

Hyper-V Replication on Windows Server 2016

Step by Step (V1.1)

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Lab Scenario

This lab provides basic information about:

- 1- Install and configure Hyper-V 2016 Server role.
- 2- Install Windows Server 2016 Core VM on Hyper-V.
- 3- Enable and configure Hyper-V 2016 Replica Server.
- 4- Replicate Server Core 2016 VM from Hyper-V server to another through Hyper-V.

Existing Environment

we have Active Directory and DNS in Windows Server 2016 named **ITPROLABS.XYZ**, for this lab we join another 2 Windows Server 2016 machine named **Hyper-V01 & Hyper-V02** to our domain, one of these servers will play Hyper-V server Role which host Windows Server core 2016, while second one will act as Hyper-V replica server to receive replicated VM from first Hyper-V server.

Domain: **ITPROLABS.XYZ**

DC IP: **192.168.153.10**

DNS: **192.168.153.10**

Hyper-V01: **192.168.153.50**

Hyper-V02 replica server: **192.168.153.51**

Server Core VM: **192.168.153.52**

For full Windows Server 2016 active directory lab check the following link:

<https://gallery.technet.microsoft.com/Install-Windows-Server-f37e3c6d?redir=0>

For full Hyper-V and Windows Server 2016 Core lab check the following link:

<https://gallery.technet.microsoft.com/Install-and-Configure-b70f4cc2?redir=0>

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Working with Hyper-V

Login to server that will play Hyper-V role.

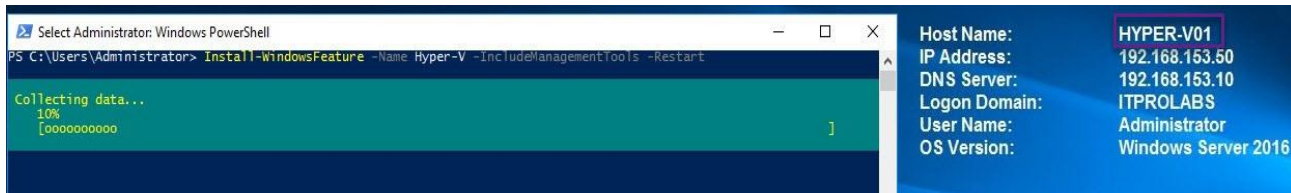
Server name: **Hyper-V01**

IP address: **192.168.153.50**

Domain: **ITProLab.xyz**

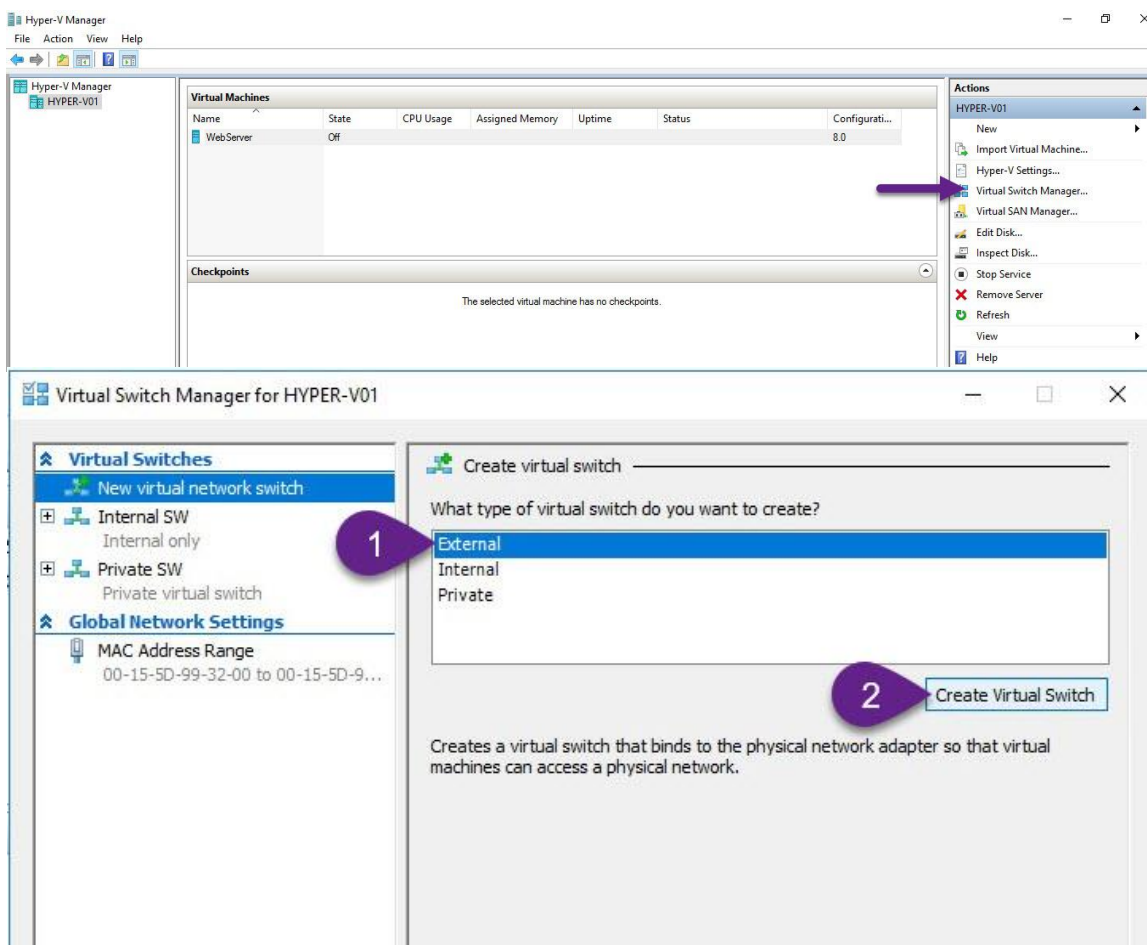
add Hyper-V role through PowerShell

Install-WindowsFeature -Name Hyper-V -IncludeManagementTools -Restart

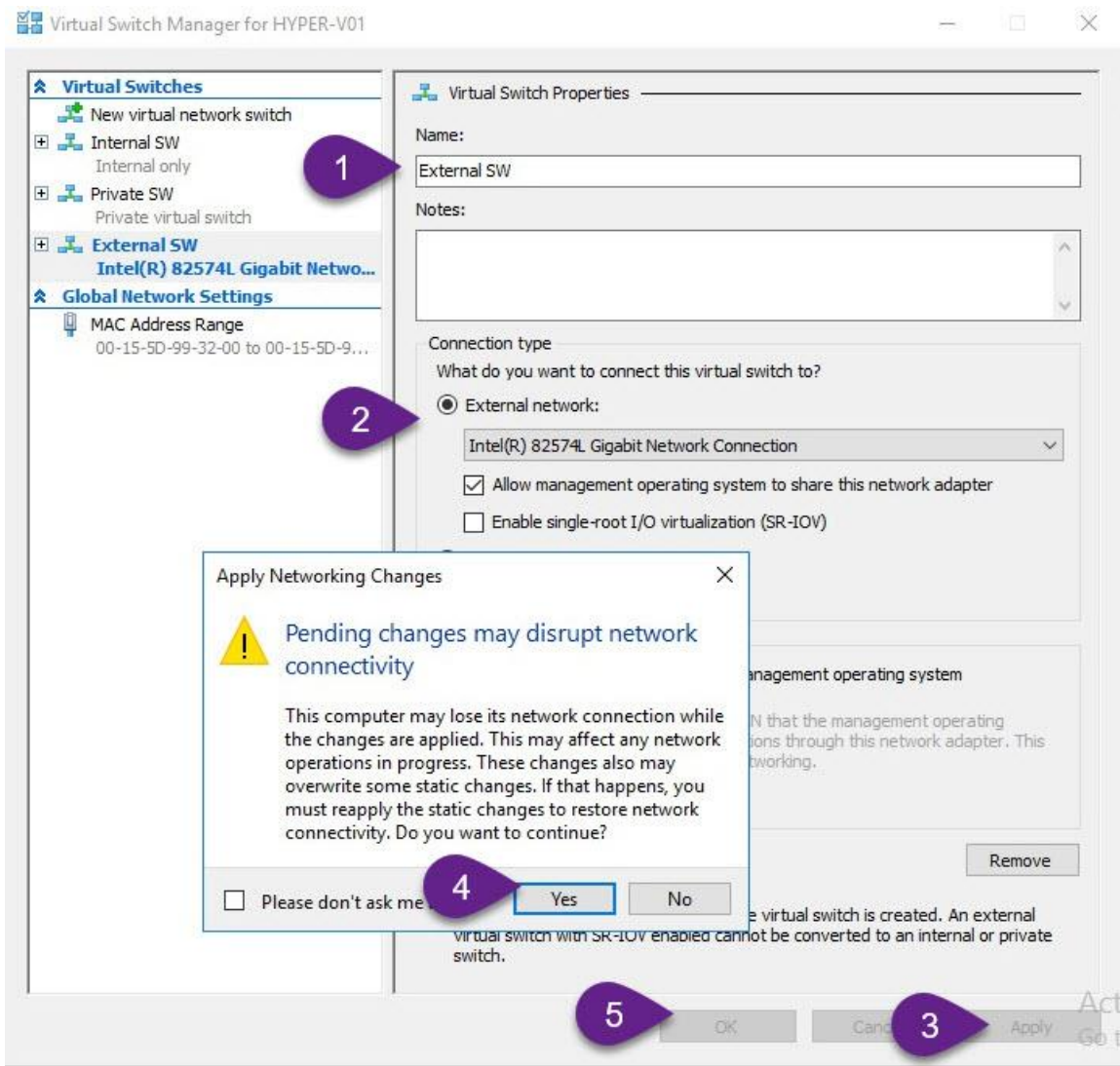


add Virtual Switch to Hyper-V

Add external virtual switch so we can connect VMs that hosted in Hyper-V with other VMs

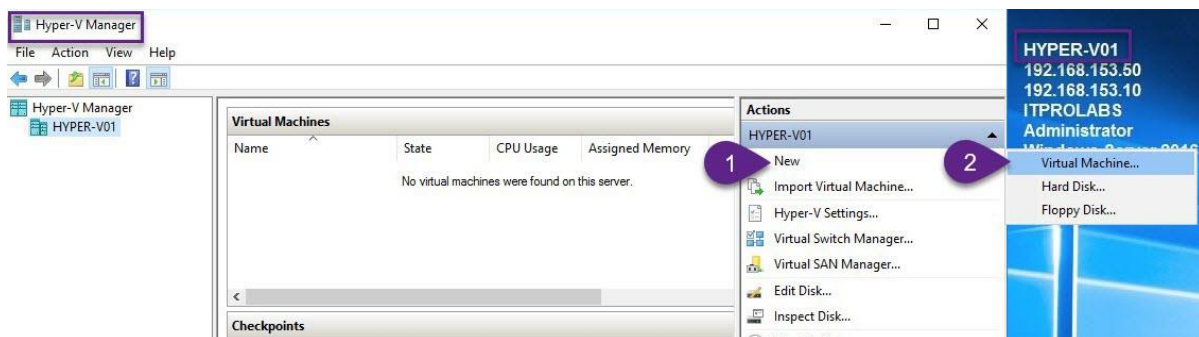


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Install Server Core 2016 on Hyper-V

from **Hyper-V01** server manager access Hyper-V management console and follow the below figures to install Server Core 2016 VM.



Hyper-V Replication on Windows Server 2016

New Virtual Machine Wizard ×

Specify Name and Location

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

Choose a name and location for this virtual machine.

The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.

Name:

You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.

Store the virtual machine in a different location

Location:

! If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.

New Virtual Machine Wizard ×

Specify Generation

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

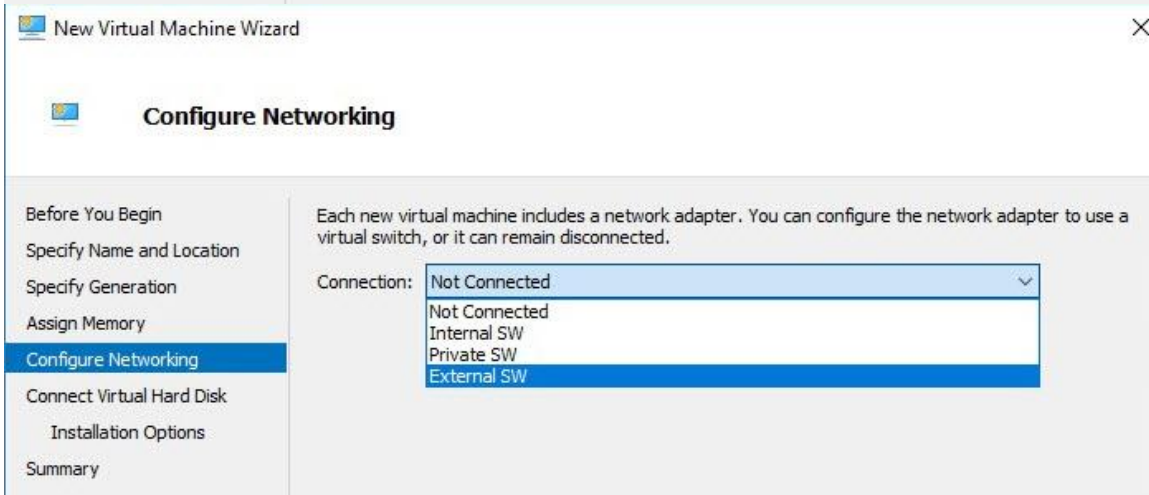
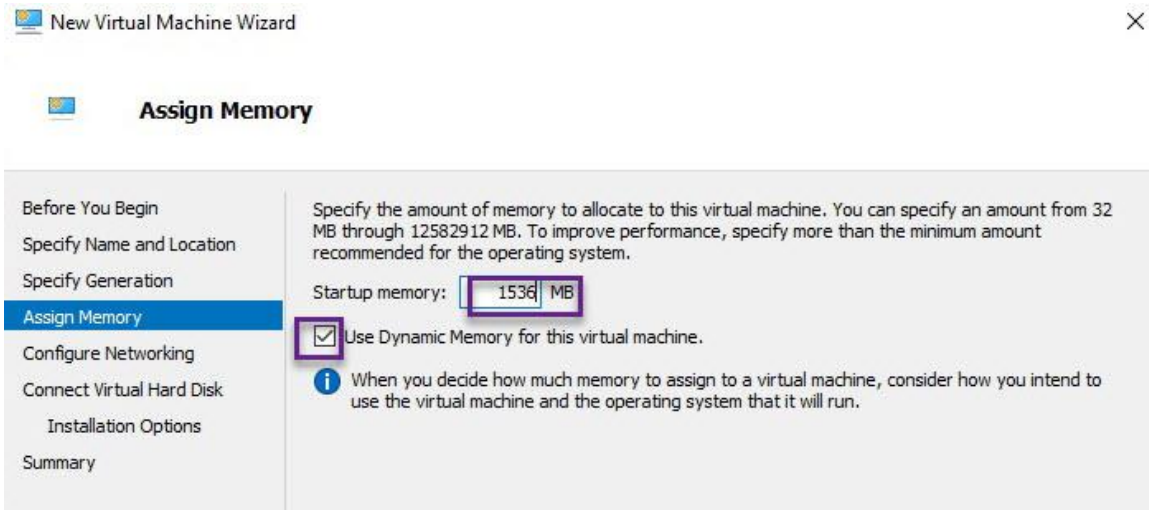
Choose the generation of this virtual machine.

Generation 1
This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V.

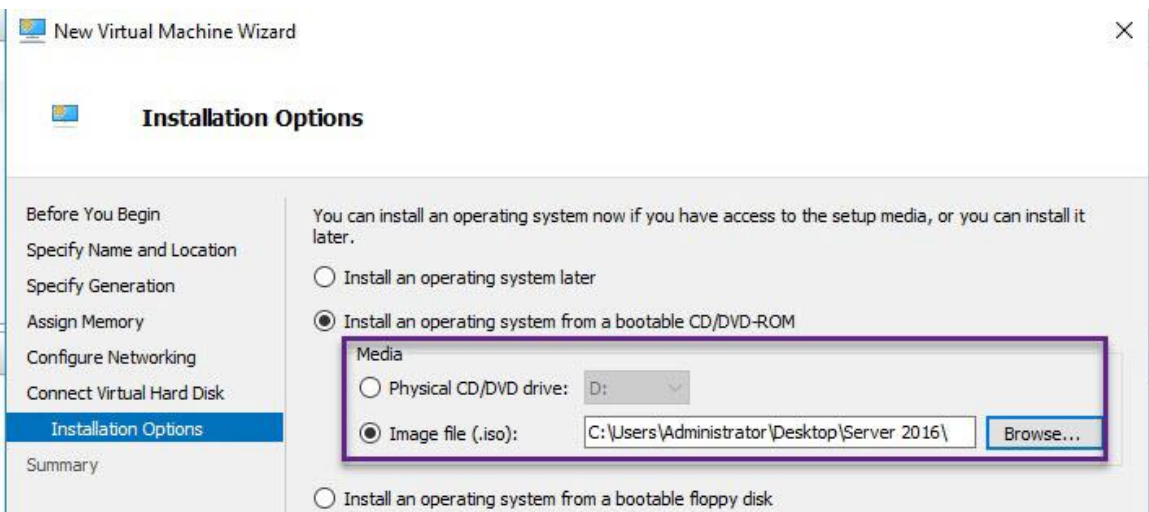
Generation 2
This virtual machine generation provides support for newer virtualization features, has UEFI-based firmware, and requires a supported 64-bit guest operating system.

! Once a virtual machine has been created, you cannot change its generation.

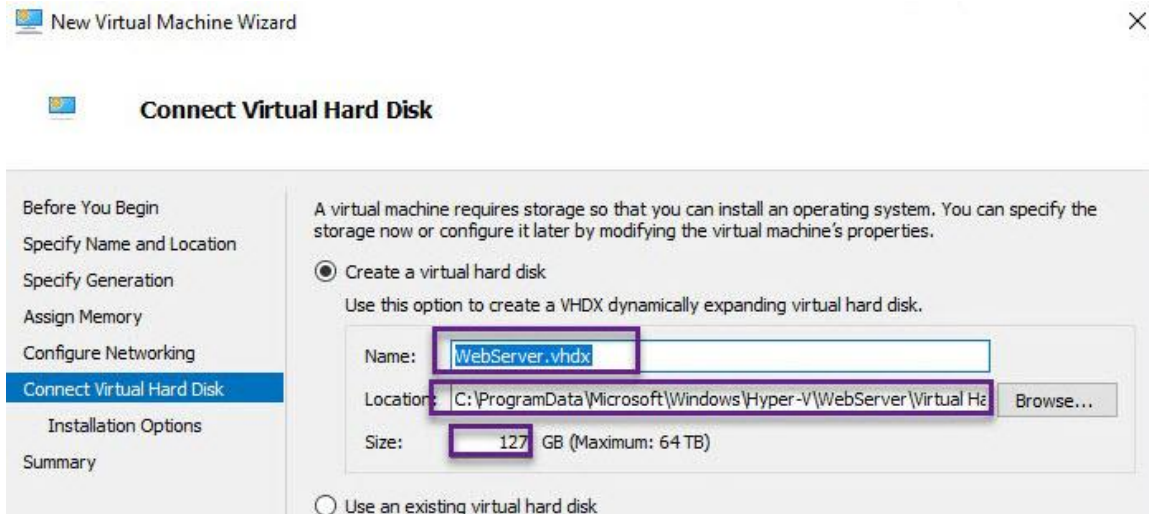
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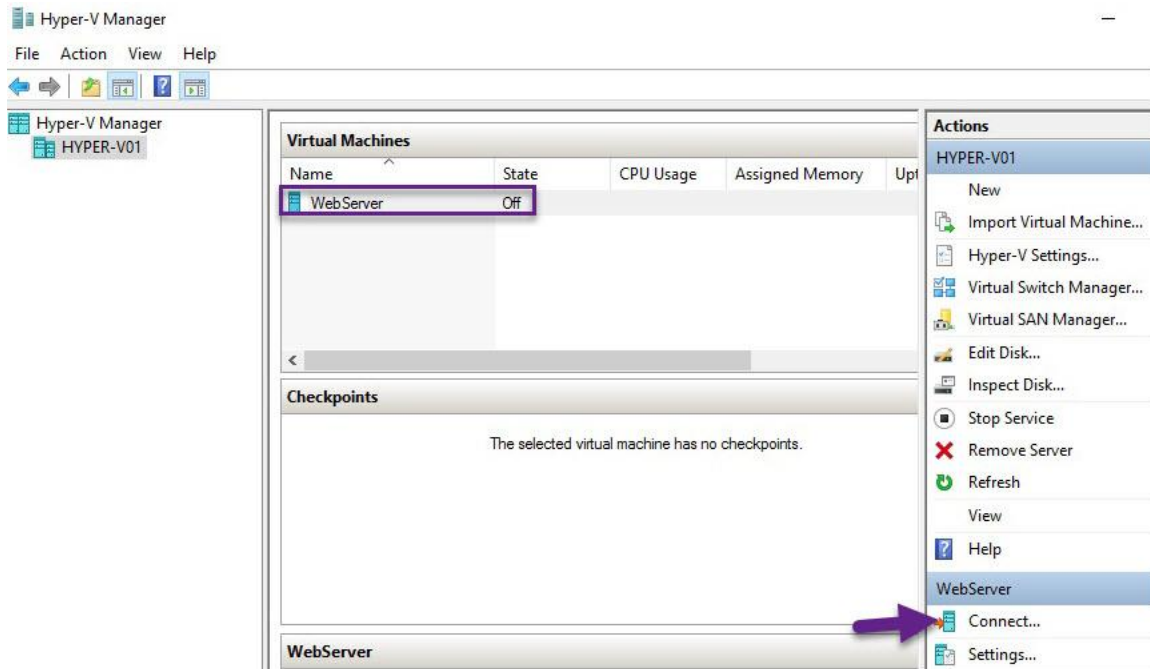
Browse and select Windows Server 2016 ISO image to use it as installation source



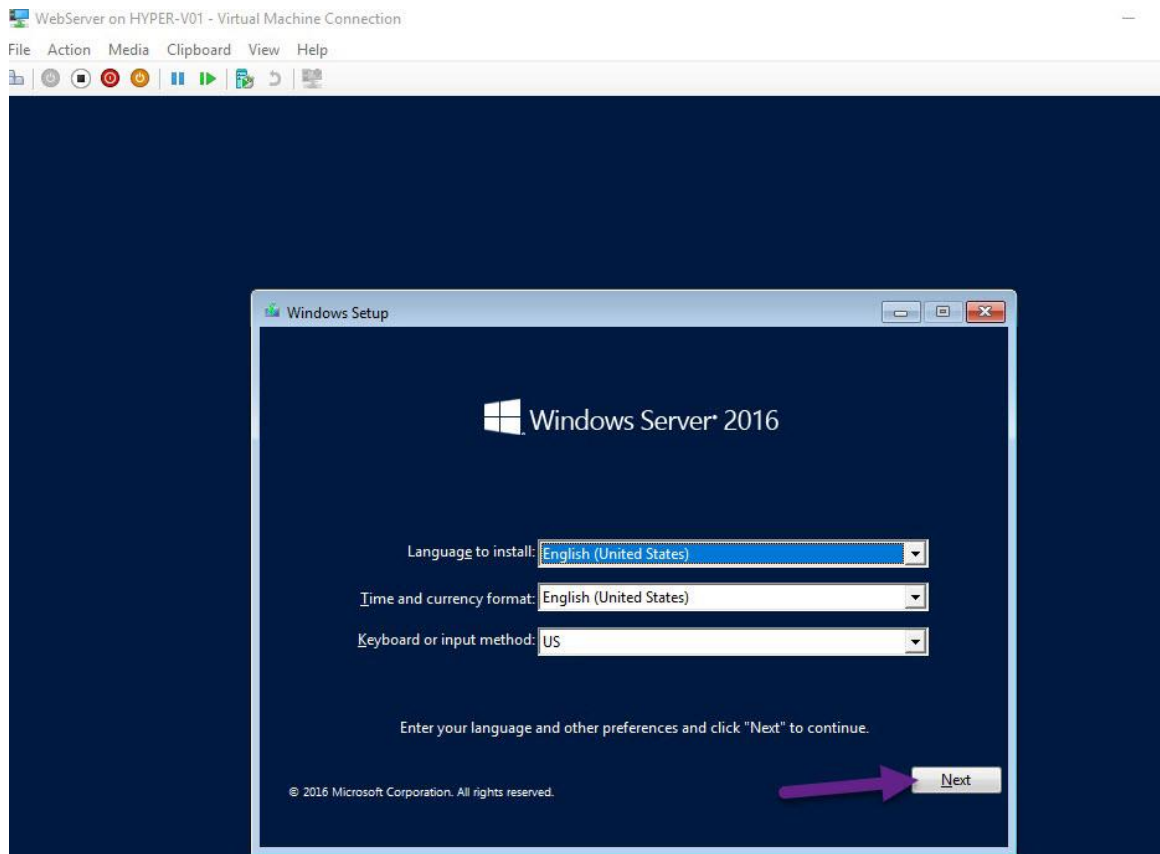
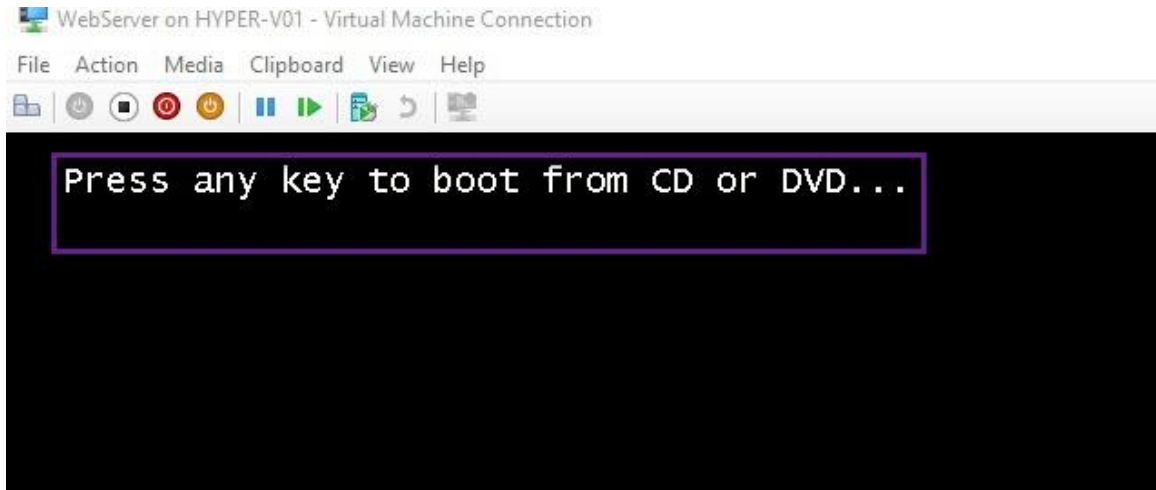
Hyper-V Replication on Windows Server 2016



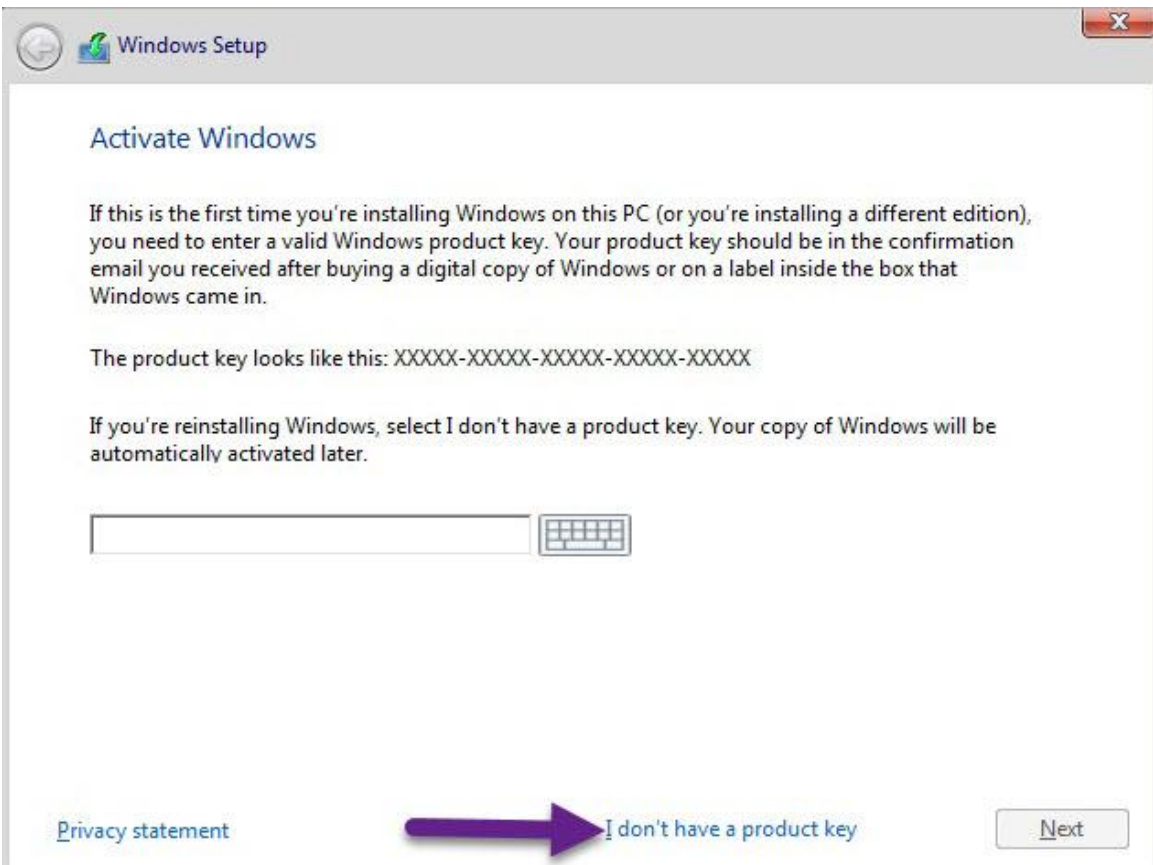
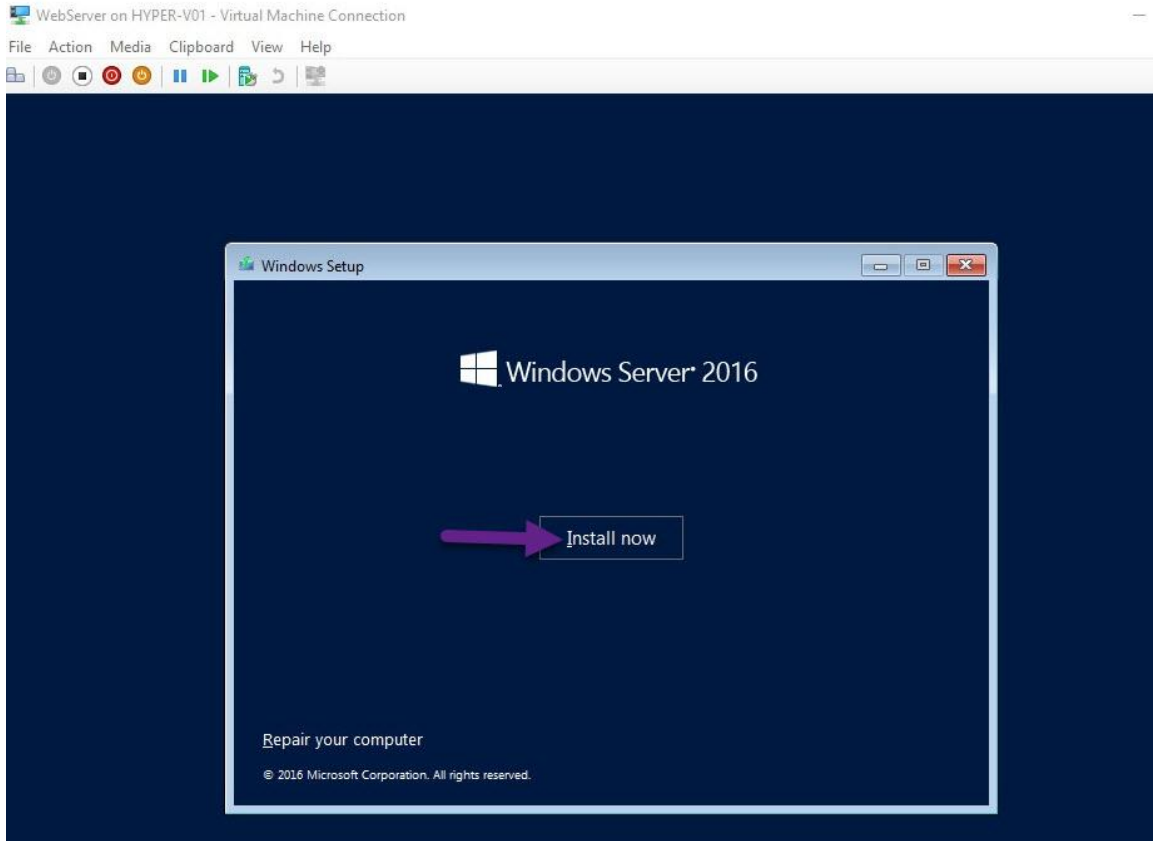
Connect to Server Core VM and start installation process



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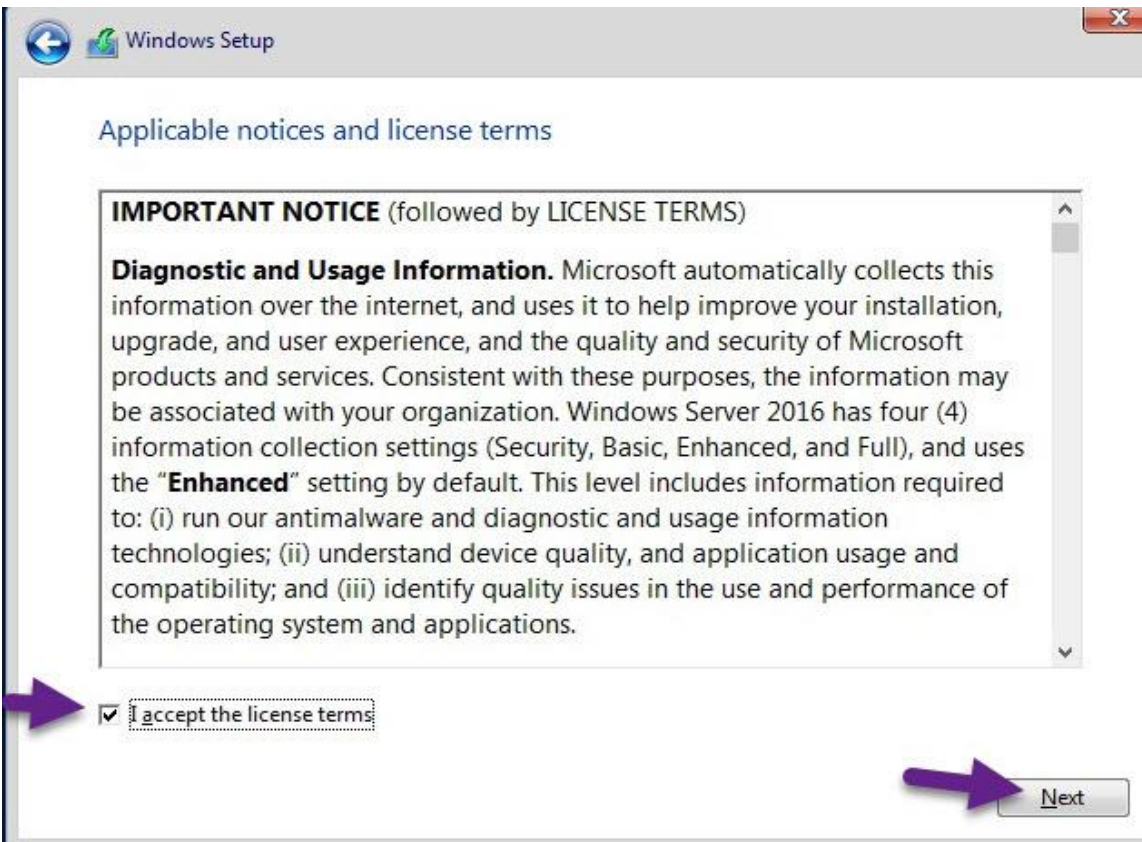
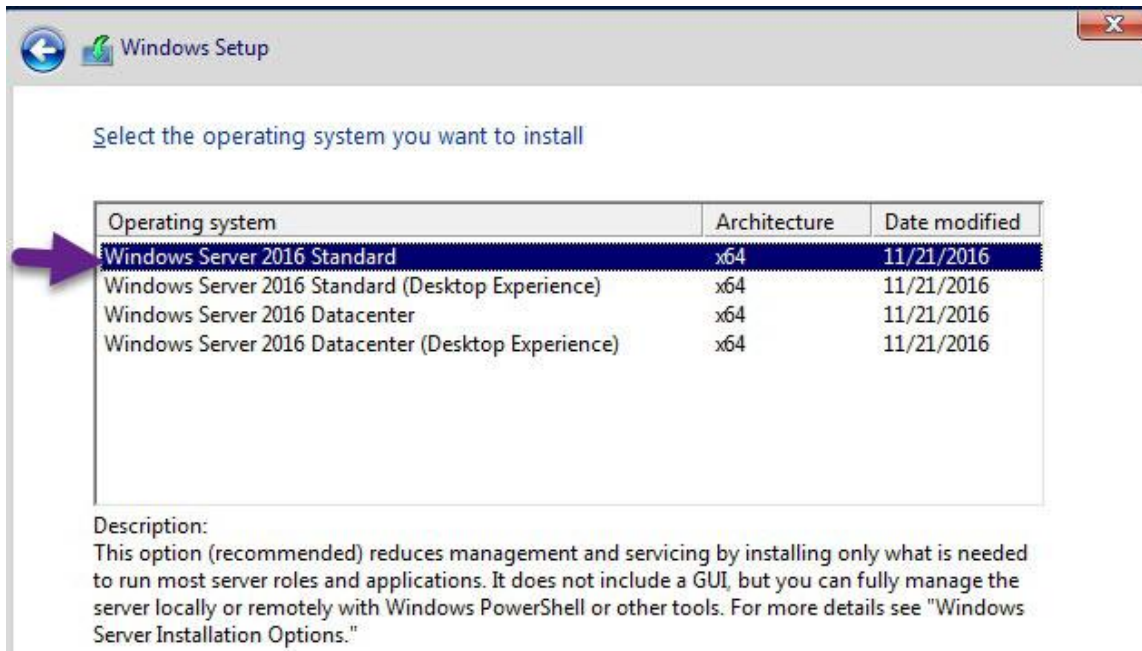


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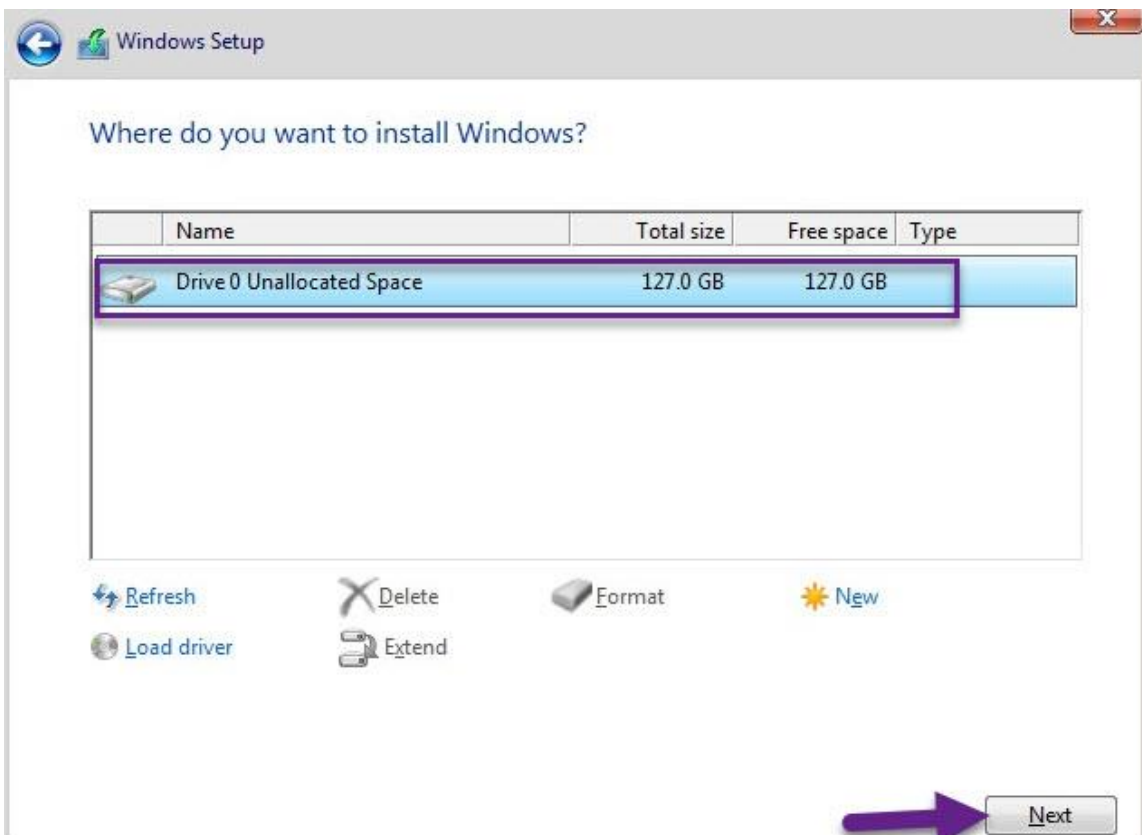
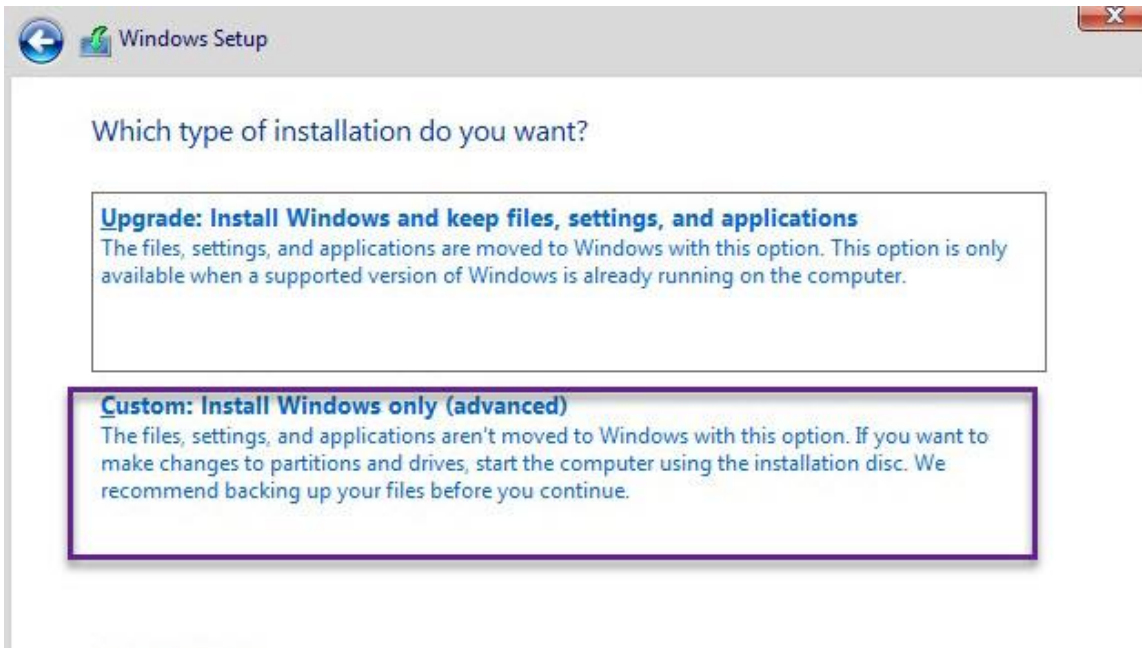


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Select Windows Server 2016 Standard Core



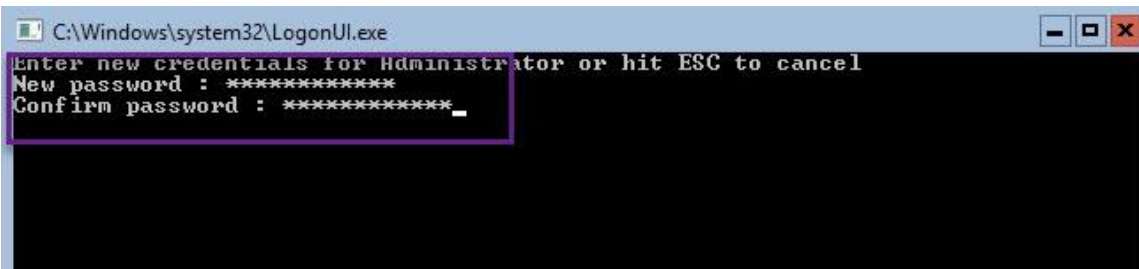
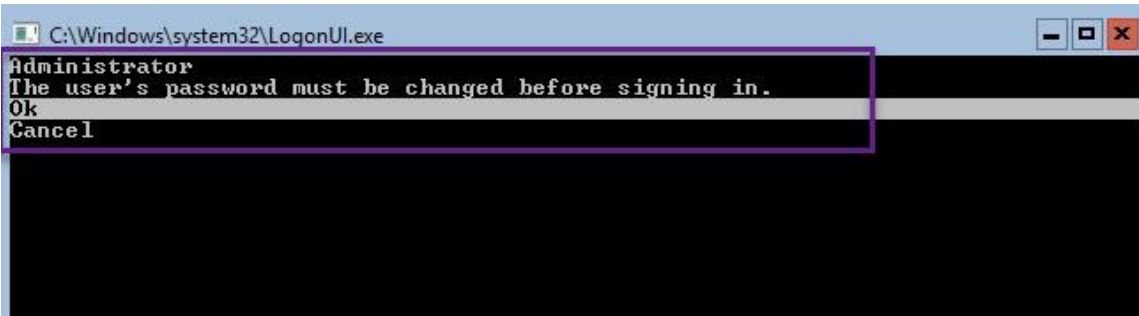
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Hyper-V Replication on Windows Server 2016



After installation is done, change local administrator password (we need it to access our server for first time)



Hyper-V Replication on Windows Server 2016

Manage server 2016 Core locally

Windows Server 2016 Initial Configuration

Login to server core using local administrator account, then use **Sconfig** to change server Initial Configuration like Server name and network configuration, so we can join our server to **ITPROLABS.XYZ** domain.

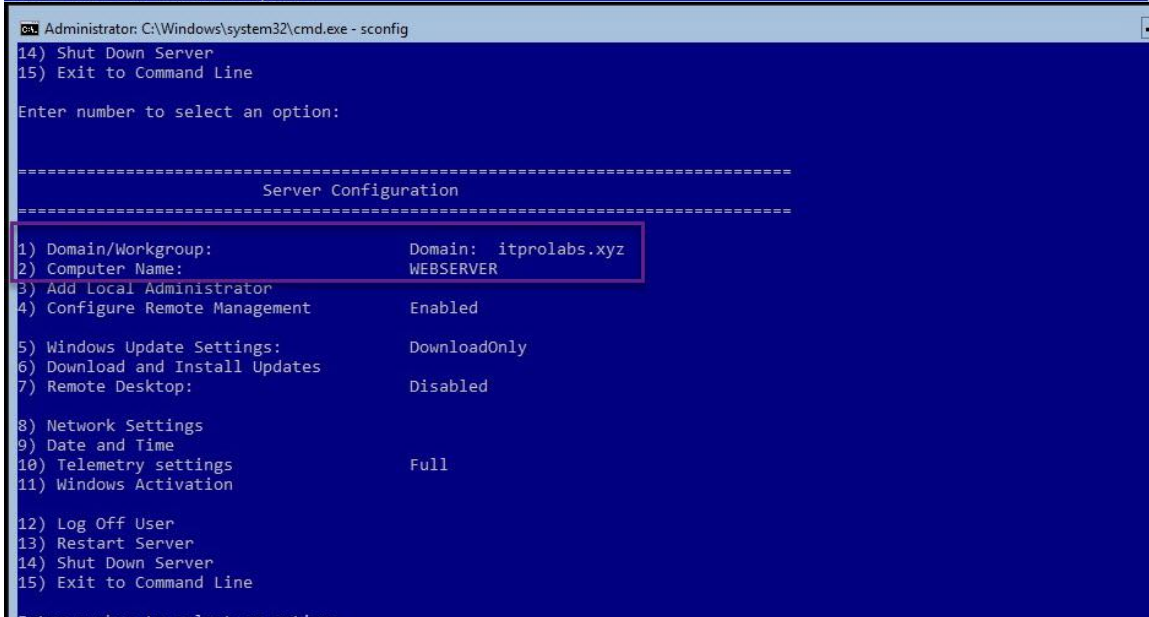
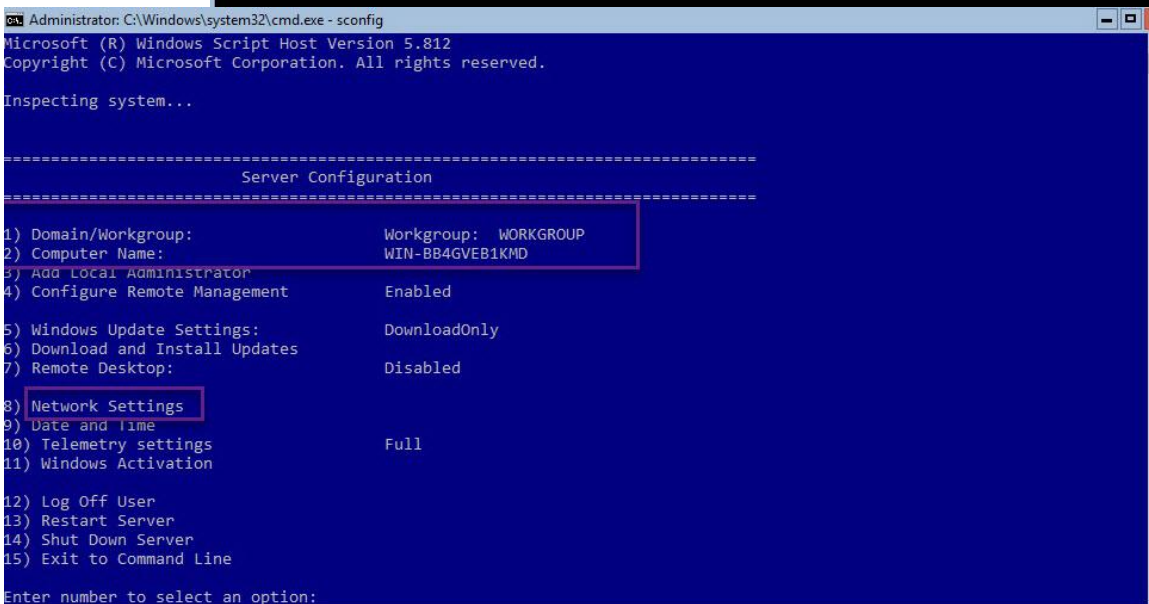
Server Name: **WebServer**

IP address: **192.168.153.52**

SM:**255.255.255.0**

DNS: **192.168.153.10**

DG: **192.168.153.2**

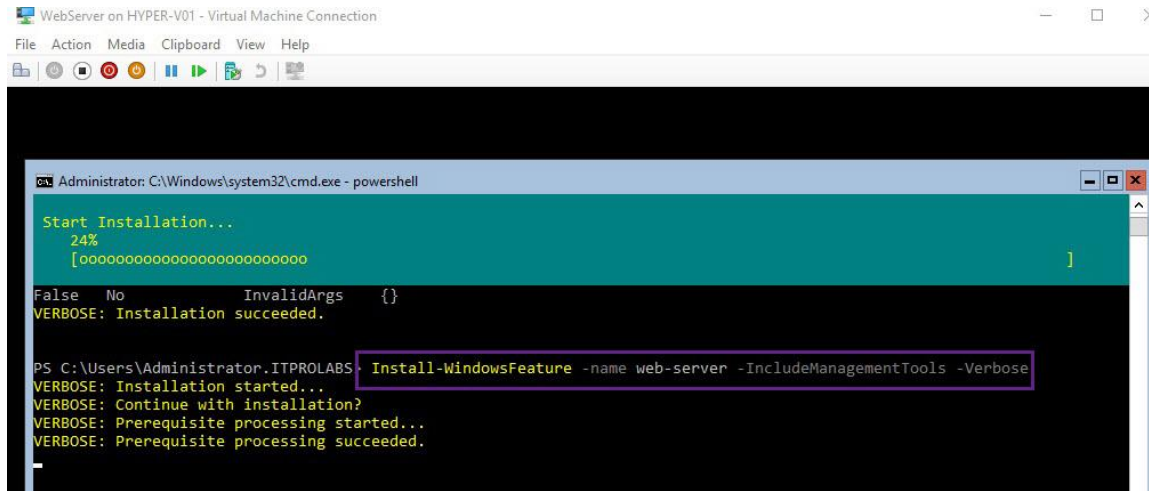


Hyper-V Replication on Windows Server 2016

add IIS Role

Type 15 to exit **scnfig** to command line mode then type PowerShell to access PowerShell mode. Through PowerShell use the following command to install IIS server role

```
Install-WindowsFeature -name Web-Server -IncludeManagementTools -verbose
```



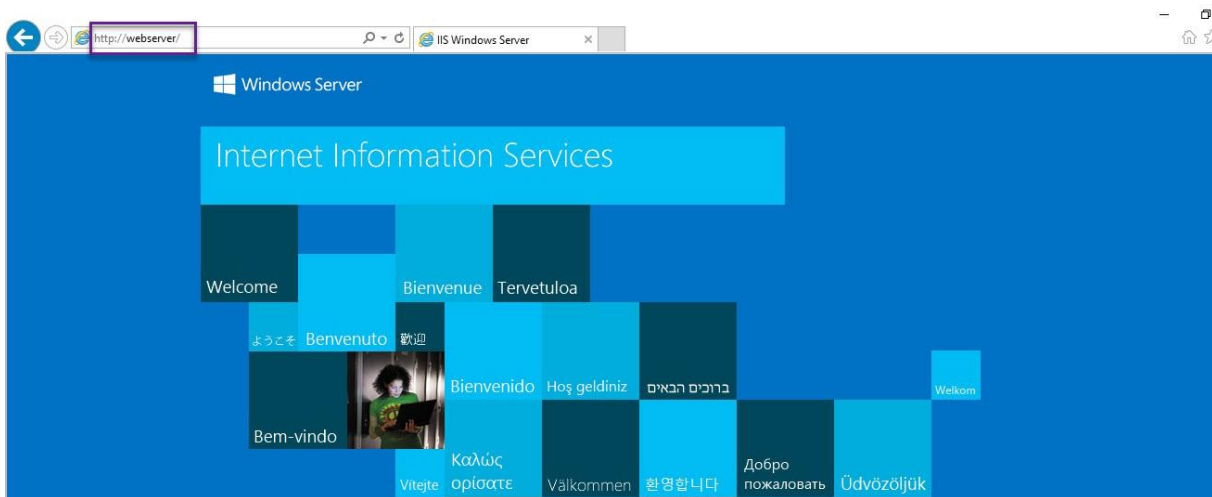
```
Administrator: C:\Windows\system32\cmd.exe - powershell

Start Installation...
24%
[ooooooooooooooooooooooooooooo ]

False No InvalidArgs {}
VERBOSE: Installation succeeded.

PS C:\Users\Administrator.ITPROLABS> Install-WindowsFeature -name web-server -IncludeManagementTools -Verbose
VERBOSE: Installation started...
VERBOSE: Continue with installation?
VERBOSE: Prerequisite processing started...
VERBOSE: Prerequisite processing succeeded.
```

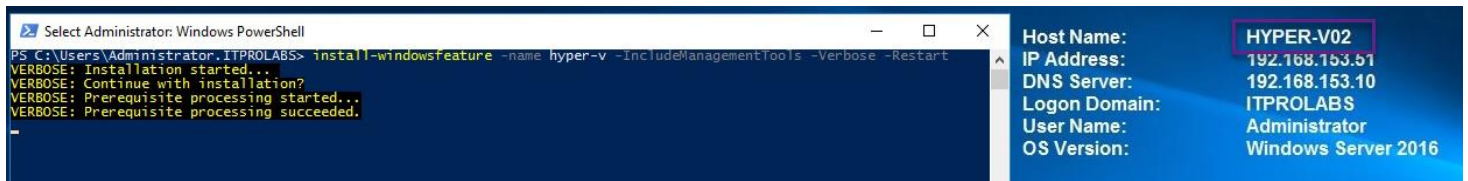
After IIS installation is done, you can access **WebServer** through web as shown down



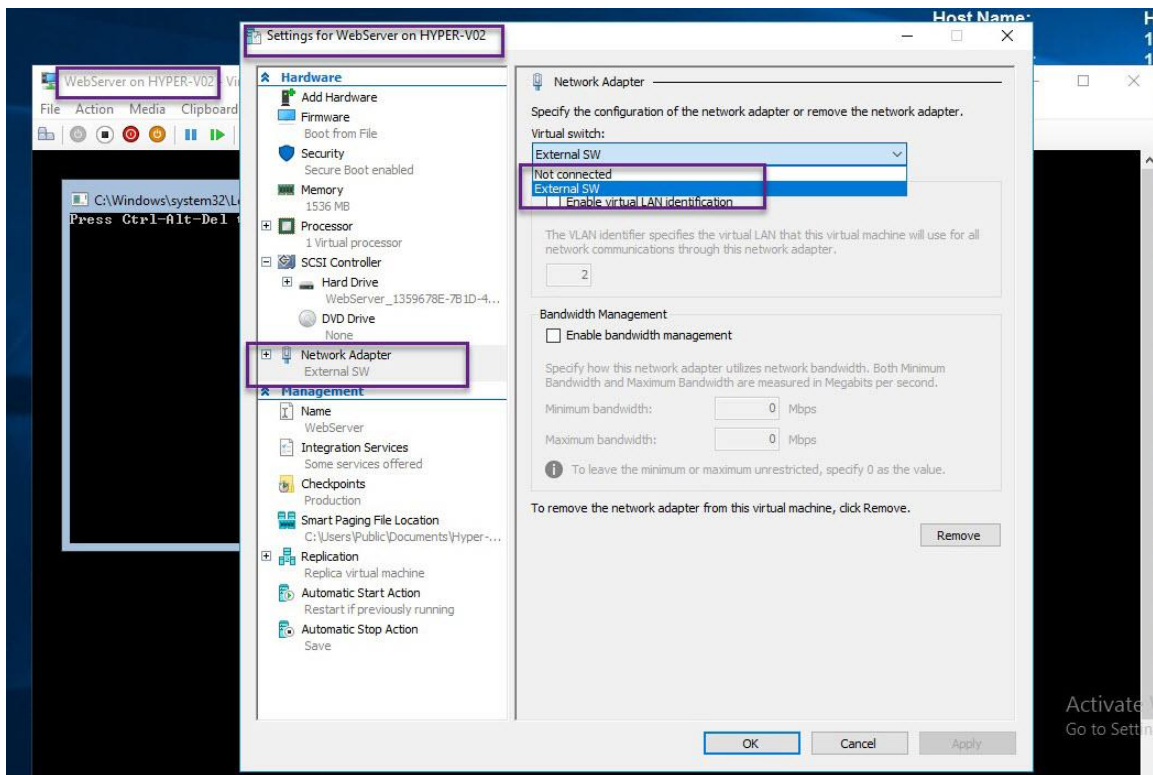
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Configure Hyper-V Replica Server

add Hyper-V role through PowerShell



add Virtual Switch to Hyper-V

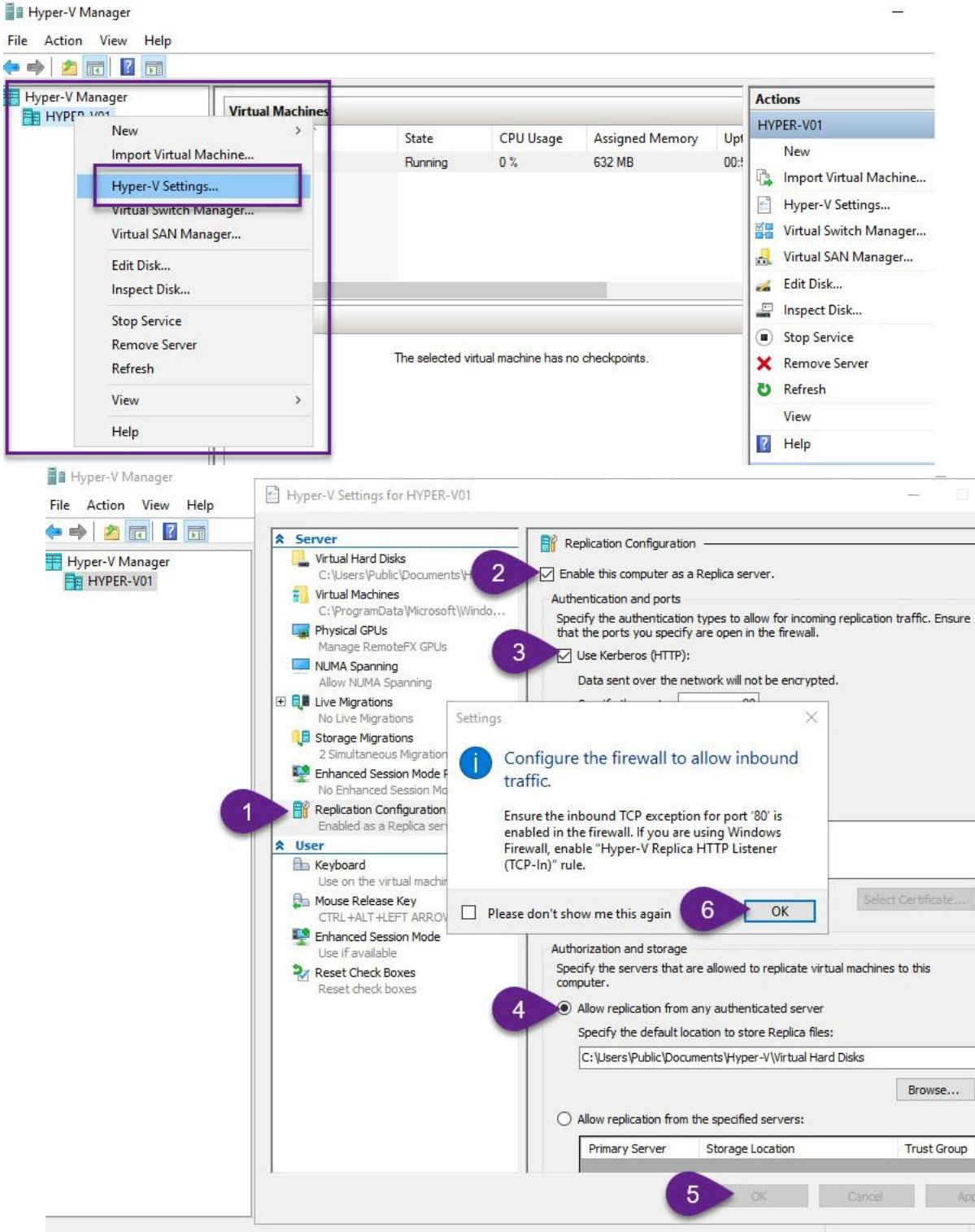


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Hyper-V Replication Process

Enable Hyper-V Replication settings

To allow **WebServer** VM to replicate from **Hyper-V01** server to another Hyper-V server (**Hyper-V02**), enable Hyper-V replication settings on both Hyper-V servers



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also, enable same settings on **Hyper-V02** server

The screenshot shows the 'Hyper-V Settings for HYPER-V02' window. The left pane shows the 'Server' section with 'Replication Configuration' selected. The right pane shows the 'Replication Configuration' settings. A 'Settings' dialog box is open in the foreground, displaying an information message: 'Configure the firewall to allow inbound traffic. Ensure the inbound TCP exception for port '80' is enabled in the firewall. If you are using Windows Firewall, enable "Hyper-V Replica HTTP Listener (TCP-In)" rule.' The dialog box has an 'OK' button and a 'Please don't show me this again' checkbox.

1. Replication Configuration

2. Enable this computer as a Replica server.

3. Use Kerberos (HTTP):

4. Allow replication from any authenticated server

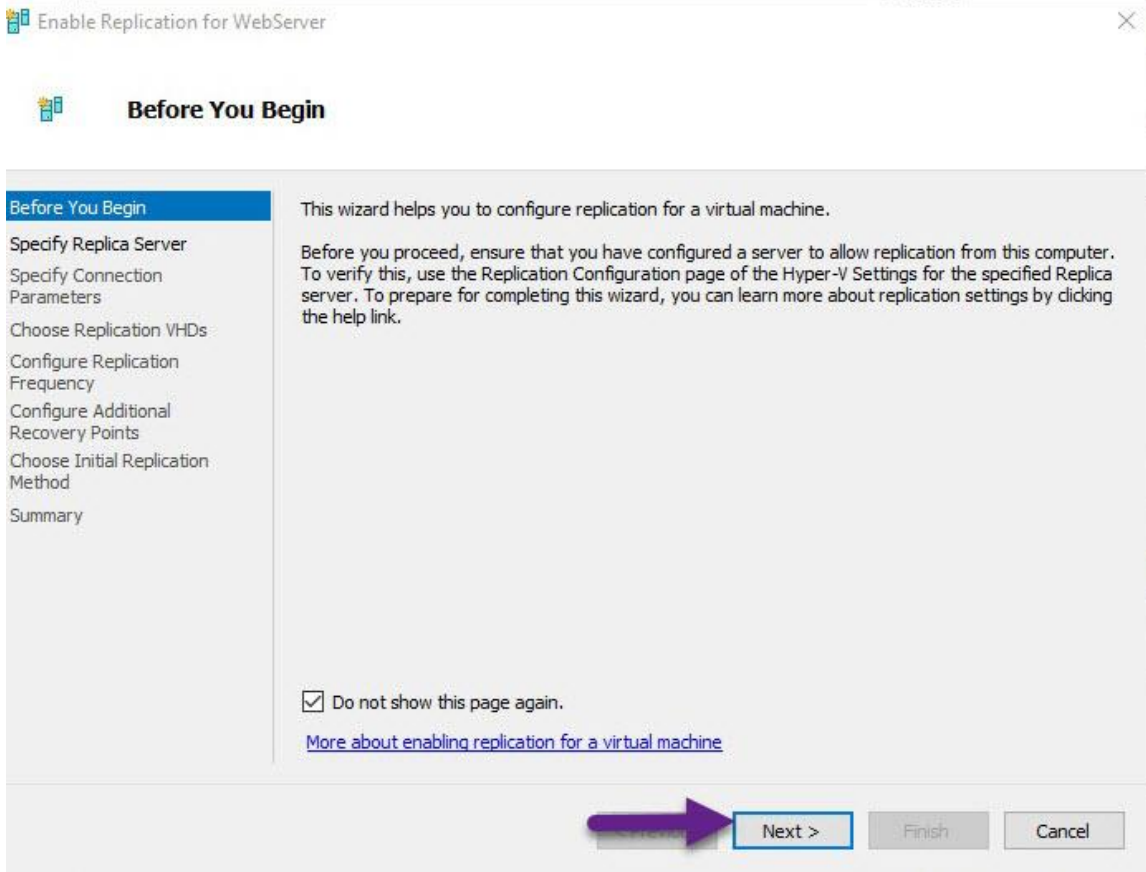
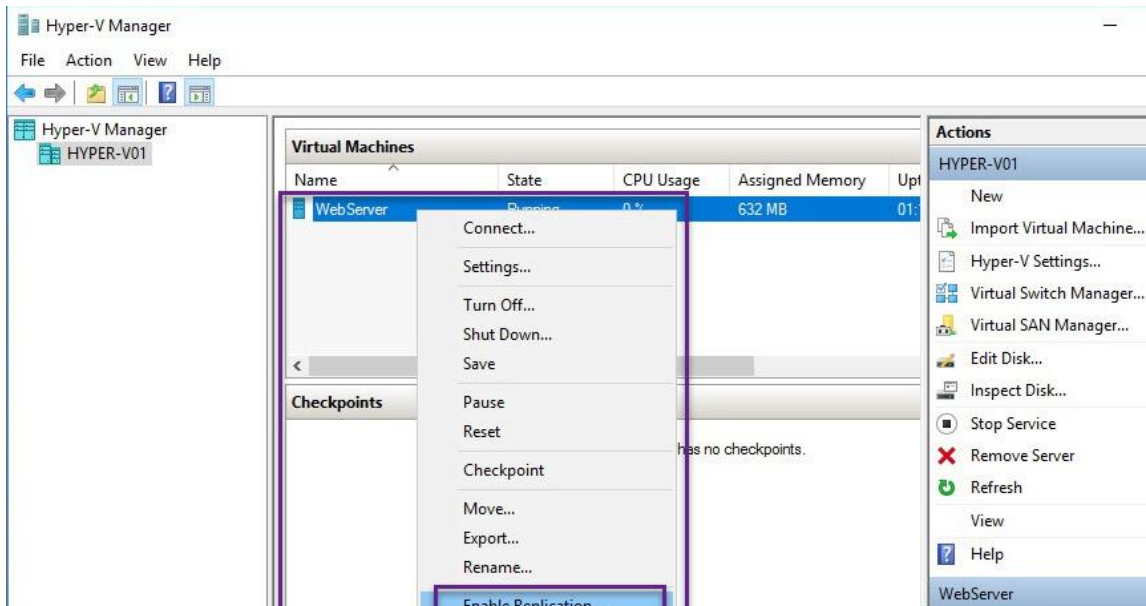
5. OK

6. OK

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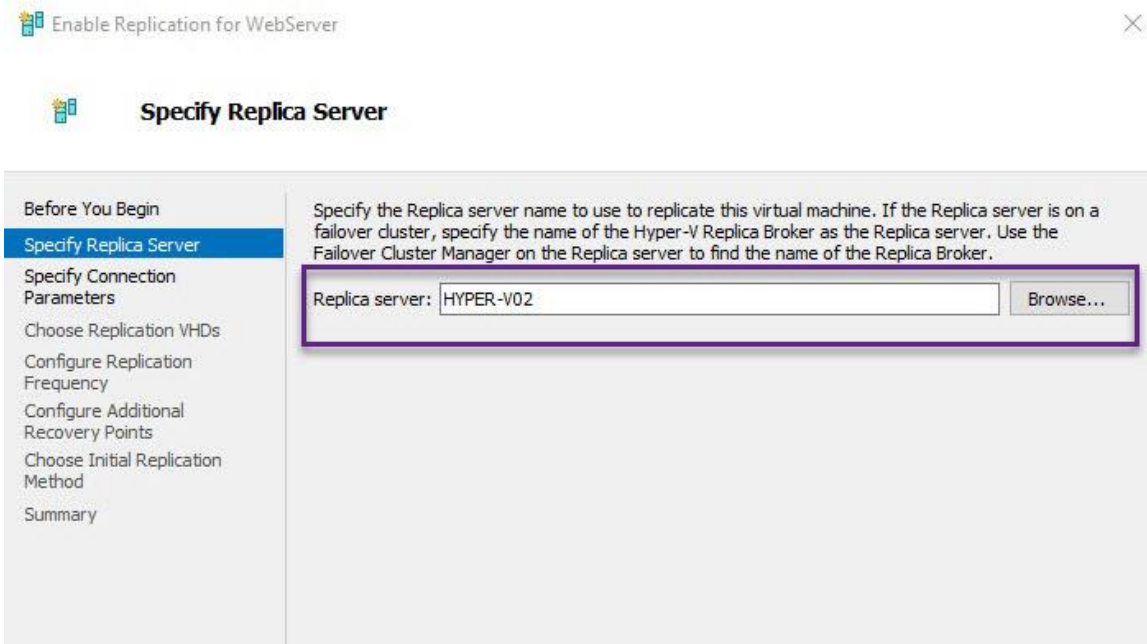
Replication Process

From Hyper-V01 server enable WebServer VM replication to Hyper-V02 server



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Browse and select Hyper-V server which will host the replicated VM, in our scenario replica server will be **Hyper-V02** server.



Enable Replication for WebServer

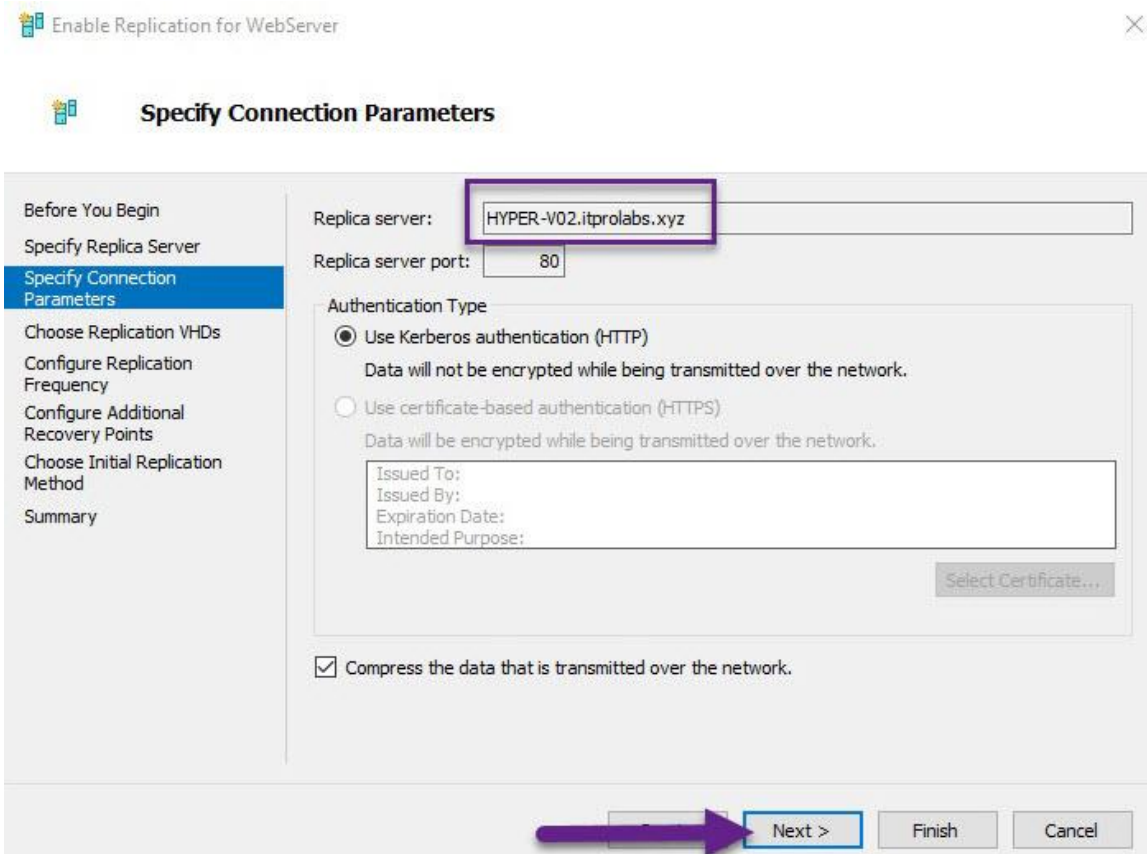
Specify Replica Server

Before You Begin

- Specify Replica Server
- Specify Connection Parameters
- Choose Replication VHDs
- Configure Replication Frequency
- Configure Additional Recovery Points
- Choose Initial Replication Method
- Summary

Specify the Replica server name to use to replicate this virtual machine. If the Replica server is on a failover cluster, specify the name of the Hyper-V Replica Broker as the Replica server. Use the Failover Cluster Manager on the Replica server to find the name of the Replica Broker.

Replica server:



Enable Replication for WebServer

Specify Connection Parameters

Before You Begin

- Specify Replica Server
- Specify Connection Parameters
- Choose Replication VHDs
- Configure Replication Frequency
- Configure Additional Recovery Points
- Choose Initial Replication Method
- Summary

Replica server:

Replica server port:

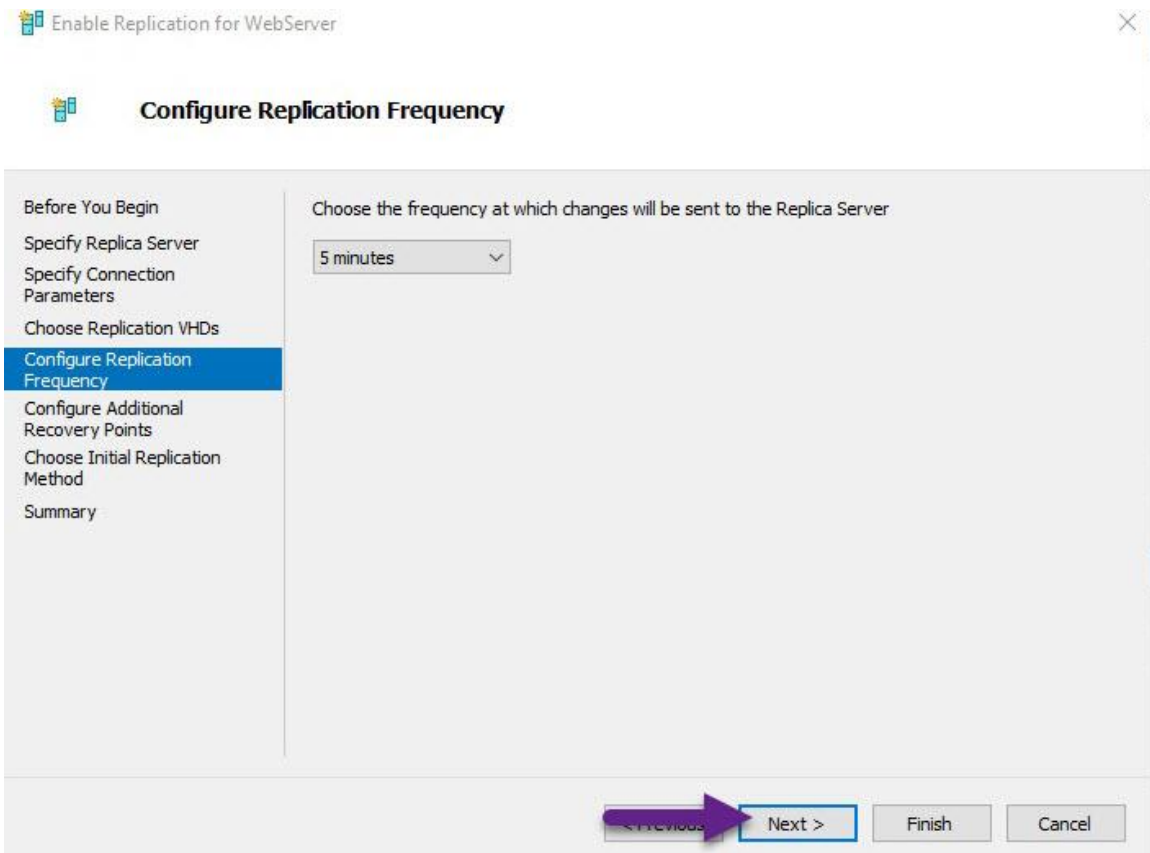
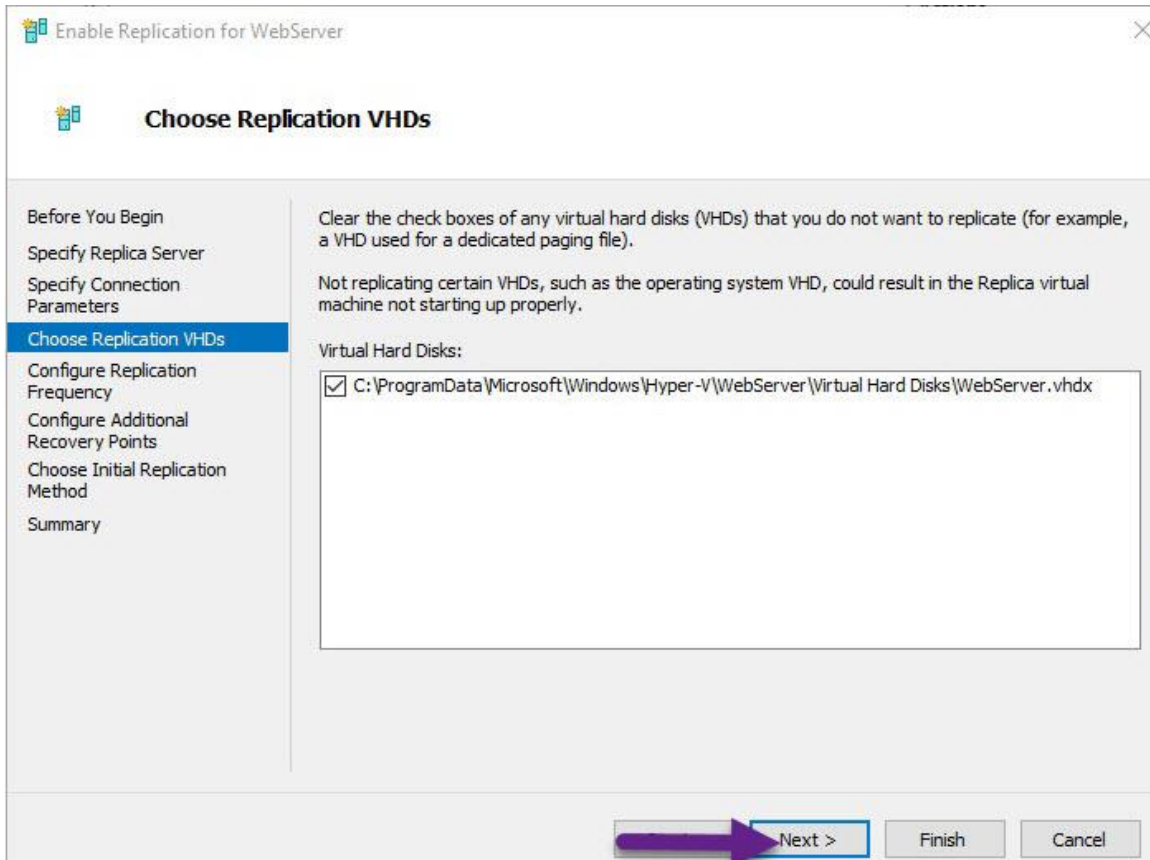
Authentication Type

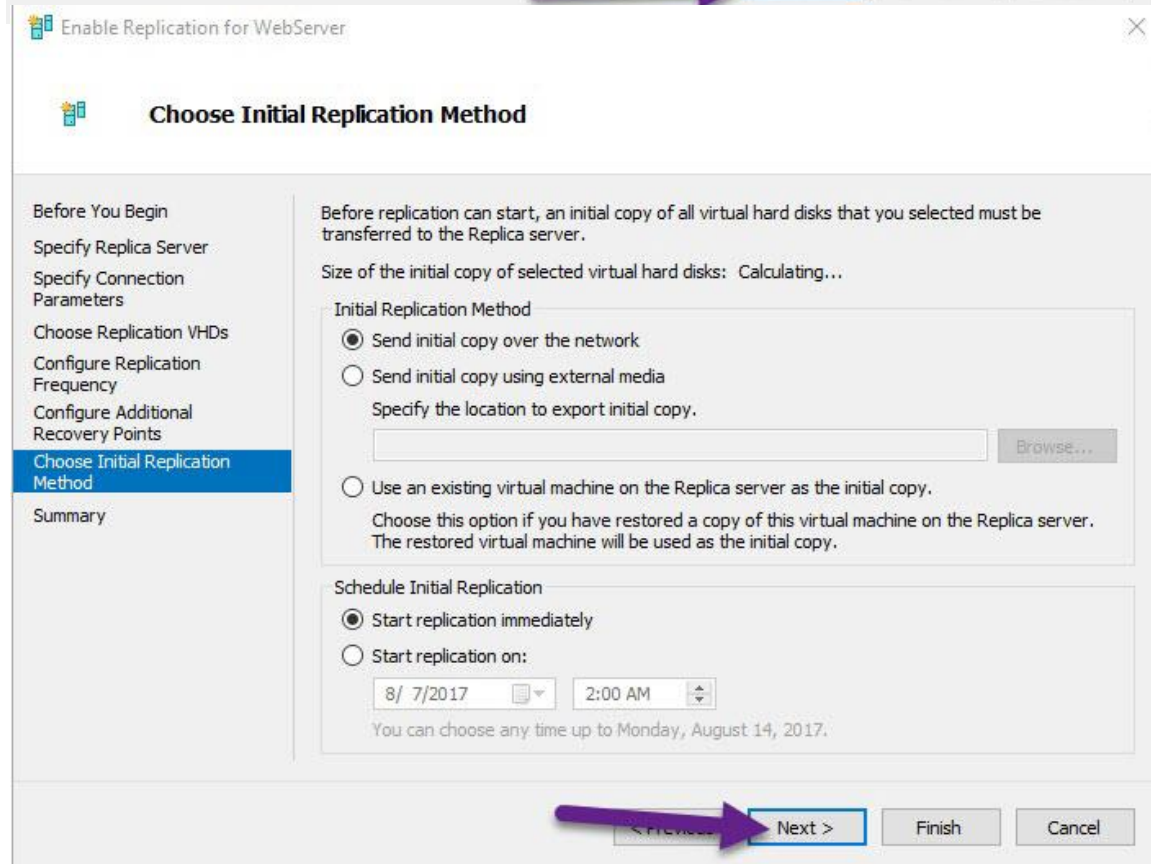
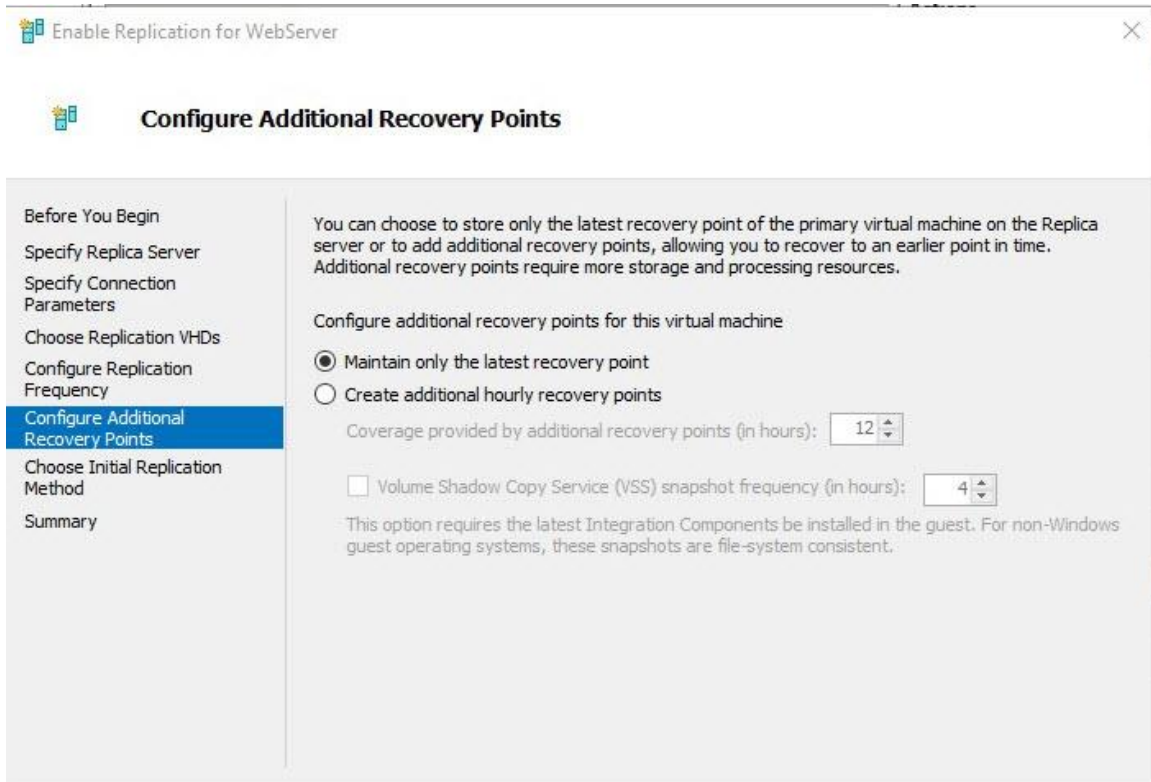
- Use Kerberos authentication (HTTP)
Data will not be encrypted while being transmitted over the network.
- Use certificate-based authentication (HTTPS)
Data will be encrypted while being transmitted over the network.

Issued To:
Issued By:
Expiration Date:
Intended Purpose:

Compress the data that is transmitted over the network.

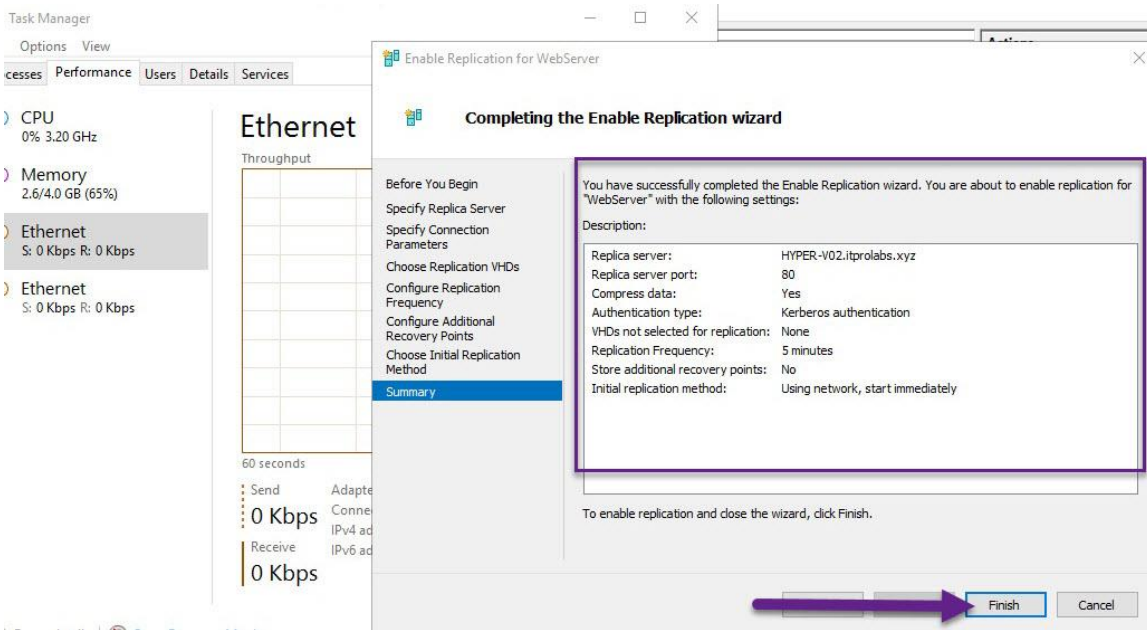
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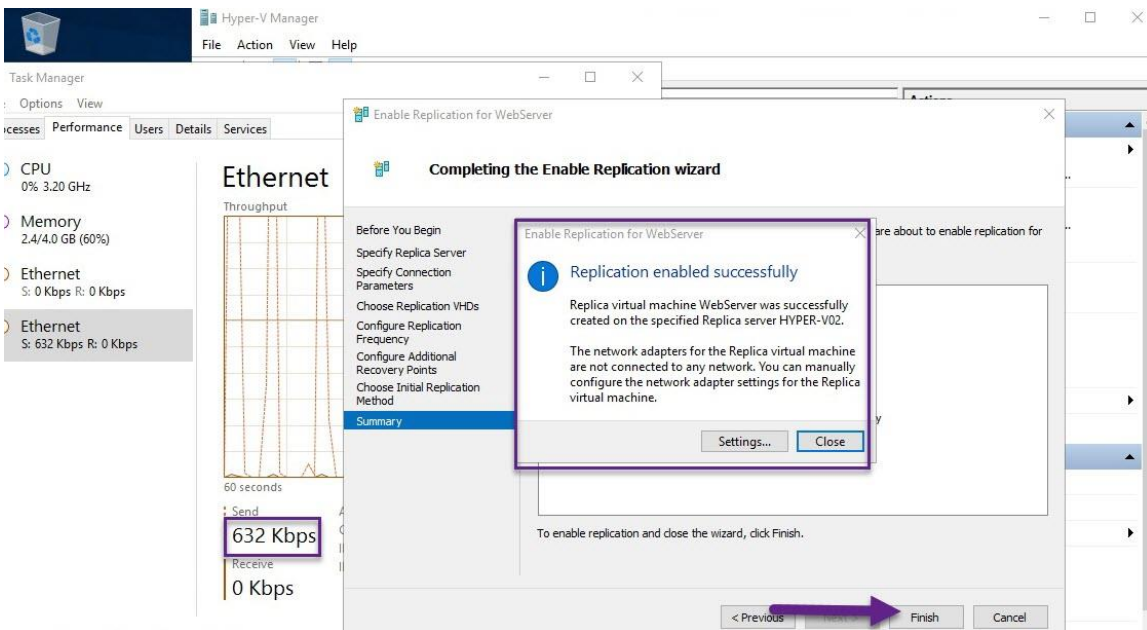
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From task manager check network traffic, you will notice that there is no traffic before replication

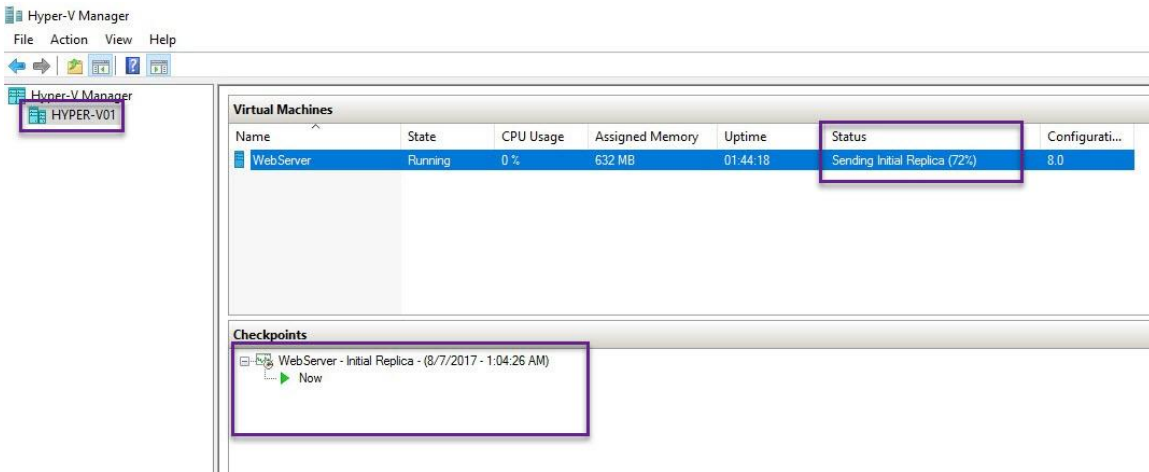


Replication Status

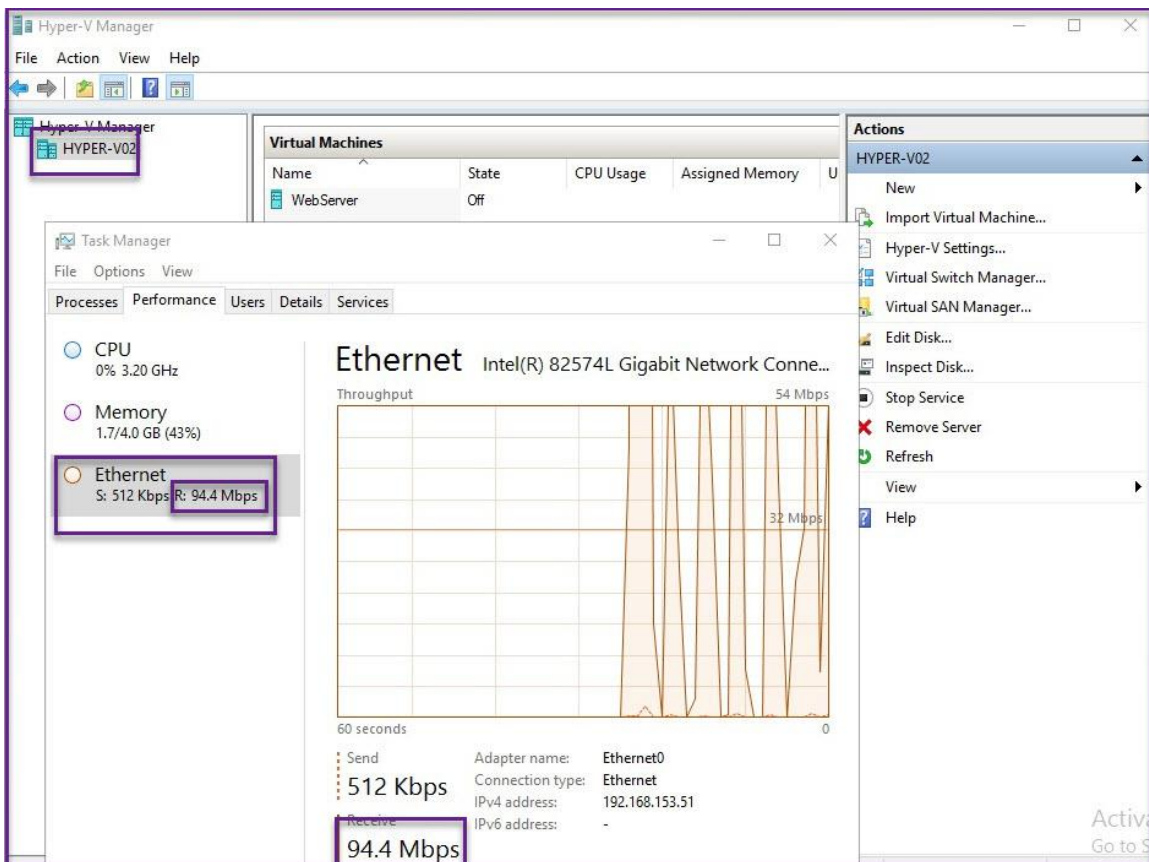
When replication start, notice send traffic increase because the replication go through network as we configured.



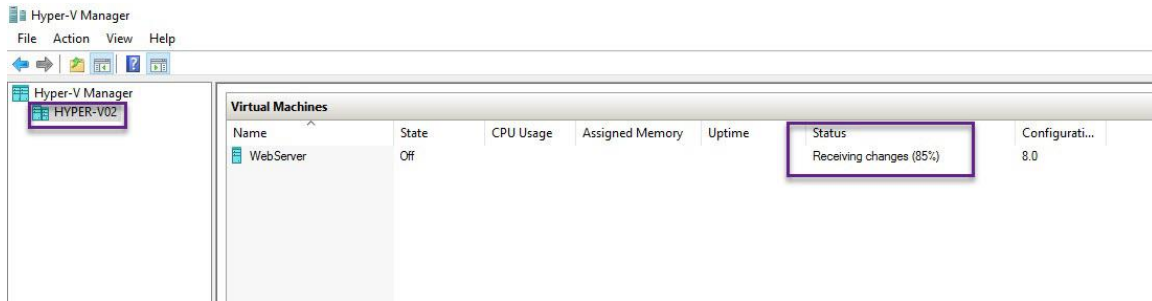
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Go to another Hyper-V server which receive replicated VM, will notice increment in receive traffic

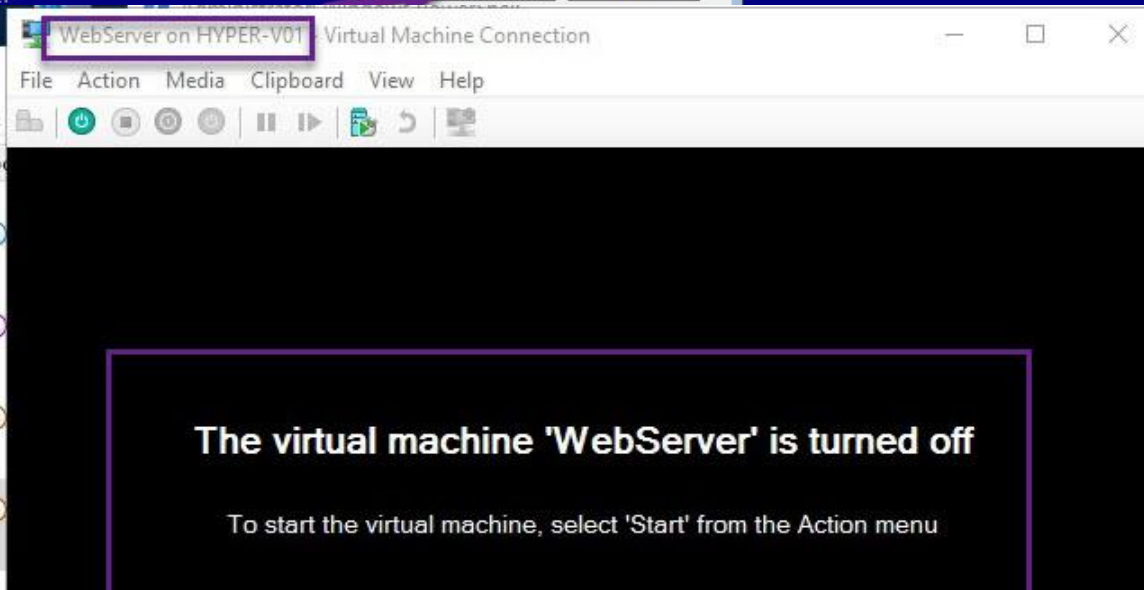
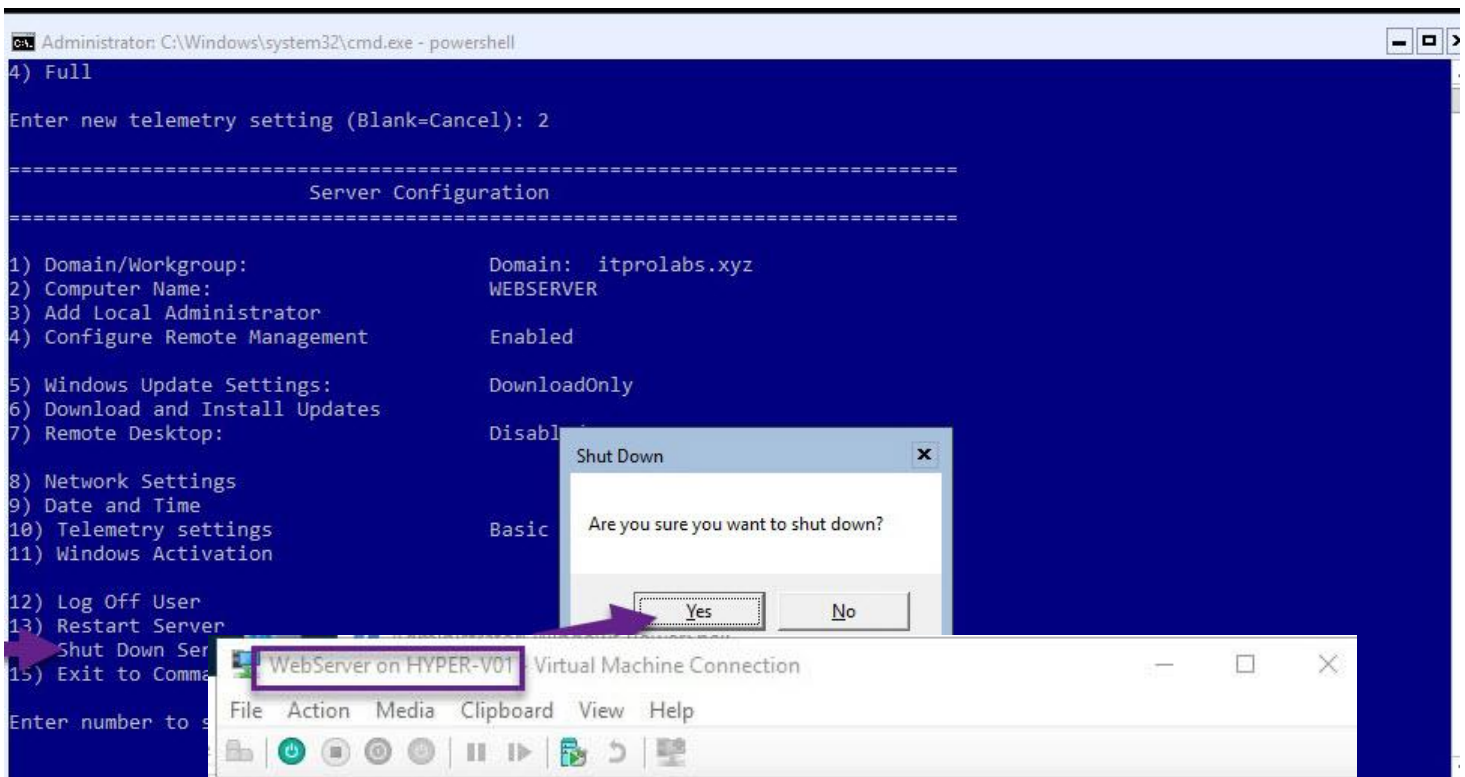


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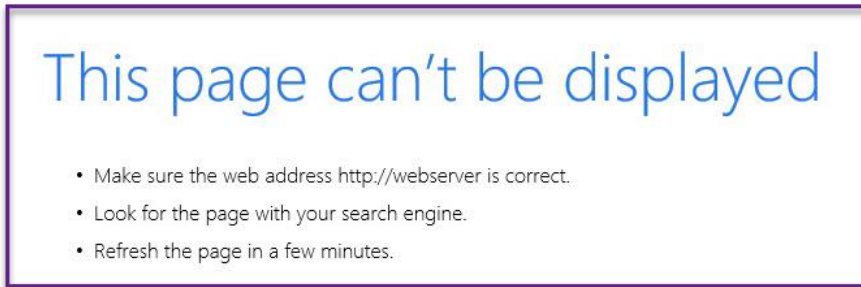
Test replicated VM

- Shutdown the main **webserv** VM then try to access IIS which hosted on this server

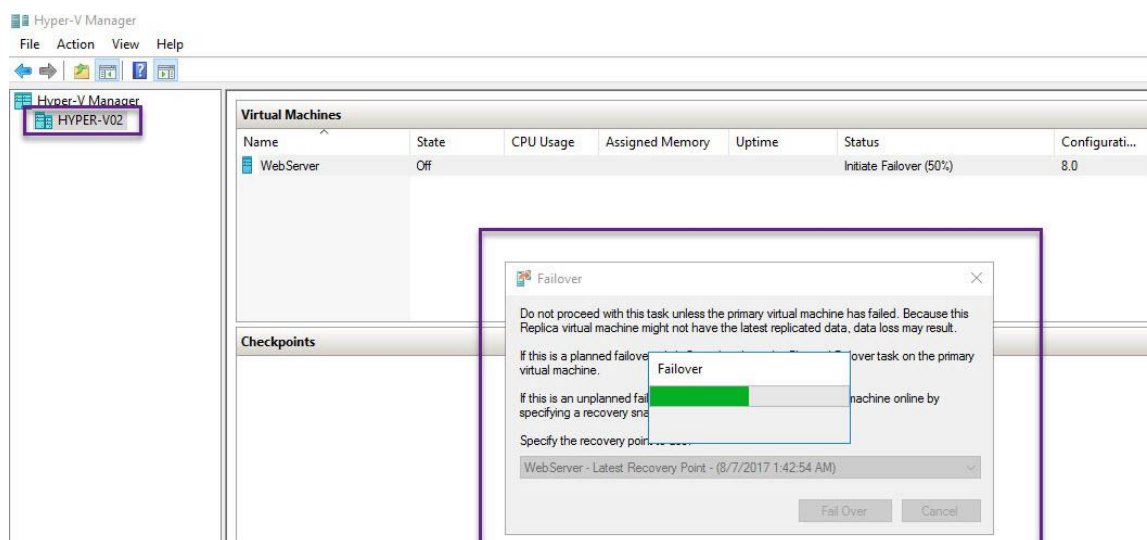
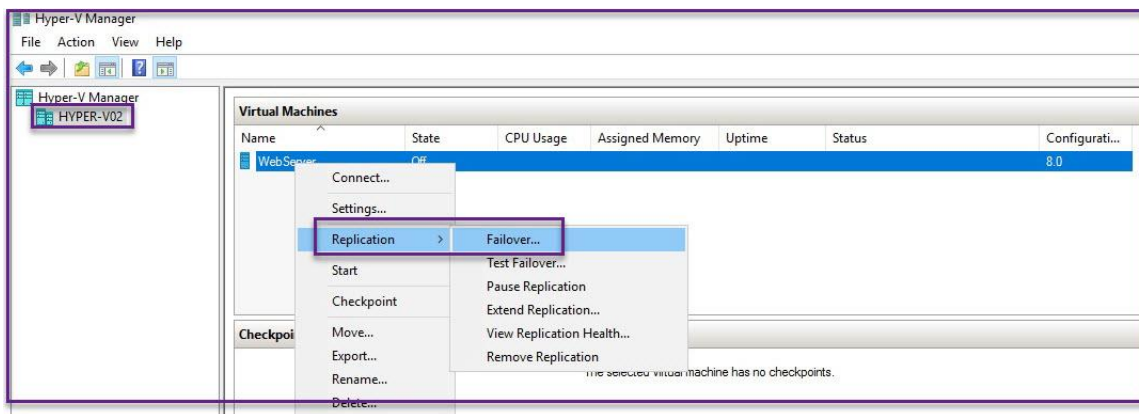


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Now, IIS services is down.



- Go to replicated VM and follow the figures below to operate the replicated VM



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try again to access IIS on **WebServer** VM, Now is working through replicated VM.

