



Azure Backup
Hands-on lab
-Microsoft Azure



Azure Backup & SR

Lab Guide

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Version 1.1

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Document Revision

Change Record

Date	Author	Version	Change Reference
29-10-2018	Gino van Essen	0.1	Create document
30-10-2018	Stephan van de Kruis	0.2	Add Azure Backup content
30-10-2018	Gino van Essen	0.3	Add Site Recovery content
31-10-2018	Gino van Essen	1.0	Review document
4-2-2019	Stephan van de Kruis	1.1	Update document

Name	Version Approved	Position	Date
Alex Scheepers	1.0	Product Manager	31-10-2018

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Introduction – Azure Backup

Azure Backup is a simple and reliable cloud integrated backup as a service. In this lab, you will learn how to create an Azure Backup Vault, and then use this vault to backup files and system state from a Windows client device. After the backup is finished, we will restore the backup-up files.

Estimated time to complete this lab

75 minutes

Objectives

During this lab, you will learn how to get started on Azure with Azure Backup to;

- Set-up your tenant using your Azure Pass.
- Create and manage Resource Groups and Storage Accounts
- Deploy a Recovery Vault
- Create a files backup job
- Create a VM backup job
- Restore items from your Recovery Vault

Prerequisites

- Laptop/computer with Internet browser and WiFi connected
- Account with an Azure CSP Subscription

Student Materials

All student materials are available for download here:

<https://github.com/Copaco/handsonlab/>

Activity 1: Getting Started

Objectives

In this activity, you will configure the components necessary to perform this lab:

In this activity, you will validate the necessary access to perform this lab

- Login to your Azure CSP tenant
- Create a Resource Group
- Create a Virtual Machine with Nested Virtualization

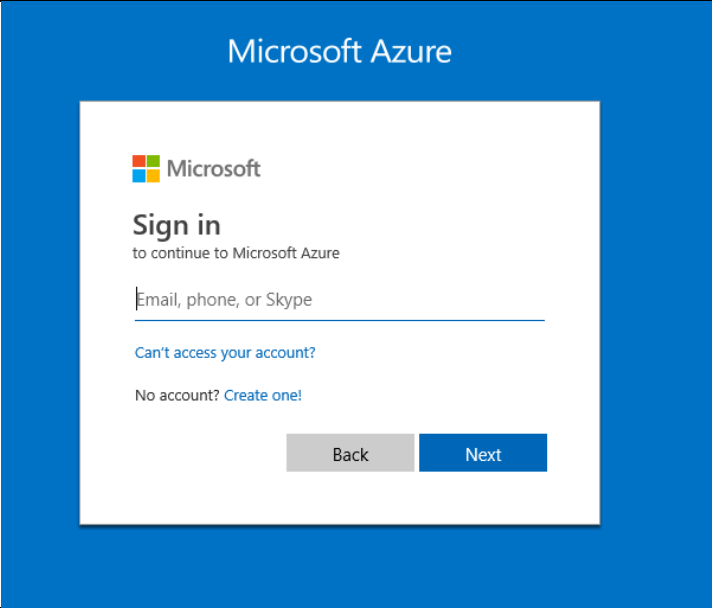
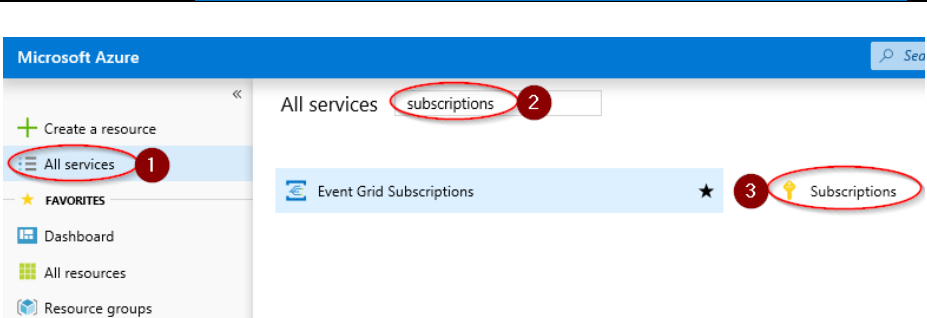
<https://docs.microsoft.com/nl-nl/azure/virtual-machines/windows/nested-virtualization>

After verifying your access, you will use the Azure tenant to create a Recovery Vault you can use to store your backups.

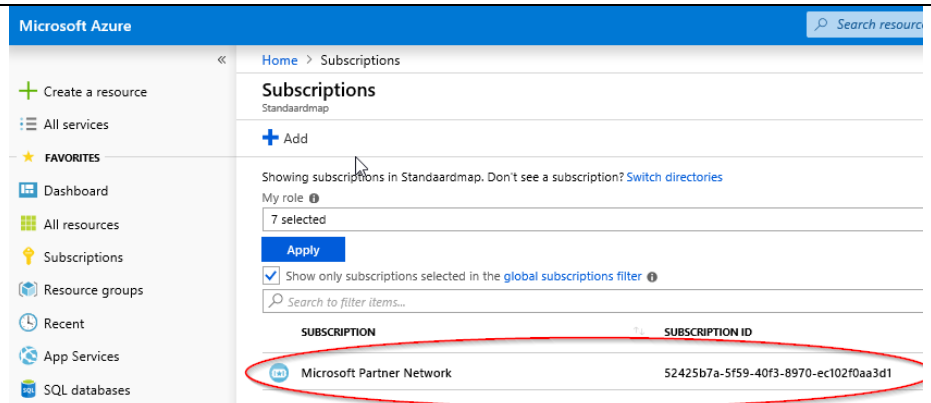
Estimated time to complete this activity

15 minutes

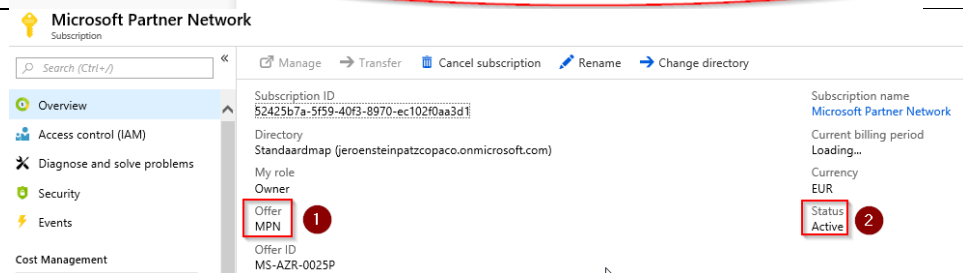
Exercise 1a: Login to Azure

<p>1. Using your Work Account, you can sign into the Azure Portal at: https://portal.azure.com</p>	
<p>2. Using the navigation bar on the left, use the All services menu to browse to the Subscriptions pane. The Search filter on the top will help you to find what you need.</p>	

3. From the **Subscriptions** overview, click the active subscription.

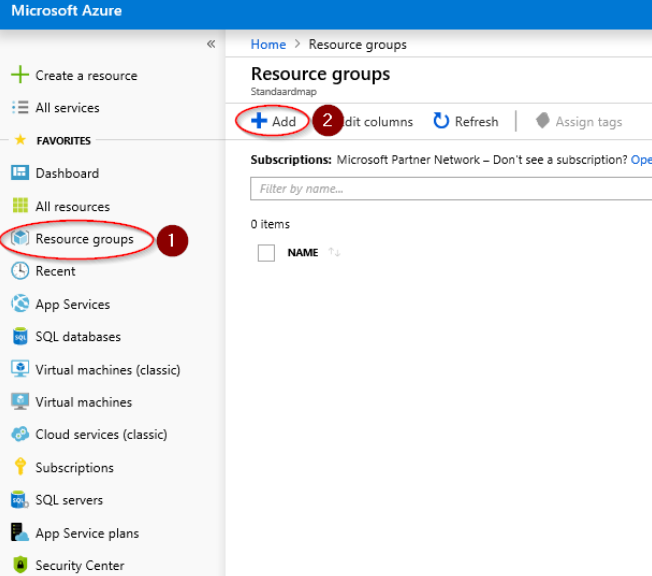
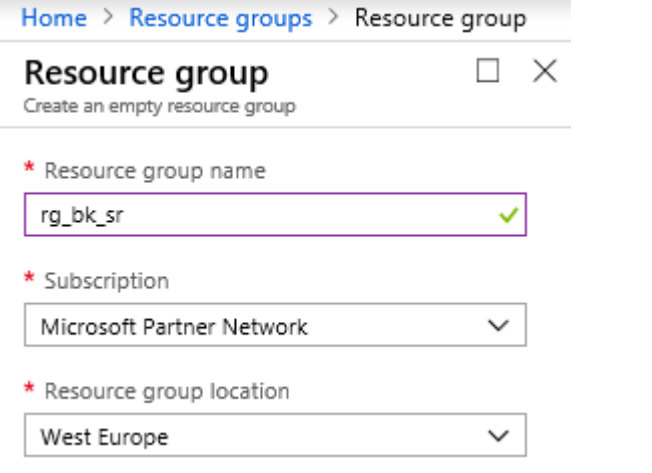
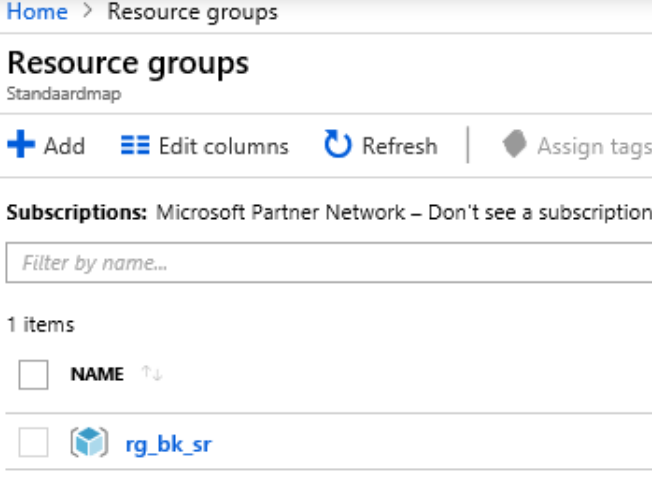


4. In the Overview pane, check the Offer type for being either CSP, MPN, MSDN, OPEN or EA
5. Check the **Status** for being Active.



✦ We also strongly recommend that you use InPrivate browsing to ensure that you are not automatically logged on with other credentials during the registration / activation process.

Exercise 1b: Create a Resource Group

<ol style="list-style-type: none"> 1. Click Resource Groups 2. Click Add 	 <p>Microsoft Azure</p> <p>Home > Resource groups</p> <p>Resource groups</p> <p>Standaardmap</p> <p>+ Add 2 Edit columns Refresh Assign tags</p> <p>Subscriptions: Microsoft Partner Network – Don't see a subscription? Open</p> <p>Filter by name...</p> <p>0 items</p> <p>NAME ↑↓</p>
<ol style="list-style-type: none"> 3. Add Resource group name "rg_bk_sr" 4. Select CSP Subscription 5. Select Resource Group Location "West Europe" 	 <p>Home > Resource groups > Resource group</p> <p>Resource group</p> <p>Create an empty resource group</p> <p>* Resource group name</p> <p>rg_bk_sr ✓</p> <p>* Subscription</p> <p>Microsoft Partner Network</p> <p>* Resource group location</p> <p>West Europe</p>
<ol style="list-style-type: none"> 6. After a few moments, the Resource Group "rg_bk_sr" is created 	 <p>Home > Resource groups</p> <p>Resource groups</p> <p>Standaardmap</p> <p>+ Add Edit columns Refresh Assign tags</p> <p>Subscriptions: Microsoft Partner Network – Don't see a subscription? Open</p> <p>Filter by name...</p> <p>1 items</p> <p>NAME ↑↓</p> <p>rg_bk_sr</p>

Exercise 1c: Create a Recovery Services Vault

1. From the navigation pane, click **Add** or **Create Resources** and search for **Backup**

The screenshot shows the Azure portal interface for a resource group named 'rg_bk_sr'. In the top navigation bar, the 'Add' button is circled in red. Below the navigation bar, the 'Everything' view is selected. A search bar contains the text 'backup', which is also circled in red and labeled with a red circle containing the number 1. Below the search bar, the 'Results' section displays a list of resources. The first result, 'Backup and Site Recovery (OMS)', is circled in red and labeled with a red circle containing the number 2. Other results include 'Unitrends Backup', 'Veritas Backup Exec™ - BYOL', 'Acronis Backup Gateway', and 'Veeam Backup & Replication 9.5'.

2. Click **Create**

Backup and Site Recovery (OMS)

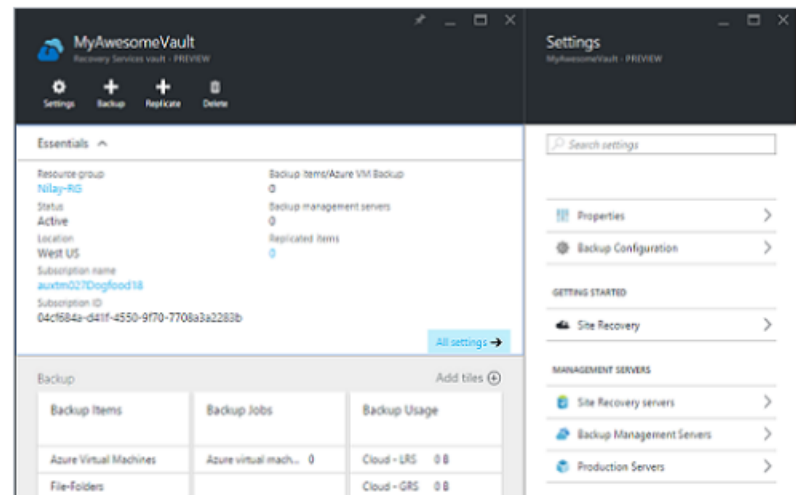
Microsoft

A disaster recovery and data protection strategy keeps your business running when unexpected events occur.

The Backup service is Microsoft's born in the cloud backup solution to backup data that's located on-premises and in Azure. It replaces your existing on-premises or offsite backup solution with a reliable, secure and cost competitive cloud backup solution. It also provides the flexibility of protecting your assets running in the cloud. You can backup Windows Servers, Windows Clients, Hyper-V VMs, Microsoft workloads, Azure Virtual Machines (Windows and Linux) with its in-built resilience and high SLAs. [Learn more.](#)

The Site Recovery service ensures your servers, virtual machines, and apps are resilient by replicating them so that when disasters and outages occur you can easily fail over to your replicated environment and continue working. When services are resumed you simply failback to your primary location with uninterrupted access. Site Recovery helps protect a wide range of Microsoft and third-party workloads. [Learn more.](#)

[Save for later](#)



PUBLISHER

Microsoft

[Backup Pricing details](#)

Create

- Fill in the parameters and click **Create**. Make sure you select the existing Resource Group we just created.

*Select CSP subscription instead of Microsoft Partner Network

- Wait for the Vault to get deployed. You can check the status from the **Notifications** in the top bar.

Recovery Services vault

Recovery Services vault

* Name

rsvbksr0111

* Subscription

Microsoft Partner Network

* Resource group

rg_bk_sr

[Create new](#)

* Location

West Europe

- Open the **Recovery Services Vault** "rsvbksr0111" when it's ready, the **Overview** pane will show a dashboard

rg_bk_sr
Resource group

Search (Ctrl+/)

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Quickstart

Resource costs

+ Add Edit columns Delete resource group Refresh

Subscription (change)
Microsoft Partner Network

Subscription ID
52425b7a-5f59-40f3-897

Tags (change)
[Click here to add tags](#)

Filter by name...

All types

1 items

☐ Show hidden types

☐ NAME

☐ rsvbksr0111

Home > Resource groups > rg_bk_sr > rsvbksr0111

rsvbksr0111
Recovery Services vault

Search (Ctrl+/)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Properties

Locks

Automation script

Getting started

Backup

Site Recovery

Protected items

Backup items

Replicated items

Manage

Backup policies

+ Backup + Replicate Delete Refresh

Essentials

Overview Backup Site Recovery

What's new

Accelerated Networking with Azure virtual machine disaster recovery is now available. →

Azure Site Recovery now supports cross-subscription disaster recovery for Azure virtual machines. →

Azure Backup for SQL Server on Azure now in public preview. →

Disaster recovery for Azure IaaS virtual machines is now available. →

Instant Recovery of Azure VMs is now available. →



Backup

Getting started

Backup dashboard

Backup items

Backup policies

Learn more



Site Recovery

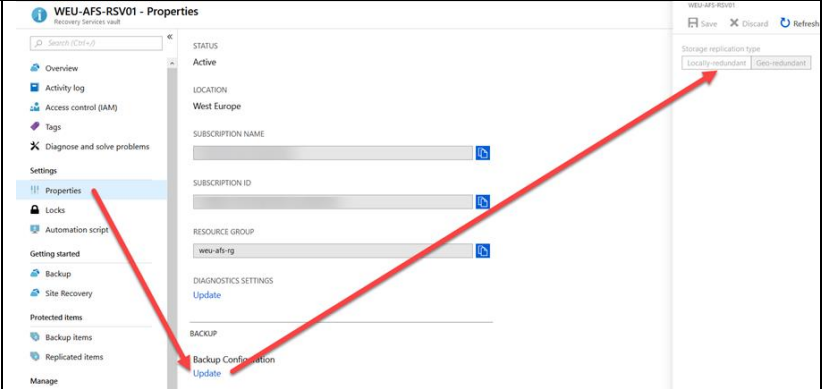
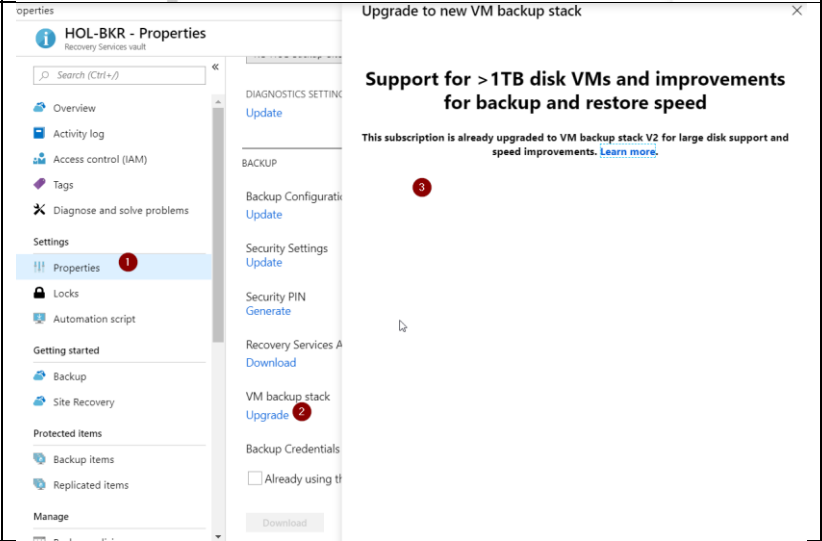
Getting started

Site Recovery dashboard

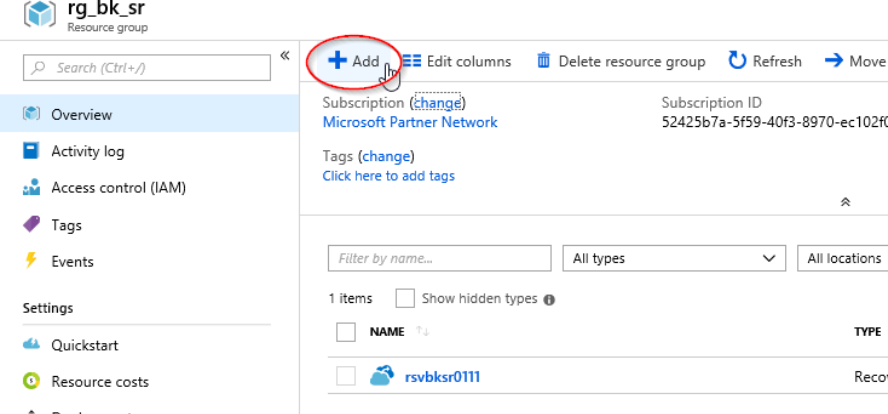
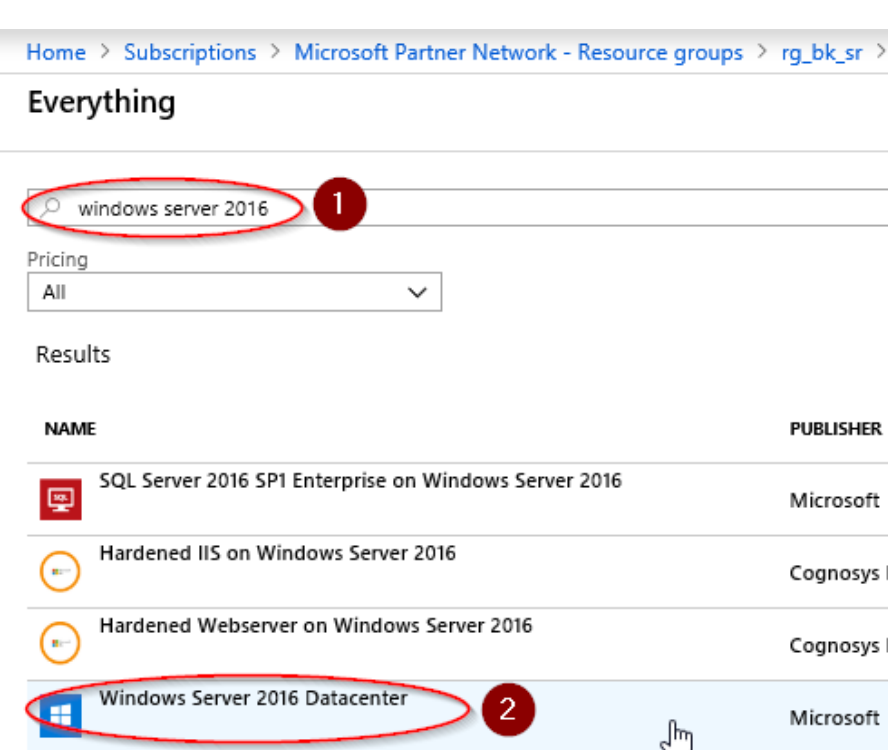
Replicated items

Manage Recovery Plans

Learn more

<ol style="list-style-type: none"> 6. Using the navigation pane, browse to Backup Infrastructure and then Backup Configuration. 7. Make sure Local Redundant Storage (LRS) is selected. Click Apply. 	
<ol style="list-style-type: none"> 8. VM back up stack upgrade 9. Choose properties and VM Backup upgrade (this step is optional) 10. Update 	
<ol style="list-style-type: none"> 11. You're done, we have created a Recovery Services Vault we can use to store the backups. 	

Exercise 1d: Create a Azure Virtual Machine

<p>1. Click Add to create a Virtual Machine Resource</p>	 <p>The screenshot shows the Azure portal interface for the resource group 'rg_bk_sr'. On the left is a navigation pane with options like Overview, Activity log, Access control (IAM), Tags, Events, Settings, Quickstart, Resource costs, and Deployments. The main area shows the 'Add' button circled in red, along with other actions like Edit columns, Delete resource group, Refresh, and Move. Below this, there's information about the subscription (Microsoft Partner Network) and a table with one item, 'rsvbksr0111'.</p>										
<p>2. From the search box, search for Windows Server 2016 and select Windows Server 2016 Datacenter.</p>	 <p>The screenshot shows the search results for 'windows server 2016'. The search box is circled in red with a red circle containing the number '1'. Below the search box, there's a 'Pricing' dropdown set to 'All'. The 'Results' section shows a table with columns 'NAME' and 'PUBLISHER'. The first three results are 'SQL Server 2016 SP1 Enterprise on Windows Server 2016', 'Hardened IIS on Windows Server 2016', and 'Hardened Webserver on Windows Server 2016'. The fourth result, 'Windows Server 2016 Datacenter', is circled in red with a red circle containing the number '2'. A hand cursor is pointing at this result.</p> <table border="1"> <thead> <tr> <th>NAME</th> <th>PUBLISHER</th> </tr> </thead> <tbody> <tr> <td>SQL Server 2016 SP1 Enterprise on Windows Server 2016</td> <td>Microsoft</td> </tr> <tr> <td>Hardened IIS on Windows Server 2016</td> <td>Cognosys I</td> </tr> <tr> <td>Hardened Webserver on Windows Server 2016</td> <td>Cognosys I</td> </tr> <tr> <td>Windows Server 2016 Datacenter</td> <td>Microsoft</td> </tr> </tbody> </table>	NAME	PUBLISHER	SQL Server 2016 SP1 Enterprise on Windows Server 2016	Microsoft	Hardened IIS on Windows Server 2016	Cognosys I	Hardened Webserver on Windows Server 2016	Cognosys I	Windows Server 2016 Datacenter	Microsoft
NAME	PUBLISHER										
SQL Server 2016 SP1 Enterprise on Windows Server 2016	Microsoft										
Hardened IIS on Windows Server 2016	Cognosys I										
Hardened Webserver on Windows Server 2016	Cognosys I										
Windows Server 2016 Datacenter	Microsoft										

3. Click **Create**

Windows Server 2016 Datacenter

Microsoft

Windows Server 2016 is a comprehensive server operating system designed to run the applications and infrastructure that power your business. It includes built-in layers of security and innovation to help you run traditional and cloud-native applications with confidence. This Server with Desktop Experience image includes all roles including the graphical user interface (GUI).

This image can be used with [Azure Hybrid Benefit for Windows Server](#).

Legal Terms

By clicking the Create button, I acknowledge that I am getting this software from Microsoft and that the [legal terms](#) of Microsoft apply to it. Microsoft does not provide rights for third-party software. Also see the [privacy statement](#) from Microsoft.

[Save for later](#)

PUBLISHER

Microsoft

USEFUL LINKS

[Documentation](#)

[Introducing Windows Server 2016](#)

[What's New in 2016](#)

[Learn more](#)

Select a deployment model ⓘ

Resource Manager

Create

4. Add the parameters

VM Name: vm-host-bk-asr

VM Size: D4s V3

Username: labadminuser

Password:
lab@Eindhoven0702

[Home](#) > [Windows Server 2016 Datacenter](#) > Create a virtual machine

Create a virtual machine

[Basics](#) [Disks](#) [Networking](#) [Management](#) [Guest config](#) [Tags](#) [Review](#)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or Complete the Basics tab then Review + create to provision a virtual machine with default parameter customization.

Looking for classic VMs? [Create VM from Azure Marketplace](#)

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folder resources.

* Subscription ⓘ

Microsoft Partner Network

* Resource group ⓘ

rg_bk_sr

[Create new](#)

INSTANCE DETAILS

* Virtual machine name ⓘ

vm-host-bk-asr

1

* Region ⓘ

West Europe

Availability options ⓘ

No infrastructure redundancy required

* Image ⓘ

Windows Server 2016 Datacenter

[Browse all images and disks](#)

* Size ⓘ

Standard D4s v3
4 vcpus, 16 GB memory

[Change size](#)

2

ADMINISTRATOR ACCOUNT

* Username ⓘ

labadminuser

3

* Password ⓘ

.....

4

* Confirm password ⓘ

.....

5

*** Extra info VM Size**

D4s_v3

Select a VM size

Browse available virtual machine sizes and their features

1
Clear all filters

Size : Small
Generation : Current
Family : General purpose
Premium disk : Supported

Showing 1 of 212 VM sizes. | Subscription: Microsoft Partner Network | Region: West Europe

VM SIZE	OFFERING	FAMILY	VCPUS	RAM (GB)	DATA DISKS	MAX IOPS	TEMP
D4s_v3	2	Standard	General purpose	4	16	8	6400 32 G

Select

Prices presented are estimates in your local currency that include only Azure infrastructure costs and any disc applicable software costs. [View Azure pricing calculator.](#)

Inbound Port Rules:

HTTP

HTTPS

RDP

Save Money:

Yes

Check box - Confirmation

INBOUND PORT RULES

Select which virtual machine network ports are accessible from the public internet. You can access on the Networking tab.

* Public inbound ports

☐ None
 ☒ Allow selected ports

* Select inbound ports

RDP, HTTPS, HTTP

☒ HTTP (80)

☒ HTTPS (443)

☐ SSH (22)

☒ RDP (3389)

SAVE MONEY

Save up to 49% with a license you already own using Azure Hybrid Benefit for Windows S

* Already have a Windows license?

☒ Yes
 ☐ No

* License type

Windows Server

* Confirmation

☒

I confirm I have an eligible Windows license with Softw to apply this Azure Hybrid Benefit.

[Review Azure hybrid benefit compliance](#)

Review + create
Previous
Next : Disks >

5. Select **Standard SSD**
6. Add **new Data Disk**

Home > Windows Server 2016 Datacenter > Create a virtual machine

Create a virtual machine

Basics | **Disks** | Networking | Management | Guest config | Tags | Review + create

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

DISK OPTIONS

* OS disk type ⓘ Standard SSD

The selected VM size supports premium disks. We recommend Premium SSD for high IOPS workloads. Virtual machines with Premium SSD disks qualify for the 99.9% connectivity SLA.

Use unmanaged disks ⓘ ☐ Yes ☒ No

DATA DISKS

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	NAME	SIZE (GiB)	DISK TYPE	HOST CACHING
0	vm-host-bk-asr_DataDisk_1	255	Standard SSD	None

[Create and attach a new disk](#) [Attach an existing disk](#)

*Extra info new disk

Disk type: Standard SSD
Name:
 vm-host-bk-asr_DataDisk_1
Size: 255

Click **OK**

Create a new disk

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more about Azure Managed Disks](#)

* Disk type ⓘ Standard SSD

* Name ⓘ vm-host-bk-asr_DataDisk_1

* Size (GiB) ⓘ 255

* Source type ⓘ None (empty disk)

ESTIMATED PERFORMANCE ⓘ

IOPS limit	500
Throughput limit (MB/s)	60

OK

7. Click **Next : Networking >**

[Review + create](#) [Previous](#) [Next : Networking >](#)

8. Click **next : Management >**

Home > Windows Server 2016 Datacenter > Create a virtual machine

Create a virtual machine

Basics Disks Networking Management Guest config Tags Review + create

Configure a new or existing virtual network for your VM as well as how your VM will be accessed on the virtual network. [Learn more](#)

NETWORK INTERFACE

When creating a virtual machine, a network interface will be created for you.

* Virtual network ⓘ (new) rg_bk_sr-vnet [Create new](#)


* Subnet ⓘ default

Public IP ⓘ (new) vm-host-bk-asr-ip [Create new](#)

Network security group ☒ Basic ☐ Advanced

* Public inbound ports ⓘ ☐ None ☒ Allow selected ports

* Select inbound ports RDP, HTTPS, HTTP

 These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.

Accelerated networking ⓘ ☒ On ☐ Off

[Review + create](#) [Previous](#) [Next : Management >](#)

9. Select **OS guest diagnostics** : ON

Select **Enable auto-shutdown** : On

Set **Shutdown time** : 5PM

Set **Time Zone** : Amsterdam

10. Click **Review + Create**

Home > Windows Server 2016 Datacenter > Create a virtual machine

Create a virtual machine

Basics Disks Networking Management Guest config Tags Review + create

Configure monitoring and management options for your VM.

MONITORING

Boot diagnostics ☒ On ☐ Off

OS guest diagnostics ☒ On ☐ Off **1**

* Diagnostics storage account (new) rgbkrsdiag
 [Create new](#)

IDENTITY

Managed service identity ☐ On ☒ Off

AUTO-SHUTDOWN

Enable auto-shutdown ☒ On ☐ Off **2**

Shutdown time 5:00:00 PM **3**

Time zone (UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna **4**

Notification before shutdown ☐ On ☒ Off

BACKUP

Enable backup ☐ On ☒ Off

Review + create **5** Previous Next : Guest config >

11. Review details and click **Create**

Home > Windows Server 2016 Datacenter > Create a virtual machine

Create a virtual machine

✓ Validation passed

Basics Disks Networking Management Guest config Tags Review + create

PRODUCT DETAILS

Standard D4s v3
by Microsoft
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ
0.2024 EUR/hr
[Pricing for other VM sizes](#)

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

BASICS

Subscription	Microsoft Partner Network
Resource group	rg_bk_sr
Virtual machine name	vm-host-bk-asr
Region	West Europe
Availability options	No infrastructure redundancy required
Username	labadminuser
Public inbound ports	RDP, HTTPS, HTTP

DISKS

OS disk type	Standard SSD
Use unmanaged disks	No
Data disks	1

NETWORKING

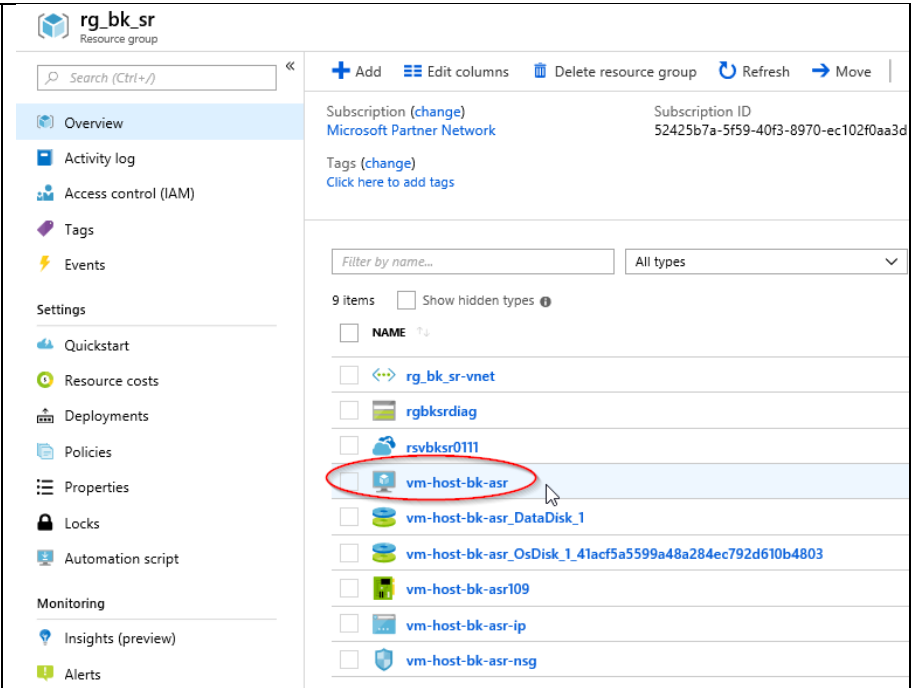
Virtual network	(new) rg_bk_sr-vnet
Subnet	default
Public IP	(new) vm-host-bk-asr-ip
Accelerated networking	On

Create Previous Next [Download a template for automation](#)

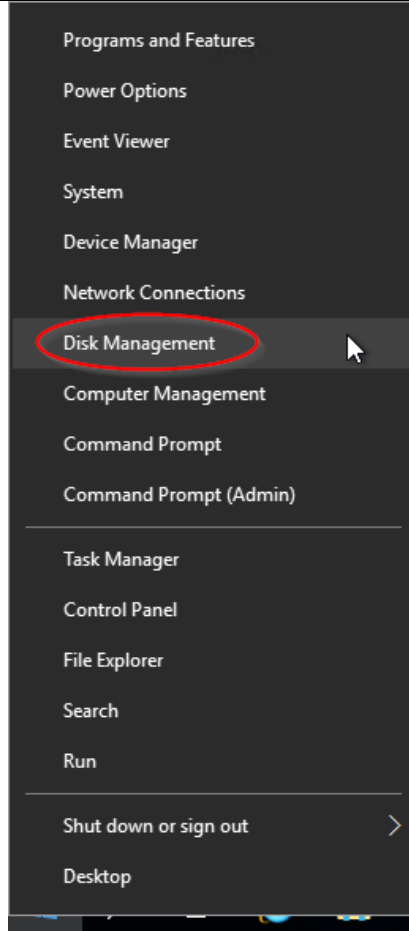
12. Wait for the VM to get deployed. You can check the status from the **Notifications** in the top bar.

13. You're done, we have created a Virtual Machine.

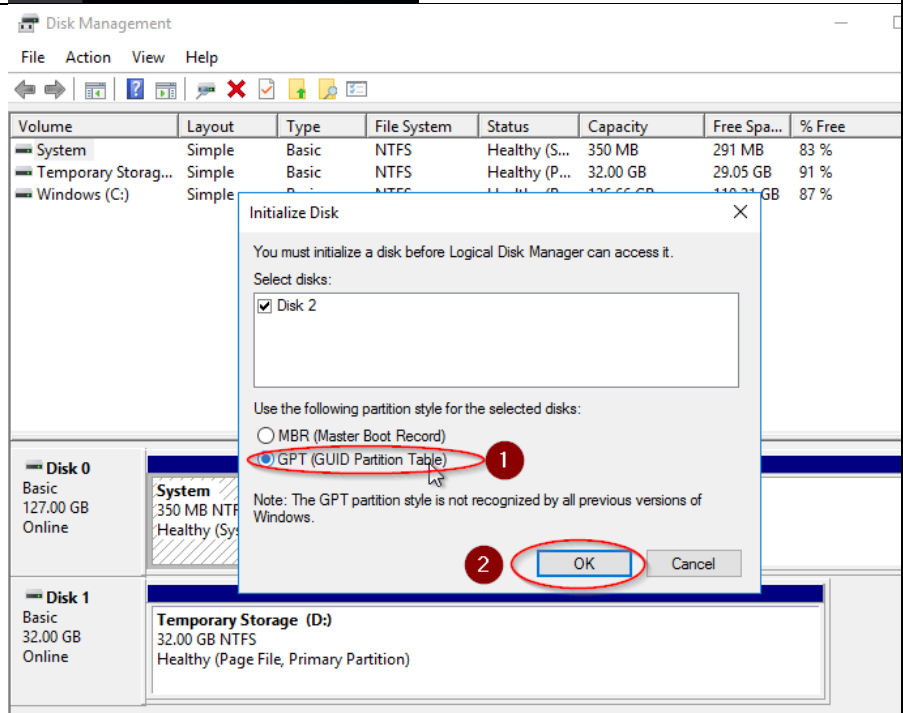
Exercise 1e: Configure Hyper-V Manager on HOST VM and Nested Virtualization networking

<ol style="list-style-type: none"> From the navigation pane, go to Resource Group "rk_bk_sr" Select Virtual Machine "vm-host-bk-asr" 	
<ol style="list-style-type: none"> Click Connect and download RDP file. Open RDP File from browser downloads 	
<ol style="list-style-type: none"> Login to the VM with provided login credentials 	

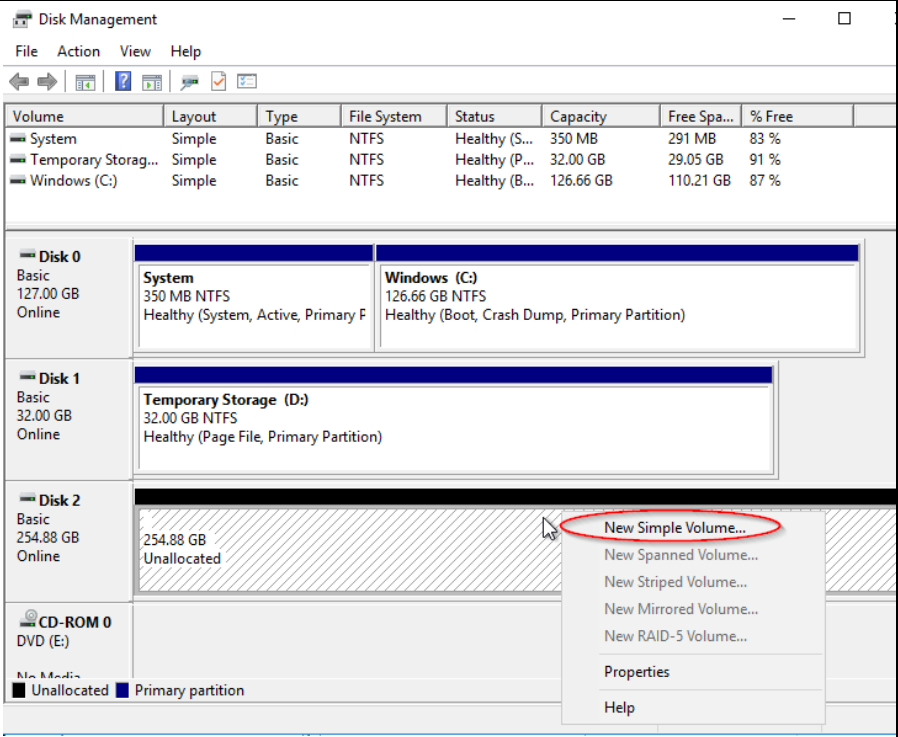
6. Go to **Disk Management**



7. Select **GPT**
8. Click **OK**



- 9. Right-click on the unallocated volume
- 10. Click **New Simple Volume**



11. Click Next
12. Assign the drive letter **F**, and click **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: 260990

Minimum disk space in MB: 8

Simple volume size in MB: 260990

< Back

Next >

Cancel

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:

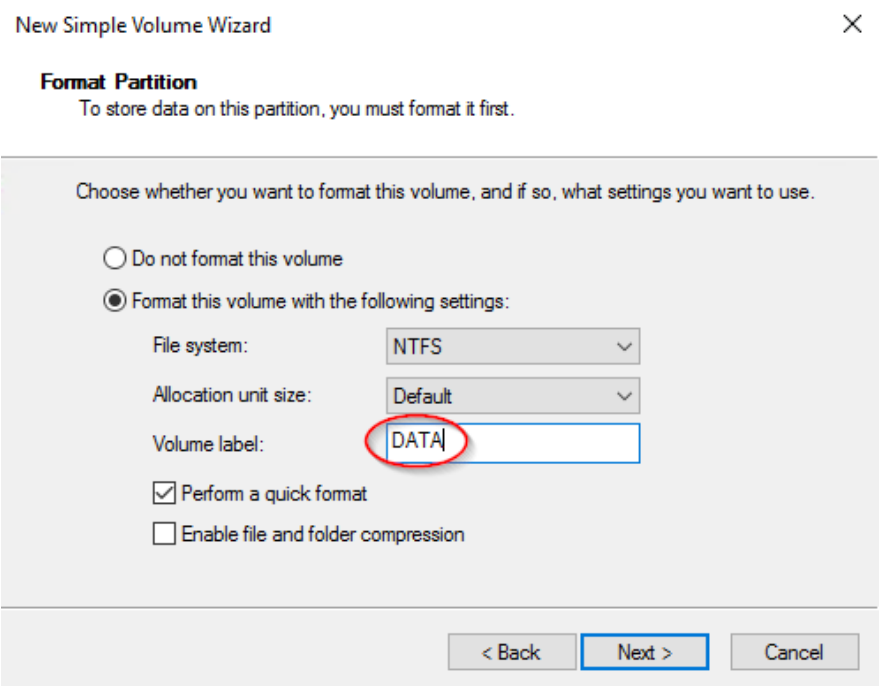
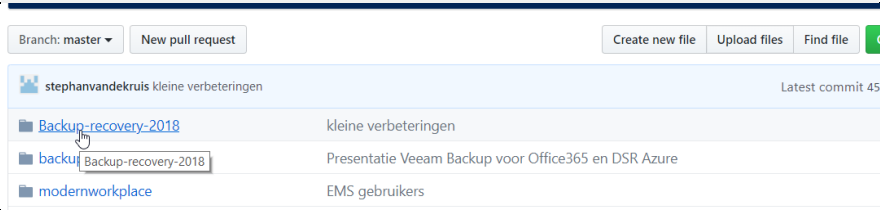
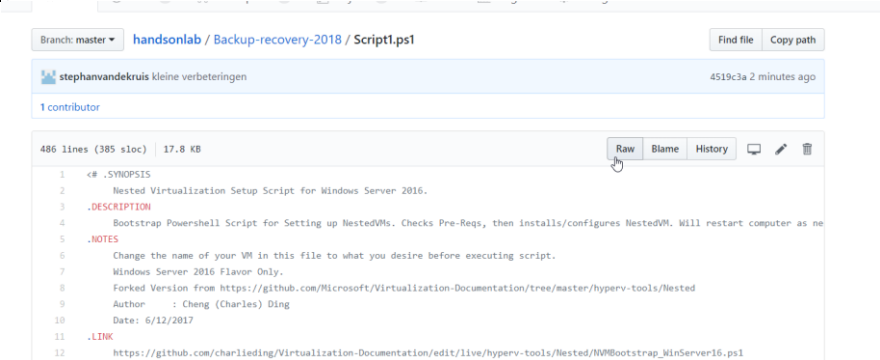

Browse...

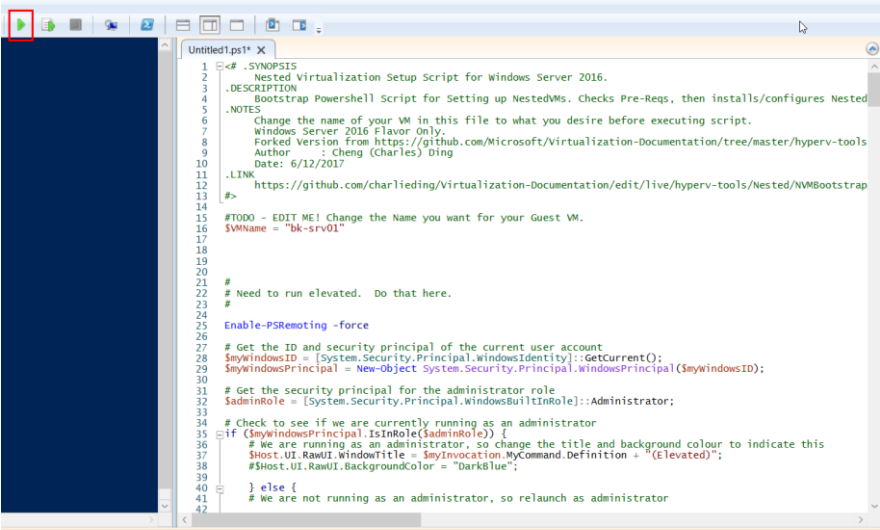
☐ Do not assign a drive letter or drive path

< Back

Next >

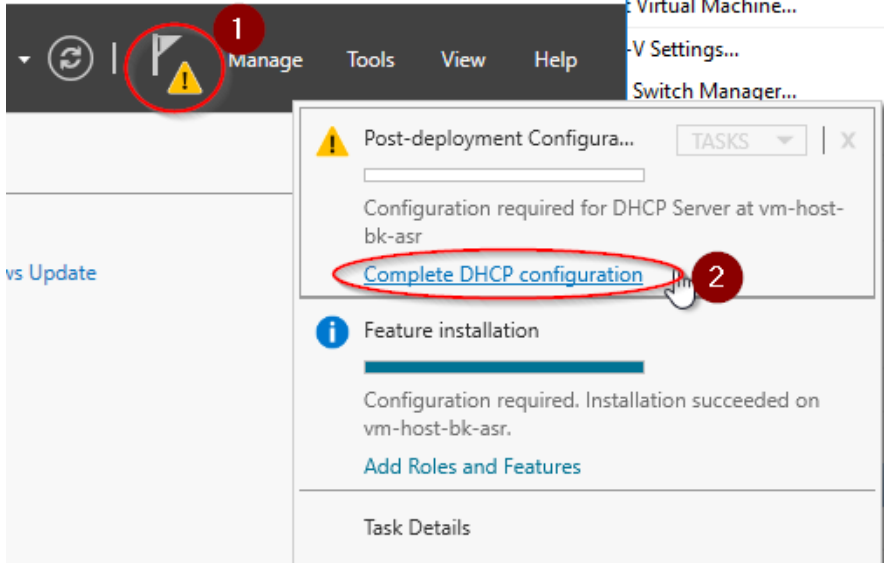
Cancel

<p>13. Set Volume Label: DATA</p> <p>14. Click Next</p> <p>15. Finish</p>	 <p>New Simple Volume Wizard</p> <p>Format Partition To store data on this partition, you must format it first.</p> <p>Choose whether you want to format this volume, and if so, what settings you want to use.</p> <p><input type="radio"/> Do not format this volume</p> <p><input checked="" type="radio"/> Format this volume with the following settings:</p> <p>File system: NTFS</p> <p>Allocation unit size: Default</p> <p>Volume label: DATA</p> <p><input checked="" type="checkbox"/> Perform a quick format</p> <p><input type="checkbox"/> Enable file and folder compression</p> <p>< Back Next > Cancel</p>
<p>16. Go to https://github.com/CloudPac/handsonlab/tree/master/Backup-recovery-2019</p>	 <p>Branch: master New pull request Create new file Upload files Find file</p> <p>stephanvandekruis kleine verbeteringen Latest commit 45</p> <p>Backup-recovery-2018 kleine verbeteringen</p> <p>backu Backup-recovery-2018 Presentatie Veeam Backup voor Office365 en DSR Azure</p> <p>modernworkplace EMS gebruikers</p>
<p>17. Click on 1_installHyperv.ps1 and click raw</p>	 <p>Branch: master handsonlab / Backup-recovery-2018 / Script1.ps1 Find file Copy path</p> <p>stephanvandekruis kleine verbeteringen 4519c3a 2 minutes ago</p> <p>1 contributor</p> <p>486 lines (385 sloc) 17.8 KB</p> <p>Raw Blame History</p> <pre> 1 <# .SYNOPSIS 2 Nested Virtualization Setup Script for Windows Server 2016. 3 .DESCRIPTION 4 Bootstrap Powershell Script for Setting up NestedVMs. Checks Pre-Reqs, then installs/configures NestedVM. Will restart computer as ne 5 .NOTES 6 Change the name of your VM in this file to what you desire before executing script. 7 Windows Server 2016 Flavor Only. 8 Forked Version from https://github.com/Microsoft/Virtualization-Documentation/tree/master/hyperv-tools/Nested 9 Author : Cheng (Charles) Ding 10 Date: 6/12/2017 11 .LINK 12 https://github.com/charlieding/Virtualization-Documentation/edit/live/hyperv-tools/Nested/VM/Bootstrap_WinServer16.ps1 </pre>
<p>18. Select all the content and copy it</p>	
<p>19. Open Powershell ISE as an administrator.</p> <p>20. Select the show script pane right</p>	 <p>Shell ISE</p> <p>Add-ons Help</p> <p>Document: Loaded</p> <p>Untitled1.ps1* X</p> <pre> 1 <# .SYNOPSIS 2 Nested Virtualiz 3 .DESCRIPTION 4 Bootstrap Powersk </pre>

<p>21. Copy the script in the white field</p> <p>22. Press the RUN button</p> <p>23. Let the script finish</p> <p>24. The VM will reboot during the installation</p>	 <pre> 1 <# .SYNOPSIS 2 Nested Virtualization Setup Script for Windows Server 2016. 3 .DESCRIPTION 4 Bootstrap Powershell Script for Setting up NestedVMs. Checks Pre-Reqs, then installs/configures Nested 5 .NOTES 6 Change the name of your VM in this file to what you desire before executing script. 7 Windows Server 2016 Flavor Only. 8 Forked Version From https://github.com/Microsoft/Virtualization-Documentation/tree/master/hyperv-tools 9 Author : Cheng (Charles) Ding 10 Date: 6/12/2017 11 12 .LINK 13 https://github.com/charlieding/Virtualization-Documentation/edit/live/hyperv-tools/Nested/VMBootstrap 14 #> 15 16 #TODO - EDIT ME! Change the Name you want for your Guest VM. 17 \$VMName = "bk-srv01" 18 19 20 21 # 22 # Need to run elevated. Do that here. 23 # 24 25 Enable-PSRemoting -force 26 27 # Get the ID and security principal of the current user account 28 \$myWindowsID = [System.Security.Principal.WindowsIdentity]::GetCurrent(); 29 \$myWindowsPrincipal = New-Object System.Security.Principal.WindowsPrincipal(\$myWindowsID); 30 31 # Get the security principal for the administrator role 32 \$adminRole = [System.Security.Principal.WindowsBuiltInRole]::Administrator; 33 34 # Check to see if we are currently running as an administrator 35 if (\$myWindowsPrincipal.IsInRole(\$adminRole)) { 36 # We are running as an administrator, so change the title and background colour to indicate this 37 \$Host.UI.RawUI.WindowTitle = \$myInvocation.MyCommand.Definition + "(Elevated)"; 38 \$Host.UI.RawUI.BackgroundColor = "DarkBlue"; 39 } else { 40 # We are not running as an administrator, so relaunch as administrator 41 } 42 </pre>
<p>25. Repeat the steps with</p> <p>2_vswitch.ps1</p> <p>3_NewVM.ps1</p> <p>4_NewVM.ps1</p>	

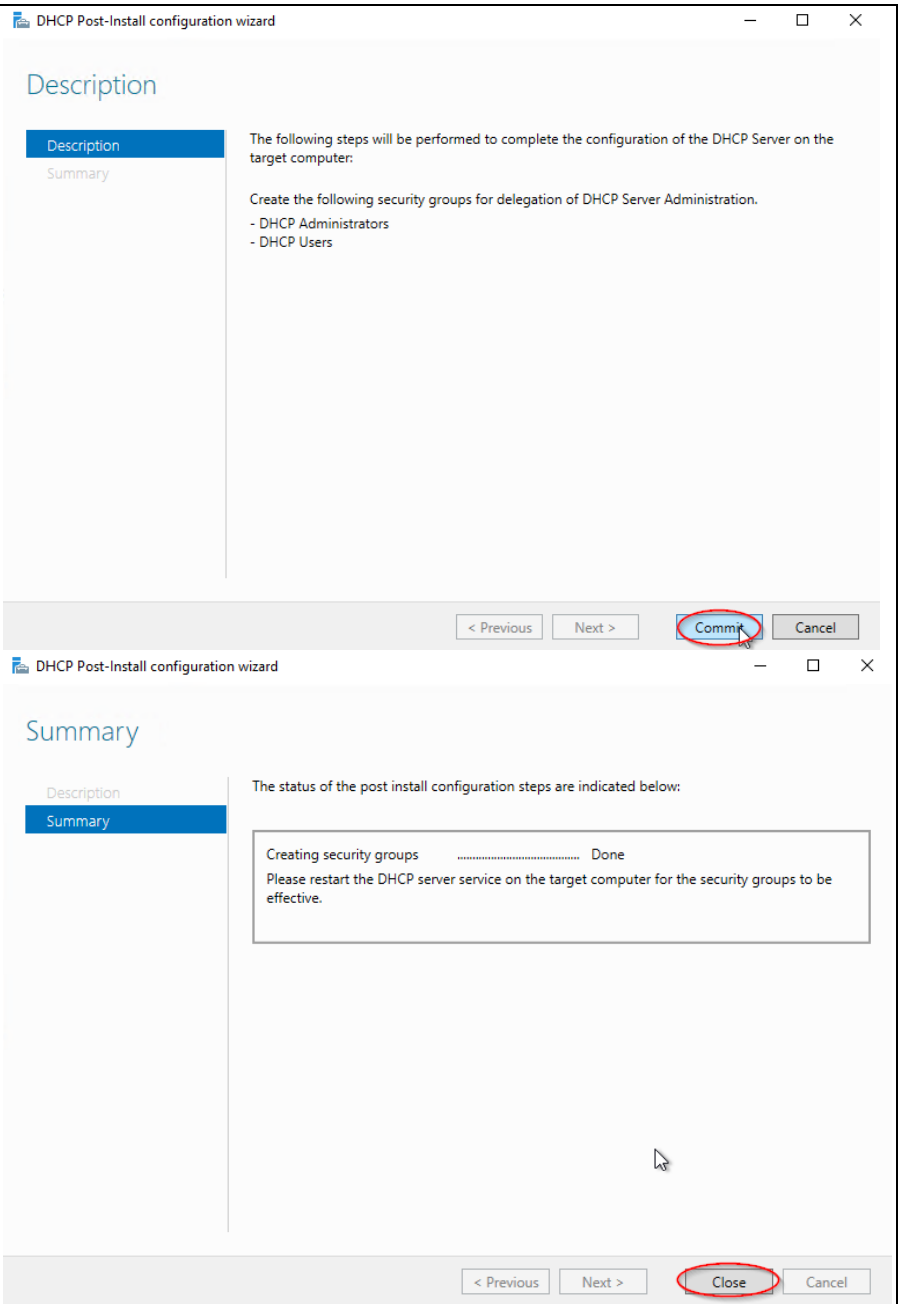
Exercise 1f: Configure DHCP

Follow the steps below to configure DHCP on the host virtual machine for dynamic address assignment.

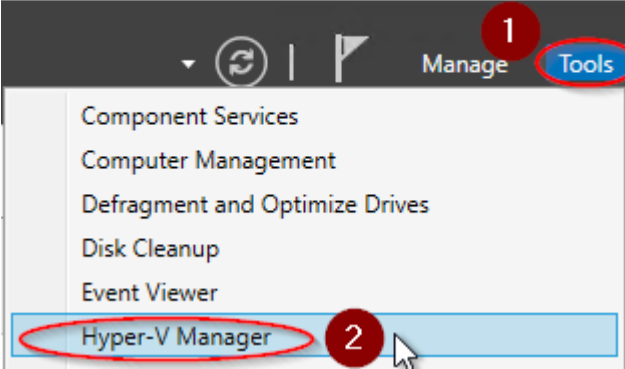
<p>5_DHCP.ps1</p> <p>1. Run the 5_DHCP.ps1 script in Powershell.</p>	
<p>2. In Server Manager click the flag and Complete the DHCP configuration</p>	 <p>The screenshot shows the Server Manager interface. In the top navigation bar, a yellow warning icon is circled in red with a red circle containing the number '1'. A context menu is open over this icon, showing a 'Post-deployment Configuration' section. Within this section, the text 'Configuration required for DHCP Server at vm-host-bk-asr' is followed by a link 'Complete DHCP configuration', which is also circled in red with a red circle containing the number '2'. Below this, there is a 'Feature installation' section with a progress bar and the text 'Configuration required. Installation succeeded on vm-host-bk-asr.' and a link 'Add Roles and Features'.</p>

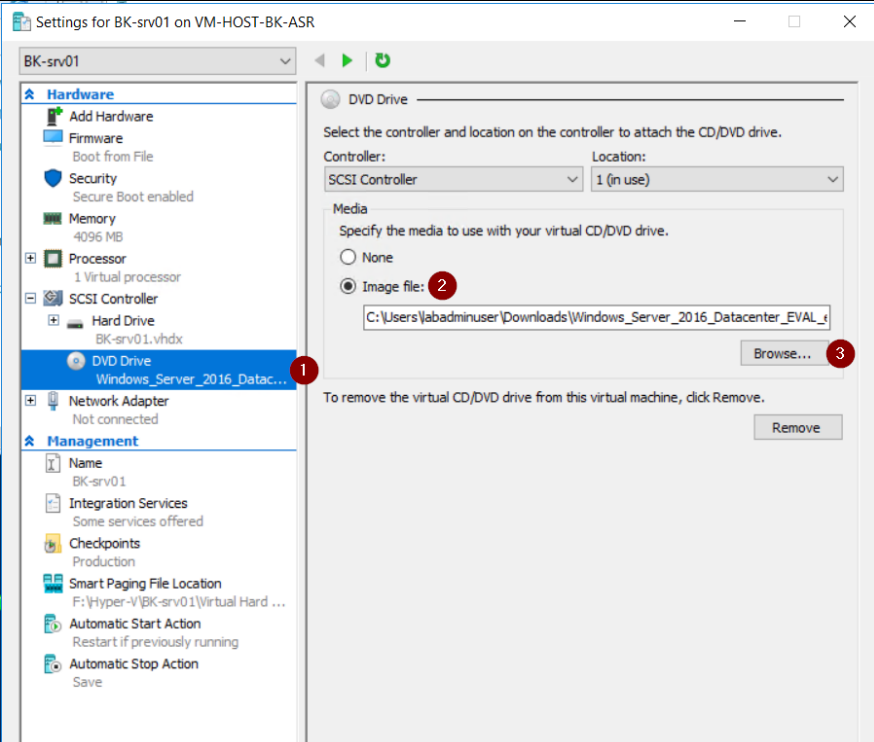
3. Click **Commit** to add the security groups

4. Click **Close**

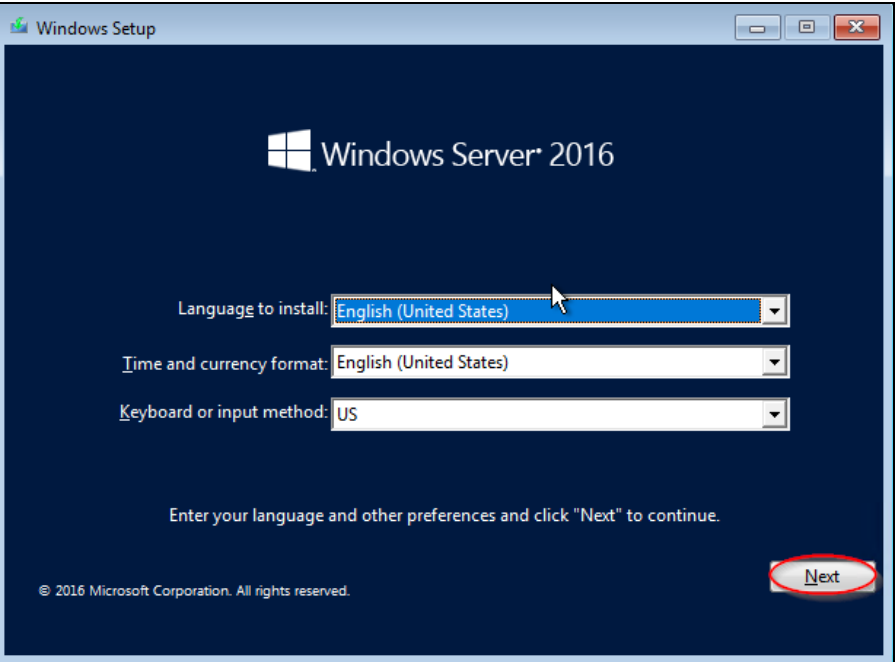


Exercise 1h: Create Guest virtual machines

<p>1. Open HOST VM "vm-host-bk-asr"</p> <p>2. Open Hyper-V Manager</p>	
<p>Download Windows Server 2016 evaluation datacenter on HOST VM:</p> <p>https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016</p> <p>Download location: C:\Users\labadminuser\Downloads</p> <p>ISO name: Windows_Server_2016_Datacenter_EVAL_en-us_14393_refresh</p>	

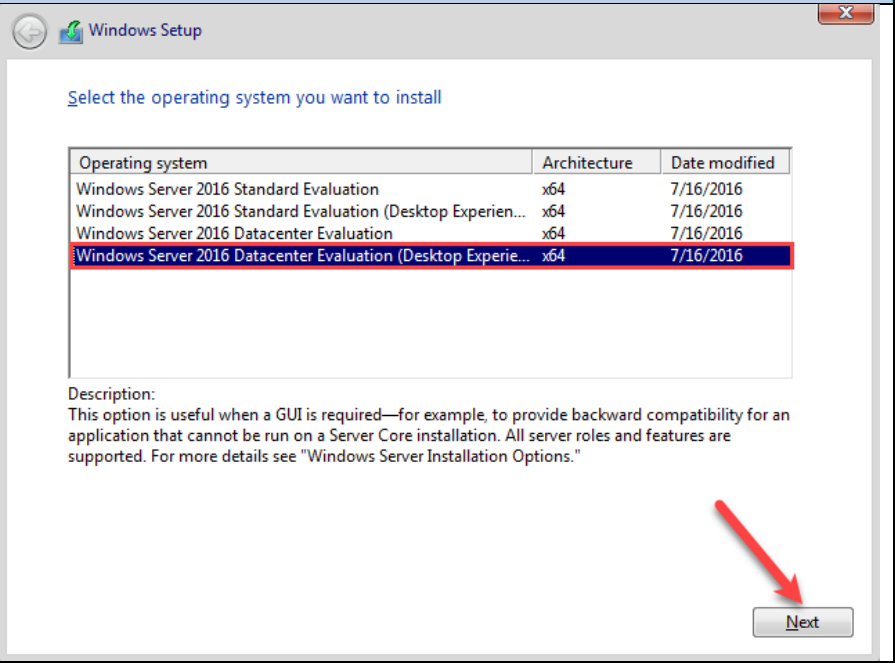
<p>3. Select the server bk-svr-xx</p> <p>4. Go to Settings</p> <p>5. Select DVD Drive and mount the image</p> <p>ISO name: Windows_Server_2016_D atacenter_EVAL_en- us_14393_refresh</p>	
<p>6. Start VM</p> <p>7. Hit Any key on keyboard to start Windows Server installation</p>	

8. Click **Next**



The screenshot shows the 'Windows Setup' window for Windows Server 2016. The title bar says 'Windows Setup'. The main heading is 'Windows Server 2016'. Below it, there are three dropdown menus: 'Language to install:' set to 'English (United States)', 'Time and currency format:' set to 'English (United States)', and 'Keyboard or input method:' set to 'US'. Below these is the instruction 'Enter your language and other preferences and click "Next" to continue.' At the bottom right, there is a 'Next' button circled in red. At the bottom left, it says '© 2016 Microsoft Corporation. All rights reserved.'

9. Select **Windows Server 2016 Datacenter (Desktop Experience)**
10. Click **Next**

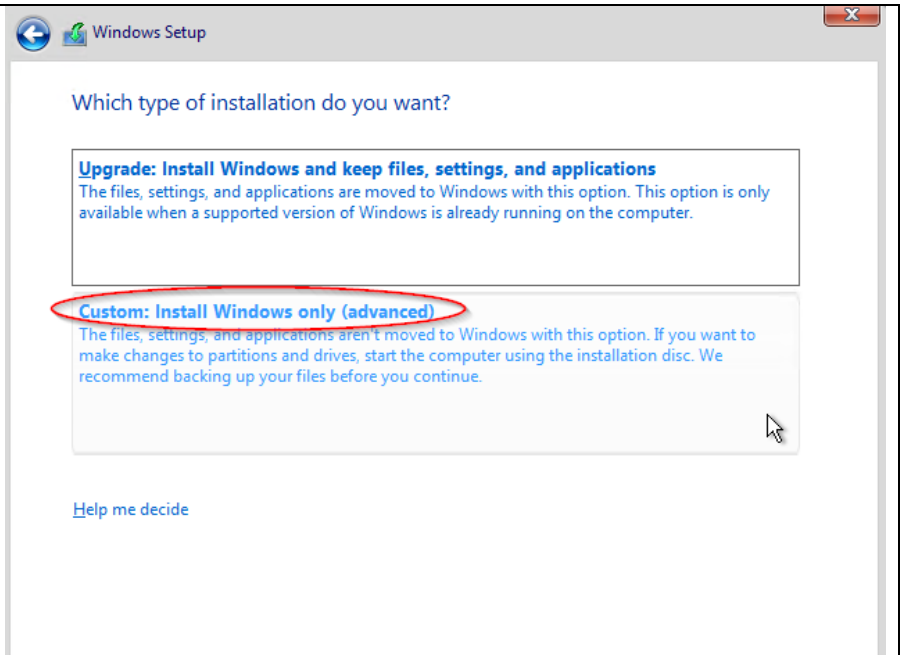


The screenshot shows the 'Windows Setup' window with the heading 'Select the operating system you want to install'. Below this is a table with three columns: 'Operating system', 'Architecture', and 'Date modified'. The table lists four options, with the last one, 'Windows Server 2016 Datacenter Evaluation (Desktop Experience)', highlighted with a red border. Below the table is a 'Description:' section explaining that this option is useful when a GUI is required. At the bottom right, there is a 'Next' button with a red arrow pointing to it.

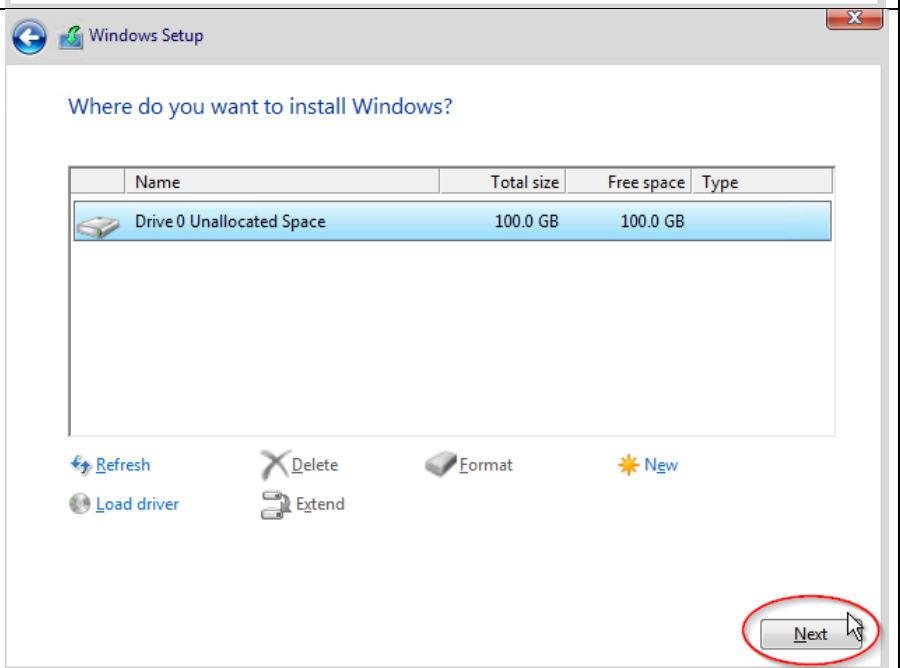
Operating system	Architecture	Date modified
Windows Server 2016 Standard Evaluation	x64	7/16/2016
Windows Server 2016 Standard Evaluation (Desktop Experience)	x64	7/16/2016
Windows Server 2016 Datacenter Evaluation	x64	7/16/2016
Windows Server 2016 Datacenter Evaluation (Desktop Experience)	x64	7/16/2016

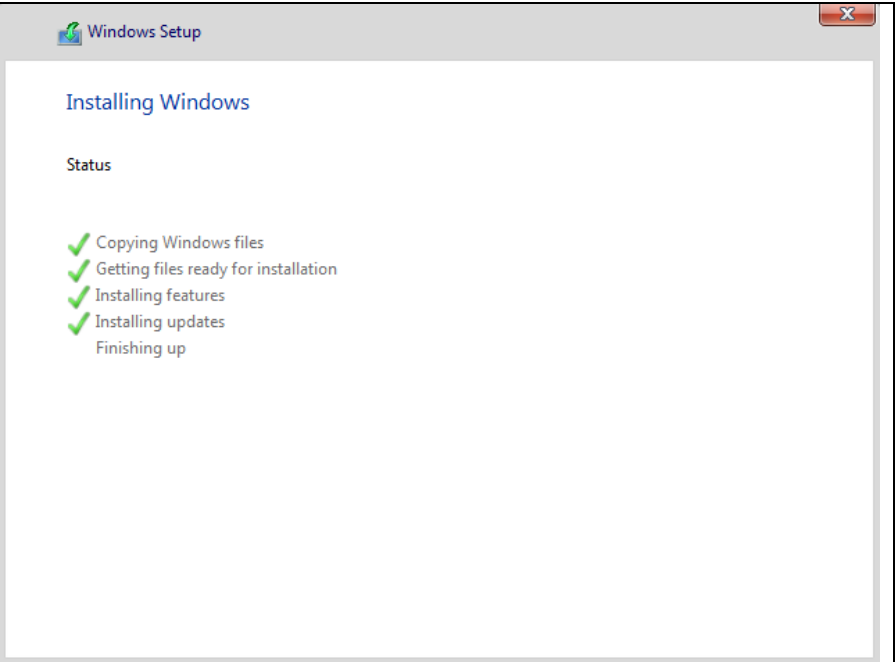
Description:
This option is useful when a GUI is required—for example, to provide backward compatibility for an application that cannot be run on a Server Core installation. All server roles and features are supported. For more details see "Windows Server Installation Options."

11. Click **Custom: Install Windows Only**



12. Click **Next**



13. Complete installation	 <p>The screenshot shows the 'Windows Setup' window with the title 'Installing Windows'. Under the 'Status' section, there is a list of five steps, each preceded by a green checkmark: 'Copying Windows files', 'Getting files ready for installation', 'Installing features', 'Installing updates', and 'Finishing up'.</p>
14.Repeat Steps for VM2	

Activity 2: Backup & Recovery

Estimated time to complete this activity

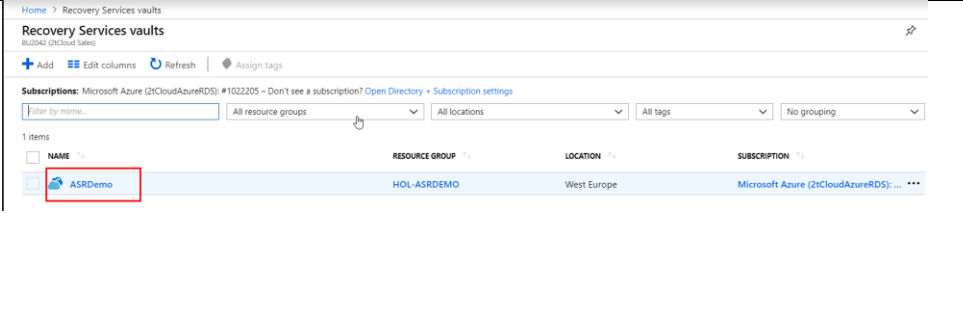
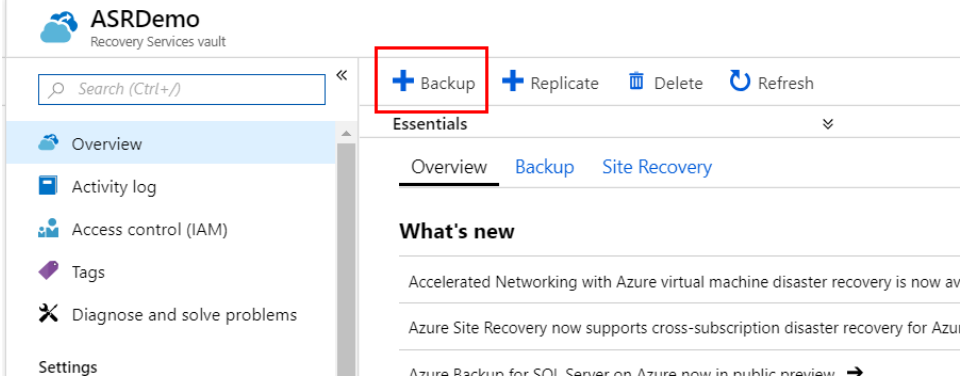
60 minutes

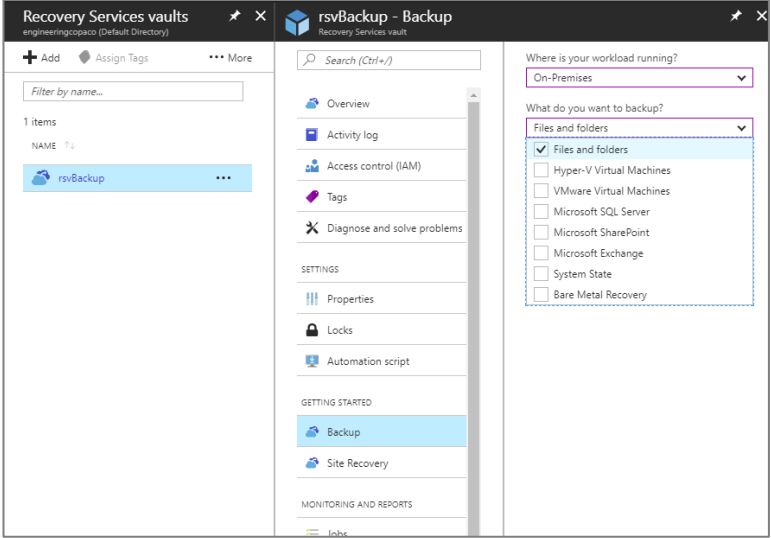
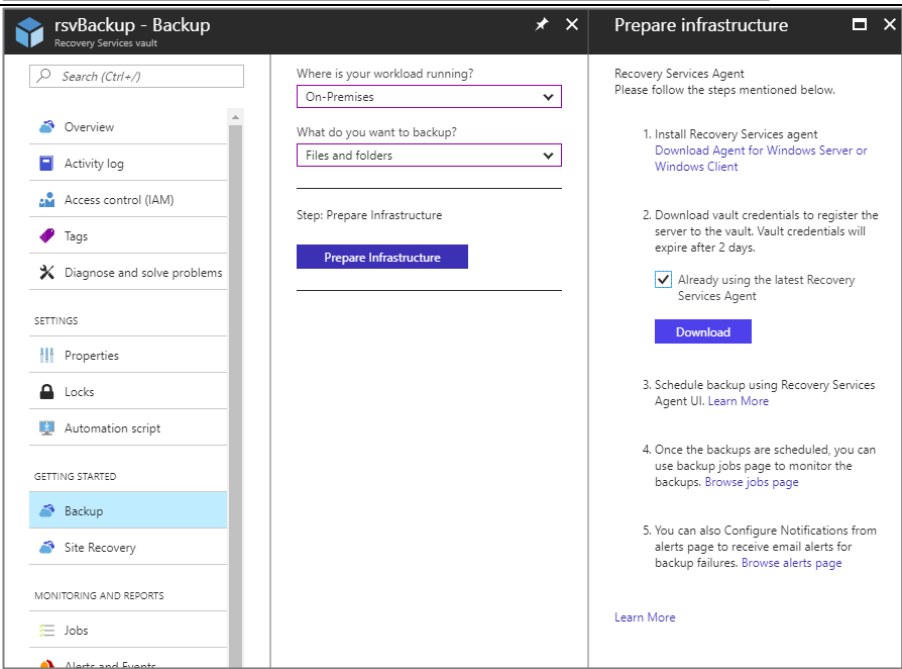
Objectives

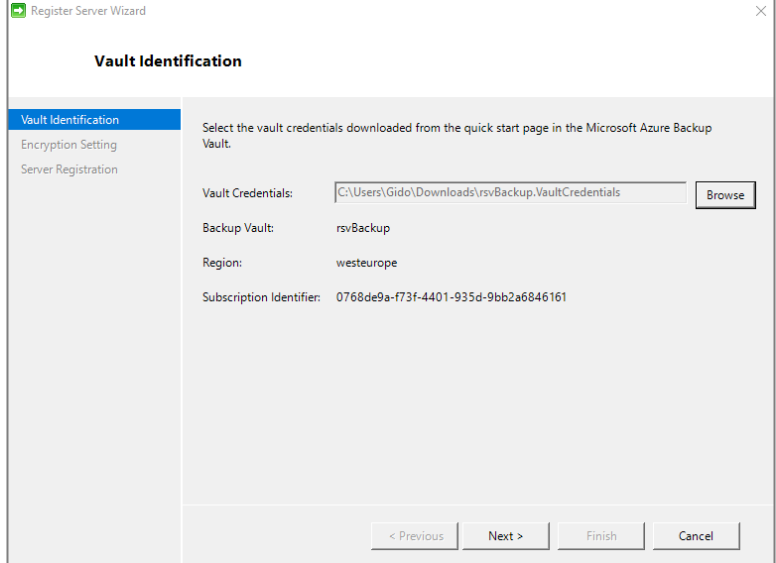
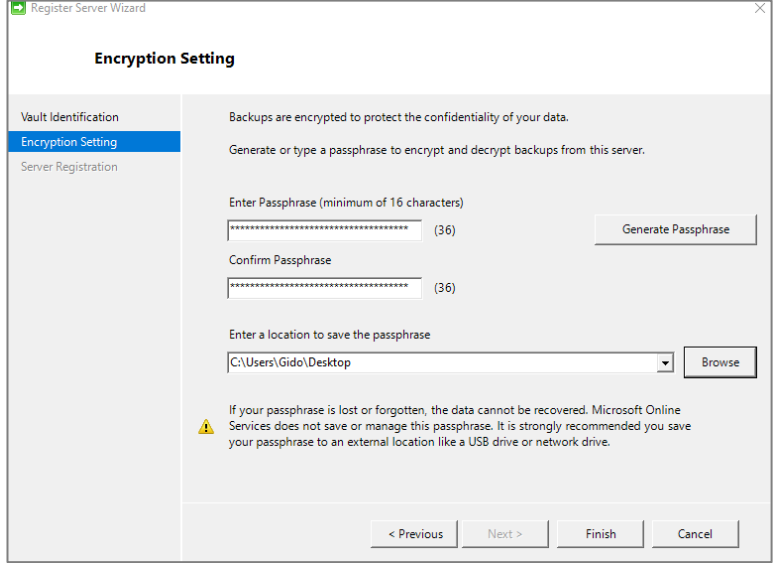
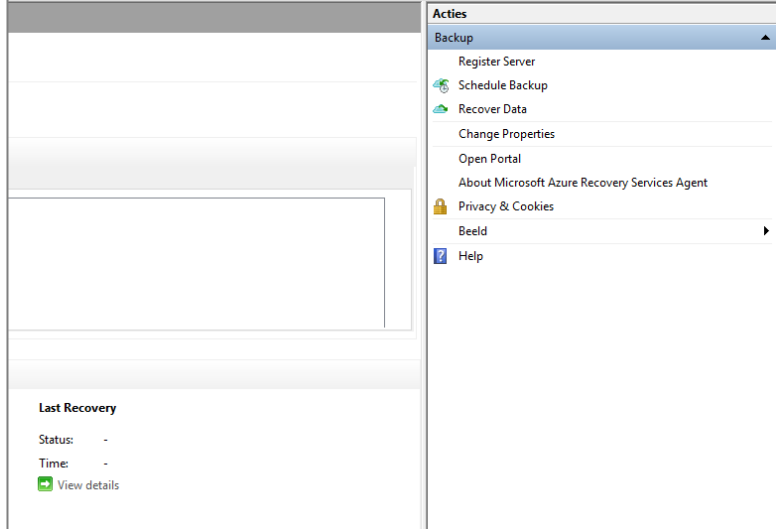
In this activity, you will;

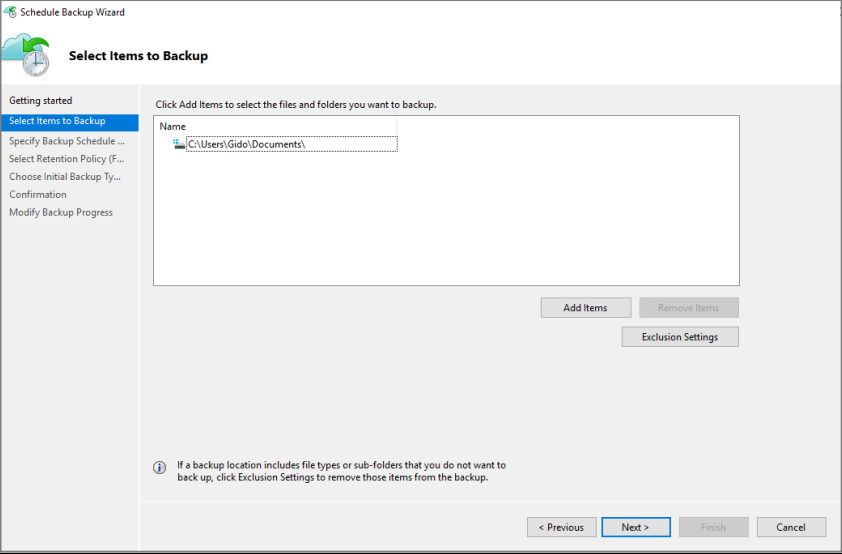
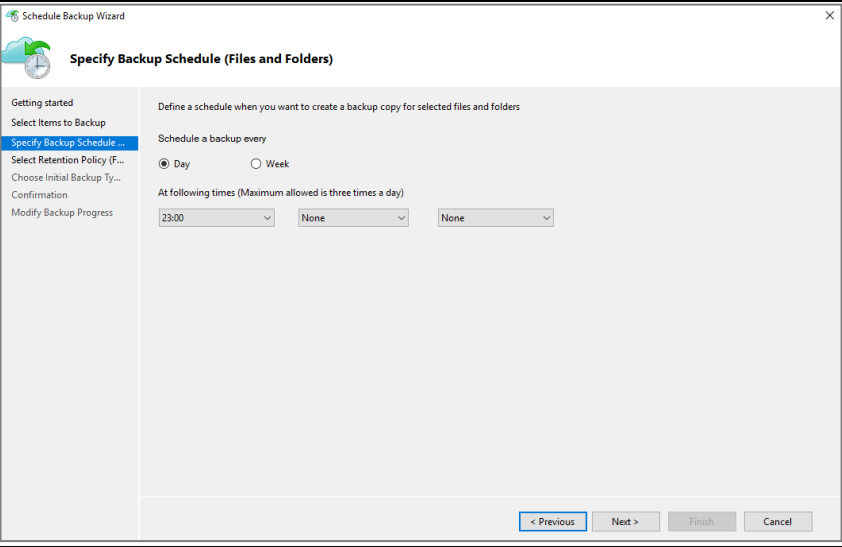
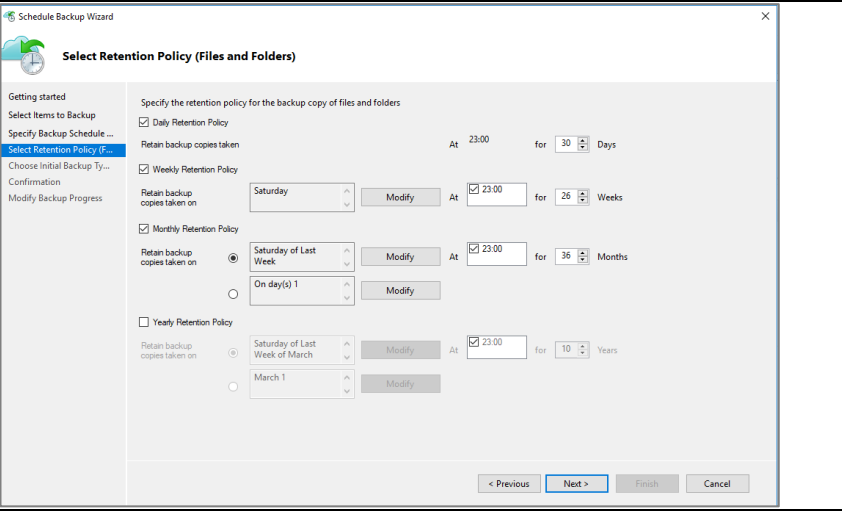
- Create a backup of your files using the Azure Recovery Agent
- Create a backup of your Azure Virtual Machine
- Perform a recovery of your files and folders using the Azure Recovery Agent
- Perform a recovery of your files and folders from your Azure Virtual Machine

Exercise 1: Create a backup of your files

<ol style="list-style-type: none"> 1. Login on the BK-SVR01, go to portal.azure.com and sign in. 2. From the Azure Portal, browse to your Recovery Services Vault from the Navigation pane 3. Select the created recovery vault 	 <p>The screenshot shows the 'Recovery Services vaults' page in the Azure portal. A table lists the vaults with columns: NAME, RESOURCE GROUP, LOCATION, and SUBSCRIPTION. The vault 'ASRDemo' is listed under the resource group 'HOL-ASRDEMO' in the 'West Europe' location, and is highlighted with a red box.</p>
<ol style="list-style-type: none"> 4. Choose Backup 	 <p>The screenshot shows the 'ASRDemo' Recovery Services vault page. On the left is a navigation pane with options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, and Settings. On the right, there are buttons for '+ Backup', '+ Replicate', 'Delete', and 'Refresh'. The '+ Backup' button is highlighted with a red box. Below these buttons are tabs for 'Overview', 'Backup', and 'Site Recovery', with 'Overview' currently selected. A 'What's new' section is also visible at the bottom.</p>

<p>5. Choose On Premises as the source of your backup and choose Files and Folders as the backup type</p>	
<p>6. Download the Recovery Services Agent with the link provided and enable the checkbox to confirm you have downloaded the agent.</p>	
<p>7. The Download button will become available, save the Vault Credentials to your local computer.</p>	

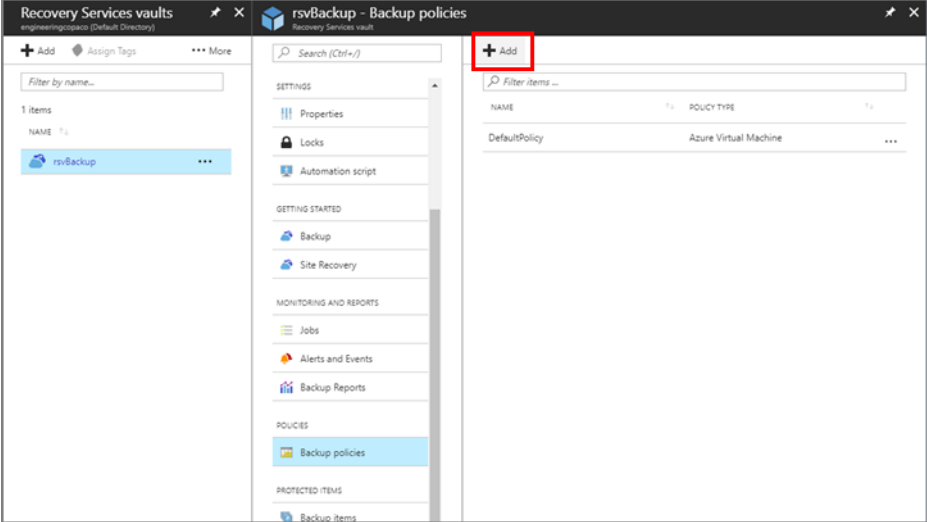
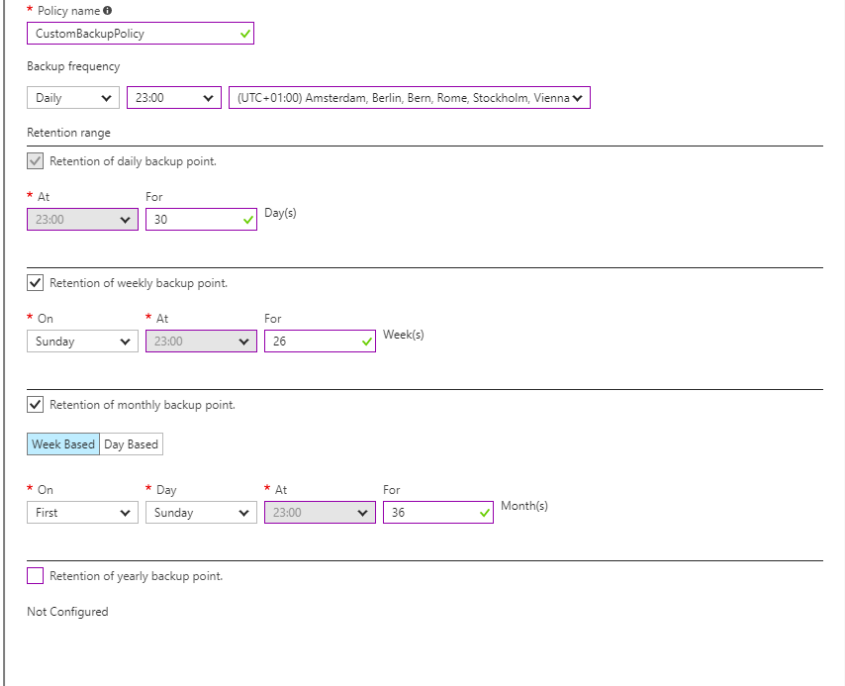
<p>8. When the downloads are ready, run the installer. Use the defaults, until you are asked for identification of the Vault. Select the Vault Credentials file you downloaded.</p>	
<p>9. Generate a Passphrase (or choose one yourself). Save it to your computer.</p>	
<p>10. Start Microsoft Azure Backup from the shortcut on your desktop 11. Schedule a backup from the action pane on the right.</p>	

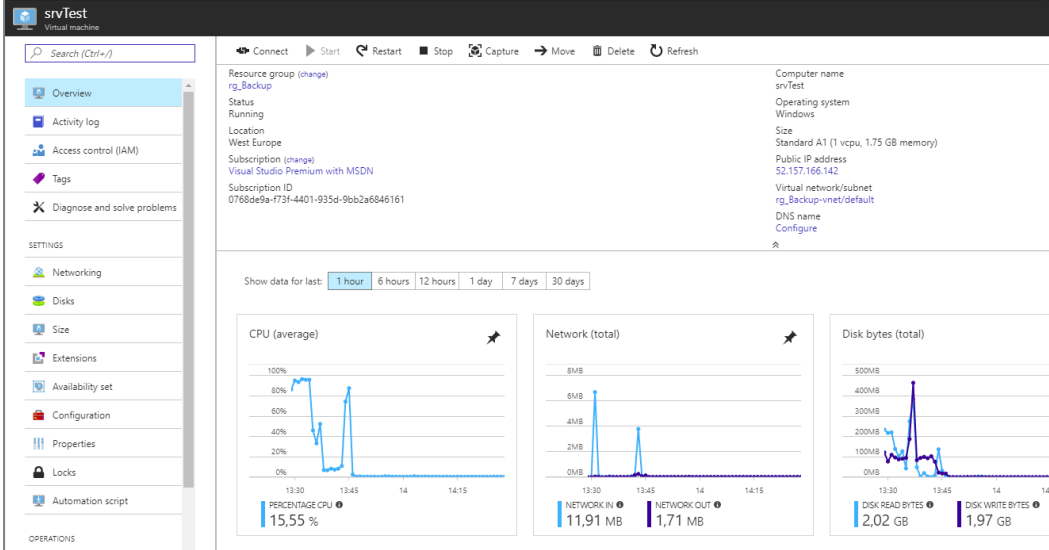
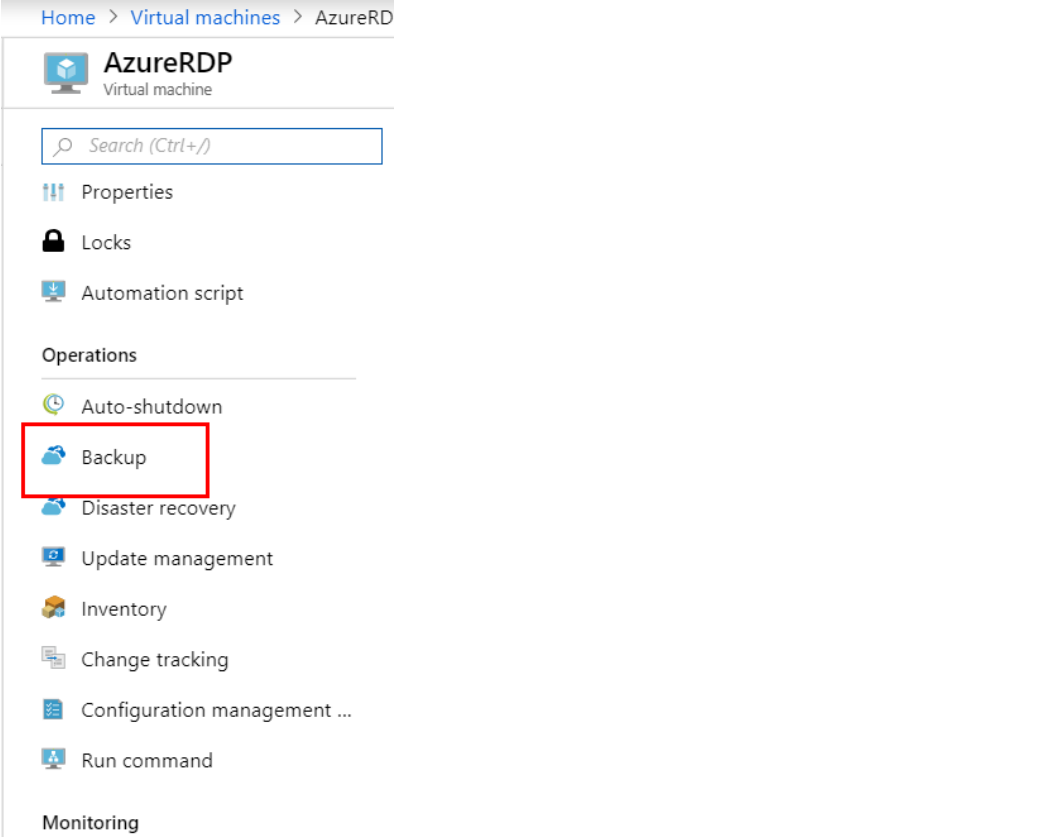
<p>12. Select the items you want to backup. Make sure the selection only has a small amount of data, so you don't have to wait.</p>	
<p>13. Select how often and when the backup can take place. For instance, at 23.00.</p>	
<p>14. Select the desired Retention Policy, for instance</p> <ul style="list-style-type: none"> a. Daily for 14 days b. Weekly for 4 weeks c. Monthly for 6 months d. No yearly backups 	
<p>15. On the next screen, you can choose to make adjustments for an offline</p>	

<p>backup scenario. Accept the defaults for automatic configuration and proceed.</p> <p>16. Finish the wizard and click Backup Now to do an instant backup.</p> <p>17. As the backup is running, proceed with the next exercise. We will return to the results of this exercise when the job is finished.</p>	
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Exercise 2: Create a backup of your Azure Virtual Machine

In this exercise we are going to back up the host VM

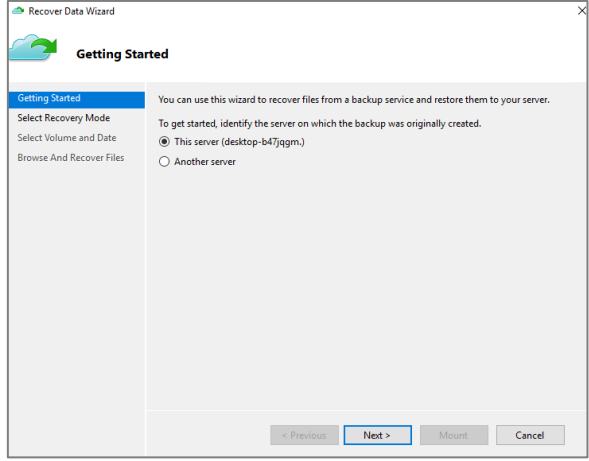
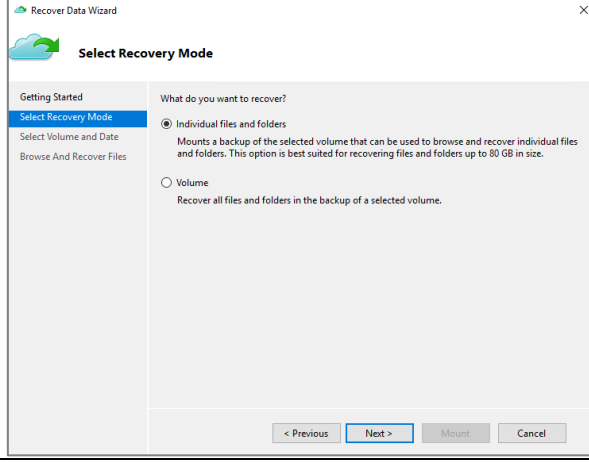
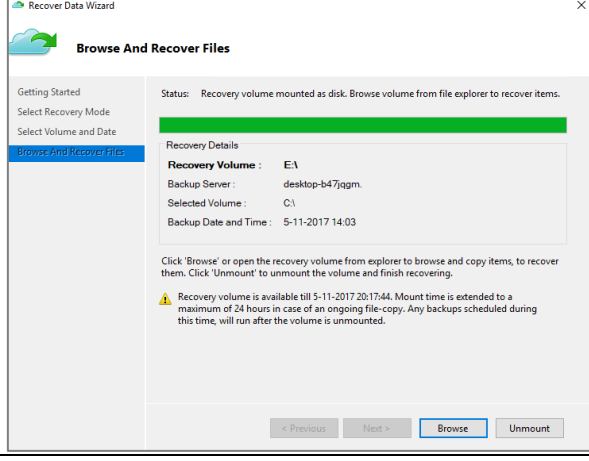
<ol style="list-style-type: none"> Go to the Azure Portal and browse to your Recovery Services Vault. Open Backup Policies from the navigation pane. Add a new Backup Policy 	
<ol style="list-style-type: none"> Choose Azure Virtual Machine Use the following parameters; <ol style="list-style-type: none"> Name CustomBackupPolicy Frequency Daily at 23:00 Daily retention 30 days Weekly retention 26 weeks Monthly retention 36 months Yearly retention None Create the policy 	

<p>6. Browse to the Resource Group created before</p> <p>7. Identify the Virtual Machine that was created in the previous exercise and select it to open the details. As you can see, it is running and the overview pane shows you basic insights on the VM.</p>	 <p>The screenshot shows the 'Overview' page for a virtual machine named 'srvTest'. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, and Diagnose and solve problems. The main area displays the VM's status as 'Running', its location as 'West Europe', and its subscription as 'Visual Studio Premium with MSDN'. Below this, there are three performance charts: CPU (average) showing 15.55%, Network (total) showing 11.91 MB in and 1.71 MB out, and Disk bytes (total) showing 2.02 GB read and 1.97 GB write. The top bar includes action buttons like Connect, Start, Restart, Stop, Capture, Move, Delete, and Refresh.</p>
<p>8. Select Backup</p>	 <p>The screenshot shows the 'Operations' section for a virtual machine named 'AzureRDP'. The left sidebar contains navigation links for Properties, Locks, Automation script, and Operations. The main area lists various operations: Auto-shutdown, Backup (highlighted with a red box), Disaster recovery, Update management, Inventory, Change tracking, Configuration management, and Run command. The top bar shows the breadcrumb 'Home > Virtual machines > AzureRD'.</p>

<p>9. Select:</p> <ol style="list-style-type: none"> Select Existing and choose the recovery vault you created Choose the backup policy you created And choose Enable Backup <p>10. Wait for the configuration to finish</p>	<h3>Enable backup</h3> <p>workspace365dem</p> <p>Welcome to Azure Backup Simple and reliable server backup to the cloud. Learn more. Charges are based on the number and size of VMs being backed up.</p> <p>Review the following information and click on 'Enable backup' to start protecting your VM.</p> <p>Recovery Services vault ⓘ <input type="radio"/> Create new <input checked="" type="radio"/> Select existing 1</p> <p>ASRDemo 2</p> <p>Choose backup policy ⓘ onedaybackup 3</p> <p>BACKUP FREQUENCY Daily at 12:00 PM W. Europe Standard Time</p> <p>RETENTION RANGE Retention of daily backup point Retain backup taken every day at 12:00 PM for 180 Day(s)</p> <p>Or Create (or edit) a new policy</p> <p>Enable Backup</p>						
<p>11. Open the Backup pane once again and click Backup Now. Select the desired retention and choose Backup.</p>	<p>Home > Virtual machines > workspace365dem - Backup > Backup Now</p> <p>Backup Now workspace365dem</p> <p>Backup now 1 Restore VM File Recovery Stop backup Resume backup More</p> <p>Alerts and Jobs View all Alerts (last 24 hours) View all Jobs (last 24 hours)</p> <p>Backup status Backup Pre-Check ✓ Passed Last backup status ⚠ Warning(initial backup pending)</p> <p>Summary Retain Backup Till 2 2018-11-29</p> <p>Restore points This list is filtered for last 30 days of restore points. To recover from restore point older than 30 days, click here.</p> <table border="1"> <thead> <tr> <th>CRASH CONSISTENT</th> <th>APPLICATION CONSISTENT</th> <th>FILE-SYSTEM CONSISTENT</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>TIME CONSISTENCY</p> <p>No restore points available.</p> <p>OK 3</p>	CRASH CONSISTENT	APPLICATION CONSISTENT	FILE-SYSTEM CONSISTENT	0	0	0
CRASH CONSISTENT	APPLICATION CONSISTENT	FILE-SYSTEM CONSISTENT					
0	0	0					

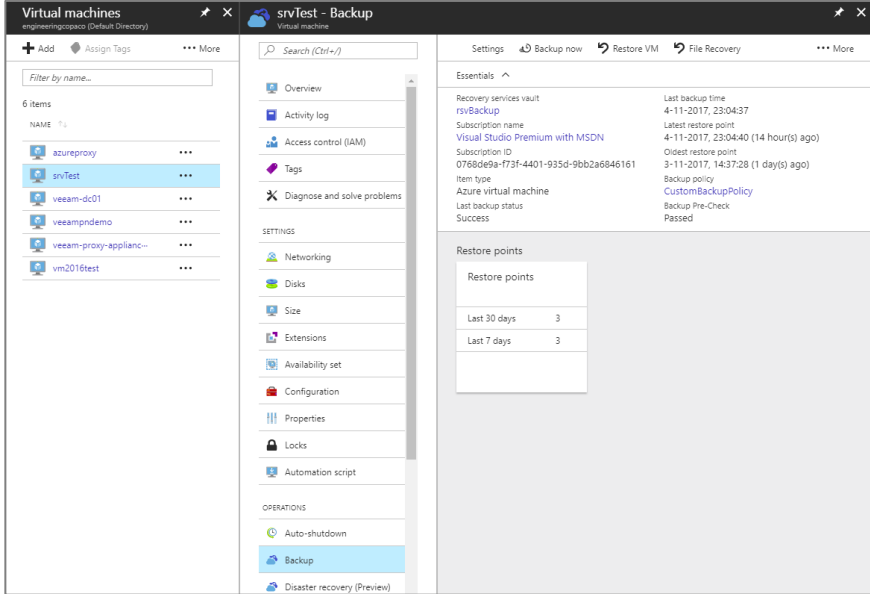
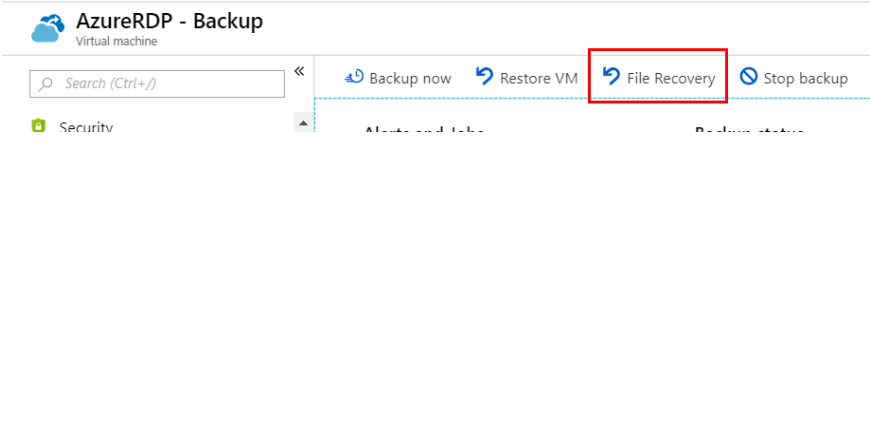
<p>You can verify the job is running from the Notification button in the top right of the Azure Portal. For detailed information;</p> <ol style="list-style-type: none">1. Open your Recovery Services Vault2. Open Backup Items under Protected Items. Please note the Azure Virtual Machine Count has gone up.	<div><div><div><div>Search (Ctrl+/)</div><div>Overview</div><div>Activity log</div><div>Access control (IAM)</div><div>Tags</div><div>Diagnose and solve problems</div><div>SETTINGS</div><div>Properties</div><div>Locks</div><div>Automation script</div><div>GETTING STARTED</div><div>Backup</div><div>Site Recovery</div><div>MONITORING AND REPORTS</div><div>Jobs</div><div>Alerts and Events</div><div>Backup Reports</div><div>POLICIES</div><div>Backup policies</div><div>PROTECTED ITEMS</div><div>Backup items</div><div>Replicated items</div></div><div><div>Refresh</div><table><thead><tr><th>BACKUP MANAGEMENT TYPE</th><th>BACKUP ITEM COUNT</th></tr></thead><tbody><tr><td>Azure Virtual Machine</td><td>1</td></tr><tr><td>Azure Backup Agent</td><td>1</td></tr><tr><td>Azure Backup Server</td><td>0</td></tr></tbody></table></div></div></div>	BACKUP MANAGEMENT TYPE	BACKUP ITEM COUNT	Azure Virtual Machine	1	Azure Backup Agent	1	Azure Backup Server	0		
BACKUP MANAGEMENT TYPE	BACKUP ITEM COUNT										
Azure Virtual Machine	1										
Azure Backup Agent	1										
Azure Backup Server	0										
<ol style="list-style-type: none">3. Click on it to get detailed information	<div><div><div>Backup Items (Azure Virtual Machine)</div><div>RefreshAddFilter</div><div><div>Fetching data from service completed.</div><div>Filter items ...</div><table><thead><tr><th>NAME</th><th>RESOURCE GROUP</th><th>BACKUP PRE-CHECK</th><th>LAST BACKUP STATUS</th><th>LATEST RESTORE POINT</th></tr></thead><tbody><tr><td>srvTest</td><td>rg_Backup</td><td>Passed</td><td>Warning(initial backu...</td><td>...</td></tr></tbody></table></div></div><div><div>srvTest</div><div>Backup Item</div><div>SettingsBackup nowRestore VMFile Recovery</div><div>Essentials</div><div><div>Recovery services vault</div><div>rsvBackup</div><div>Subscription name</div><div>Visual Studio Premium with MSDN</div><div>Subscription ID</div><div>0768de9a-f73f-4401-935d-9bb2a6846161</div><div>Item type</div><div>Azure virtual machine</div><div>Last backup status</div><div>Warning(initial backup pending)</div><div>Last backup time</div><div>-</div><div>Latest restore point</div><div>-</div><div>Oldest restore point</div><div>-</div><div>Backup policy</div><div>CustomBackupPolicy</div><div>Backup Pre-Check</div><div>Passed</div></div><div><div>Restore points</div><div>Restore points</div><div>Last 30 days</div><div>0</div><div>Last 7 days</div><div>0</div></div></div></div>	NAME	RESOURCE GROUP	BACKUP PRE-CHECK	LAST BACKUP STATUS	LATEST RESTORE POINT	srvTest	rg_Backup	Passed	Warning(initial backu...	...
NAME	RESOURCE GROUP	BACKUP PRE-CHECK	LAST BACKUP STATUS	LATEST RESTORE POINT							
srvTest	rg_Backup	Passed	Warning(initial backu...	...							
<ol style="list-style-type: none">4. Proceed to the next exercise. While the backup of your Virtual Machine is running, we'll check on the backup of your Files and Folders that we started before.											

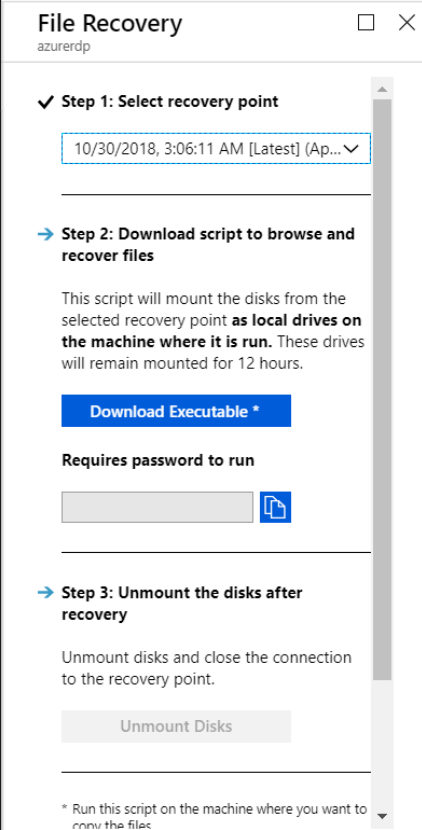
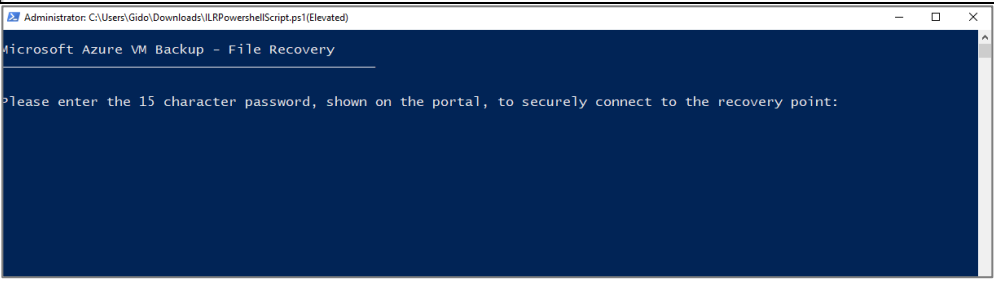
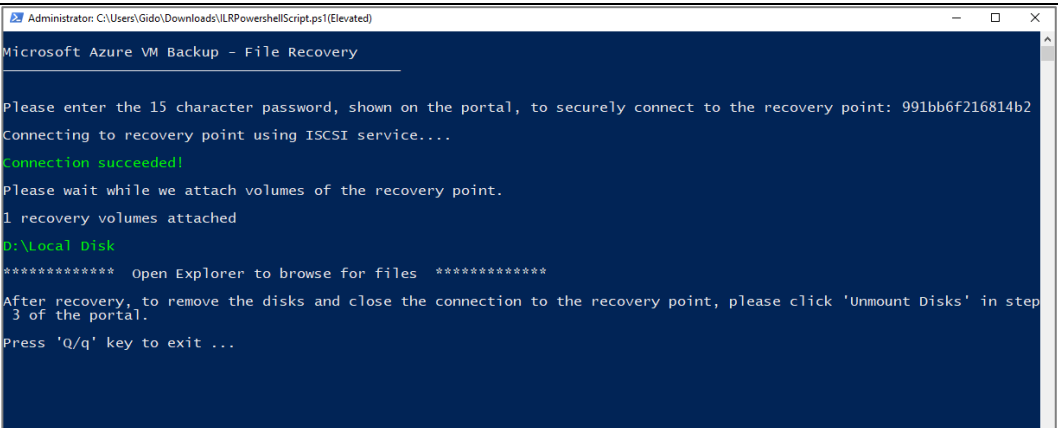
Exercise 3: Perform a recovery of your Files and Folders

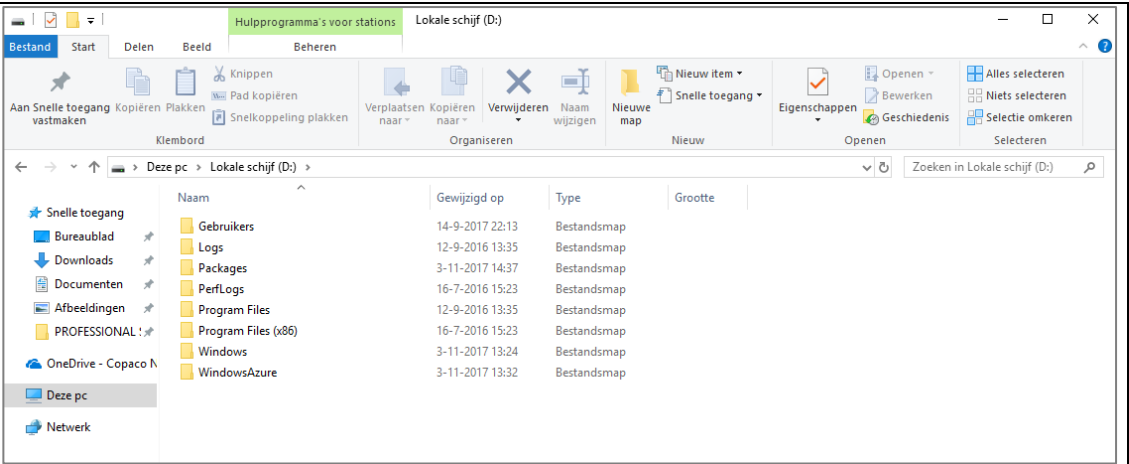
<ol style="list-style-type: none"> 1. Start the Microsoft Azure Backup shortcut on your desktop of the BK-SVR01 2. Start the Microsoft Azure Backup shortcut on your desktop. 3. The Jobs overview will show you if your backup job was successful. From the Action pane on the right, choose to Recover Data. From the Getting Started wizard, choose to Recover from this server 	
<ol style="list-style-type: none"> 4. Choose to restore individual Files and Folders and select C:\ as the volume 	
<ol style="list-style-type: none"> 5. From the calendar, select the restore point just created. Click Mount 	
<ol style="list-style-type: none"> 6. When the volume is mounted, you can click Browse to recover file by using the copy and paste options from Windows Explorer. Try to recover your files. 	

7. When finished, click Unmount from the Recover Data Wizard.	
--	--

Exercise 4: Perform a recovery of your VM files

<p>1. From the Resource Group, open your Virtual Machine. From there, select Backup to see the backup state of this machine. Check the Last Backup State, it should now show successful.</p>	
<p>2. Please note it is possible to restore the full VM from here. However, this activity is not included in this lab. Instead, for this exercise, open File Recovery.</p>	

<p>3. Select Recovery Point and click Download Executable</p> <p>4. Copy the password to clipboard</p>	
<p>5. Browse the executable on your local computer. Right click to Run as Administrator</p>	
<p>6. Paste (or type) the password from clipboard when asked. Please wait while the Recovery Point is mounted.</p>	

7. From the Windows Explorer , the Recovery Point is mounted as a drive letter (D:)	
8. Try to browse the Recovery Point and copy some files to your local drive.	
9. When done, click Unmount Disks from the Azure Portal. After some time, the drive mapping on your local machine will disappear.	

Introduction - Azure Site Recovery

Site Recovery helps ensure business continuity by keeping business apps and workloads running during outages. Site Recovery replicates workloads running on physical and virtual machines (VMs) from a primary site to a secondary location. When an outage occurs at your primary site, you fail over to secondary location, and access apps from there. After the primary location is running again, you can fail back to it.

Estimated time to complete this lab

75 minutes

Objectives

During this lab, you will learn how to get started on Azure with Azure Backup to;

- Login to your Azure CSP tenant
- Prepare Site Recovery Infrastructure
- Install Agent on HOST VM
- Configure OS types and Disks
- Configure Replication Settings
- Enable Replication
- Configure and enable fail-over test

Prerequisites

- Laptop/computer with Internet browser and Wi-Fi connected
- Account with an Azure CSP Subscription

Student Materials

All student materials are available for download here:

<https://github.com/Copaco/handsonlab/>

Activity 1: Getting Started

Objectives

In this activity, you will configure the components necessary to perform this lab:

In this activity, you will validate the necessary access to perform this lab

- Login to your Azure CSP tenant
- Recovery Services Vault
- HOST VM and 2 Guest VMs with Server 2016 and internet connectivity

After verifying your access, you will use the Azure tenant to create a Site Recovery infrastructure and perform replication and fail-over tests.

Estimated time to complete this activity

? minutes

Exercise 1: Configure Hyper-V Host

1. Open **Resource Group** "rg_bk_sr"

2. Open **Recovery Services Vault** "rsvbksr0111"

Home > Resource groups

Resource groups

Standaardmap

+ Add

Edit columns

Refresh

Assign tags

Subscriptions: Microsoft Partner Network – Don't see a subscription? [Open Directory + Subscription settings](#)

Filter by name...


1 items

☐

NAME

↑↓

☐

 rg_bk_sr

rg_bk_sr

Resource group

Search (Ctrl+/)

«

Overview

Activity log

Access control (IAM)

Tags

Events

Settings

Quickstart

Resource costs

+ Add

Edit columns

Delete resource group

Refresh

Move

Assign tags

Subscription [\(change\)](#) Microsoft Partner Network

Subscription ID 52425b7a-5f59-40f3-8970-ec102f0aa3d1

Deployment 1 Success

Tags [\(change\)](#)
[Click here to add tags](#)

Filter by name...

All types

All locations

No

1 items


☐ Show hidden types

☐

NAME

↑↓

☐

 rsvbksr0111

TYPE

↑↓

Recovery Services vault

3. Click **Site Recovery Infrastructure**

4. Click **Hyper-V Site**

5. Add **Name** "ASRHOST"

6. Click **OK**

Home > HOL-BKR > Site Recovery infrastructure - Hyper-V Sites

Site Recovery infrastructure - Hyper-V Sites

HOL-BKR

Search (Ctrl+/)

«

Overview

For Azure virtual machines

Network mapping

Replication policies

Extension update settings

For VMware & Physical Machines

Configuration Servers

Replication policies

For System Center VMM

VMM Servers

Network mapping

Replication policies

For Hyper-V Sites

Hyper-V Sites

Hyper-V Hosts

Replication policies

+ Hyper-V site

Search

NAME

No Hyper-V sites have been added.

Page | 51

7. Click **Site Recovery Infrastructure**

8. Click **Hyper-V Hosts**

9. Click **Server**

Home > Resource groups > rg_bk_sr > rsvbksr0111 - Site Recovery Infrastructure > Servers

rsvbksr0111 - Site Recovery Infrastructure

Recovery Services vault

Search (Ctrl+J)

Filter settings

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Properties

Locks

Automation script

Getting started

Backup

Site Recovery

Protected items

Backup items

Replicated items

Manage

Backup policies

Backup Infrastructure

Site Recovery Infrastructure

Recovery Plans (Site Recovery)

Backup Reports

FOR AZURE VIRTUAL MACHINES

Network Mapping

Replication Policies

Extension Update Settings

FOR SYSTEM CENTER VMM

VMM Servers

Network Mapping

Replication Policies

FOR VMWARE & PHYSICAL MACHINES

Configuration Servers

Replication Policies

FOR HYPER-V SITES

Hyper-V Sites

Hyper-V Hosts

Replication Policies

Servers

rsvbksr0111

+ Server

Finished loading data from service.


SERVER NAME

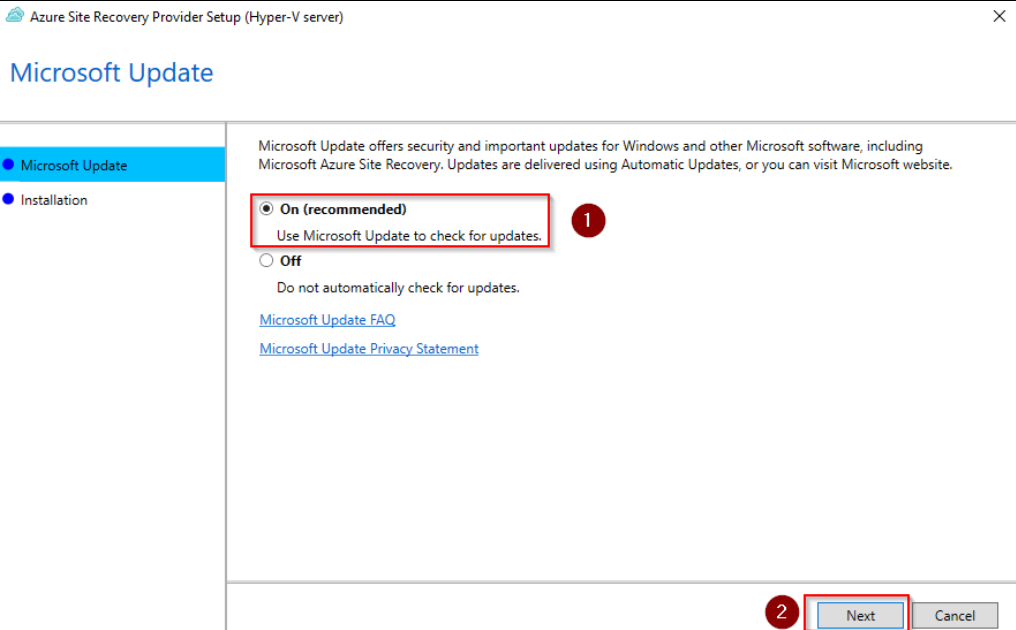
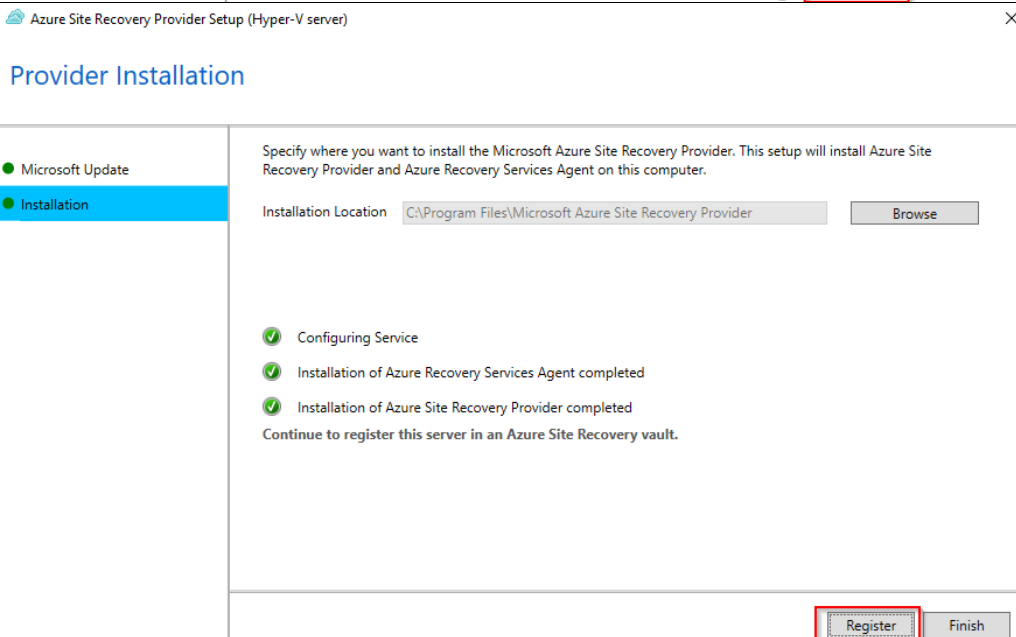
CONNECTION STATUS


LAST HEARTBEAT

No servers are registered yet. Click on + Servers to read more on how to get started

Page | 52

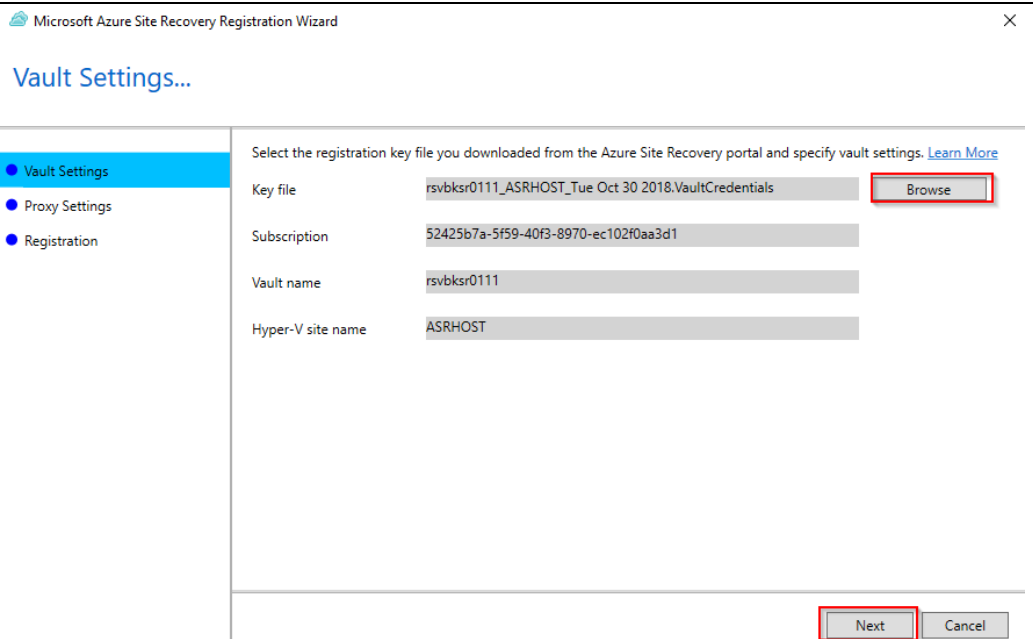
<p>10. Download the Site Recovery Provider Software on the HOST VM "vm-host-bk-asr"</p> <p>* Download URL http://aka.ms/downloaddrawe</p>	<div data-bbox="539 280 1082 1352"> <h3>Add Server</h3> <p>rsvbksr0111</p> <p>Server type</p> <p>Hyper-V server</p> <div>  <p>Adding Hyper-V server may take ... minutes to 30 minutes</p> </div> <p>Register your Hyper-V host(s)</p> <p>On-premises</p> <ol style="list-style-type: none"> 1. Make sure the host is running Windows Server 2012 R2 or above. Learn more. 2. Configure Proxy setting and ensure each host can access the Service URLs 3. Download the installer for the Microsoft Azure Site Recovery Provider. 4. Download the vault registration key to register the host in a Hyper-V site <p>Select one...</p> <p>Download</p> 5. Install the Provider on the Hyper-V host and use the registration key to register the host in the vault. Learn more. </div>
<p>11. Open Installer "AzureSiteRecoveryProvider.exe"</p>	

<p>12. Select ON, click Next and Install</p>	 <p>Azure Site Recovery Provider Setup (Hyper-V server)</p> <h3>Microsoft Update</h3> <p>Microsoft Update offers security and important updates for Windows and other Microsoft software, including Microsoft Azure Site Recovery. Updates are delivered using Automatic Updates, or you can visit Microsoft website.</p> <p> <input checked="" type="radio"/> On (recommended) Use Microsoft Update to check for updates. </p> <p> <input type="radio"/> Off Do not automatically check for updates. </p> <p> Microsoft Update FAQ Microsoft Update Privacy Statement </p> <p>Next Cancel</p>
<p>13. Click Register</p>	 <p>Azure Site Recovery Provider Setup (Hyper-V server)</p> <h3>Provider Installation</h3> <p>Specify where you want to install the Microsoft Azure Site Recovery Provider. This setup will install Azure Site Recovery Provider and Azure Recovery Services Agent on this computer.</p> <p> Installation Location: C:\Program Files\Microsoft Azure Site Recovery Provider Browse </p> <p> <input checked="" type="radio"/> Microsoft Update <input checked="" type="radio"/> Installation </p> <p> <input checked="" type="checkbox"/> Configuring Service <input checked="" type="checkbox"/> Installation of Azure Recovery Services Agent completed <input checked="" type="checkbox"/> Installation of Azure Site Recovery Provider completed Continue to register this server in an Azure Site Recovery vault. </p> <p>Register Finish</p>

<p>14. Download Vault registration key</p> <p>15. Save VaultCredentials file</p> <p>16. Copy file to HOST VM "vm-host-bk-asr"</p>	<div data-bbox="507 286 1267 1691"> <h2>Add Server</h2> <p>rsvbksr0111</p> <hr/> <p>Server type</p> <div data-bbox="549 461 1214 519">Hyper-V server</div> <div data-bbox="549 604 1214 728">  <p>Adding Hyper-V server may take 15 minutes to 30 minutes</p> </div> <p>Register your Hyper-V host(s)</p> <p>On-premises</p> <ol style="list-style-type: none"> 1. Make sure the host is running Windows Server 2012 R2 or above. Learn more. 2. Configure Proxy setting and ensure each host can access the Service URLs 3. Download the installer for the Microsoft Azure Site Recovery Provider. 4. Download the vault registration key to register the host in a Hyper-V site <div data-bbox="608 1384 1214 1442">ASRHOST</div> <div data-bbox="590 1442 869 1525"> <div>Download</div> </div> 5. Install the Provider on the Hyper-V host and use the registration key to register the host in the vault. Learn more. </div>
--	--

17. Import VaultCredentials file via **Browse**

18. Click **Next**



Microsoft Azure Site Recovery Registration Wizard

Vault Settings...

Select the registration key file you downloaded from the Azure Site Recovery portal and specify vault settings. [Learn More](#)

Key file: Browse

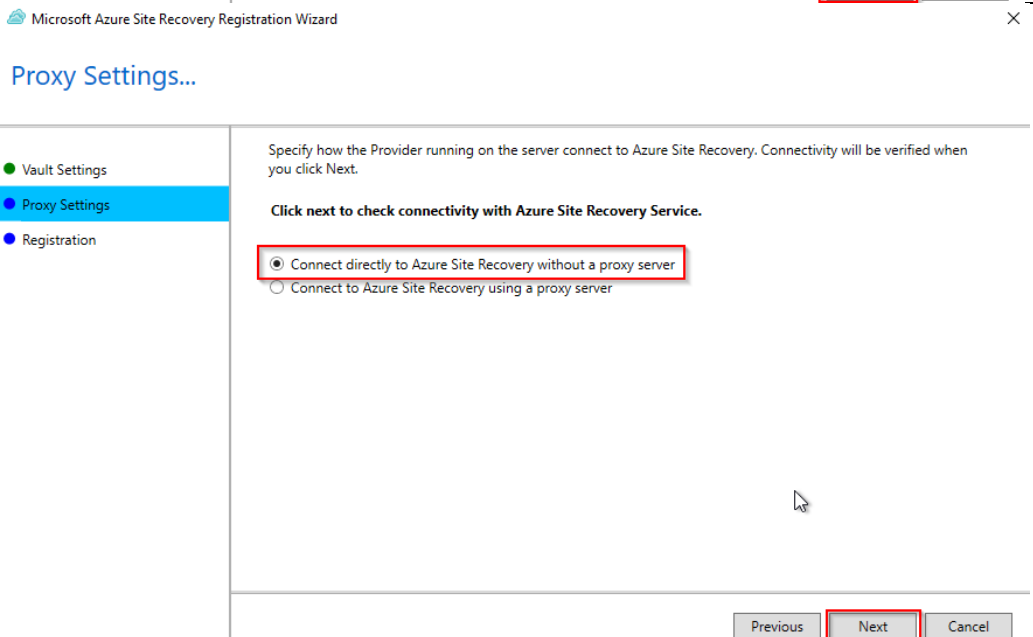
Subscription:

Vault name:

Hyper-V site name:

Next Cancel

19. Click **Next**



Microsoft Azure Site Recovery Registration Wizard

Proxy Settings...

Specify how the Provider running on the server connect to Azure Site Recovery. Connectivity will be verified when you click Next.

Click next to check connectivity with Azure Site Recovery Service.

☒ Connect directly to Azure Site Recovery without a proxy server

☐ Connect to Azure Site Recovery using a proxy server

Previous Next Cancel

20. Click **Finish**

Microsoft Azure Site Recovery Registration Wizard

Registration

Vault Settings

Proxy Settings

Registration

✔ The server was registered in the Azure Site Recovery vault

Finish

21. Check **Hyper-V Host** status

Infrastructure

Servers

rsvbkst0111

+ Server

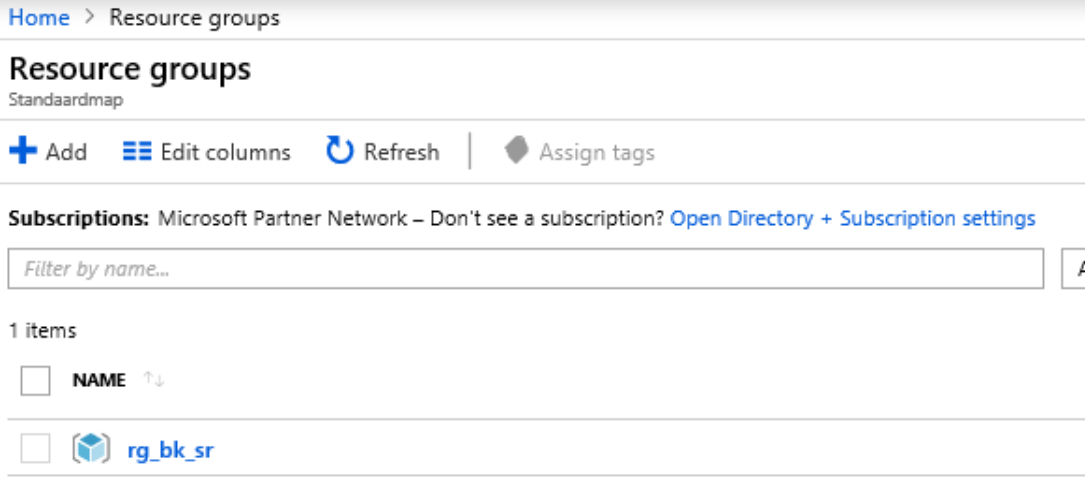
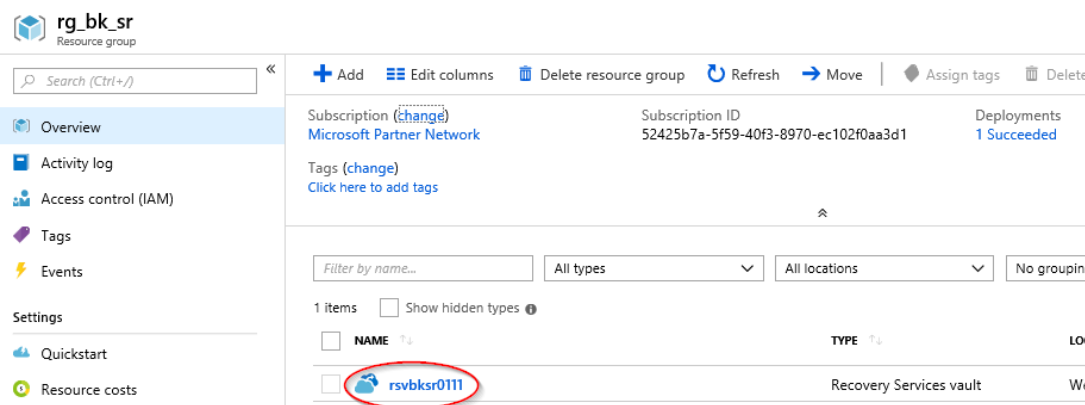
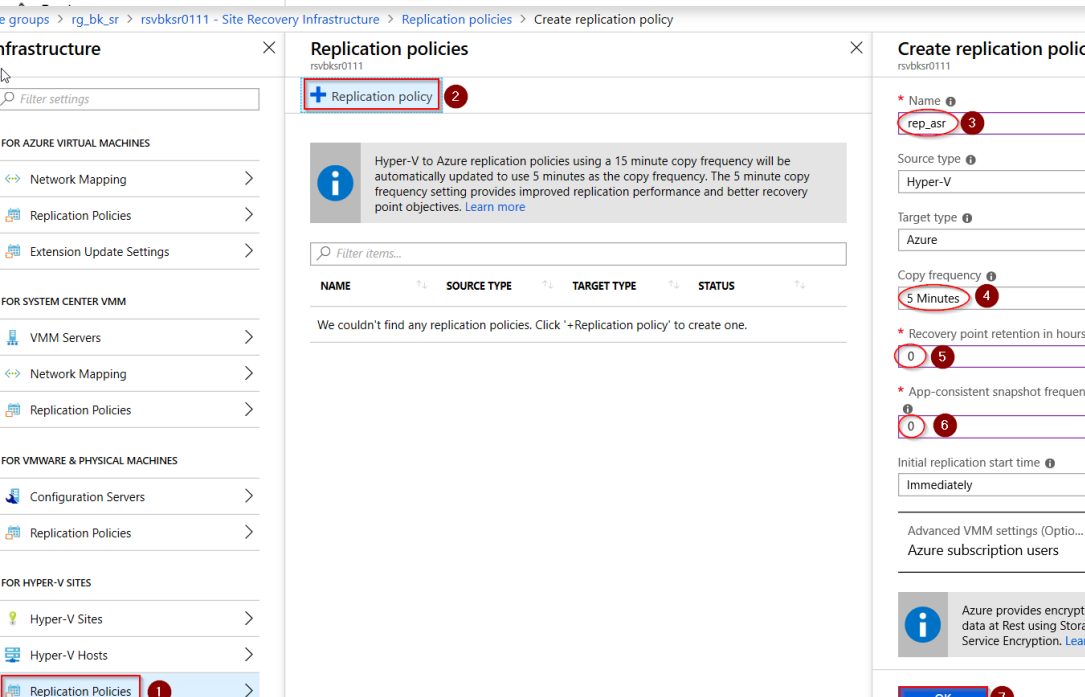
Finished loading data from service.

Filter items...

SERVER NAME	CONNECTION STATUS	LAST HEARTBEAT	AGENT VERSION	SERVER TYPE
vm-host-bk-asr	Connected	10/30/2018, 8:12:50 PM	5.1.3650.0 (latest)	Hyper-V server

<p>22. Click Server Name for extra info</p>	<div> <div>vm-host-bk-asr</div> <div>Hyper-V server</div> <div> <div>Refresh Server</div> <div>Renew Certificates</div> <div>Error Details</div> <div>Delete</div> </div> <table> <tr> <td>Name</td><td>vm-host-bk-asr</td></tr> <tr> <td>Server ID</td><td>29583063-cf7d-45ea-84f5-5c8968fd3f02</td></tr> <tr> <td>Hyper-V Site</td><td>ASRHOST</td></tr> <tr> <td>Connection status</td><td>✓ Connected</td></tr> <tr> <td>Last heartbeat</td><td>10/30/2018, 8:13:50 PM</td></tr> <tr> <td>Agent version</td><td>5.1.3650.0 (latest)</td></tr> <tr> <td>Protected items</td><td>0</td></tr> </table> </div>	Name	vm-host-bk-asr	Server ID	29583063-cf7d-45ea-84f5-5c8968fd3f02	Hyper-V Site	ASRHOST	Connection status	✓ Connected	Last heartbeat	10/30/2018, 8:13:50 PM	Agent version	5.1.3650.0 (latest)	Protected items	0
Name	vm-host-bk-asr														
Server ID	29583063-cf7d-45ea-84f5-5c8968fd3f02														
Hyper-V Site	ASRHOST														
Connection status	✓ Connected														
Last heartbeat	10/30/2018, 8:13:50 PM														
Agent version	5.1.3650.0 (latest)														
Protected items	0														

Exercise 2: Configure Replication Policy and enable replication

<ol style="list-style-type: none"> 1. Open Resource Group "rg_bk_sr" 	 <p>The screenshot shows the 'Resource groups' page in the Azure portal. The breadcrumb is 'Home > Resource groups'. The title is 'Resource groups' with a subtitle 'Standaardmap'. There are buttons for '+ Add', 'Edit columns', 'Refresh', and 'Assign tags'. Below this, it says 'Subscriptions: Microsoft Partner Network – Don't see a subscription? Open Directory + Subscription settings'. There is a search bar 'Filter by name...'. Under '1 items', there is a table with one item: 'rg_bk_sr'.</p>
<ol style="list-style-type: none"> 2. Open Recovery Services Vault "rsvbksr0111" 	 <p>The screenshot shows the 'rg_bk_sr' resource group page. The left sidebar has 'Overview' selected. The main area shows 'Subscription (change) Microsoft Partner Network', 'Subscription ID 52425b7a-5f59-40f3-8970-ec102f0aa3d1', and 'Deployments 1 Succeeded'. Below this is a table with one item: 'rsvbksr0111' of type 'Recovery Services vault'. The 'rsvbksr0111' item is circled in red.</p>
<ol style="list-style-type: none"> 3. Click Replication Policies 4. Add Replication Policy 5. Set Name "rep_asr" 6. Select Copy frequency "5 minutes" 7. Set Recovery Point "0" 8. Set App-consistent "0" 9. Click OK 	 <p>The screenshot shows the 'Create replication policy' dialog box. The left sidebar has 'Replication Policies' selected. The main area shows 'Hyper-V to Azure replication policies using a 15 minute copy frequency will be automatically updated to use 5 minutes as the copy frequency. The 5 minute copy frequency setting provides improved replication performance and better recovery point objectives. Learn more'. Below this is a table with one item: 'rep_asr' of type 'Hyper-V'. The 'rep_asr' item is circled in red. The 'Copy frequency' is set to '5 Minutes'. The 'Recovery point retention in hours' is set to '0'. The 'App-consistent snapshot frequency' is set to '0'. The 'Initial replication start time' is set to 'Immediately'. The 'Advanced VMM settings (Optional)' section is expanded, showing 'Azure subscription users'. The 'OK' button is circled in red.</p>

10. Click **Name**
"rep_asr"

11. Click **Associate Hyper-V Site**

ips > rg_bk_sr > rsvbksr0111 - Site Recovery Infrastructure > Replication policies > rep_asr

Replication policies

rsvbksr0111

+ Replication policy

i

Hyper-V to Azure replication policies using a 15 minute copy frequency will be automatically updated to use 5 minutes as the copy frequency. The 5 minute copy frequency setting provides improved replication performance and better recovery point objectives. [Learn more](#)

Filter items...

NAME

SOURCE TYPE

TARGET TYPE

STATUS

rep_asr

Hyper-V

Azure

Not in use

...

rep_asr

Edit settings

Associate VMM cloud

Associate Hyper-V site

Replication settings

Source type

Hyper-V

Target type

Azure

Copy frequency

5 Minutes

Recovery point retention

0 Hours

App consistent snapshot frequency

0 Hours

Initial replication start time

Immediately

Encrypt data stored on Azure

Off

VMM settings

Not configured

12. Select **Associated Hyper-V Site**
"ASRHOST"

13. Click **OK**

Associate Hyper-V site

rsvbksr0111

* Associated Hyper-V site

ASRHOST

OK

14. Click **Overview**

15. Click **Replicate**

Home > Resource groups > rg_bk_sr > rsvbksr0111

rsvbksr0111

Recovery Services vault

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

+ Backup

+ Replicate

Essentials

Overview

Backup

Site R

What's new

16. Click **OK**

Home > Resource groups > rg_bk_sr > rsvbksr0111 > Enable replication > Source

Enable replication

rsvbksr0111

1

Source
Configure

>

2

Virtual machines
Select

>

3

Replication settings
Configure replication settings

>

Enable replication

Source

rsvbksr0111

Select your source environment

Source

On-premises

* Source location ⓘ

ASRHOST

OK

17. Click **Storage Account**
18. Select **Create new**
19. Set unique **Name**
"asrstorage0111x
xx"
20. Select
Replication LRS
21. Select **Azure Network**
configure later
22. Click **OK**

Home > Resource groups > rg_bk_sr > rsvbksr0111 > Enable replication > Target > Choose storage account

Enable replication

1 Source
ASRHOST

2 Target
Configure

3 Virtual machines
Select

4 Properties
Configure properties

5 Replication settings
Configure replication settings

Target

Select your target settings for recovery

* Target
Azure

* Subscription
Microsoft Partner Network

Post-failover resource group
rg_bk_sr

* Post-failover deployment model
Resource Manager

* Storage account
Select

Azure network
Configure later

You can go to individual machine's 'Compute and Network' settings and customize it after protection is complete

OK

Choose storage account

These are the storage accounts in the selected subscription and location 'West Europe'.

Create new

rgbksrdiag
rg_bk_sr
West Europe, Sta...

Create storage account

* Name

asrstorage0111

.core.windows.net

Account kind

Storage (general purpose v1)

Performance

Standard

Premium

Replication

Locally-redundant storage (LRS)

23. Select **Virtual Machine** "sr-srvxx"

24. Click **OK**

Home > Resource groups > rg_bk_sr > rsvbksr0111 > Enable replication > Select virtual machines

Enable replication

rsvbksr0111

1

Source
ASRHOST

✓

2

Target
Azure

✓

3

Virtual machines
Select

>

4

Properties
Configure properties

>

5

Replication settings
Configure replication settings

>

Enable replication
OK

Select virtual machines

Finished retrieving data.

sr-srv03

☐
SR-srv01

☒
sr-srv02

BK-srv01

Selected virtual machines
>

1

OK

25. Select **OS Type** Windows

26. Click **OK**

Configure properties

NAME	OS TYPE	OS DISK	DISKS TO REPLICATE
Defaults	Select	Need to select per VM.	Need to select per VM. ...
sr-srv02	Windows	sr-srv02	All Disks [1] ...

OK

27. Click **OK**

Home > Resource groups > rg_bk_sr > rsvbksr0111 > Enable replication > Configure replication settings

Enable replication

1

Source
ASRHOST

✓

2

Target
Azure

✓

3

Virtual machines
1 Selected

✓

4

Properties
Configured

✓

5

Replication settings
Configure replication settings

>

Enable replication

OK

Configure replication settings

Replication policy

rep_asr

Copy frequency

5 Minutes

Recovery point retention

0 Hours

App consistent snapshot frequency

0 Hours

Initial replication start time

Immediately

Encrypt data stored on Azure

Off

VMM settings

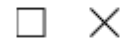
Not configured

Page | 64

28. Click **Enable Replication**

[Home](#) > [Resource groups](#) > [rg_bk_sr](#) > [rsvbksr0111](#)

Enable replication



rsvbksr0111

1

Source
ASRHOST



2

Target
Azure



3

Virtual machines
1 Selected



4

Properties
Configured



5

Replication settings
rep_asr



Enable replication

29. Click **Replicated Items**

30. Check status of replicated VM

Home > Resource groups > rg_bk_sr > rsvbksr0111 - Replicated items

rsvbksr0111 - Replicated items

Recovery Services vault

Refresh

Replicate

Columns

Filter

Search (Ctrl+J)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Properties

Locks

Automation script

Getting started

Backup

Site Recovery

Protected items

Backup items

Replicated items

You can run your machines on managed disks after a failover or migration from on-premises to Azure. Set the option to use managed disks in Replicated item and Network.

Last refreshed at: 10/30/2018, 8:54:00 PM

Finished loading data from service.

Filter items...

NAME	REPLICATION HEALTH	STATUS	ACTIVE LOCATION
sr-srv02	Healthy	0% synchronized	ASRHOST

It can take a while before the VM is replicated/ synchronized

Page | 66

Exercise 3: Create Recovery Plan & edit items

<ol style="list-style-type: none"> 1. Click Site Recovery 2. Click Step 2: Manage Recovery Plans 	<p>Home > Resource groups > rg_bk_sr > rsvbksr0111 - Site Recovery</p> <p>rsvbksr0111 - Site Recovery Recovery Services vault</p> <p>Search (Ctrl+/)</p> <p>Diagnose and solve problems</p> <p>Settings</p> <ul style="list-style-type: none"> Properties Locks Automation script <p>Getting started</p> <ul style="list-style-type: none"> Backup Site Recovery (1) <p>Filter settings</p> <p>FOR ON-PREMISES MACHINES</p> <ul style="list-style-type: none"> Prepare Infrastructure <p>FOR ON-PREMISES MACHINES AND AZURE VMS</p> <ul style="list-style-type: none"> Step 1: Replicate Application Step 2: Manage Recovery Plans (2) 								
<ol style="list-style-type: none"> 3. Click Recovery Plan 	<p>Home > Resource groups > rg_bk_sr > rsvbksr0111 - Site Recovery > Recovery plans</p> <p>Recovery plans rsvbksr0111</p> <p>+ Recovery plan</p> <p>Filter items...</p> <table border="1"> <thead> <tr> <th>NAME</th> <th>SOURCE</th> <th>TARGET</th> <th>CURRENT JOB</th> </tr> </thead> <tbody> <tr> <td colspan="4">To failover virtual machines individually, go to Replicated Items. To failover multiple virtual machines together, create a Recovery plan.</td> </tr> </tbody> </table>	NAME	SOURCE	TARGET	CURRENT JOB	To failover virtual machines individually, go to Replicated Items. To failover multiple virtual machines together, create a Recovery plan.			
NAME	SOURCE	TARGET	CURRENT JOB						
To failover virtual machines individually, go to Replicated Items. To failover multiple virtual machines together, create a Recovery plan.									

4. Enter **Name** "rcplanasr"
5. Select **Allow items with deployment model** Resource Manager
6. Click **Select Items**
7. Mark **Protected Item** "sr-srvxx"
8. Click **OK**
9. Click **OK**

Home > Resource groups > rg_bk_sr > rsvbksr0111 - Site Recovery > Recovery plans > Create recovery plan > Select items
✕

Create recovery plan

* Name
rcplanasr 1

* Source
ASRHOST

* Target
Microsoft Azure

* Allow items with deployment model ⓘ
Resource Manager 2

* Select items
0

OK 5

Select items

i Finished retrieving data.

Filter items...

PROTECTED ITEM	TYPE
<input checked="" type="checkbox"/> sr-srv02 3	Machine

Selected items ⓘ
1

OK 4

10. Select **Source**

rcplanasr

rsvbksr0111

Settings

Customize

Test failover

Cleanup test failover

More

Essentials

Recovery Services vault

rsvbksr0111

Start groups

1

Source

ASRHOST

Deployment model

Resource Manager

Items in recovery plan

1

Scripts

0

Target

Microsoft Azure

All settings

Items in recovery plan

Source

1

Target

0

11. Select **replicated item** Sr-srvxx

Items in recovery plan

rcplanasr

Refresh

Columns

You can run your machines on managed disks after a failover or migration from on-premises to Azure. Set the option to use managed disks.

Replicated item -> Settings -> Compute and Network.

Last refreshed at: 10/30/2018, 9:15:25 PM

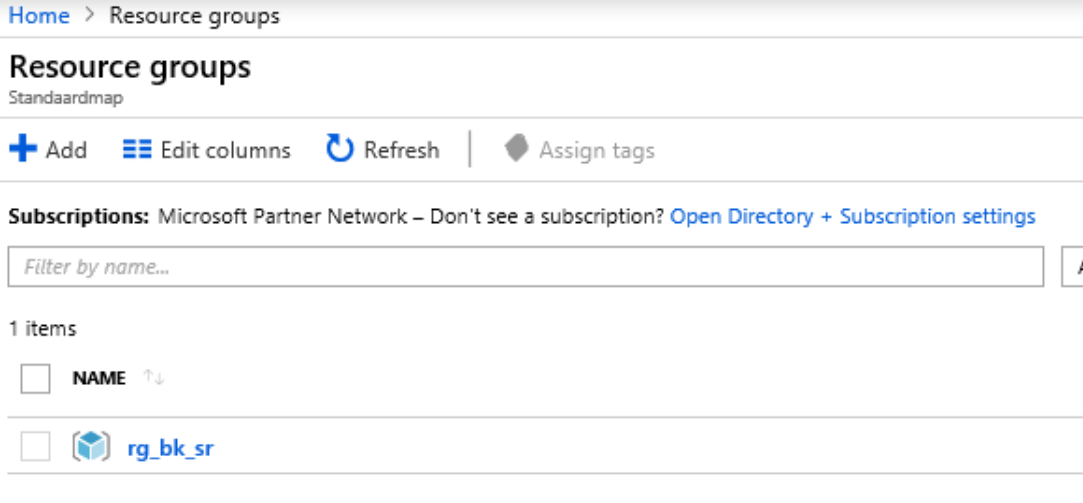
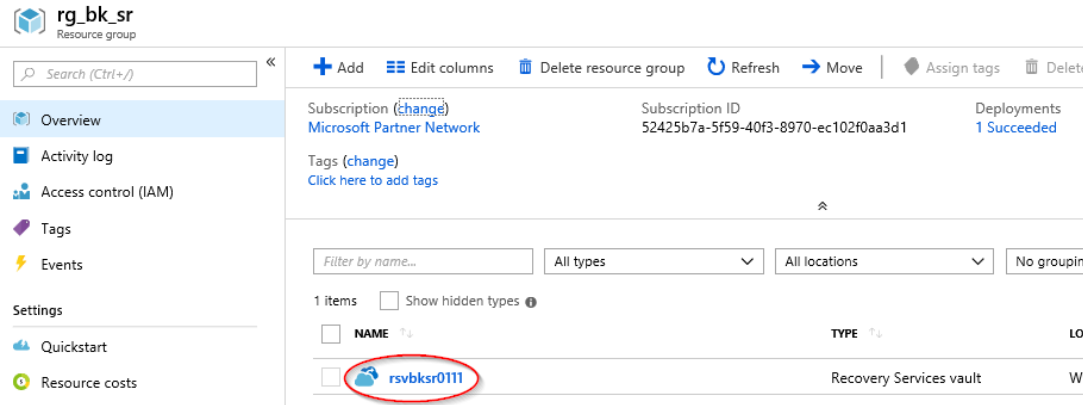
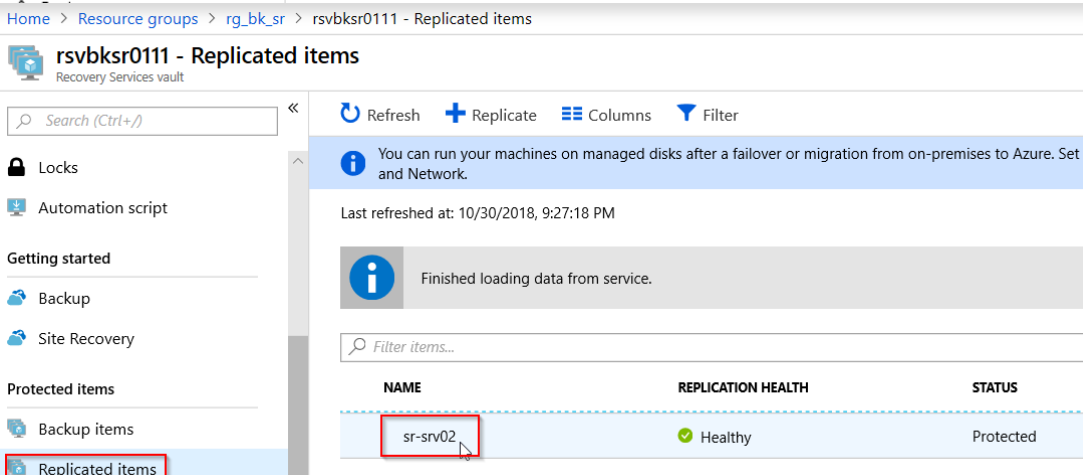
Finished loading data from service.

Filter items...

NAME	REPLICATION HEALTH	STATUS	ACTIVE LOCATION
sr-srv02	Healthy	Protected	ASRHOST

<p>12. Select Compute and Network</p> <p>13. Select Size A1_v2</p> <p>14. Select Manage Disks Yes</p> <p>15. Select Target Network rg_bk_sr-vnet</p> <p>16. Select Target Network Interface Type Primary</p> <p>17. Click Save</p>	
<p>18. Check Overview and Properties tab for more replication details</p>	

Exercise 4: Test Failover

<p>1. Open Resource Group "rg_bk_sr"</p>	 <p>The screenshot shows the 'Resource groups' page in the Azure portal. The breadcrumb is 'Home > Resource groups'. The title is 'Resource groups' with a subtitle 'Standaardmap'. There are buttons for '+ Add', 'Edit columns', 'Refresh', and 'Assign tags'. Below this, it says 'Subscriptions: Microsoft Partner Network – Don't see a subscription? Open Directory + Subscription settings'. There is a search bar 'Filter by name...'. Below that, it says '1 items'. A table with one item is shown: 'rg_bk_sr'.</p>						
<p>2. Open Recovery Services Vault "rsbksr0111"</p>	 <p>The screenshot shows the 'rg_bk_sr' resource group page. The left sidebar has a search bar and a list of tabs: Overview, Activity log, Access control (IAM), Tags, Events, Settings, Quickstart, and Resource costs. The main area shows the 'rg_bk_sr' resource group details, including the subscription 'Microsoft Partner Network' and the subscription ID '52425b7a-5f59-40f3-8970-ec102f0aa3d1'. Below this, there is a table with one item: 'rsbksr0111' (Recovery Services vault).</p>						
<p>3. Click Replicated Items</p> <p>4. Click Name sr-srvxx</p>	 <p>The screenshot shows the 'rsbksr0111 - Replicated items' page. The left sidebar has a search bar and a list of tabs: Locks, Automation script, Getting started, Backup, Site Recovery, Protected items, Backup items, and Replicated items. The main area shows the 'rsbksr0111 - Replicated items' page. It has buttons for 'Refresh', 'Replicate', 'Columns', and 'Filter'. There is a message: 'You can run your machines on managed disks after a failover or migration from on-premises to Azure. Set and Network.' Below this, it says 'Last refreshed at: 10/30/2018, 9:27:18 PM'. There is a message: 'Finished loading data from service.' Below this, there is a table with one item: 'sr-srv02'.</p> <table border="1"> <thead> <tr> <th>NAME</th> <th>REPLICATION HEALTH</th> <th>STATUS</th> </tr> </thead> <tbody> <tr> <td>sr-srv02</td> <td>Healthy</td> <td>Protected</td> </tr> </tbody> </table>	NAME	REPLICATION HEALTH	STATUS	sr-srv02	Healthy	Protected
NAME	REPLICATION HEALTH	STATUS					
sr-srv02	Healthy	Protected					

5. Click **Test Failover**

Home > Resource groups > rg_bk_sr > rsvbksr0111 - Replicated items > sr-srv02

sr-srv02

Replicated items

Overview

General

Properties

Compute and Network

Disks

Planned Failover

Failover

Test Failover

Essentials

Health and status

Replication Health

Status

RPO

Protected

2 secs [As on 10/30/2018, 9:33:17 PM]

Page | 72

6. Select **Azure virtual network**
rg_bk_sr-vnet

7. Click **OK**

Test failover

sr-srv02

Failover direction

From ⓘ

ASRHOST

To ⓘ

Microsoft Azure

Recovery Point

Choose a recovery point ⓘ

Latest processed (low RTO) (10/30/2018, 9:... ▼

* Azure virtual network ⓘ

rg_bk_sr-vnet ▼

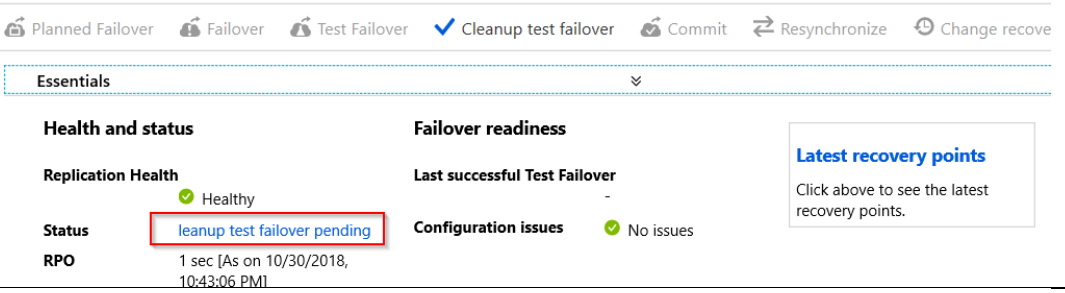


It is recommended that for a test failover you use a network different from production network (as specified under Compute and Network settings of the virtual machine). [Learn more.](#)



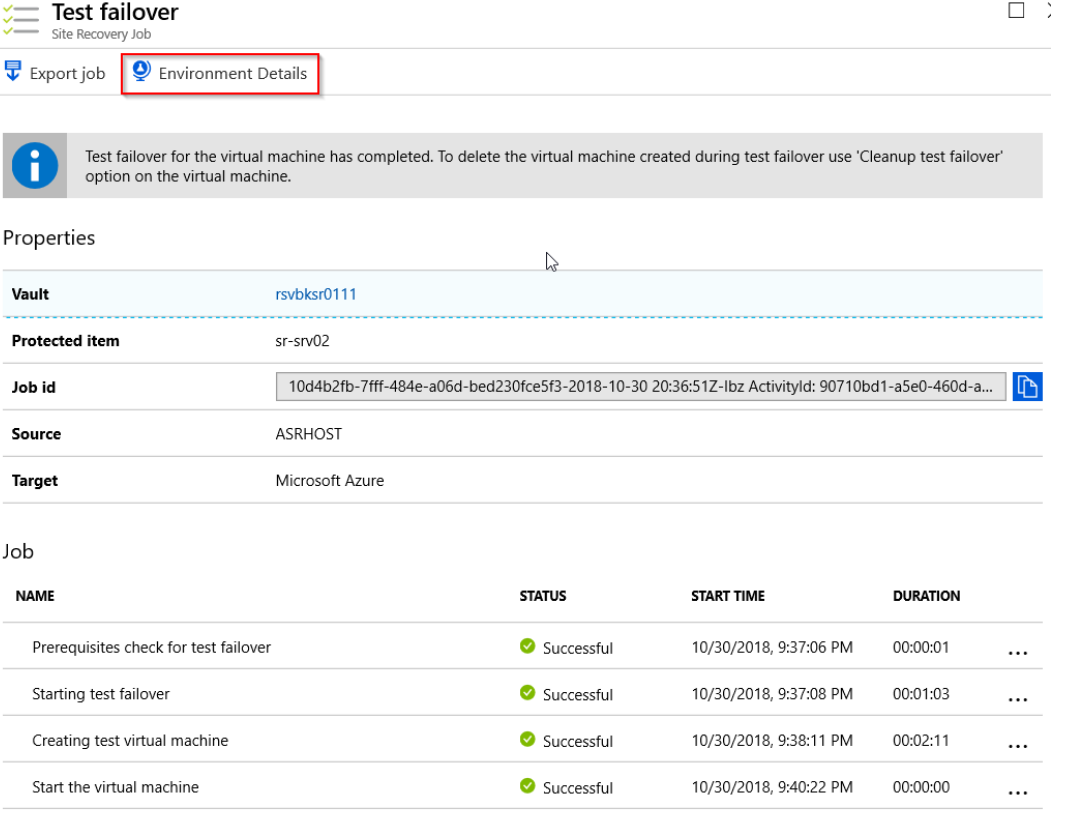
OK

8. Click **Status – Leanup test failover pending**



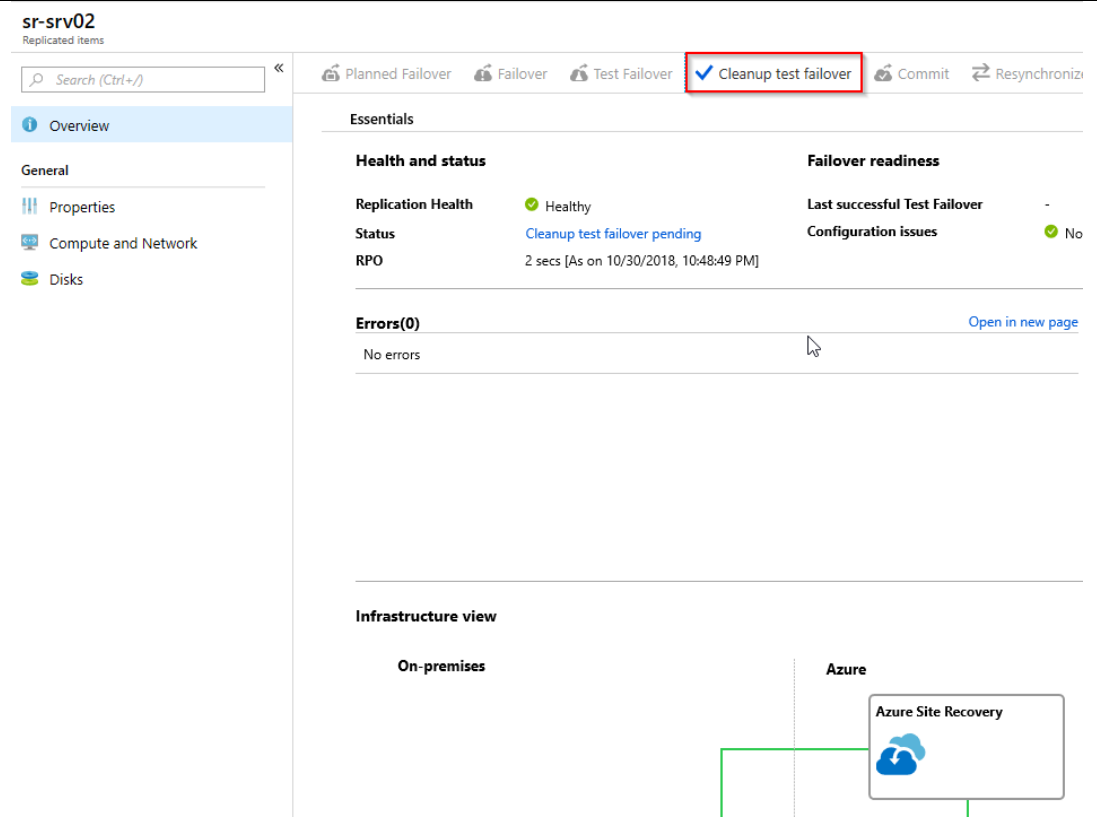
9. Check Failover test details

10. For more info **Export job** to Excel or check **Environment Details**



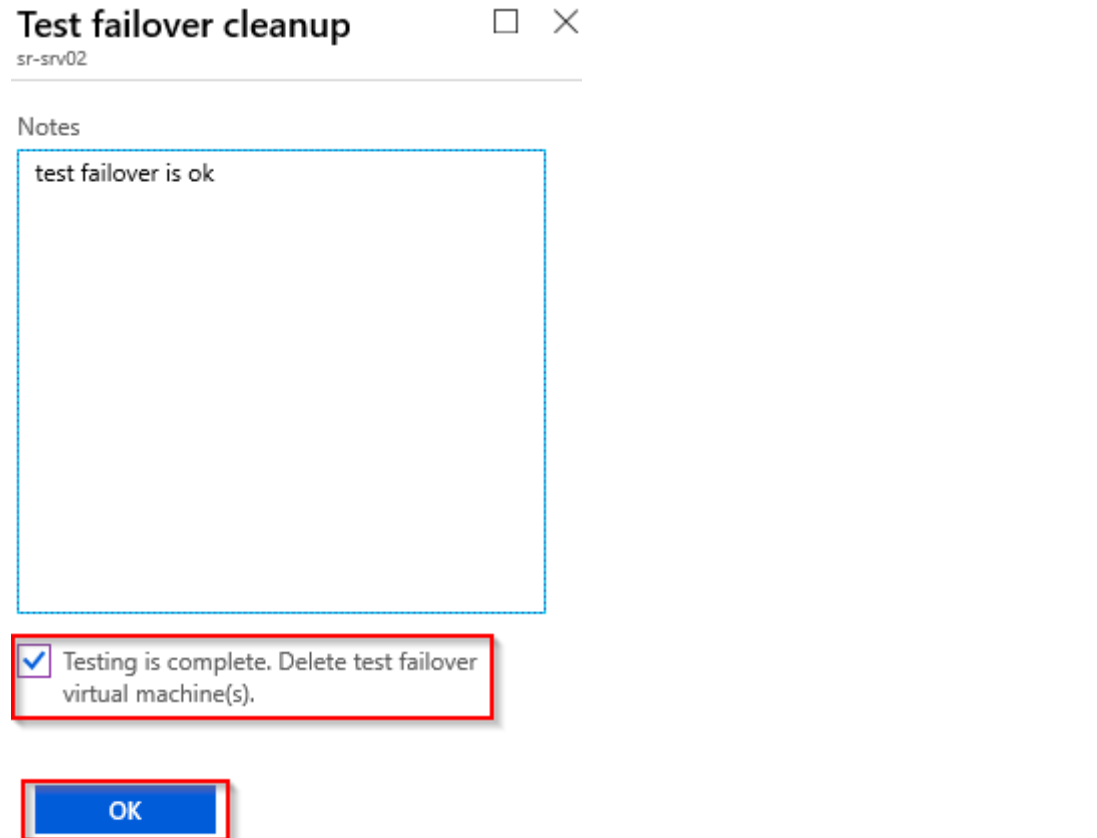
NAME	STATUS	START TIME	DURATION
Prerequisites check for test failover	✓ Successful	10/30/2018, 9:37:06 PM	00:00:01 ...
Starting test failover	✓ Successful	10/30/2018, 9:37:08 PM	00:01:03 ...
Creating test virtual machine	✓ Successful	10/30/2018, 9:38:11 PM	00:02:11 ...
Start the virtual machine	✓ Successful	10/30/2018, 9:40:22 PM	00:00:00 ...

11. Click **Cleanup test failover**



12. Mark checkbox **Testing is complete**

13. Click **OK**



This is the end of the lab.

Activity 2: Clean-up

Objectives

In this activity, you will;

- Remove the Azure resources created in this lab

The resources we deployed will consume CSP resources and credits. As they are only there for testing purposes, you can safely remove them.

1. From the **Azure Portal**, navigate to your **Resource Group**
2. Open the **Recovery Services vault** and delete the **backup items** and **Replicated Items**
3. Delete the **Recovery Services vault**
4. From the **Azure Portal**, navigate to your **Resource Group**
5. From the **Overview** pane, click **Delete Resource Group**
6. Make sure you selected the correct Resource Group and confirm this by typing the name when asked.
7. Click to **Delete** to confirm. Check the status from the **Notifications** in the top right of the Azure Portal.

Extra resources / links:

Download Windows Server 2016 Datacenter : <https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016>

Design

<https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-overview>

Dit document bevat algemene informatie omtrent Azure Site Recovery.

<https://docs.microsoft.com/en-us/azure/site-recovery/hyper-v-azure-support-matrix>

Support matrix voor Hyper-V replication naar Azure.

<https://docs.microsoft.com/nl-nl/azure/site-recovery/vmware-physical-azure-support-matrix>

Support matrix voor Vmware en fysieke servers naar Azure.

<https://docs.microsoft.com/en-us/azure/site-recovery/hyper-v-azure-architecture>

Dit document bevat architectuur informatie.

<https://azure.microsoft.com/en-us/pricing/calculator/>

Op deze website kunt u eenvoudig ASR-pricing berekenen.

Implementation

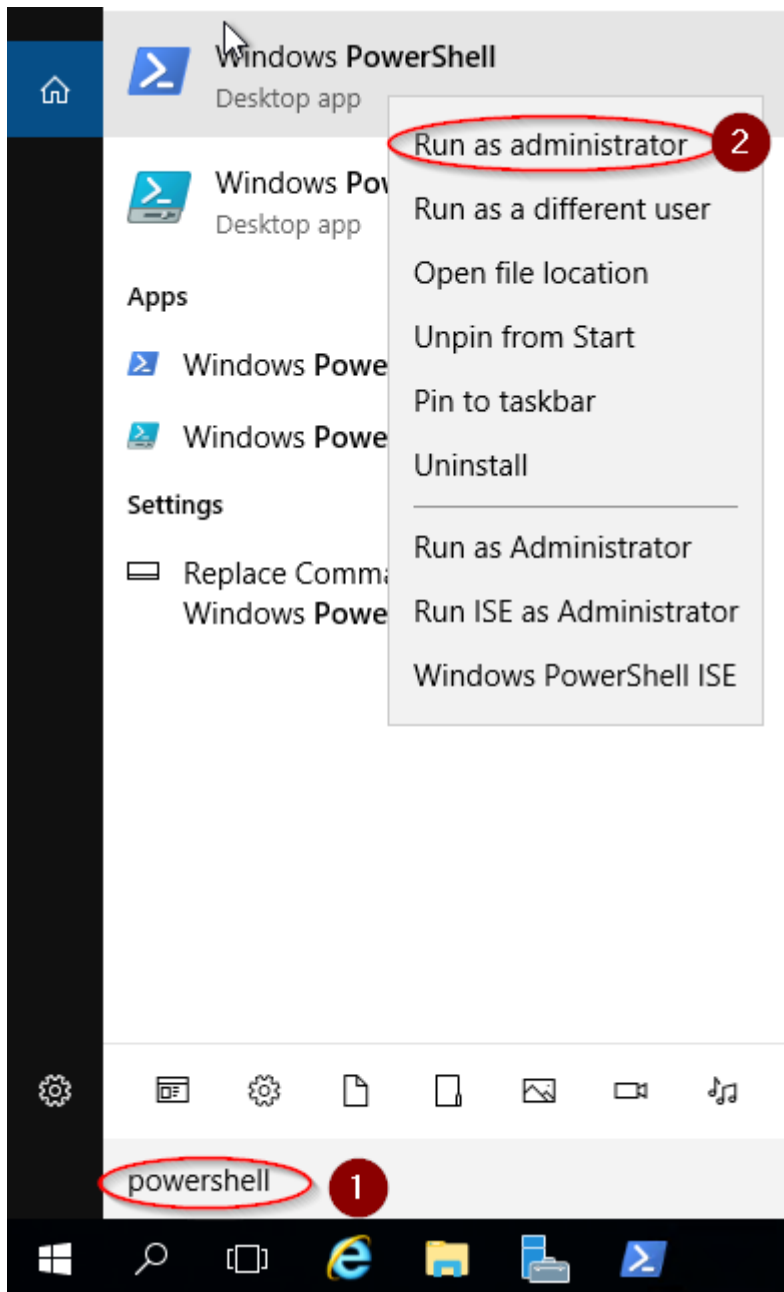
<https://docs.microsoft.com/en-us/azure/site-recovery/hyper-v-prepare-on-premises-tutorial>

Belangrijke informatie omtrent voorbereiding ASR.

<https://docs.microsoft.com/en-us/azure/site-recovery/hyper-v-azure-tutorial>

Dit document bevat een stap voor stap uitleg om een Hyper-V naar Azure replicatie te starten

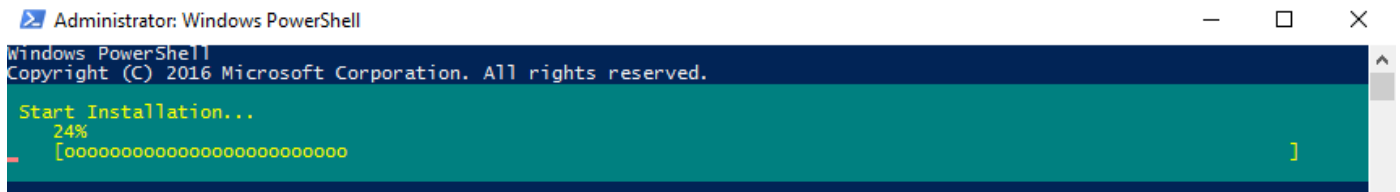
Extra screenshots: troubleshooting



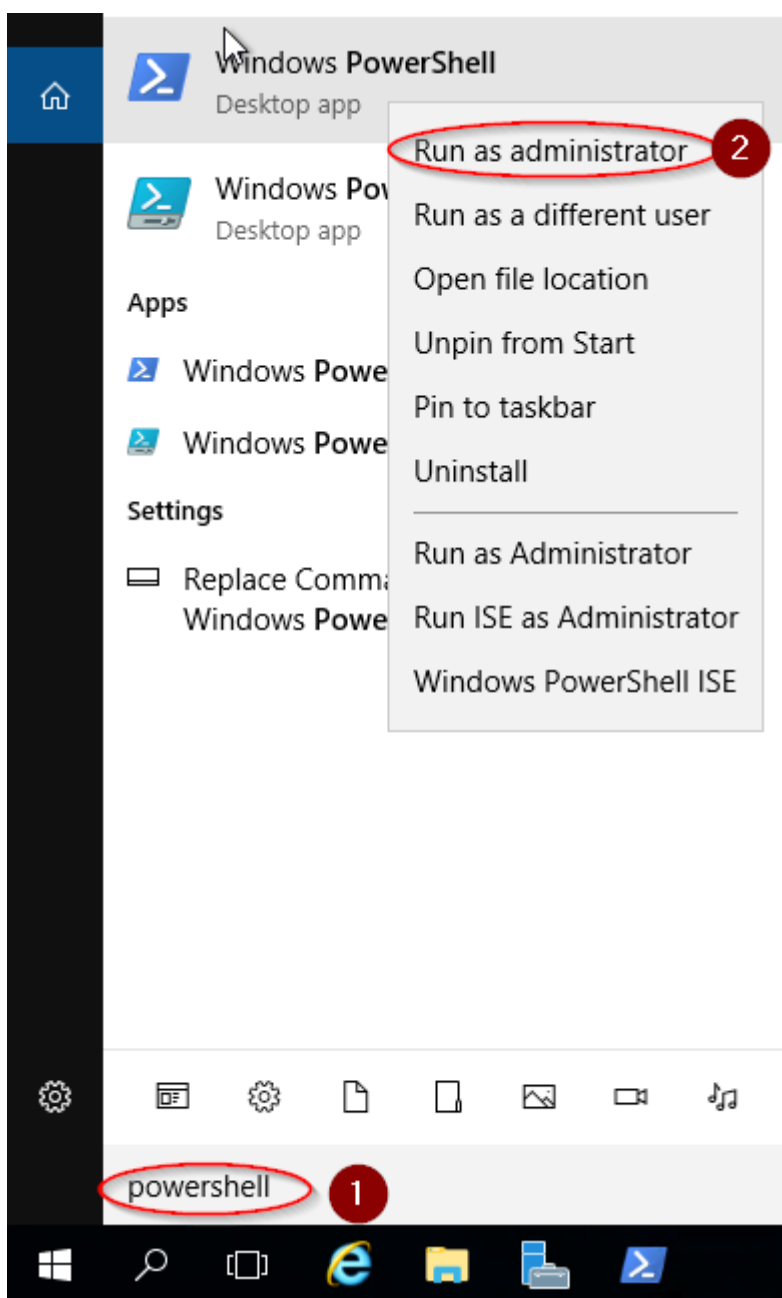
`Install-WindowsFeature -Name Hyper-V -IncludeManagementTools -Restart`

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

PS C:\Users\labadminuser> Install-WindowsFeature -Name Hyper-V -IncludeManagementTools -Restart
```



Restart -> Connect to VPN -> Open PS (admin)



New-VMSwitch -Name "InternalNATSwitch" -SwitchType Internal

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

PS C:\Users\labadminuser> New-VMSwitch -Name "InternalNATSwitch" -SwitchType Internal

Name                SwitchType NetAdapterInterfaceDescription
----                -
InternalNATSwitch Internal
```

Get-NetAdapter

```
PS C:\Users\labadminuser> Get-NetAdapter

Name                InterfaceDescription          ifIndex Status      MacAddress          LinkSpeed
----                -
vEthernet (InternalNAT... Hyper-V Virtual Ethernet Adapter 14 Up        00-15-5D-00-04-00   10 Gbps
Ethernet 2          Microsoft Hyper-V Network Adapter #2 2 Up        00-0D-3A-2B-B7-DE   40 Gbps
Ethernet 3          Mellanox ConnectX-3 Virtual Function... 5 Up        00-0D-3A-2B-B7-DE   40 Gbps
```

New-NetIPAddress -IPAddress 192.168.0.1 -PrefixLength 24 -InterfaceIndex 13

Kies bij -interfaceindex het juiste nummer bij IfIndex

```
Select Administrator: Windows PowerShell

PS C:\Users\labadminuser> New-NetIPAddress -IPAddress 192.168.0.1 -PrefixLength 24 -InterfaceIndex 14

IPAddress           : 192.168.0.1
InterfaceIndex      : 14
InterfaceAlias       : vEthernet (InternalNATSwitch)
AddressFamily        : IPv4
Type                : Unicast
PrefixLength         : 24
PrefixOrigin         : Manual
SuffixOrigin         : Manual
AddressState         : Tentative
ValidLifetime        : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime    : Infinite ([TimeSpan]::MaxValue)
SkipAsSource         : False
PolicyStore          : ActiveStore

IPAddress           : 192.168.0.1
InterfaceIndex      : 14
InterfaceAlias       : vEthernet (InternalNATSwitch)
AddressFamily        : IPv4
Type                : Unicast
PrefixLength         : 24
PrefixOrigin         : Manual
SuffixOrigin         : Manual
AddressState         : Invalid
ValidLifetime        : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime    : Infinite ([TimeSpan]::MaxValue)
SkipAsSource         : False
PolicyStore          : PersistentStore
```


New-NetNat -Name "InternalNat" -InternalIPInterfaceAddressPrefix 192.168.0.0/24

```
Administrator: Windows PowerShell
PS C:\Users\labadminuser> New-NetNat -Name "InternalNat" -InternalIPInterfaceAddressPrefix 192.168.0.0/24

Name : InternalNat
ExternalIPInterfaceAddressPrefix :
InternalIPInterfaceAddressPrefix : 192.168.0.0/24
IcmpQueryTimeout : 30
TcpEstablishedConnectionTimeout : 1800
TcpTransientConnectionTimeout : 120
TcpFilteringBehavior : AddressDependentFiltering
UdpFilteringBehavior : AddressDependentFiltering
UdpIdleSessionTimeout : 120
UdpInboundRefresh : False
Store : Local
Active : True
```

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
- ☐ No, I will activate this scope later

< Back

Next >

1

Cancel

1. Create **Virtual Machine**

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: BK-srv01

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: F:\Hyper-V\ Browse...

⚠ 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.

< Previous Next > Finish Cancel

2.

New Virtual Machine Wizard

Assign Memory

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

Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 12582912 MB. To improve performance, specify more than the minimum amount recommended for the operating system.

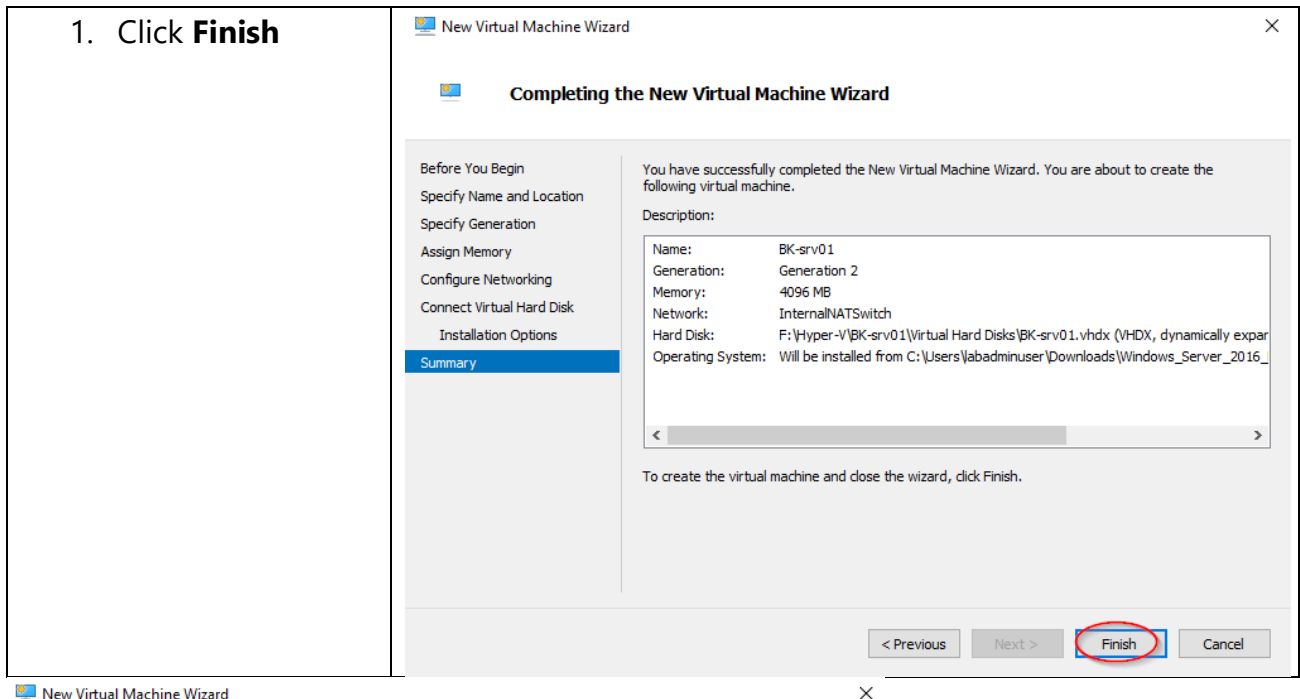
Startup memory: 4096 MB

☐ Use Dynamic Memory for this virtual machine.

i When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.

< Previous Next > Finish Cancel

1. Click **Finish**



Installation Options

