

Hyper-V

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S2D Force remove a drive

To verify that all drives are healthy and operational :

```
Get-PhysicalDisk
```

Get the FriendlyName of the device :

```
Get-PhysicalDisk | ft FriendlyName
```

Retire the disk :

```
Set-PhysicalDisk -FriendlyName "<DeviceName>" -Usage Retired
```

Find the name of the Virtual Disk :

```
Get-VirtualDisk
```

If the name is too long use :

```
Get-VirtualDisk | ft -AutoSize
```

For every Virtual Disk in the storage pool do :

```
Repair-VirtualDisk -FriendlyName "YourVirtualDisk"
```

Open a new PowerShell window to monitor the repairs with :

```
Get-StorageJob
```

Remove the PhysicalDisk if all repairs are successfully done:

```
Get-PhysicalDisk | Where-Object { $_.Usage -eq 'Retired' }
```

Assign the disk to a variable:

```
$DiskToRemove = Get-PhysicalDisk | Where-Object { $_.Usage -eq 'Retired' }
```

Find the name of the storage pool:

```
Get-StoragePool
```

Delete the physical disk from the storage pool:

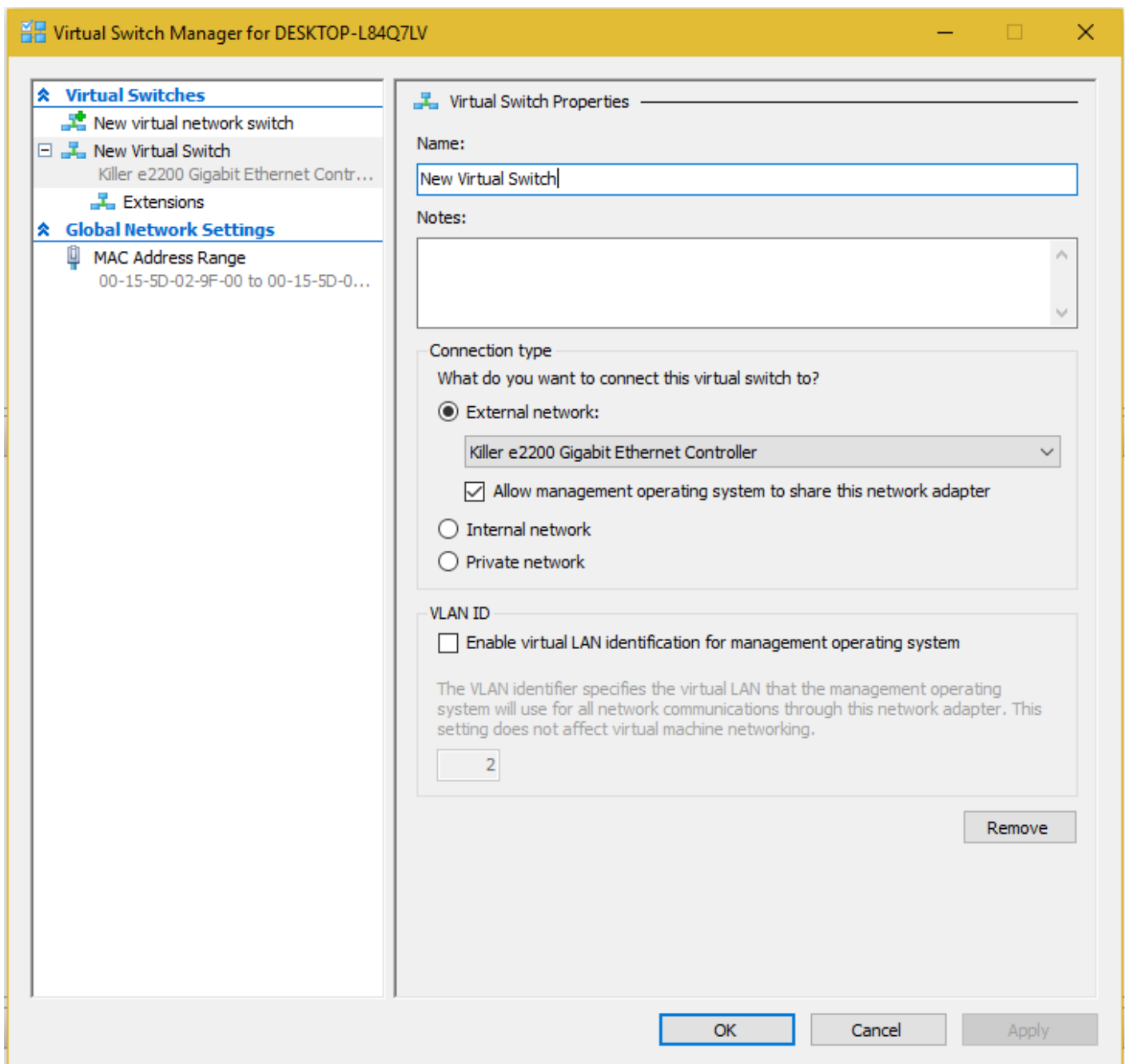
```
Remove-PhysicalDisk -PhysicalDisks $DiskToRemove -StoragePoolFriendlyName "Storage pool"
```

Add IP on vSwitch

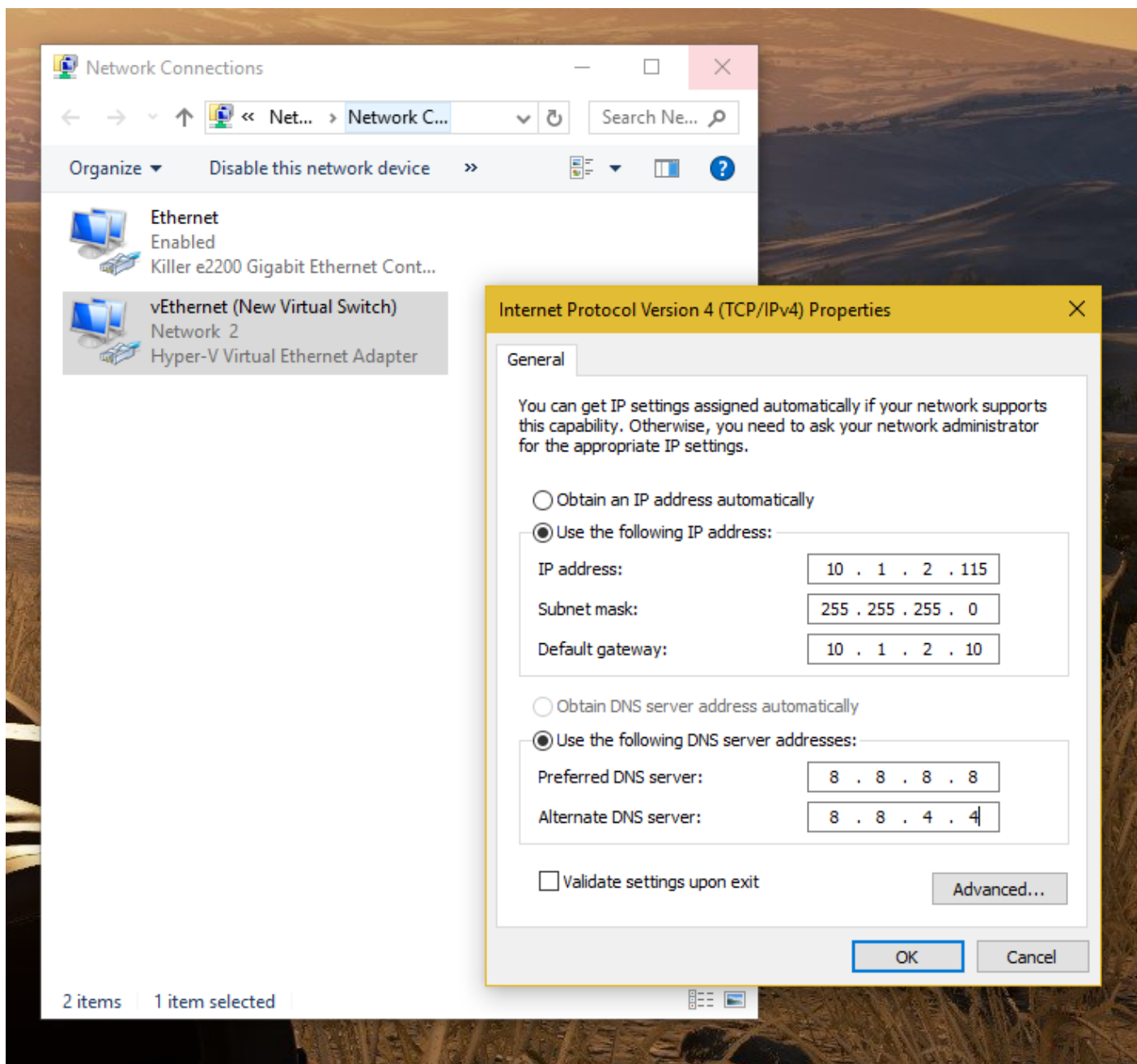
So you installed hyper-v and you need to configure your NIC with your public IP and your secondary IP's, let me show you how.

(Would recommend having physical access / KVM IP if anything fails)

First create a v-Switch in the hyper-v settings.

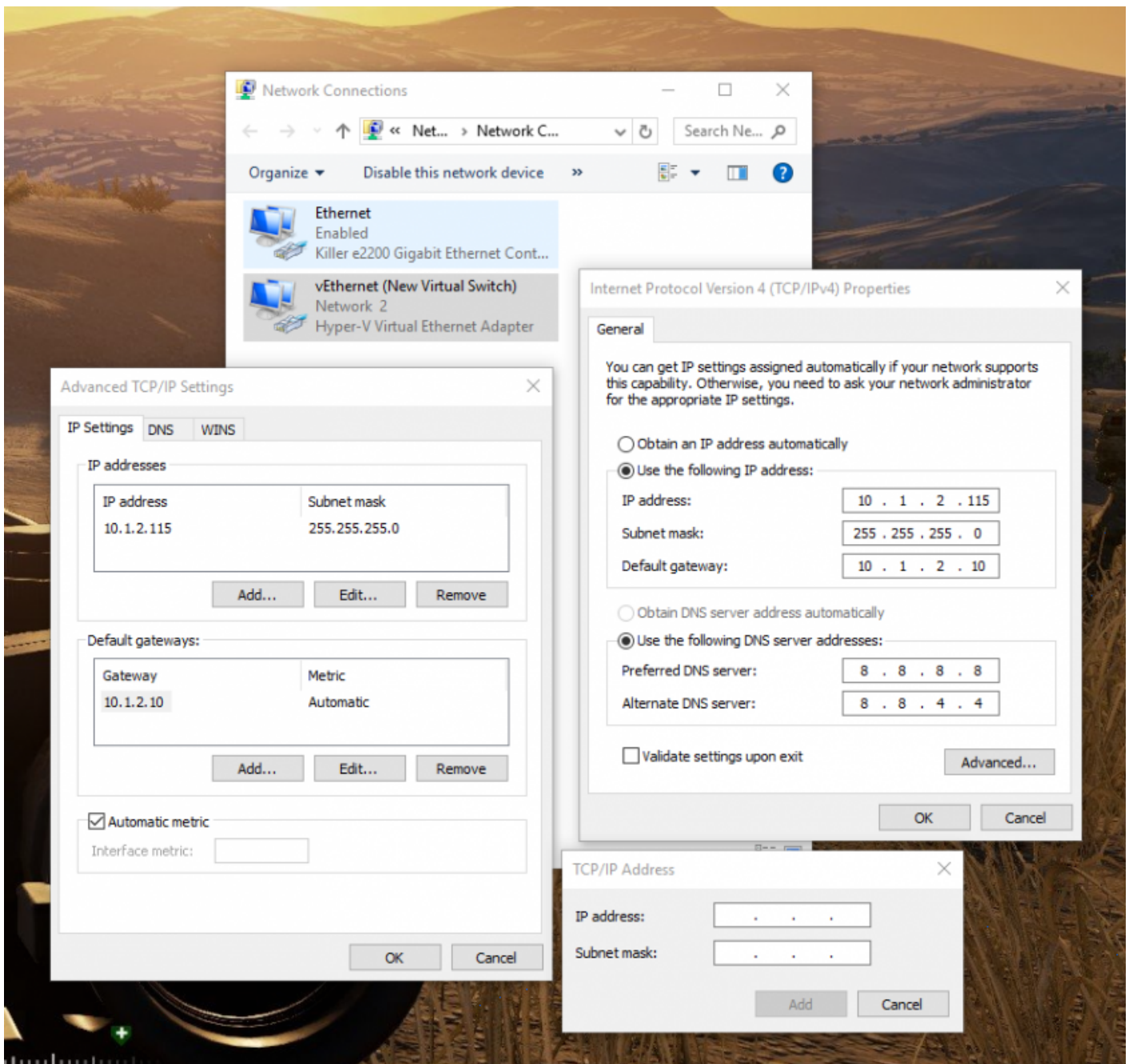


Then, go to the IPv4 settings of your new hyper-v vswitch and add your primary IP.



To add your secondary IP's, you will need to go to the advanced options and put in the first usable address of your secondary subnet, not the broadcast address but the first usable address and the subnet below.

You will then use that address as the gateway for your VM's.



Last step will be to enable ip forwarding, open power-shell as admin and type the following commands :

```
netsh
netsh> interface ipv4
```

Then the following command to view the list of available interfaces

```
netsh interface ipv4> show int
```

To view the interface settings, replace "15" by the proper ID :

```
netsh interface ipv4> show int 15
```

And finally, the following command to enable IP forwarding :

```
netsh interface ipv4> set int 15 forwarding=enabled
```

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Windows\System32> netsh
netsh interface ipv4>
netsh interface ipv4>show int

Idx  Met  MTU  State  Name
-----
1    75  4294967295  connected  Loopback Pseudo-Interface 1
15   25   1500  connected  vEthernet (New Virtual Switch)

netsh interface ipv4>show int 15

Interface vEthernet (New Virtual Switch) Parameters
-----
IfLuid           : ethernet_32775
IfIndex          : 15
State            : connected
Metric           : 25
Link MTU         : 1500 bytes
Reachable Time   : 20500 ms
Base Reachable Time : 30000 ms
Retransmission Interval : 1000 ms
DAD Transmits    : 3
Site Prefix Length : 64
Site Id          : 1
Forwarding       : disabled
Advertising      : disabled
Neighbor Discovery : enabled
Neighbor Unreachability Detection : enabled
Router Discovery : enabled
Managed Address Configuration : enabled
Other Stateful Configuration : enabled
Weak Host Sends  : disabled
Weak Host Receives : disabled
Use Automatic Metric : enabled
Ignore Default Routes : disabled
Advertised Router Lifetime : 1800 seconds
Advertise Default Route : disabled
Current Hop Limit : 0
Force ARPND Wake up patterns : disabled
Directed MAC Wake up patterns : disabled
ECN capability    : application
RA Based DNS Config (RFC 6106) : disabled
DHCP/Static IP coexistence : disabled

netsh interface ipv4>set int 15 forwarding=enabled
OK.

netsh interface ipv4>show int 15

Interface vEthernet (New Virtual Switch) Parameters
-----
IfLuid           : ethernet_32775
IfIndex          : 15
State            : connected
Metric           : 25
Link MTU         : 1500 bytes
Reachable Time   : 20500 ms
Base Reachable Time : 30000 ms
Retransmission Interval : 1000 ms
DAD Transmits    : 3
Site Prefix Length : 64
Site Id          : 1
Forwarding       : enabled
Advertising      : disabled
Neighbor Discovery : enabled
Neighbor Unreachability Detection : enabled
Router Discovery : enabled
Managed Address Configuration : enabled
Other Stateful Configuration : enabled
Weak Host Sends  : disabled
Weak Host Receives : disabled
Use Automatic Metric : enabled
Ignore Default Routes : disabled
Advertised Router Lifetime : 1800 seconds
Advertise Default Route : disabled
Current Hop Limit : 0
Force ARPND Wake up patterns : disabled
Directed MAC Wake up patterns : disabled
ECN capability    : application
RA Based DNS Config (RFC 6106) : disabled
DHCP/Static IP coexistence : disabled

netsh interface ipv4>
```

Adding Adapter on vSwitch

List Adapter

```
Get-VMNetworkAdapterVlan -ManagementOS
```

Adding Adapter

```
Add-VMNetworkAdapter -ManagementOS -Name "Lan" -SwitchName "vSwitch"
```

```
Add-VMNetworkAdapter -ManagementOS -Name "Wan" -SwitchName "vSwitch"
```

Tagging vlan on Adapter

```
Set-VMNetworkAdapterVlan -ManagementOS -VMNetworkAdapterName "LAN" -Access -VlanId 3023
```

```
Set-VMNetworkAdapterVlan -ManagementOS -VMNetworkAdapterName "Wan" -Access -VlanId 2295
```

If you need to remove an Adapter

```
Remove-VMNetworkAdapter -ManagementOs -VMNetworkAdapterName LAN
```

Add an IP to an Adapter

```
New-NetIPAddress -InterfaceAlias "vEthernet (LAN)" -IPAddress 10.10.10.10 -PrefixLength 24 -Type Unicast
```

```
New-NetIPAddress -InterfaceAlias "vEthernet (WAN)" -IPAddress 1.1.1.1 -PrefixLength 24 -DefaultGateway  
2.2.2.2 -Type Unicast
```


AVMA - Hyper-V Automatic Virtual Machine Activation

Open CMD/Powershell

slui 3

Guest Operating System	Key
Windows Server 2012 R2 Essentials	K2XGM-NMBT3-2R6Q8-WF2FK-P36R2
Windows Server 2012 R2 Standard	DBGBW-NPF86-BJVTX-K3WKJ-MTB6V
Windows Server 2012 R2 Datacenter	Y4TGP-NPTV9-HTC2H-7MGQ3-DV4TW
Windows Server 2016 Essentials	B4YNW-62DX9-W8V6M-82649-MHBKQ
Windows Server 2016 Standard	C3RCX-M6NRP-6CXC9-TW2F2-4RHYD
Windows Server 2016 Datacenter	TMJ3Y-NTRTM-FJYXT-T22BY-CWG3J
Windows Server 2019 Essentials	2CTP7-NHT64-BP62M-FV6GG-HFV28
Windows Server 2019 Standard	TNK62-RXVTB-4P47B-2D623-4GF74
Windows Server 2019 Datacenter	H3RNG-8C32Q-Q8FRX-6TDXV-WMBMW

Supported Activation

Host	Windows Server 2012 R2 will activate	Windows Server 2016 will activate
Windows Server 2012 R2 Essentials Edition>	Yes	Yes

Windows Server 2012 R2 Standard Edition	Yes	Yes
Windows Server 2012 R2 Datacenter Edition	Yes	Yes
Windows Server 2016 Essentials Edition	No	Yes
Windows Server 2016 Standard Edition	No	Yes
Windows Server 2016 Datacenter Edition	No	Yes

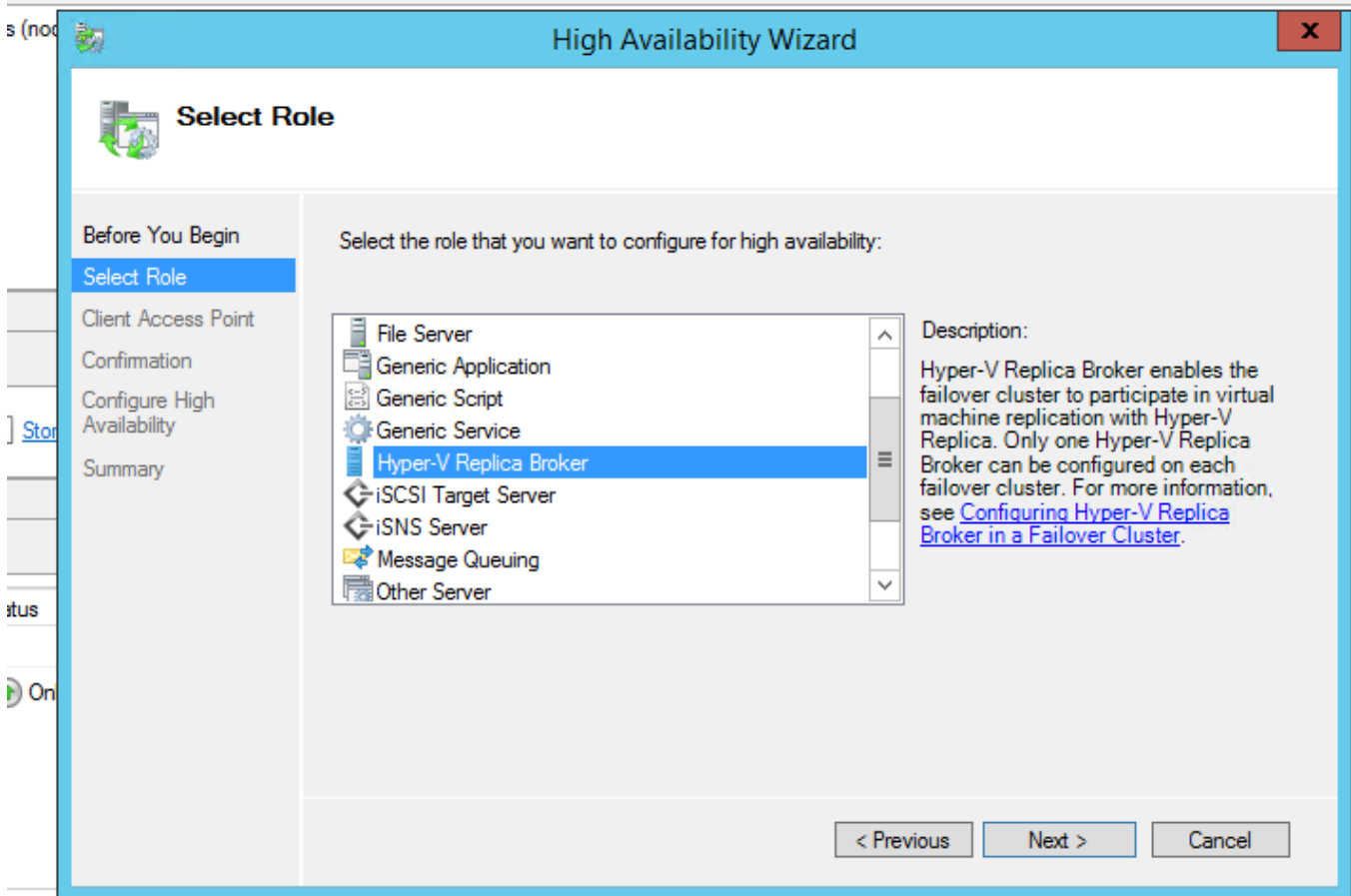
Server host version	Windows Server 2019	Windows Server 2016	Windows Server 2012 R2
Windows Server 2019	X	X	X
Windows Server 2016		X	X
Windows Server 2012 R2			X

Configuring DR Replica

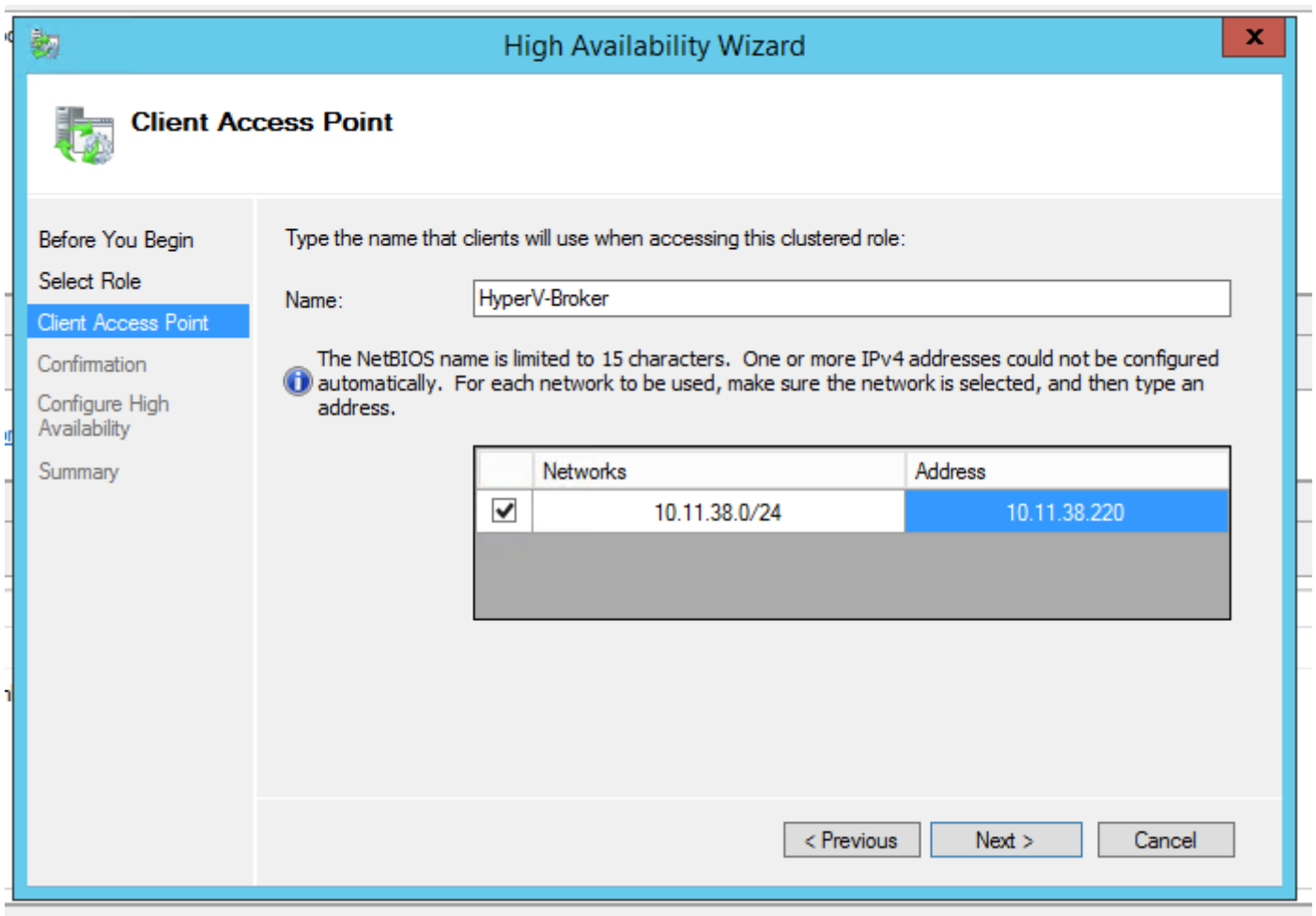
Open failover cluster manager

Right click the Cluster -> Select "Configure Role"

Click next -> select Hyper-V Replica Broker



Fill in the information (Choose an available IP from his subnet)



Create SSL cert via Powershell

For this, you will need to download Windows SDK and install

<https://msdn.microsoft.com/library/windows/desktop/aa386968.aspx>

Create the ROOT certificate

```
& "C:\Program Files\Microsoft SDKs\Windows\v7.1\Bin\x64\makecert.exe" -pe -n "CN=PrimaryRootCA" -ss root -sr LocalMachine -sky signature -r "PrimaryRootCA.cer"
```

Create SSL with the hostname of DR

```
& "C:\Program Files\Microsoft SDKs\Windows\v7.1\Bin\x64\makecert.exe" -pe -n "CN=dr.domain.com" -ss my -sr LocalMachine -sky exchange -eku "1.3.6.1.5.5.7.3.1,1.3.6.1.5.5.7.3.2" -in "primaryRootCA" -is root -ir LocalMachine -sp "Microsoft RSA SChannel Cryptographic Provider" -sy 12 replicaCert.cer
```

Create SSL with the name of the Hyper-V Replica Broker you created

Note, if you are in an AD, you will need to add the full FQDN of the broker

```
& "C:\Program Files\Microsoft SDKs\Windows\v7.1\Bin\x64\makecert.exe" -pe -n "CN=HyperV-Broker.domain.com" -ss my -sr LocalMachine -sky exchange -eku "1.3.6.1.5.5.7.3.1,1.3.6.1.5.5.7.3.2" -in "primaryRootCA" -is root -ir LocalMachine -sp "Microsoft RSA SChannel Cryptographic Provider" -sy 12 primaryCert.cer
```

On all hosts (nodes and DR) disable SSL revocation

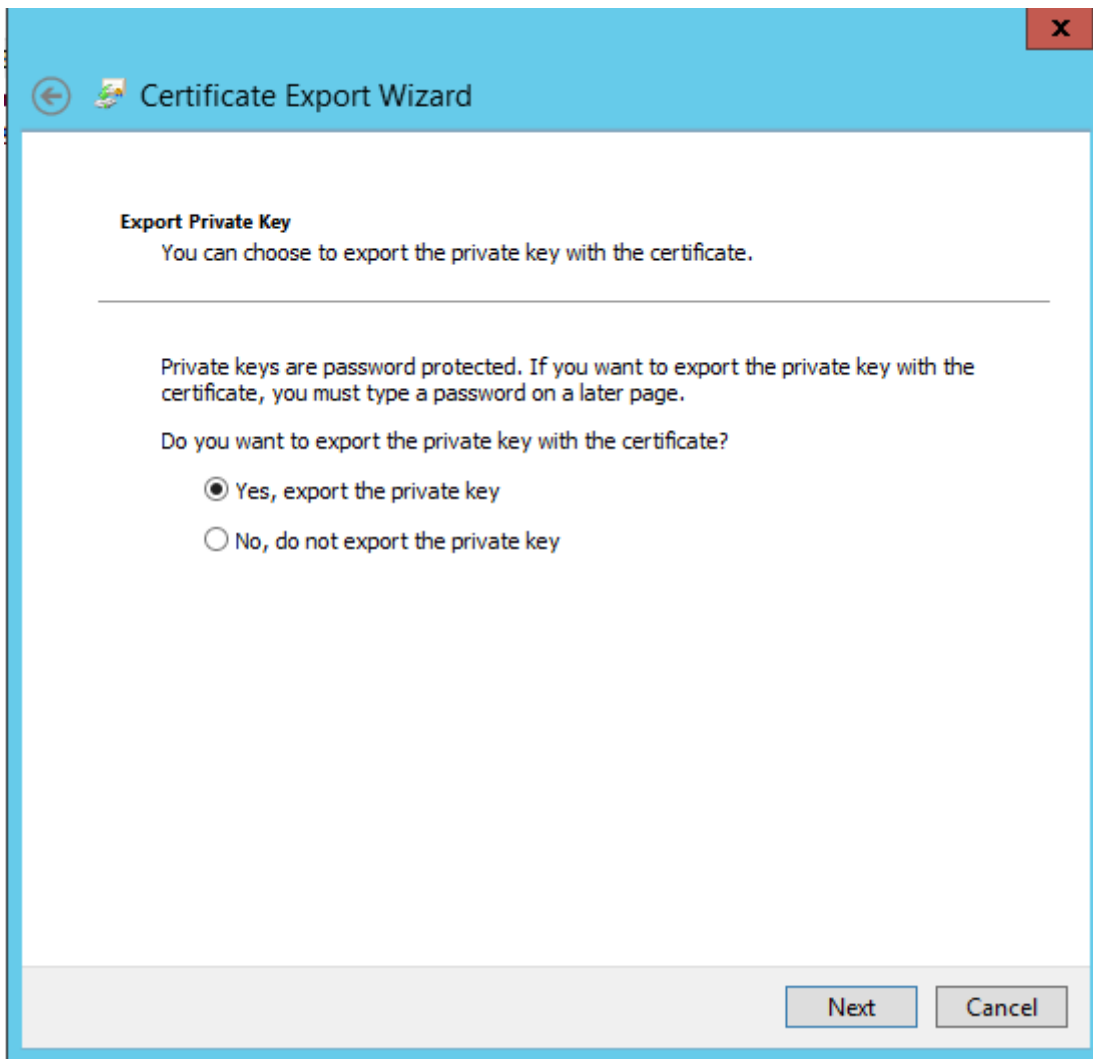
```
reg add "HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Virtualization\Replication" /v DisableCertRevocationCheck /d 1 /t REG_DWORD /f
```

Exporting the SSL

Open Certificate MMC console (simply search for certificate and click on "Manage Computer Certificates")

Under personal, click certificates

Right click the DR certificate -> all task -> export



Click Next -> Select "Yes, export the private key"

Click Next -> Select "Password" and enter any password

Click Next -> Select where to save the certificate

Import the SSL certificate

The following steps have to be performed on the DR

Open Certificate MMC console with the snap-in to manage certs

Right click "Personal" -> Select "All Task" -> Select "Import"

Click Next (Local Machine) -> Browse the Certificate and import

Enter the password used during the export

Click Next -> Select "Place all certificates in the following store"

Click Next -> Click Finish

Once done, move the Root Certificate under "Certificates" of "Trusted Root Certificate Authorities"

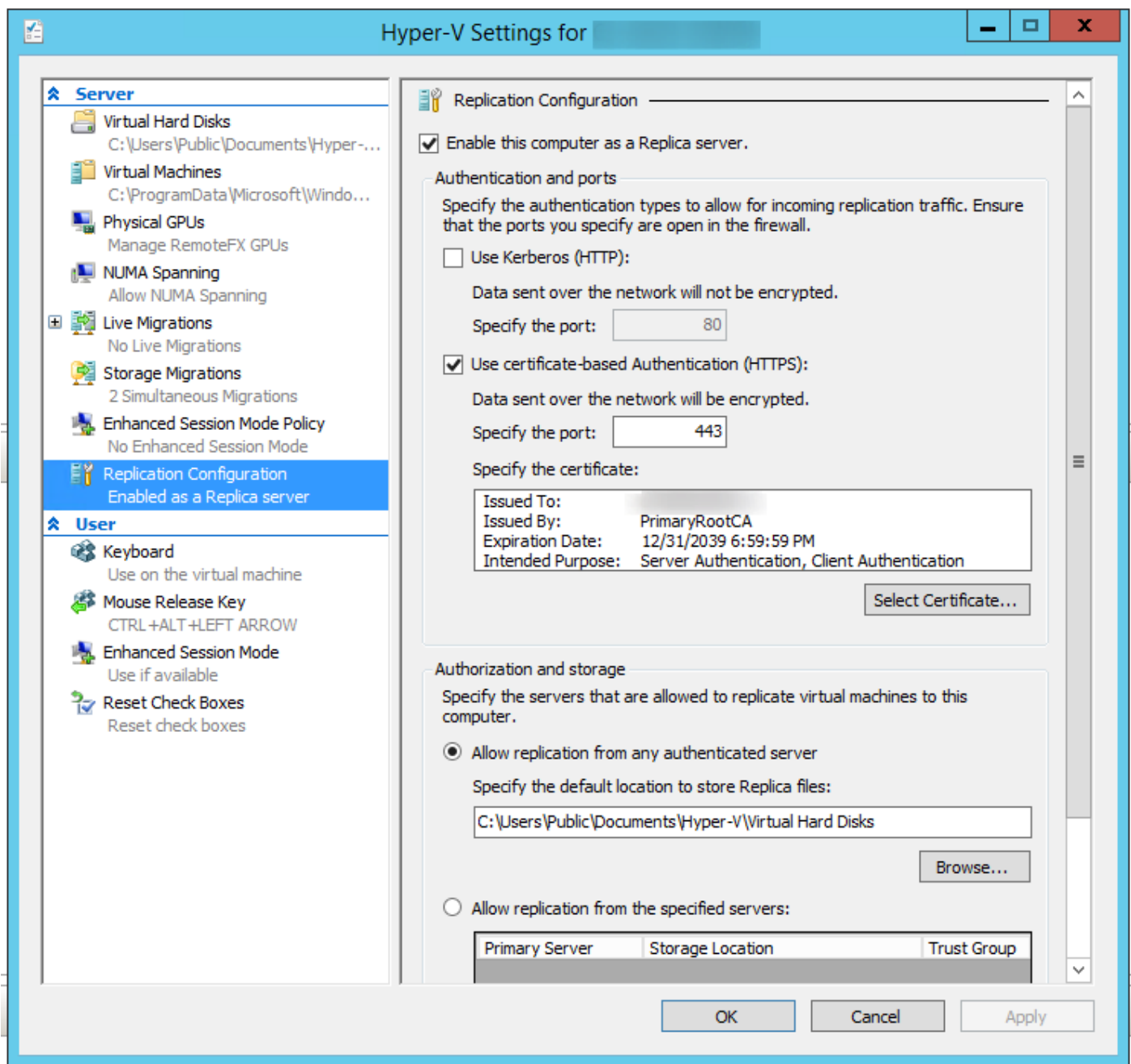
Configure the Replication Role in Hyper-V

In Hyper-V, right click the server -> Click on "Hyper-V Settings"

Select the "Replication Configuration" tab

Click "Enable this computer as Replica Server" -> Click "Use certificate-based authentication (HTTPS)" -> Select the Certificate

Under "Authorization and storage" -> Select "Allow replication from any authenticated server" with default value (C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks)



Enabling Replication for VM

Right click on the VM and select "Enable Replication"

Virtual Machines					
Name	State ^	CPU Usage	Assigned Memory	Uptime	Status
	Running	0 %	8192 MB	380.07:28:59	
	Running	0 %	2048 MB	380.07:29:29	
	Running	0 %	8192 MB	380.07:34:56	
	Running	0 %	8192 MB	275.15:52:37	
	Running	0 %	2322 MB	380.07:28:54	
	Running	0 %	8192 MB	190.15:15:15	
	Running	4 %	8192 MB	190.14:52:29	
	Running			139.01:40:09	

Connect...
Settings...
Turn Off...
Shut Down...
Save
Pause
Reset
Checkpoint
Move...
Export...
Rename...
Enable Replication...
Help

Click Next -> Enter the hostname (that we put in the host file earlier)

Once it loads (can take a minute or 2), same thing as with the DR, select "Use certificate-based authentication (HTTPS)" and

select the certificate (make sure "Compress the data that is transmitted over the network"

Keep clicking next a select the options you want for the replication

Server 2016

Server 2016 is the same concept but you will need to create a cert for all nodes

Create root CA

```
New-SelfSignedCertificate `
-DnsName "HyperVReplicationRootCA" `
-CertStoreLocation Cert:\LocalMachine\My `
-KeyLength "4096" `
-Hash SHA256 `
```

```
-KeyFriendlyName "HyperVReplicationRootCA" `
-FriendlyName "HyperVReplicationRootCA" `
-NotAfter "2030-12-31 23:59:59" `
-NotBefore "2018-10-10 00:00:00" `
-KeyUsage CertSign,CRLSign,DigitalSignature
```

Create node cert (1 cert per node)

```
New-SelfSignedCertificate `
-DnsName Myfqdn.domain.com `
-CertStoreLocation Cert:\LocalMachine\My `
-KeyLength "4096" `
-Hash SHA256 `
-KeyFriendlyName hostname `
-FriendlyName hostname `
-NotBefore "2017-01-01 00:00:00" `
-NotAfter "2030-12-31 23:59:59" `
-Signer ( Get-ChildItem Cert:\LocalMachine\My | Where -Prop Subject -eq "CN=HyperVReplicationRootCA" )
```

Use same command for broker cert and export / import cert on all nodes / dr server as explained above