

# Create Private Cloud using System Center Virtual Manager (SCVMM)

Version 1.0

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# Create Private Cloud using VMM

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## Contents

Add shared storage .....	3
VMM Library .....	7
Add Network .....	9
Create VM Template .....	16
Private Cloud Creation.....	22
Create Cloud using all previous configuration .....	22
Cloud Service Account.....	26
Create VM inside Private cloud .....	30

# Create Private Cloud using VMM

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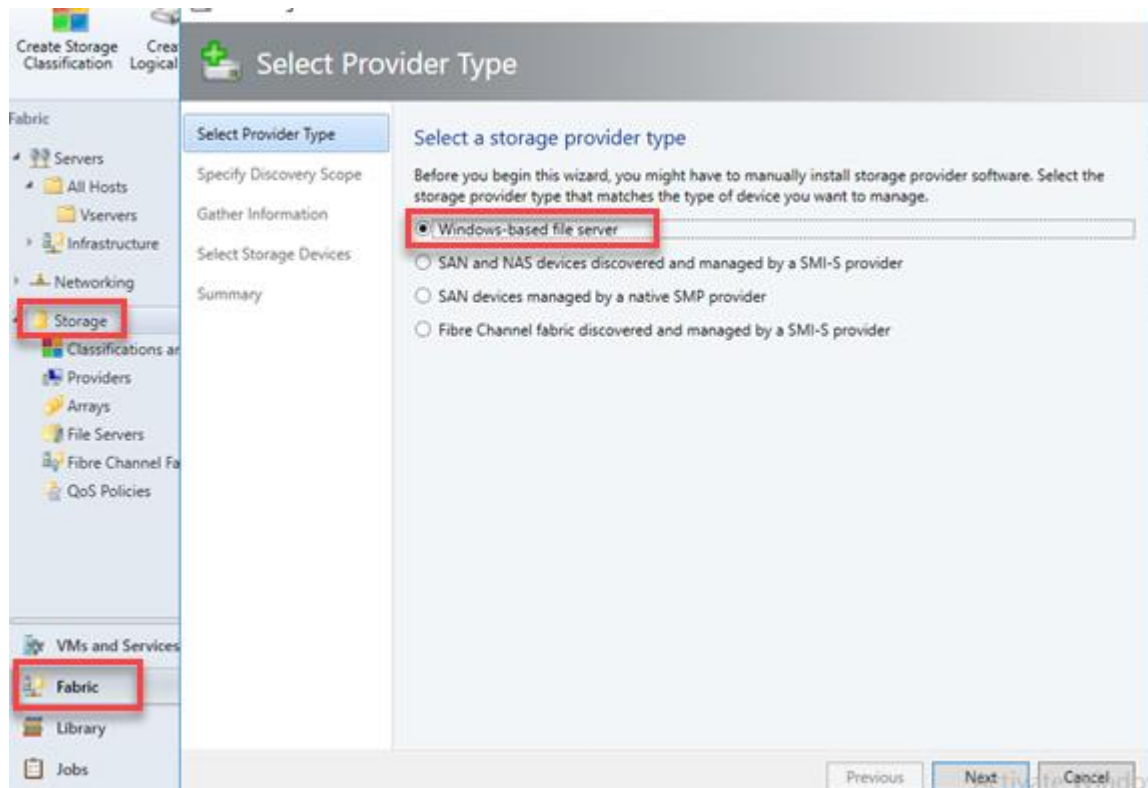
## Private Cloud Requirments

To create a private cloud, you need to create the following components first:

- 1- We already have 2 Hyper-V nodes attached to VMM
- 2- Storage to store your VMs
- 3- Network to attach VMs to the network
- 4- VMM library to add OS iso file to used during VM creation
- 5- VM template to create VM faster

## Add shared storage

From storage provider (in our scenario is DC) server I add new disk and formatted as one drive and finally I share it so I can connect that disk from all server



# Create Private Cloud using VMM

Add Storage Devices Wizard

Gather Information

Select Provider Type

Specify Discovery Scope

Gather Information

Select Storage Devices

Summary

Discover and import storage device information

Scan Provider

Storage Device	Manufacturer	Model	Capacity
DC.abdelwahed.me	Microsoft Corporation	Virtual Machine	326.32 GB

Select Storage Devices

Select Provider Type

Specify Discovery Scope

Gather Information

Select Storage Devices

Summary

Select file shares to place under management

Bringing file shares under management will make them available for use in computers managed by Virtual Machine Manager.

Storage Device	Total Capacity	Classification	Host Group
DC.abdelwahed.me	326.32 GB		
<input checked="" type="checkbox"/> E			
<input type="checkbox"/> NETLOGON			
<input type="checkbox"/> SYSVOL			

Summary

Select Provider Type

Specify Discovery Scope

Gather Information

Select Storage Devices

Summary

Confirm the settings

View Script

Resource type:Storage device

Discovery scope:DC.abdelwahed.me

Storage provider type:Native Windows WMI

Managed file shares:

E

File server: DC.abdelwahed.me

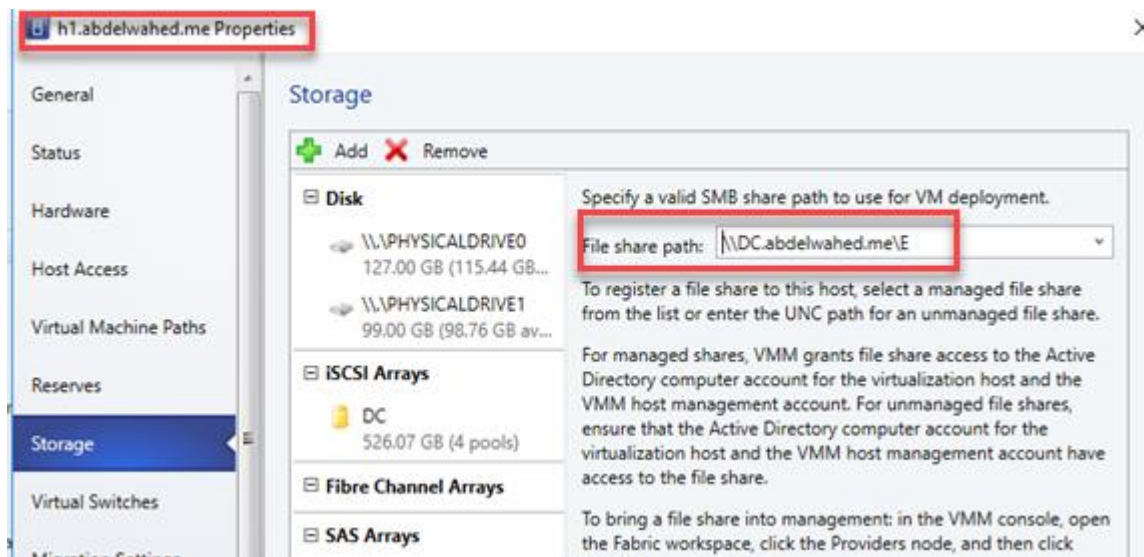
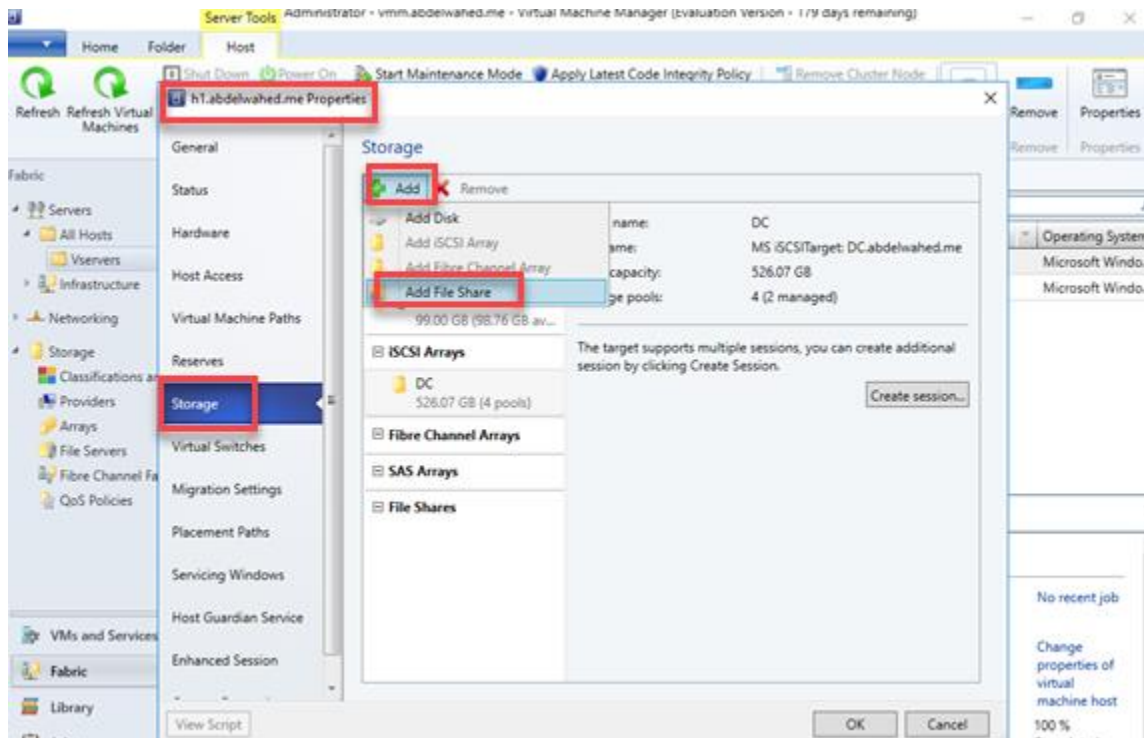
Total capacity:

Share path: \\DC.abdelwahed.me\\E

Classification: Remote Storage

## Create Private Cloud using VMM

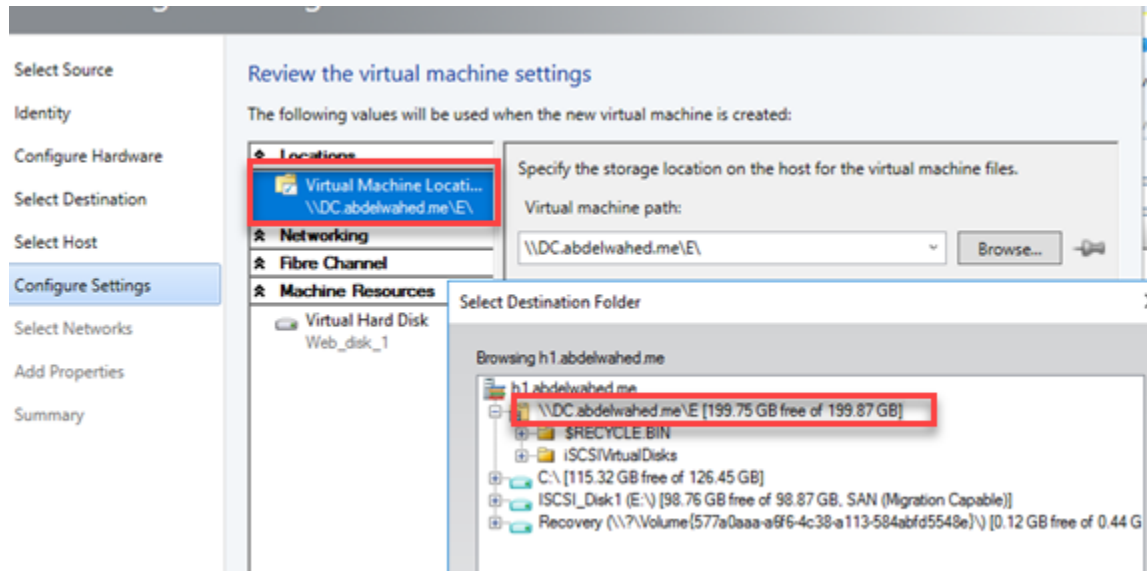
Now assign this storage to all hyper-v nodes you want to add in the private cloud.



## Create Private Cloud using VMM

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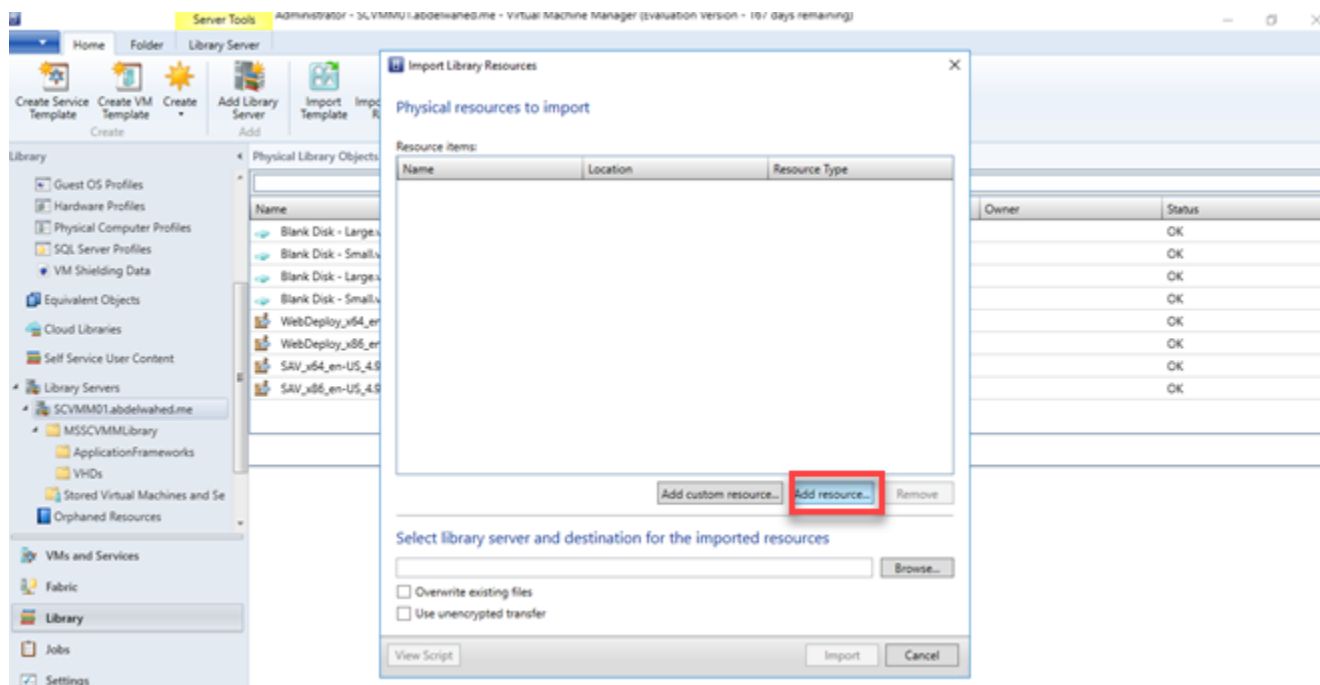
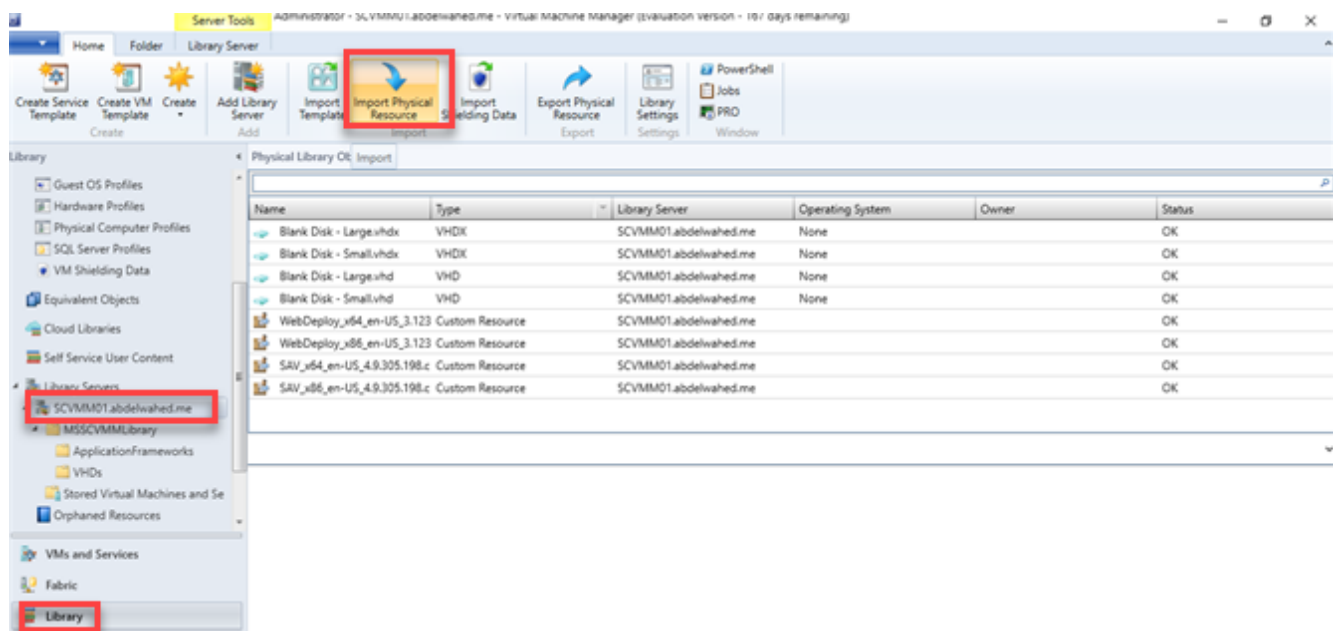
Now if you try to install VM on that host you will find all HD storage as an option to host the VM



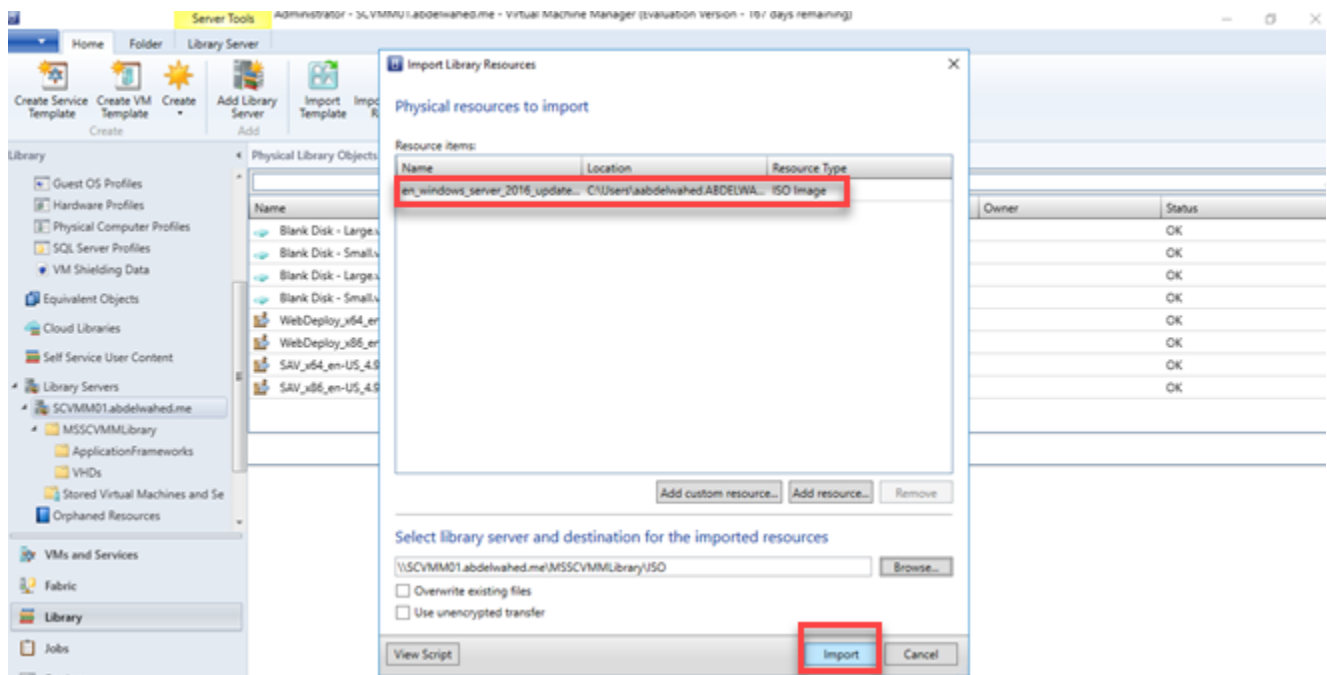
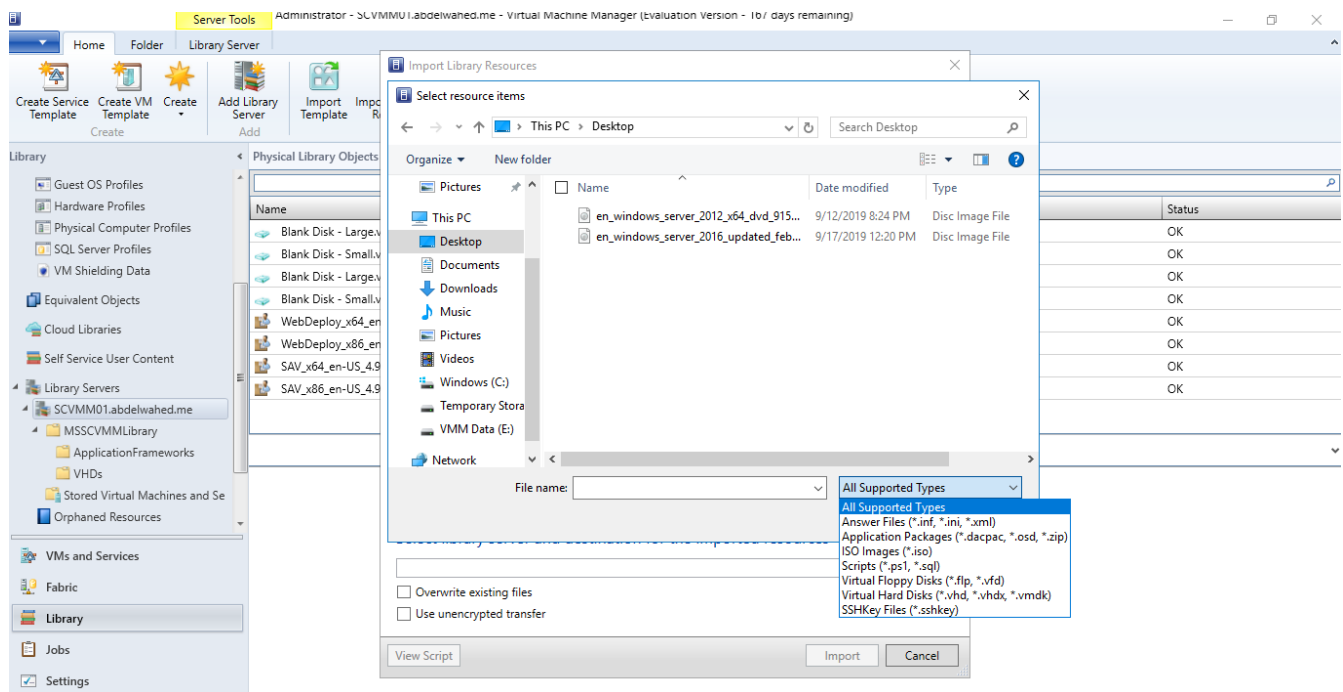
# Create Private Cloud using VMM

## VMM Library

Add ISO file to VMM library so you can use it for OS installation



# Create Private Cloud using VMM



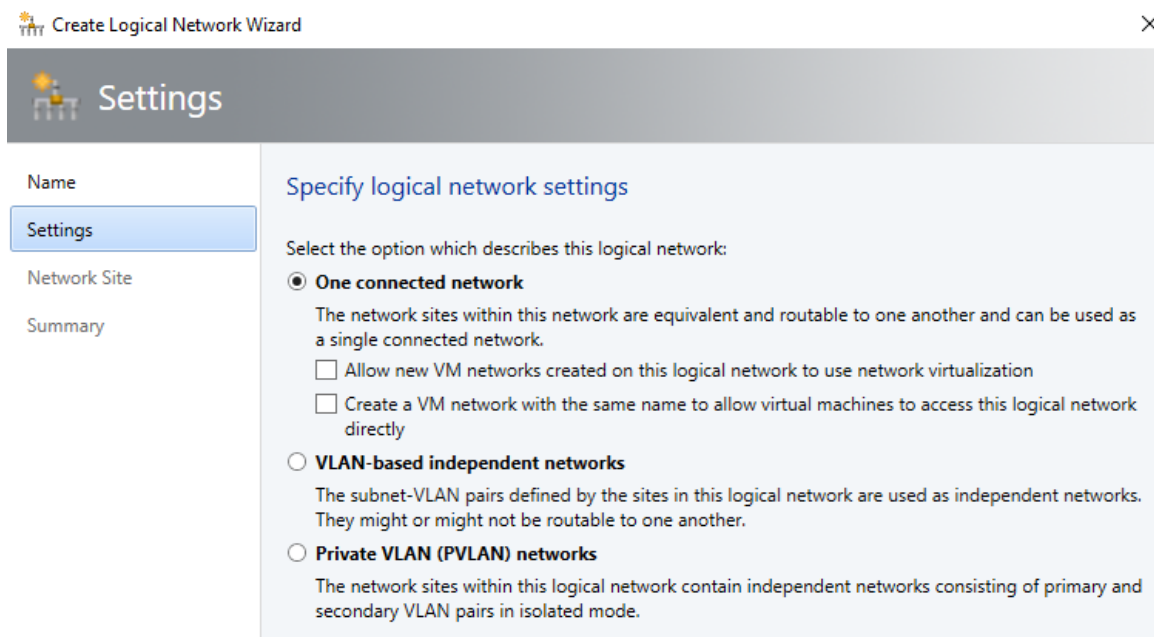
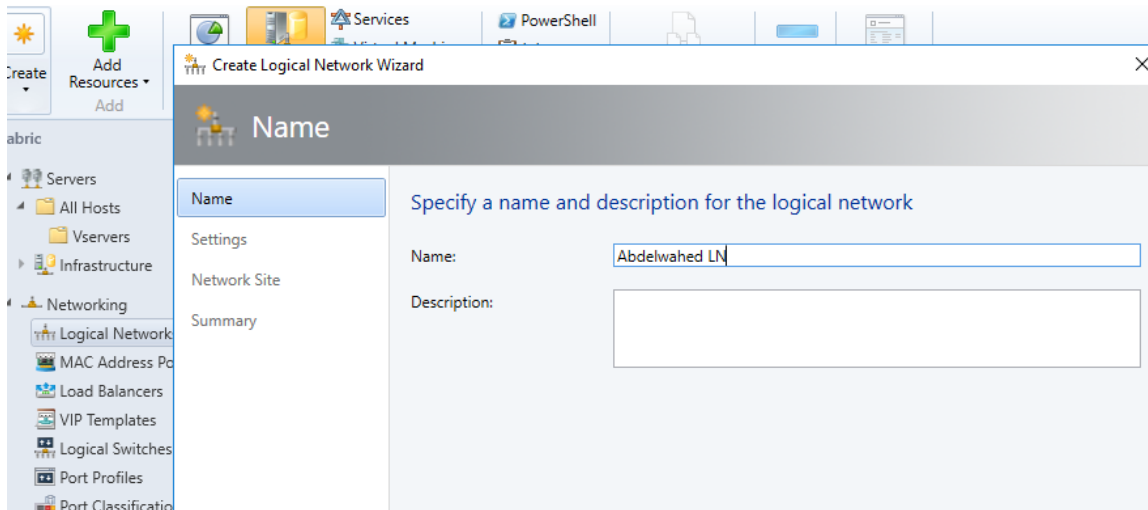


# Create Private Cloud using VMM

## Add Network

**Create Logical Network** so that VMM will know what our physical network are like. We use logical network to reflect physical network. After logical network creation we will create a VM network on top of service logical network. Our VMs will connect to this network.

- 1- From Library add logical network



## Create Private Cloud using VMM

now add your IP Scheme

The screenshot shows the 'Create Logical Network Wizard' window, specifically the 'Network Site' step. The left sidebar has tabs for 'Name', 'Settings', 'Network Site' (selected), and 'Summary'. The main area is titled 'Network sites' and contains the following elements:

- A description: 'Network sites can be added to a logical network to associate VLANs and subnets to host groups. Enter IP subnets using CIDR notation, for example: 192.168.1.0/24, FD4A:29CD:184F:3A2C::/64.'
- An 'Add' button and a 'Remove' button.
- A list of network sites: 'Abdelwahed LN\_0'.
- A section titled 'Host groups that can use this network site:' containing a table with two rows: 'All Hosts' and 'Vservers', both with checked checkboxes.
- A section titled 'Associated VLANs and IP subnets:' containing a table with two columns: 'VLAN' and 'IP subnet'. The first row has a blue highlighted 'VLAN' cell and the value '200.200.200.0/24' in the 'IP subnet' cell. There are 'Insert row' and 'Delete row' buttons to the right of the table.
- A 'Network site name:' field with the value 'Abdelwahed LN\_0'.
- 'Previous', 'Next', and 'Cancel' buttons at the bottom right.

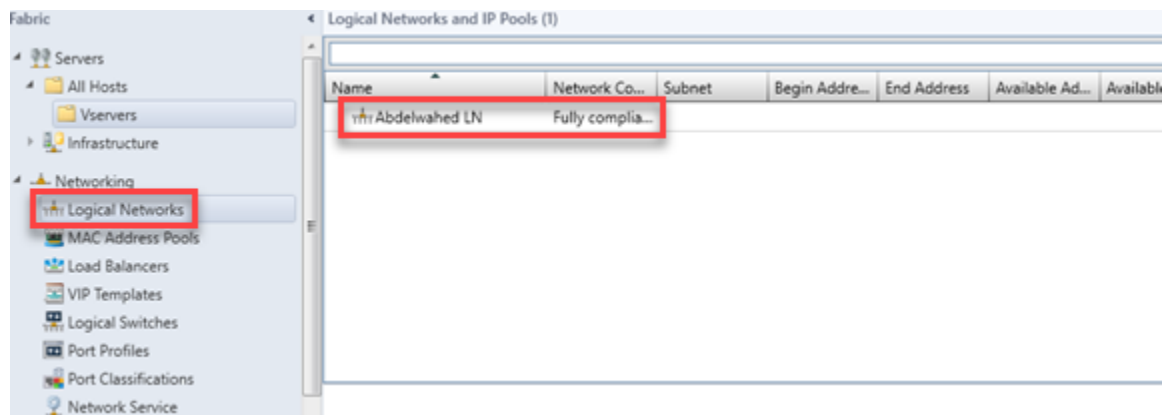
The screenshot shows the 'Create Logical Network Wizard' window, specifically the 'Summary' step. The left sidebar has tabs for 'Name', 'Settings', 'Network Site', and 'Summary' (selected). The main area is titled 'Summary' and contains the following elements:

- A 'Confirm the settings' section with a 'View Script' button.
- A summary table with the following data:

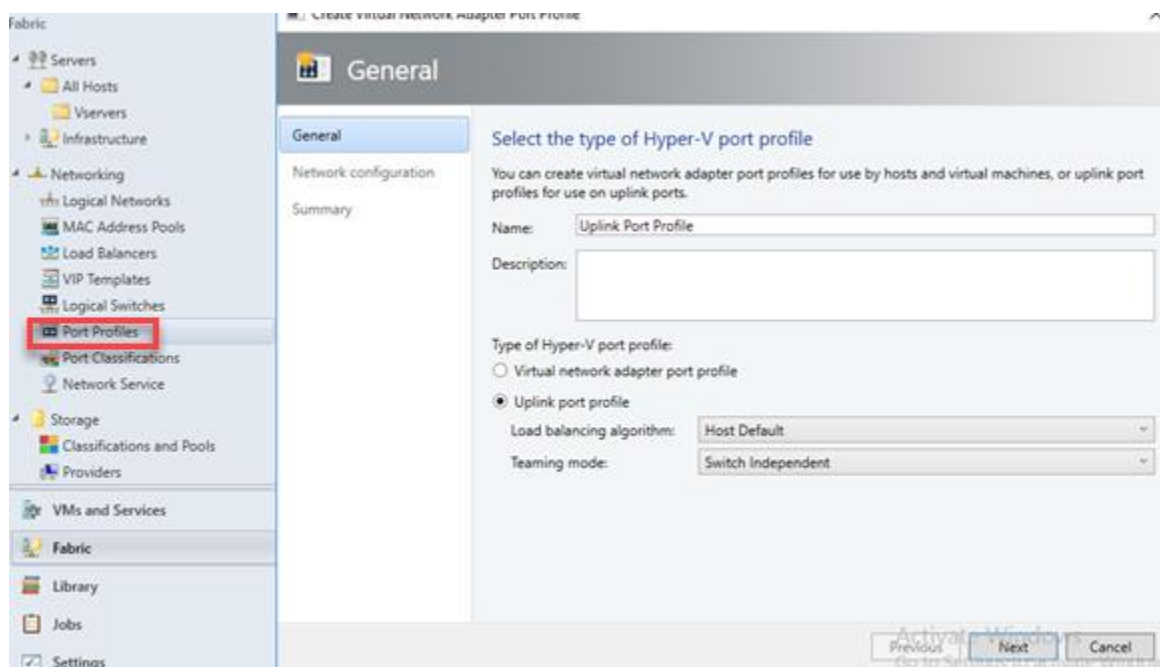
Name:	Abdelwahed LN
Description:	
Network sites:	Abdelwahed LN_0

## Create Private Cloud using VMM

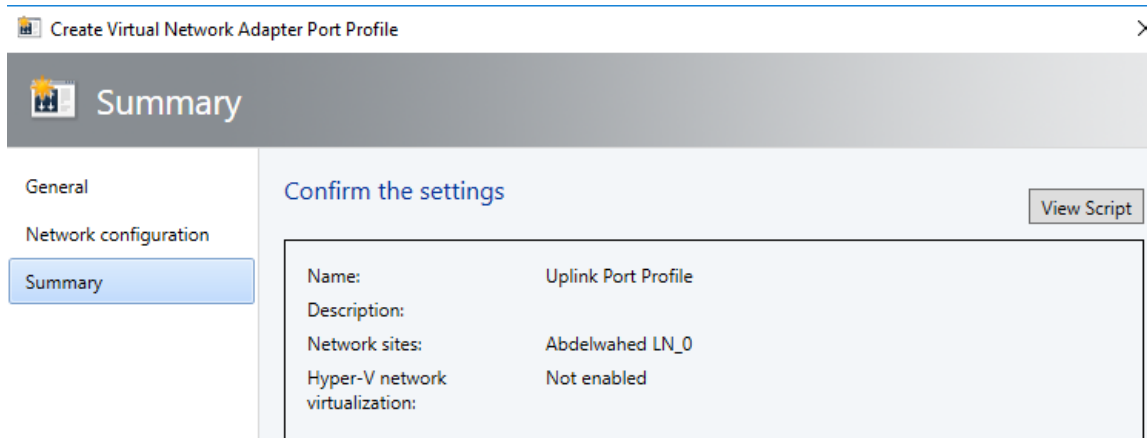
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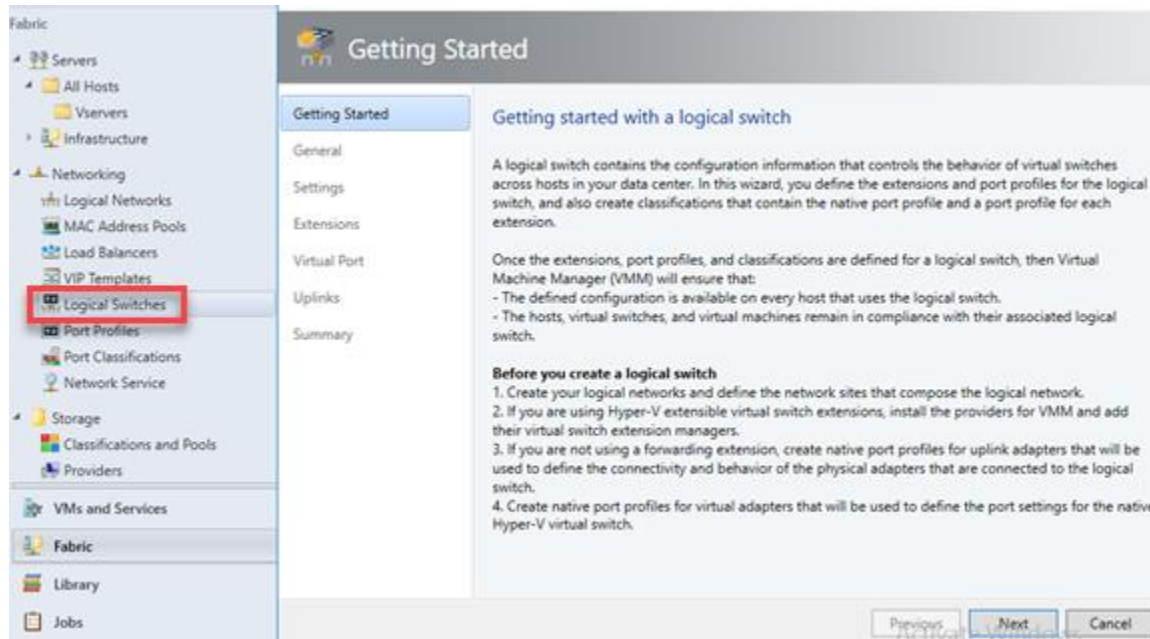
- 2- Add port profile for our network to tell VM about uplink port



## Create Private Cloud using VMM



### 3- Create Logical Switch



## Create Private Cloud using VMM

**Create Logical Switch Wizard**

**General**

Getting Started  
General  
Settings  
Extensions  
Virtual Port  
Uplinks  
Summary

Enter name and description for the logical switch

You can use a logical switch to apply settings to virtual switches across multiple hosts. A logical switch contains port profiles from the native Hyper-V switch and port profiles for any extensions that you use.

Name:

Description:

Uplink Mode:

**Create Logical Switch Wizard**

**Settings**

Getting Started  
General  
Settings  
Extensions  
Virtual Port  
Uplinks  
Summary

Specify logical switch settings

Minimum bandwidth mode:

☐ Enable single root I/O virtualization (SR-IOV)  
SR-IOV allows a device, such as a network adapter, to gain direct access to physical networks adapters that support SR-IOV. Using SR-IOV, network performance can achieve nearly the same performance as in non virtualized environments.

**i** You can enable SR-IOV only when a logical switch is created. To change your SR-IOV usage in the future, you must create a different logical switch.

**Create Logical Switch Wizard**

**Extensions**

Getting Started  
General  
Settings  
Extensions  
Virtual Port  
Uplinks  
Summary

Choose the extensions you want to use with this logical switch

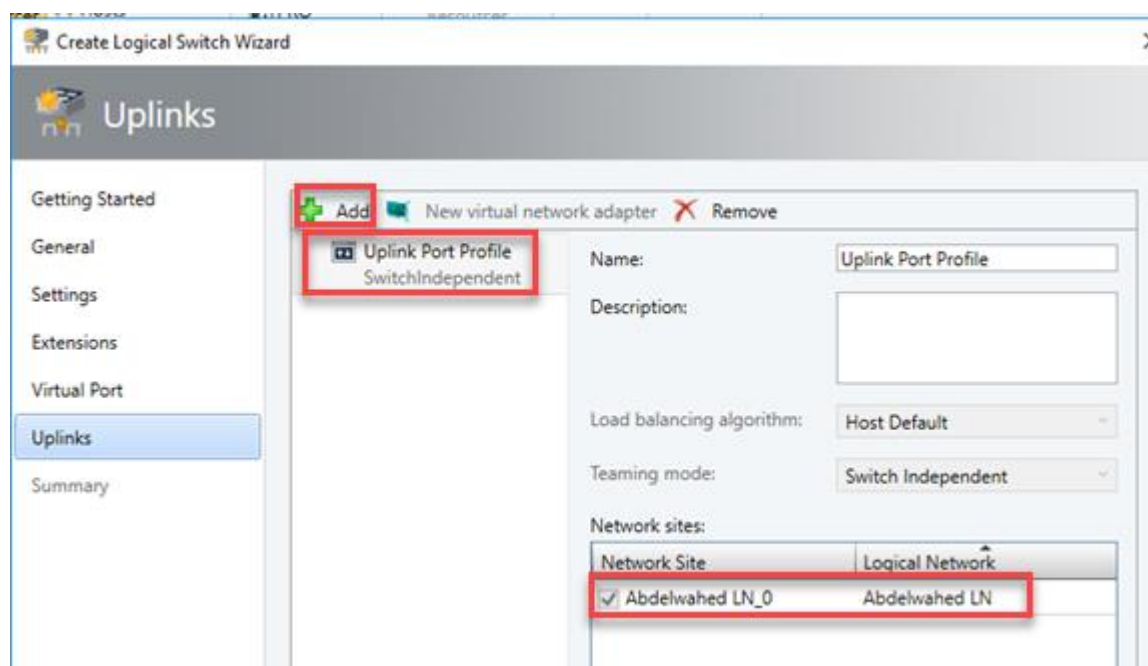
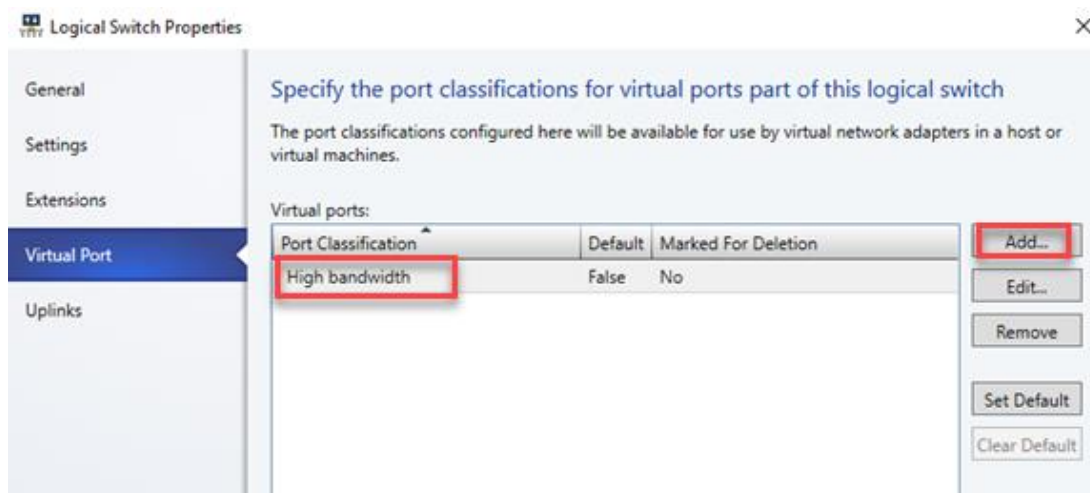
Select the check box for each extension that you want installed and configured when an instance of the logical switch is created on a host. Only one forwarding extension can be selected.

Virtual switch extensions:

Name	Extension Type	Extension Manager
<input type="checkbox"/> Microsoft NDIS Capture	Monitoring	N/A
<input checked="" type="checkbox"/> Microsoft Windows Fil...	Filter	N/A

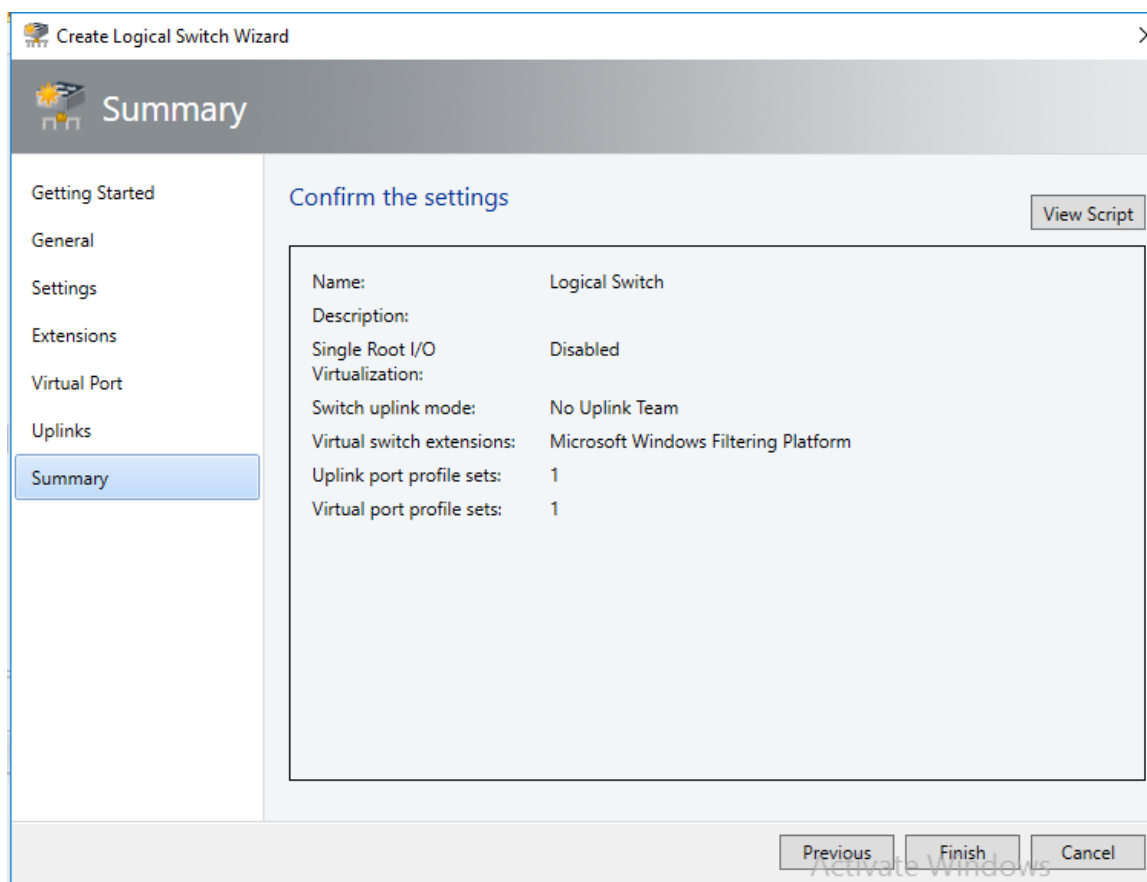
Move Up  
Move Down

## Create Private Cloud using VMM



## Create Private Cloud using VMM

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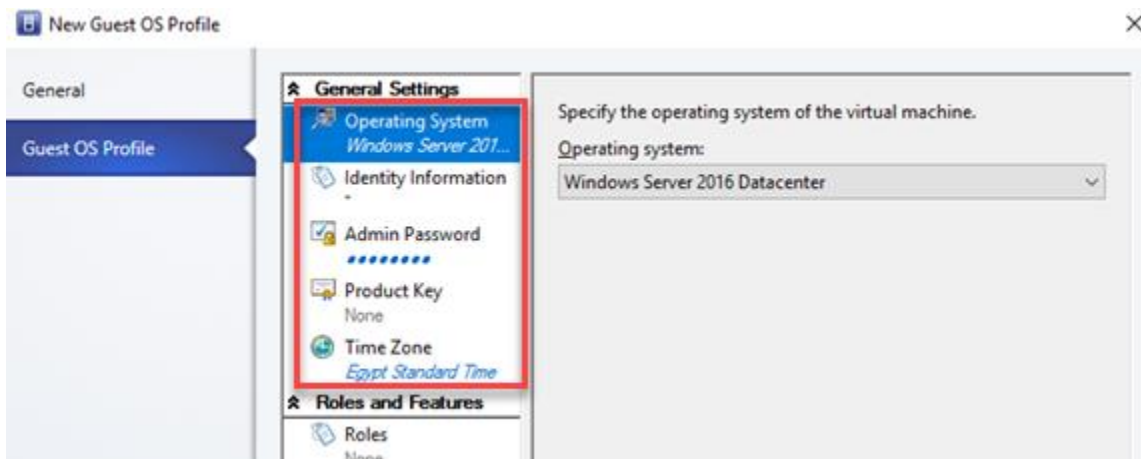
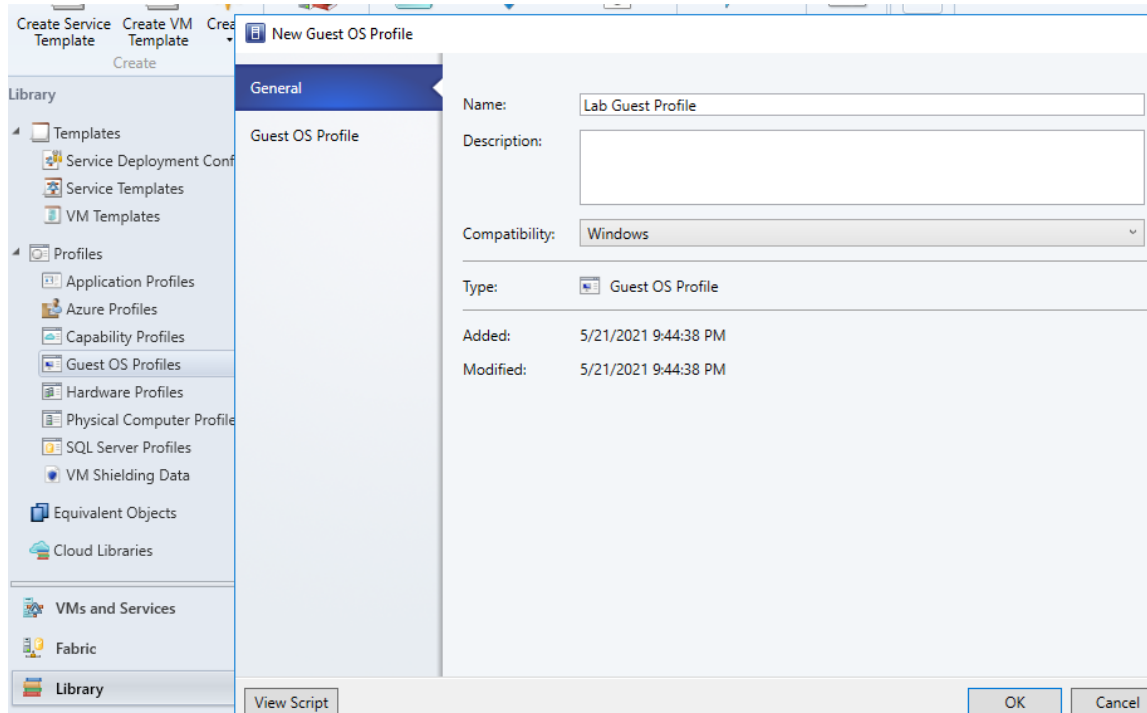


# Create Private Cloud using VMM

## Create VM Template

To allow quick VM deployment we have to create VM template, this template must have hardware and software configuration so we have to add first hardware and software profiles

a- Guest OS Profile





# Create Private Cloud using VMM

## b- Hardware Profile

**Create Service Template** **Create VM Template** **New Hardware Profile**

**General**

**Hardware Profile**

Name: Lab Hardware Profile

Description:

Generation: Generation 2

Type: Hardware Profile

Added: 5/21/2021 9:48:43 PM

Modified: 5/21/2021 9:48:43 PM

**New Hardware Profile**

**General**

**Hardware Profile**

**Select a VM Network**

Select a VM Network

Change the network that is used for deploying this service.

☐ Use a configurable service setting:

☒ Use an existing VM network:

**Create VM Network Wizard**

**Name**

Specify a name and description for the VM network

Name: VM Network

Description:

Logical network: Abdelwahed LN

# Create Private Cloud using VMM

Now start VM template creation

Select Source

Select Source

Identity

Configure Hardware

Configure Operating...

Application Configuration

SQL Server Configuration

Extensions

Select a source for the new VM template

☒ Use an existing VM template or a virtual hard disk stored in the library

Blank Disk - Small.vhdx

Browse...

☐ From an existing virtual machine that is deployed on a host

Required

Browse...

Identity

Select Source

Identity

Configure Hardware

Configure Operating...

Application Configuration

SQL Server Configuration

Extensions

Summary

VM Template Identity

VM Template name: Abdelwahed VM Template

Description:

Generation: Generation 2

Configure Hardware

Select Source

Identity

Configure Hardware

Configure Operating...

Application Configuration

SQL Server Configuration

Extensions

Summary

Configure hardware for the virtual machine. You can import settings from a hardware profile or save a new profile based on your settings.

Hardware profile: Lab Hardware Profile

Save As New Remove

Compatibility

Cloud Capability Pr...  
Hyper-V

General

Processor  
1 processor

Memory  
2048 MB

Bus Configuration

SCSI Adapter 0  
2 Devices attached

Blank Disk - Sm...  
16.00 GB, ID 0

Advanced

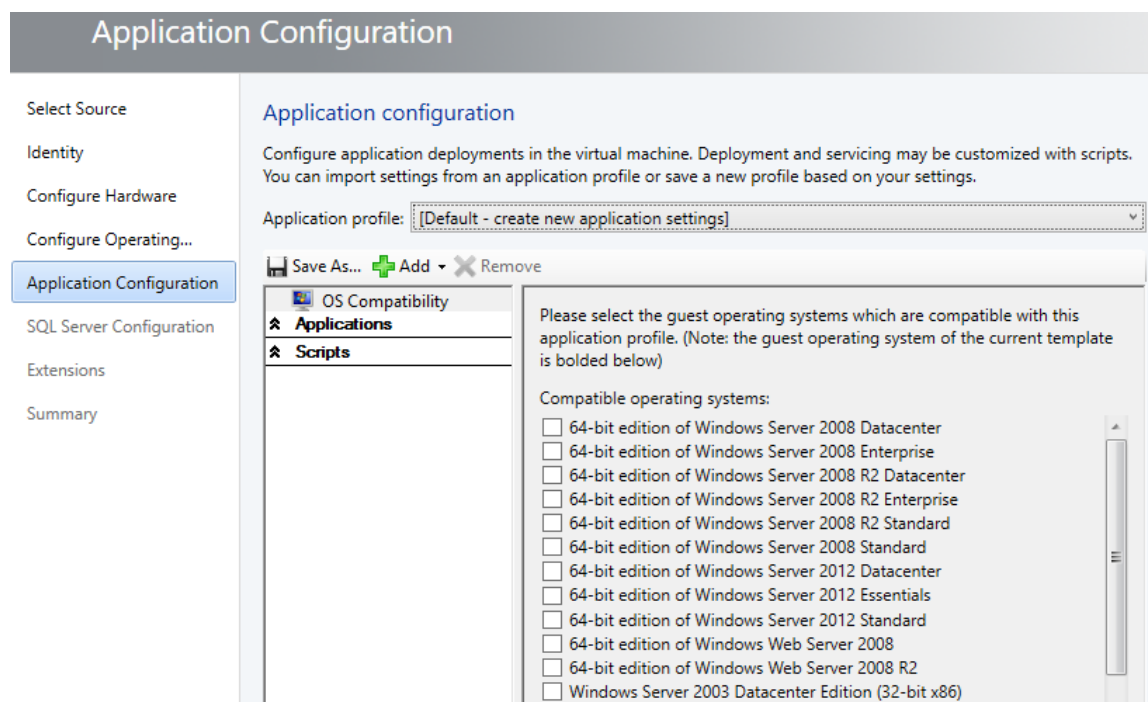
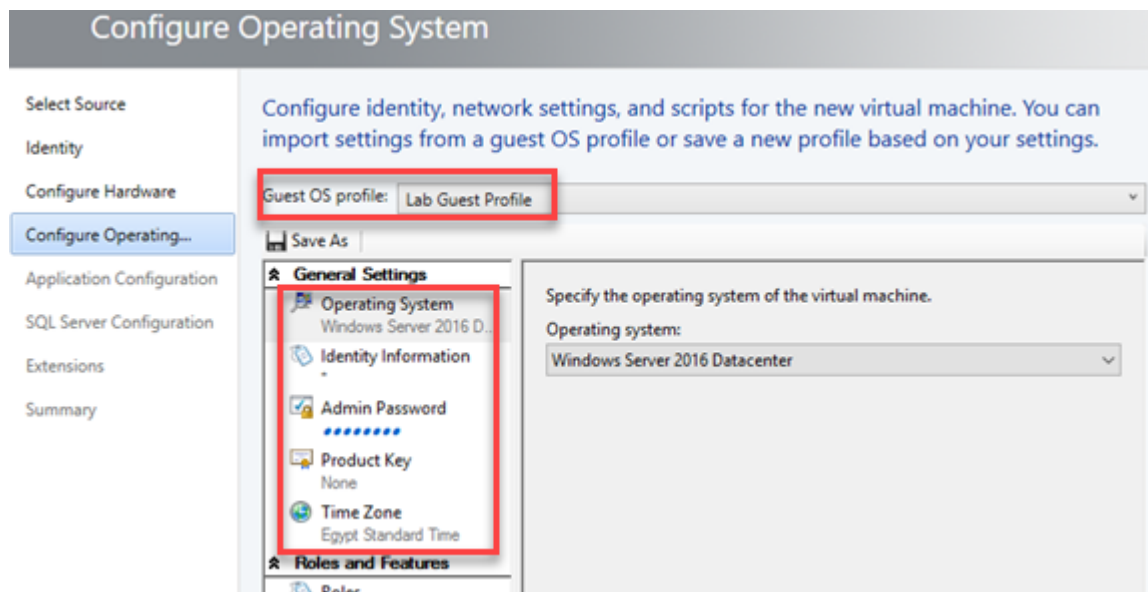
Virtual DVD drive  
No Media Captured

Compatibility

Select the capability profile to validate against this hardware profile. VMM will provide a validation state for the selected capability profile.

Name	Description	Validation Status
<input type="checkbox"/> ESX Server	The built-in fabric capabilit...	
<input checked="" type="checkbox"/> Hyper-V	The built-in fabric capabilit...	

# Create Private Cloud using VMM



## Create Private Cloud using VMM

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### SQL Server Configuration

Select Source

Identity

Configure Hardware

Configure Operating...

Application Configuration

SQL Server Configuration

Extensions

Summary

#### SQL Server configuration

Configure SQL Server installations in the virtual machine. You can import settings from a SQL Server profile or save a new profile based on your settings.

SQL Server profile: [Default - create new SQL Server configuration settings]

Save As... | Add: SQL Server Deployment | Remove

SQL Server Deployments
------------------------

### Extensions

Select Source

Identity

Configure Hardware

Configure Operating...

Application Configuration

SQL Server Configuration

Extensions

Summary

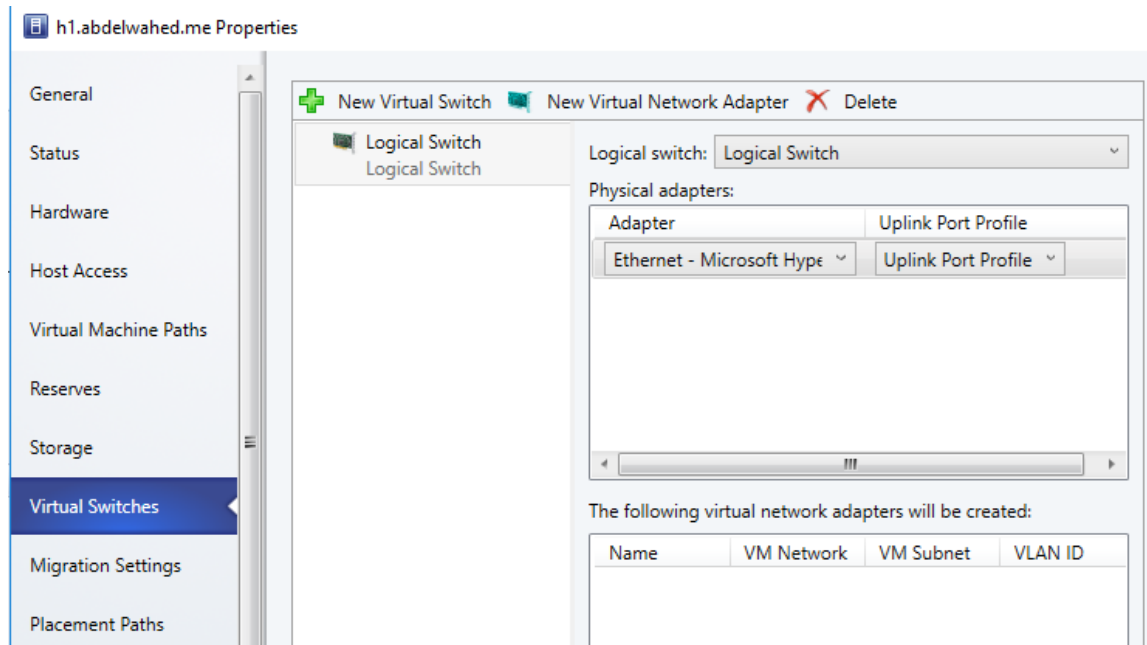
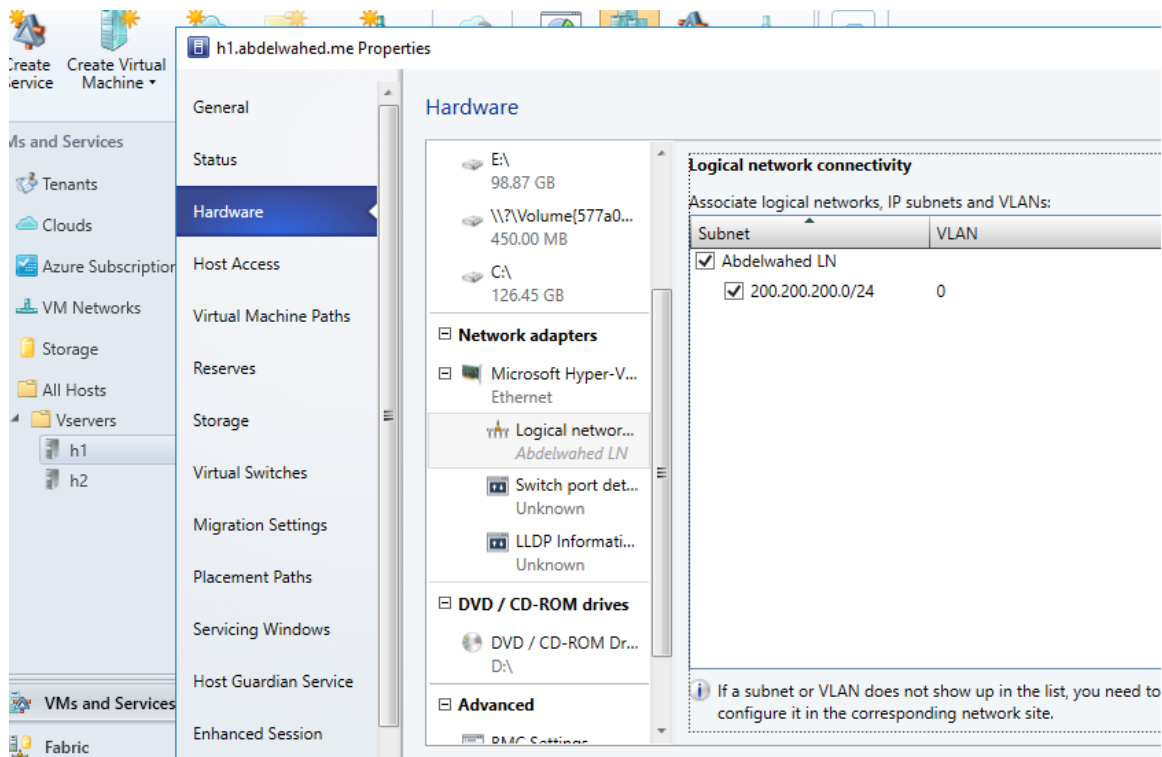
#### Enable Update Management extension to manage the updates for vm using Azure.

☐ Enable Azure Update Management

Azure Profile:

## Create Private Cloud using VMM

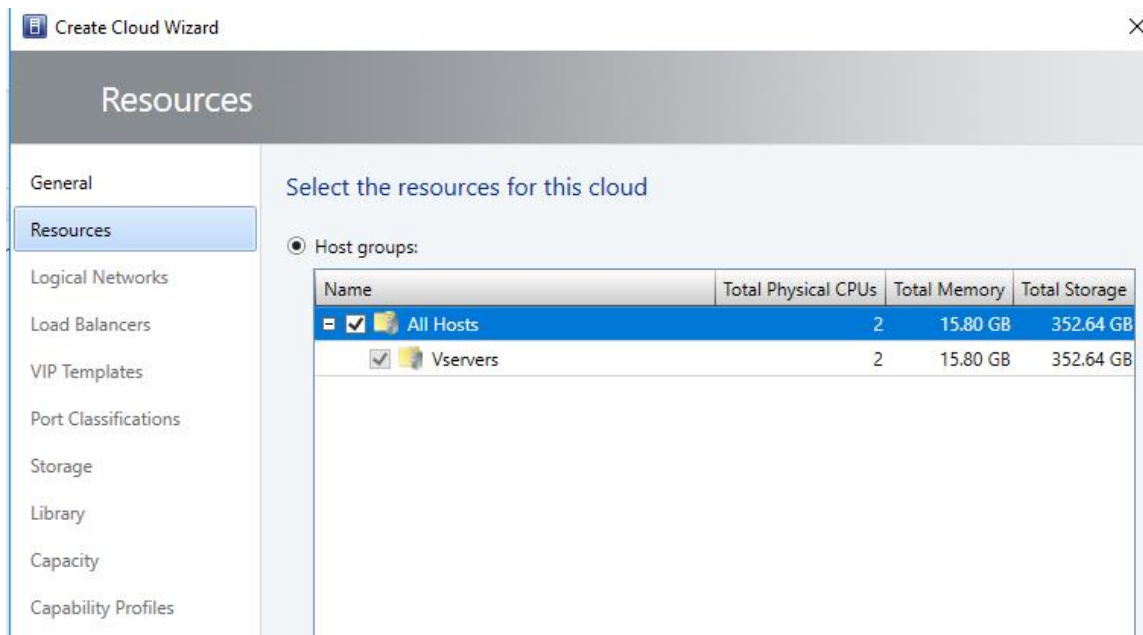
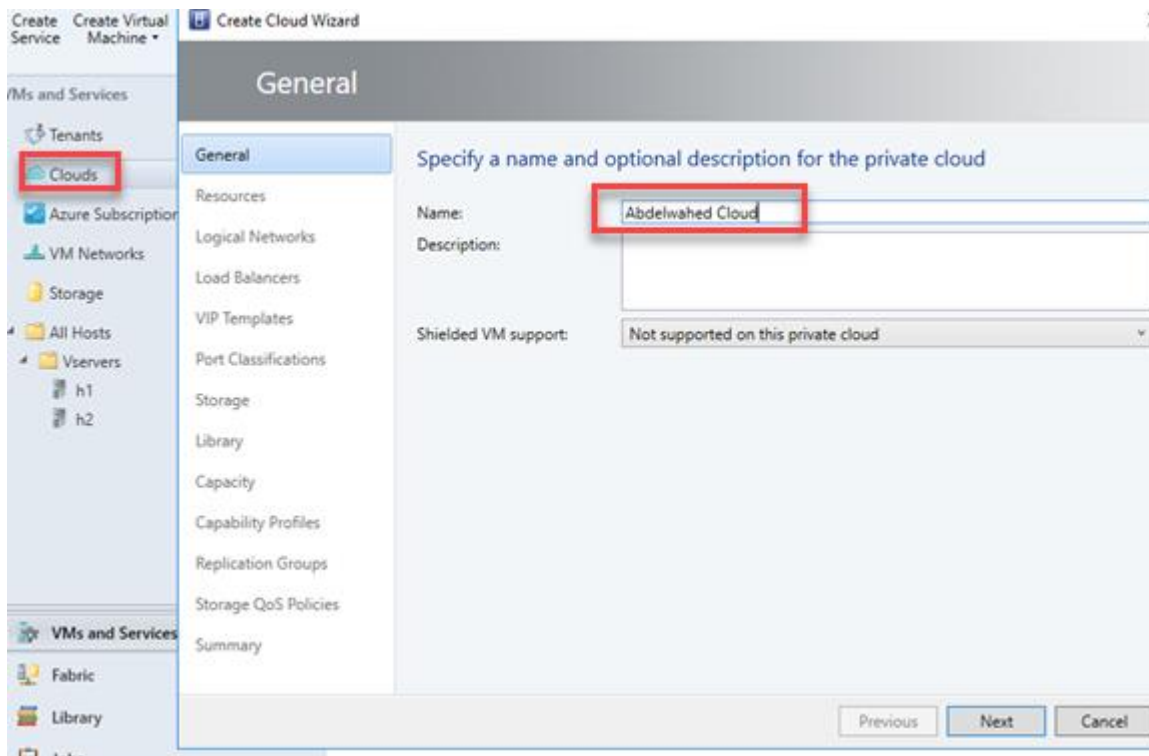
Link all hyper-V servers you want to use it in your private cloud to the logical network we have created and create Virtual switch to it.



# Create Private Cloud using VMM

## Private Cloud Creation

Create Cloud using all previous configuration



## Create Private Cloud using VMM

Create Cloud Wizard

Port Classifications

General

Resources

Logical Networks

Load Balancers

VIP Templates

Port Classifications

Storage

Library

Capacity

Capability Profiles

Replication Groups

Select the port classifications for this cloud

The selected classifications will be available to use for VMs deployed to this cloud.

Name	Description
<input type="checkbox"/> Guest Dynamic IP	Port classification to be used for virtual machines that require guest dynami..
<input checked="" type="checkbox"/> High bandwidth	Port classification to be used for virtual machines that require high bandwid..
<input type="checkbox"/> Host Cluster Worklo	Port classification for host cluster workloads.
<input type="checkbox"/> Host management	Port classification to be used for host management traffic.
<input type="checkbox"/> iSCSI workload	Port classification for host iSCSI workloads.
<input type="checkbox"/> Live migration work	Port classification to be used for host live migration workloads.
<input type="checkbox"/> Low bandwidth	Port classification to be used for virtual machines that require low bandwid..
<input type="checkbox"/> Medium bandwidth	Port classification to be used for virtual machines that require medium band..
<input type="checkbox"/> Network load balanc	Port classification to be used for virtual machines that use Microsoft Networ..
<input type="checkbox"/> SR-IOV	Port classification to be used for virtual machines that use SR-IOV.

Create Cloud Wizard

Storage

General

Resources

Logical Networks

Load Balancers

VIP Templates

Port Classifications

Storage

Library

Capacity

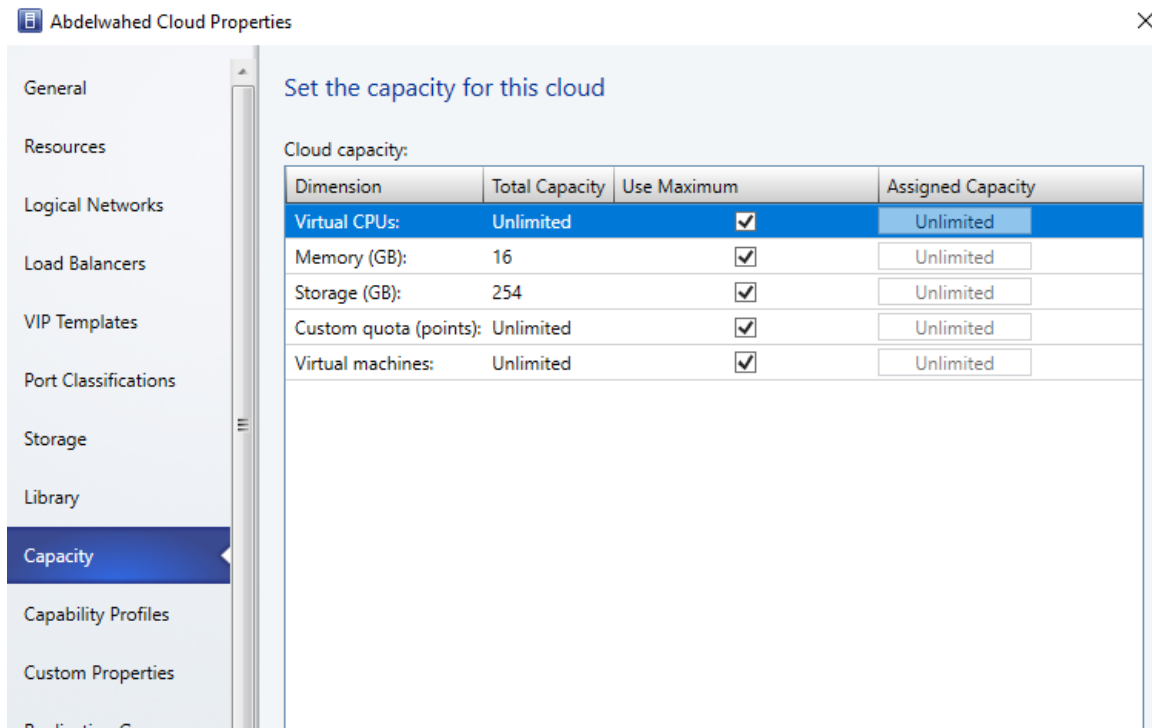
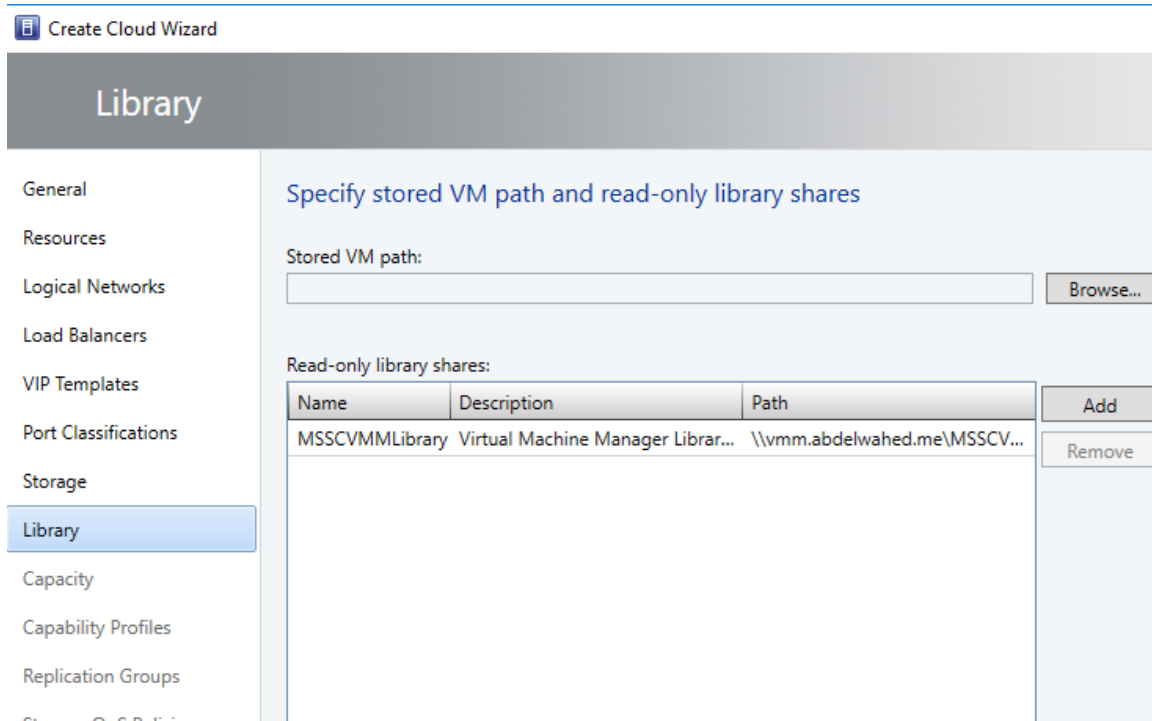
Capability Profiles

Select the storage classifications for this cloud

Storage classifications:

Classification	Total Capacity
<input type="checkbox"/> DC_Local_Storage	0 GB
<input type="checkbox"/> iSCSI	0 GB
<input type="checkbox"/> iSCSI_1	127.00 GB
<input type="checkbox"/> Local Storage	127.00 GB
<input type="checkbox"/> Remote Storage	199.87 GB
<input checked="" type="checkbox"/> Test	199.87 GB
<input type="checkbox"/> test2	198.87 GB

## Create Private Cloud using VMM





## Create Private Cloud using VMM

The screenshot shows the 'Create Cloud Wizard' window with the 'Capability Profiles' step selected in the left sidebar. The main area is titled 'Add virtual machine capability profiles for this cloud'. It contains a table with two columns: 'Name' and 'Description'. The table lists two profiles: 'ESX Server' (unchecked) and 'Hyper-V' (checked). The 'Hyper-V' profile is highlighted in blue.

Name	Description
<input type="checkbox"/> ESX Server	The built-in fabric capability profile for VMware ESX hosts
<input checked="" type="checkbox"/> Hyper-V	The built-in fabric capability profile for Microsoft Hyper-V hosts

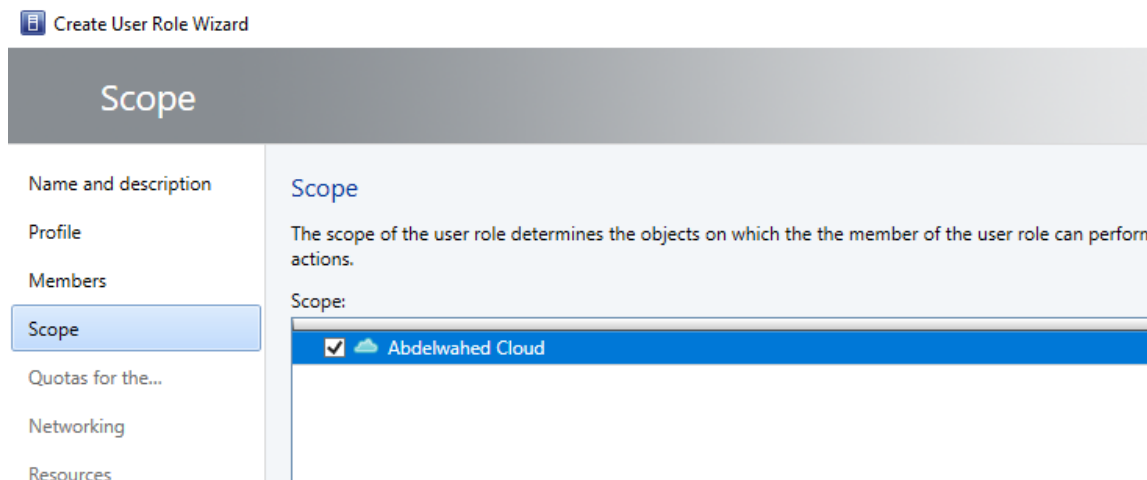
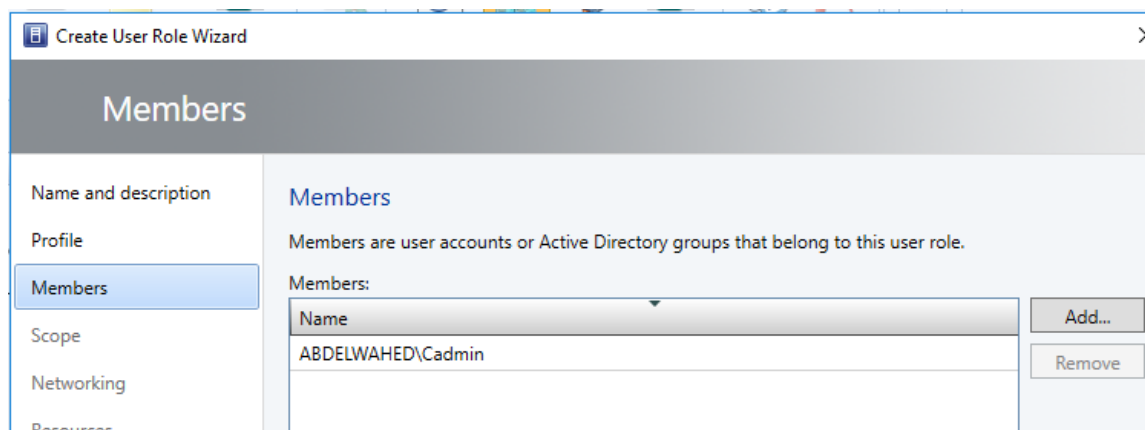
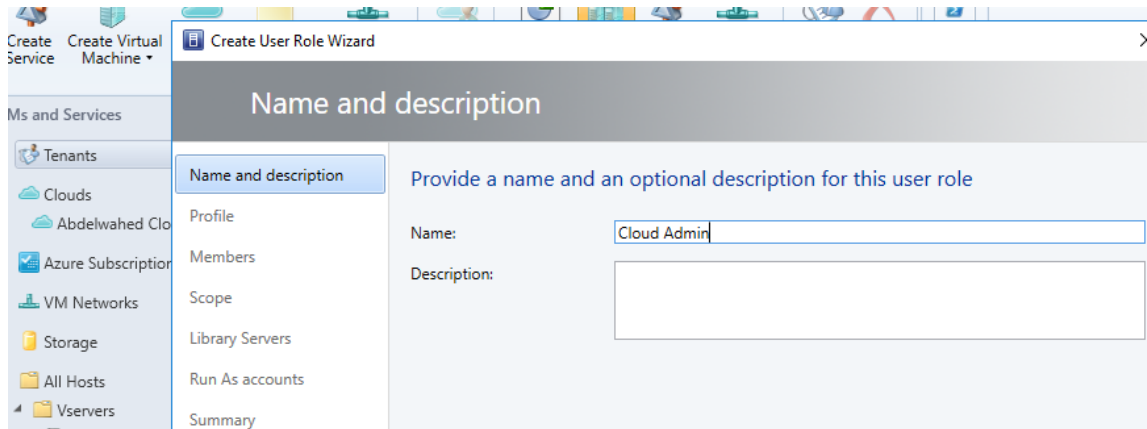
The screenshot shows the 'Create Cloud Wizard' window with the 'Summary' step selected in the left sidebar. The main area is titled 'Confirm the settings'. It contains a list of settings and their values. A 'View Script' button is located in the top right corner. At the bottom, there are 'Previous', 'Finish', and 'Cancel' buttons.

Setting	Value
Name:	Abdelwahed Cloud
Shielded VM support:	Not supported on this private cloud
Resources:	All Hosts
Logical networks:	Abdelwahed LN
Load balancers:	
VIP templates:	
Port classifications:	High bandwidth
Storage:	Classification: Test
Library:	Writable library path: Library shares: MSSCVMLLibrary
Capacity:	Virtual CPUs: Unlimited, Memory: 2, Storage: 20, Custom quota: Unlimited, VMs: Unlimited
Capability profiles:	Hyper-V
Replication groups:	

# Create Private Cloud using VMM

## Cloud Service Account

Create Cloud self service account using active directory new admin named cadmin



## Create Private Cloud using VMM

Create User Role Wizard

×

Networking

Name and description

Profile

Members

Scope

Quotas for the...

Networking

Resources

VM networks

Each member of this user role can use only the specified VM networks.

VM networks:

Name	Description
VM Network	

Add...

Remove

Create User Role Wizard

×

Resources

Name and description

Profile

Members

Scope

Quotas for the...

Networking

Resources


Permissions

Summary

Resources

Each member of this user role can use only the specified resources.

Resources:

Name	Type	Description
 Abdelwahed VM Template	VM Template	

Add...

Remove

Specify user role data path

Each member of this user role can upload their data to this library path location.

Data path:

Browse...

# Create Private Cloud using VMM

Create User Role Wizard

Permissions

Name and description

Profile

Members

Scope

Quotas for the...

Networking

Resources


Permissions

Run As accounts

Summary

Select the permitted actions for this user role

☒ Global permis...



Name	Description
<input checked="" type="checkbox"/> Checkpoint	Create and manage virtual...
<input checked="" type="checkbox"/> Checkpoint (Restore only)	Restore to but cannot creat...
<input checked="" type="checkbox"/> Deploy	Create virtual machines and...
<input checked="" type="checkbox"/> Deploy (From template only)	Create virtual machines and...
<input checked="" type="checkbox"/> Deploy shielded	Create shielded virtual mach...
<input checked="" type="checkbox"/> Local Administrator	Grants local administrator ri...
<input checked="" type="checkbox"/> Manage Azure Profiles	Create and Manage Azure P...
<input checked="" type="checkbox"/> Pause and resume	Pause and resume virtual m...
<input checked="" type="checkbox"/> Remote connection	Remotely connect to virtual...
<input checked="" type="checkbox"/> Remove	Remove virtual machines an...
<input checked="" type="checkbox"/> Save	Save virtual machines and s...
<input checked="" type="checkbox"/> Shut down	Shut down virtual machines

Select all

Clear all

Previous

Next

Cancel

Create User Role Wizard

Run As accounts

Name and description

Profile

Members

Scope

Quotas for the...

Networking

Resources

Permissions

Run As accounts

Summary

Run As accounts

Each member of this user role can use only the specified Run As accounts.

Run As accounts:

Name	Description
------	-------------

Add...

Remove

## Create Private Cloud using VMM

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Create User Role Wizard

X

Summary

Name and description

Profile

Members

Scope

Quotas for the...

Networking

Resources

Permissions

Run As accounts

Summary

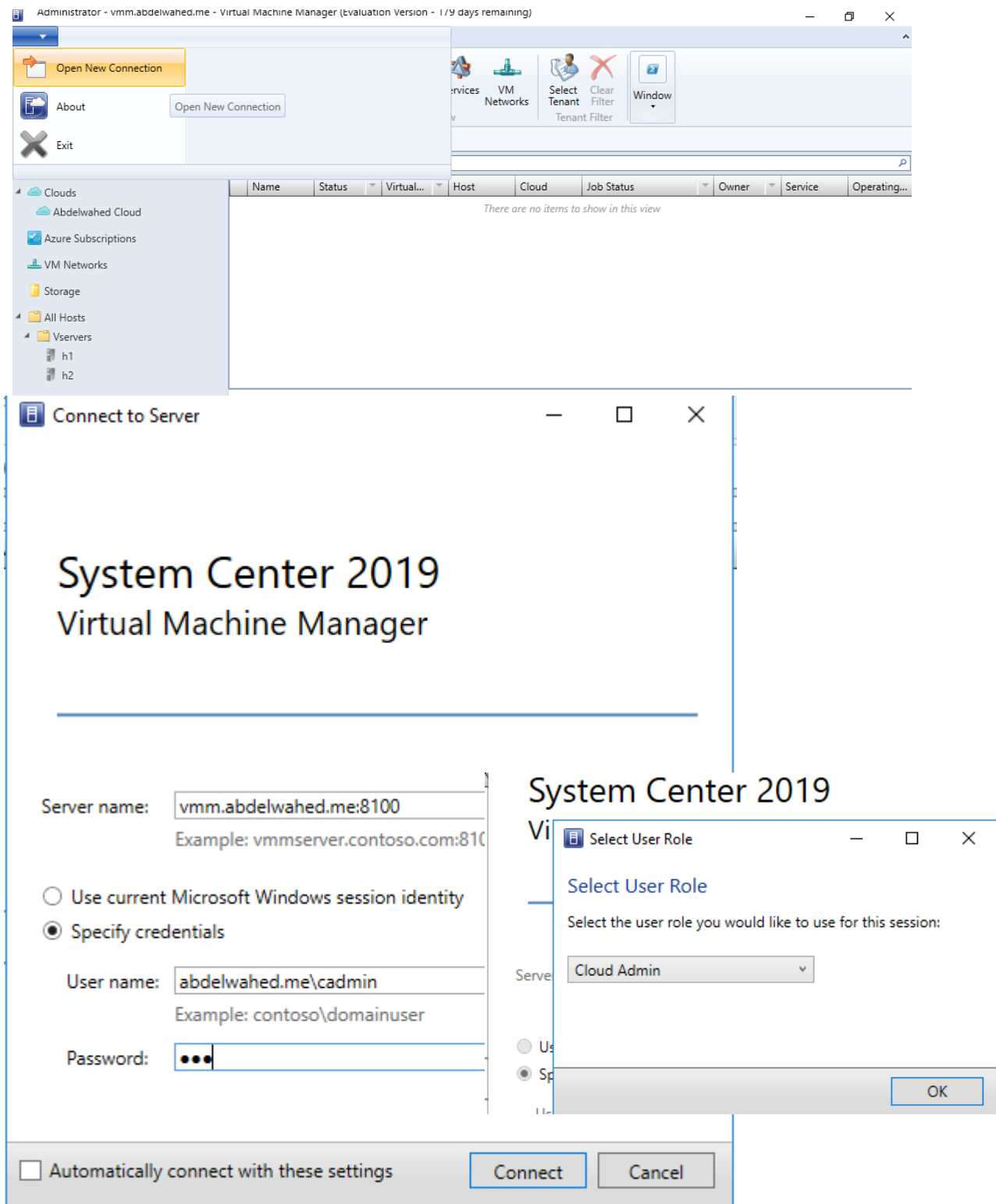
Confirm the settings

View Script

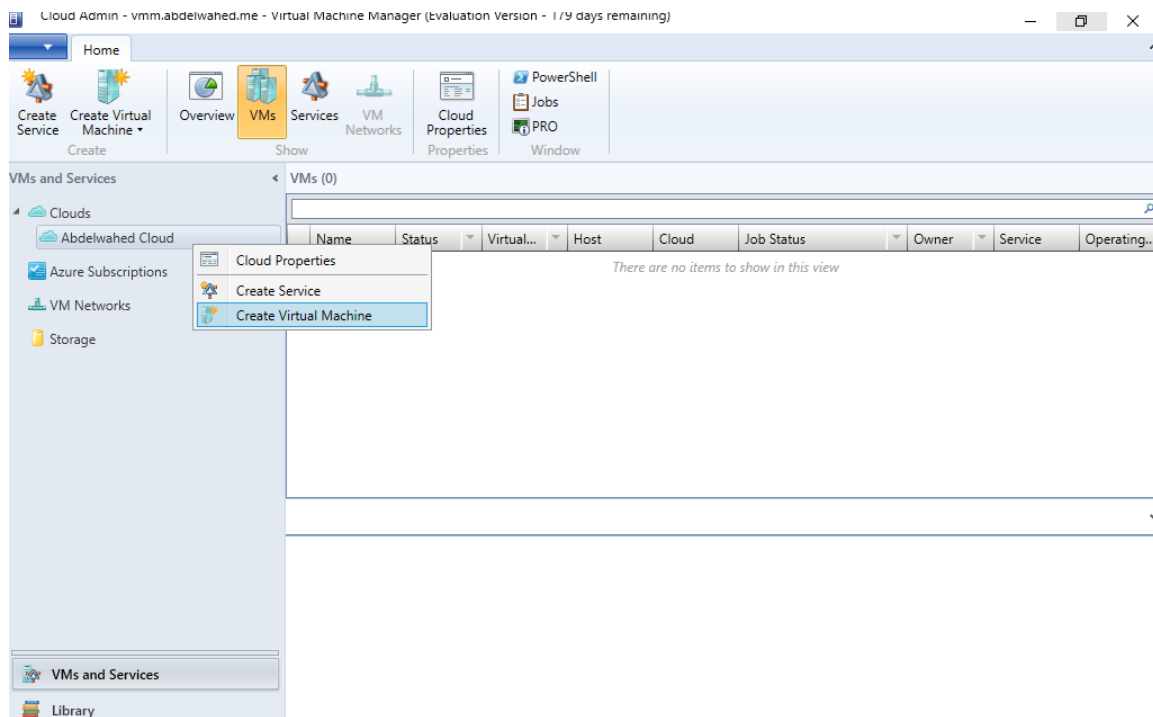
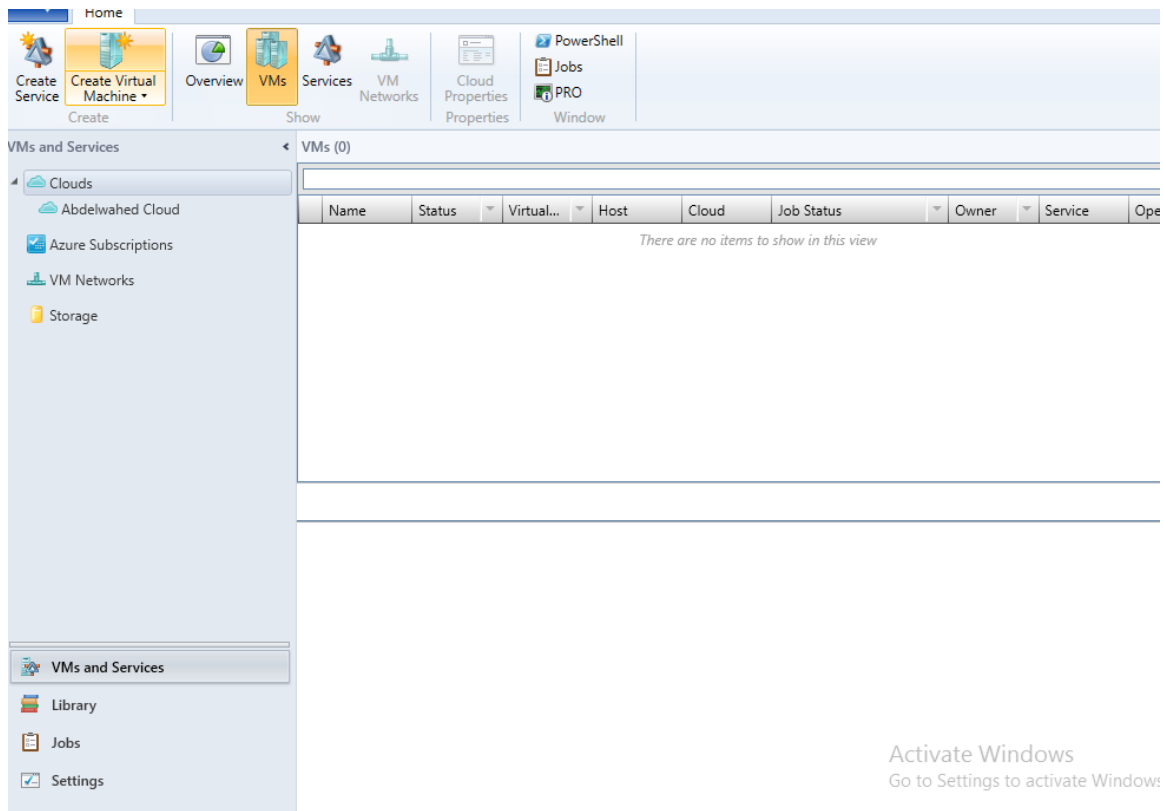
Name:	Cloud Admin
Description:	
Profile:	Self-Service user
Members:	ABDELWAHED\Cadmin
Scope:	Abdelwahed Cloud
Run As accounts:	
Networks:	VM Network
Actions:	Global permissions: None Abdelwahed Cloud: Checkpoint, Checkpoint (Restore only), Deploy, Deploy (From template only), Deploy shielded, Local Administrator, Manage Azure Profiles, Pause and resume, Remote connection, Remove, Save, Shut down, Start, Stop, Store and re-deploy
Quota for Abdelwahed Cloud:	
Role level:	Unlimited vCPU, 2048 GB RAM, 20 GB Storage, Unlimited Custom Quota, Unlimited VMs
Member level:	Unlimited vCPU, 2048 GB RAM, 20 GB Storage, Unlimited Custom

## Create Private Cloud using VMM

### Create VM inside Private cloud



# Create Private Cloud using VMM



# Create Private Cloud using VMM

Select Source

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Select the source for the new virtual machine

☒ Use an existing virtual machine, VM template, or virtual hard disk

Abdelwahed VM Template

Browse...

☐ Create the new virtual machine with a blank virtual hard disk

Identity

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Configure Settings

Specify Virtual Machine Identity

Virtual machine name: Web Server

If the Name field is left blank, VMM will generate a VM name based on the Computer Name.

Description:

☐ Turn on shielding support in the virtual machine after deploying it

Configure Hardware

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Configure Settings

Add Properties

Summary

Configure hardware for the virtual machine. You can import settings from a hardware profile or save a new profile based on your settings.

☒ Edit hardware configuration

Hardware profile: [Default - create new hardware configuration settings]

Save As New Remove

Compatibility

Cloud Capability Pr...  
Hyper-V

General

Processor  
1 processor

Memory  
2048 MB

Bus Configuration

SCSI Adapter 0  
2 Devices attached

Blank Disk - Srm...  
16.00 GB, ID 0

Advanced

Virtual DVD drive  
en\_windows\_ser...

Virtual DVD Drive

Channel:  
SCSI 0 ID 1 (in use)

Media

☐ No media

☒ Existing ISO image:  
en\_windows\_server\_2016\_updated\_feb\_2018\_x64\_dvd\_11636... Browse...

☐ Share file instead of copying it  
To share an image file may require additional configuration.



## Create Private Cloud using VMM

### Configure Operating System

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Configure Settings

Add Properties

Summary

Configure identity, network settings, and scripts for the new virtual machine. You can import settings from a guest OS profile or save a new profile based on your settings.

Guest OS profile: [Create new Windows operating system customization settings]

Save As

**General Settings**

**Operating System**  
Windows Server 2016 D...

**Identity Information**

**Admin Password**  
.....

**Product Key**  
None

**Time Zone**  
Egypt Standard Time

**Networking**

**Domain / Workgroup**  
Joined to Workgroup W...

**Scripts**

**Answer File**  
None

**[GUIRunOnce] Comma...**

Specify the operating system of the virtual machine.

Operating system:  
Windows Server 2016 Datacenter

### Select Destination

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination


Select Cloud


Configure Settings

Add Properties

Summary


Choose whether to deploy or store the virtual machine.

 ☒ Deploy the virtual machine to a private cloud

 ☐ Place the virtual machine on a host

Destination:

Copies the files associated with the virtual machine to the virtual machine host that you designate. You can then start the virtual machine immediately if desired.

 ☐ Store the virtual machine in the library

Stores the virtual machine in the library for later use. Before you can start the virtual machine, you must deploy it on a host or cloud.

# Create Private Cloud using VMM

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Configure Settings

Add Properties

Summary

Select a destination for the virtual machine

Destinations are rated based on the virtual machine requirements and on the default placement options.

Expected Utilization...

Search in All Clouds

Rating	Destination	Transfer Type
★★★★★	Abdelwahed Cloud	Network

Placement has finished calculating ratings for each potential destination of this virtual machine.

Details

DetailsRating ExplanationDeployment and Transfer Explanation

Select Source

Identity

Configure Hardware

Configure Operating...

Extensions

Select Destination

Select Cloud

Configure Settings

Add Properties

Review the virtual machine settings

The following values will be used when the new virtual machine is created:

Operating System Settings

Identity InformationWeb-Server

Specify the computer name for this virtual machine. No wild cards are allowed. This name is not required to match the virtual machine name. To ensure consistent displays in System Center Operations Manager, use the same name for the computer name and virtual machine name.

Computer name:Web-Server

# Create Private Cloud using VMM

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VMs and Services

Clouds

- Abdelwahed Cloud
- Azure Subscriptions
- VM Networks
- Storage

VMs (1)

Name	Status	Virtual...	Host	Cloud	Job Status	Owner	Service	Operating..
Web Server	Creating...	Stopped		Abdelwahe...	<div><div></div></div>	62 %	ABDELWA...	Windows S.

