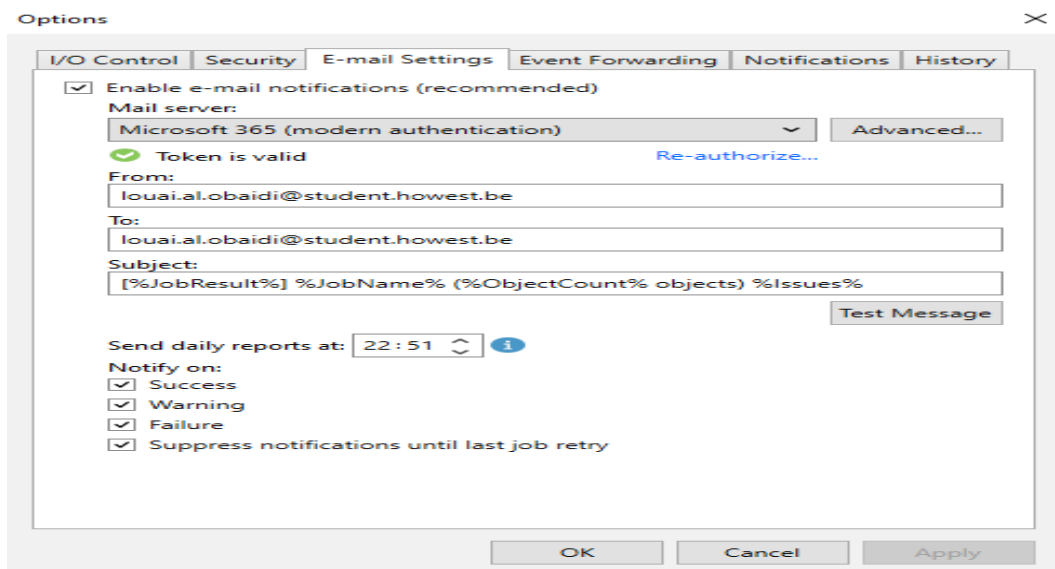




3.3.1.5 E-mail notificatie

Opmerking: U zult in de e-mailnotificatie merken dat er verschillende jobs en protection groups zijn. De screenshots die ik heb bijgevoegd, tonen echter alleen één job van één job als voorbeeld. Ik heb een email notification geactiveerd voor de Veeam status.

Dat heb ik gedaan via: Menu → option → E-mail settings



The screenshot shows the 'Options' dialog box with the 'E-mail Settings' tab selected. The 'Enable e-mail notifications (recommended)' checkbox is checked. The 'Mail server' is set to 'Microsoft 365 (modern authentication)'. A green checkmark indicates 'Token is valid', with a 'Re-authorize...' link. The 'From' and 'To' fields are both 'louai.al.obaidi@student.howest.be'. The 'Subject' field is '[%JobResult%] %JobName% (%ObjectCount% objects) %Issues%'. There is a 'Test Message' button. The 'Send daily reports at' is set to '22:51'. Under 'Notify on:', 'Success', 'Warning', 'Failure', and 'Suppress notifications until last job retry' are all checked. The dialog has 'OK', 'Cancel', and 'Apply' buttons at the bottom.

Options

I/O Control Security **E-mail Settings** Event Forwarding Notifications History

☒ Enable e-mail notifications (recommended)

Mail server: Microsoft 365 (modern authentication) Advanced...

✓ Token is valid Re-authorize...

From: louai.al.obaidi@student.howest.be

To: louai.al.obaidi@student.howest.be

Subject: [%JobResult%] %JobName% (%ObjectCount% objects) %Issues%

Test Message

Send daily reports at: 22:51 ⓘ

Notify on:

- ☒ Success
- ☒ Warning
- ☒ Failure
- ☒ Suppress notifications until last job retry

OK Cancel Apply