

Course Coverage of Certification Objectives



Implement Backup and Recovery

- Create a Recovery Services Vault
- Create and configure backup policy
- Perform backup and restore operations by using Azure Backup Service
- Use soft delete to recover Azure VMs
- Configure and review backup reports
- Create a Backup vault
- Perform site-to-site recovery by using Azure Site Recovery



Exercise Files

Slides

Code

Links to Resources

The screenshot shows the course page for "PowerShell: Getting Started" by Michael Bender. The page has a dark theme. At the top, there's a search bar and the author's name "Michael Bender" with his email "mbender@bentech.net". The main heading is "PowerShell: Getting Started" by Michael Bender. Below it, a description states: "This is an introductory course on PowerShell and how to use it for basic IT Operations support." There are buttons for "Resume Course", "Bookmark", "Add to Channel", and "Download Course". A "Course Breakdown" section lists topics like "Introduction to PowerShell", "PowerShell Basics", "Gathering Information with PowerShell", "Working with PowerShell", and "PowerShell Scripting". On the right, the "Course author" section features Michael Bender's profile and a bio: "Michael is a six-time Microsoft Most Valuable Professional, author, technical trainer, and community leader. Having been in the IT industry since the 90's, his experiences covers the gamut of...". Below that, the "Course info" section shows "Level: Beginner", "Rating: ★★★★★ (602)", "My rating: ★★★★★", "Duration: 3h 5m", and "Updated: 22 May 2019". At the bottom, there's a "Share course" section with social media icons for Facebook, Twitter, and LinkedIn. The "Exercise files" tab is highlighted in yellow, and the "Download exercise files" button is also highlighted in yellow.

What do you want to learn?

Michael Bender
mbender@bentech.net

PowerShell: Getting Started

by Michael Bender

This is an introductory course on PowerShell and how to use it for basic IT Operations support.

[Resume Course](#) [Bookmark](#) [Add to Channel](#) [Download Course](#)

Course Breakdown

- Introduction to PowerShell
- PowerShell Basics
- Gathering Information with PowerShell
- Working with PowerShell
- PowerShell Scripting

Course author

Michael Bender

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Course info

Level: Beginner

Rating: ★★★★★ (602)

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Duration: 3h 5m

Updated: 22 May 2019

Share course

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Table of contents Description **Exercise files** Discussion Learning Check Recommended

These exercise files are intended to provide you with the assets you need to create a video-based hands-on experience. With the exercise files, you can follow along with the author and re-create the same solution on your computer. We find this to be even more effective than written lab exercises.

[Download exercise files](#)



Business Continuity and Disaster Recovery



File and folder recovery

Virtual machine recovery

Site-wide recovery

Recovery point objective (RPO)

Recovery time objective (RTO)

Backup and Disaster Recovery Options in Azure

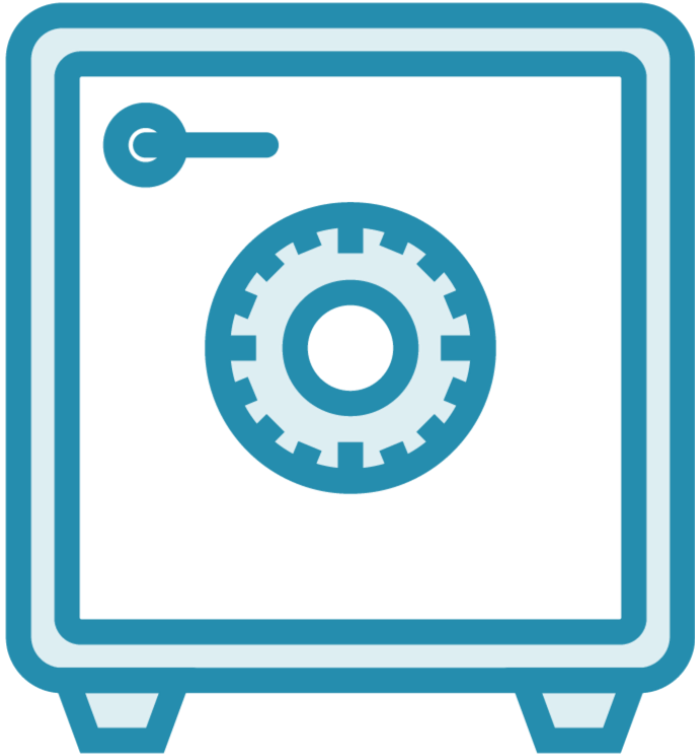


Azure Backup



Azure Site Recovery

Recovery Service Vault



Storage Entity for backup and recovery resources

Centralized management

Work with on-premises and cloud-based workloads.

Backup resources in same region

Site recovery resources in different region



Demo



Creating a Recovery Services Vault



Azure Backup



Supports on-premises and Azure workloads

Scales with your organization

Centralized monitoring and management

App-consistent backups

Encrypted-at-rest by default

Require resources and vault in same region



Backup Policy



Stored in Recovery Services Vault

Defines how a backup plan is implemented

Implements RPO and RTO

Policy for each resource type

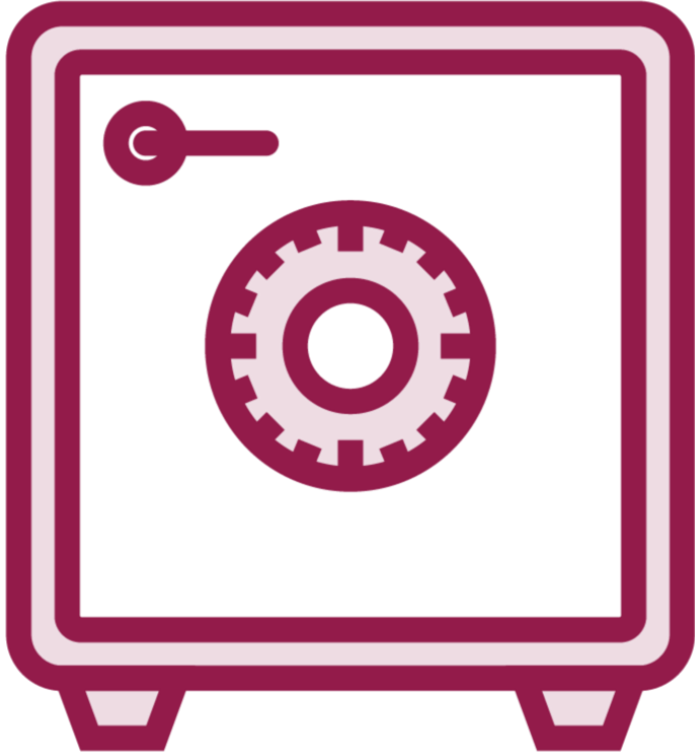
Demo



Create and Configure Backup Policy



Backup Vault



Storage Entity for backup and recovery of newer Azure Workloads

Supports Azure Backup security capabilities and RBAC

Requires access to target resources

Provides redundancy of storage based on backup storage needs



Storage Redundancy

Local redundant

Geo Redundant



Create a Backup Vault

Microsoft Azure

Search: backup va

Services [See all](#)

- Backup vaults
- Backup center
- Backup Items
- Reservations
- Key vaults
- Availability sets
- RevAPM CDN
- Private Link
- User privacy
- Recovery Services vaults

Marketplace [See all](#)

- KoçSistem Azure Backup Management
- Acronis Backup Gateway
- Backup as a Service. Data security at optimal rate
- Backup and Site Recovery

Documentation [See all](#)

- [Overview of Backup vaults - Azure Backup | Microsoft Docs](#)
- [How to move Azure Backup Recovery Services vaults - Azure ...](#)
- [Overview of Recovery Services vaults - Azure Backup ...](#)
- [Azure Backup support matrix - Azure Backup | Microsoft Docs](#)

Resource Groups [See all](#)

No results were found.

Didn't find what you were looking for?

- [Try searching in Activity Log](#)
- [Try searching in Azure Active Directory](#)

Searching all subscriptions. [Change](#)

Subscription	Resource group	Last viewed
vso-rg-feebcd8	Resource group	a month ago
job-import-001	Import/export job	7 months ago
itgeekblog	Resource group	10 months ago
itgeekblog-wp	Application Insights	10 months ago

[Subscriptions](#) [More services](#)

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- day ago
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- weeks ago
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- weeks ago
- weeks ago
- weeks ago

Navigate

<https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.DataProtection%2FBackupVaults>



Create a Backup Vault

Microsoft Azure

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Home > Backup vaults >

Backup vaults

Bender Technology Consulting, LLC (BenderTechn...

+ Create

Manage view

...

Create

Filter for any field...

Name ↑↓

backupvault001

Create Backup Vault

Data Protection (Preview)

Basics Tags Review and create

A backup vault is a storage entity in Azure that houses data and lets you organize your backups. [Learn more.](#)

PROJECT DETAILS

Select the subscription and the resource group in which you want to create the vault.

Subscription *

Pay-As-You-Go

Resource Group *

[Create new](#)

INSTANCE DETAILS

Backup vault name *

Enter a name for your backup vault

Region *

East US

Backup storage redundancy *

Select an option

Storage redundancy cannot be changed after protecting items to the vault. Geo-redundant storage provides a higher level of data durability than Locally-redundant storage but costs more. Review the trade-offs between lower cost and higher data durability that is best for your scenario. [Learn more](#)

Review and create

Next: Tags >

Create a Backup Vault

Microsoft Azure

Search resources, services, and docs (G+/I)

mbender@bentech.net
BENDER TECHNOLOGY CONSULT...

Home > Backup vaults >

Backup vaults

Bender Technology Consulting, LLC (BenderTechn...

[+ Create](#) [Manage view](#) ▼ ⋮

Filter for any field...

Name	↑↓
backupvault001	⋮

Create Backup Vault

Data Protection (Preview)

[Basics](#) [Tags](#) [Review and create](#)

A backup vault is a storage entity in Azure that houses data and lets you organize your backups. [Learn more.](#)

PROJECT DETAILS

Select the subscription and the resource group in which you want to create the vault.

Subscription *

Pay-As-You-Go

Resource Group *

(New) rg-backupvault

[Create new](#)

INSTANCE DETAILS

Backup vault name *

backupvault001

Region *

East US

Backup storage redundancy *

Select an option

Select an option

Locally-redundant

Geo-redundant

Storage redundancy cannot be changed after creation. Locally-redundant provides a level of data durability that is best for your scenario. Geo-redundant provides a higher data durability that is best for your scenario.

[Review and create](#) [Next: Tags >](#)



Create a Backup Vault

The screenshot shows the Microsoft Azure portal interface for creating a Backup Vault. The left sidebar displays the 'Backup vaults' section with a list containing 'backupvault001'. The main area is titled 'Create Backup Vault' and is in the 'Review and create' step. The configuration details are as follows:

SUMMARY	
BASICS	
Subscription	Pay-As-You-Go
Resource Group	(New) rg-backup
Backup vault name	backupvault001
Region	East US
Backup storage redundancy	GeoRedundant

A red box highlights the following information message:

i System assigned managed identity is automatically enabled for a Backup vault. Managed identity enables Azure resources to authenticate to cloud services without storing credentials. Please give the Backup vault MSI the necessary permissions to access the resources that you intend to back up. [Learn more](#)

At the bottom, there is a 'Create' button, a '< Previous' button, and a link to 'Download a template for automation'. The page footer indicates 'Page 1 of 1'.



Create a Backup Vault

The screenshot shows the Microsoft Azure portal interface for a Backup vault named 'backupvault001'. The left sidebar contains a navigation menu with the following items: Overview, Activity log, Tags, Manage (Properties, Identity, Backup policies, Backup instances), Locks, Monitoring + reporting (Alerts, Backup jobs), Automation (Tasks (preview)), and Support + troubleshooting (New Support Request). The 'Backup policies' item is highlighted with a red rectangular box. The main content area displays the 'Overview' tab for the vault, including a search bar, action buttons (Backup, Restore, Delete, Refresh), a notification banner about the new Backup center, and two data sections: 'Jobs (last 7 days)' and 'Backup instances'.

Jobs (last 7 days)

Operation	Failed	In progress	Completed
Scheduled backup	0	0	0
On-demand backup	0	0	0
Restore	0	0	0

Backup instances

Azure Database for PostgreSQL servers (Preview)

0	Protection configured	0
	Protection error	0
	Configuring protection failed	0

... out of 0 Backup instances with the underlying datasource not found



Backup Agents



Manage recovery services between source and Recovery Services Vault

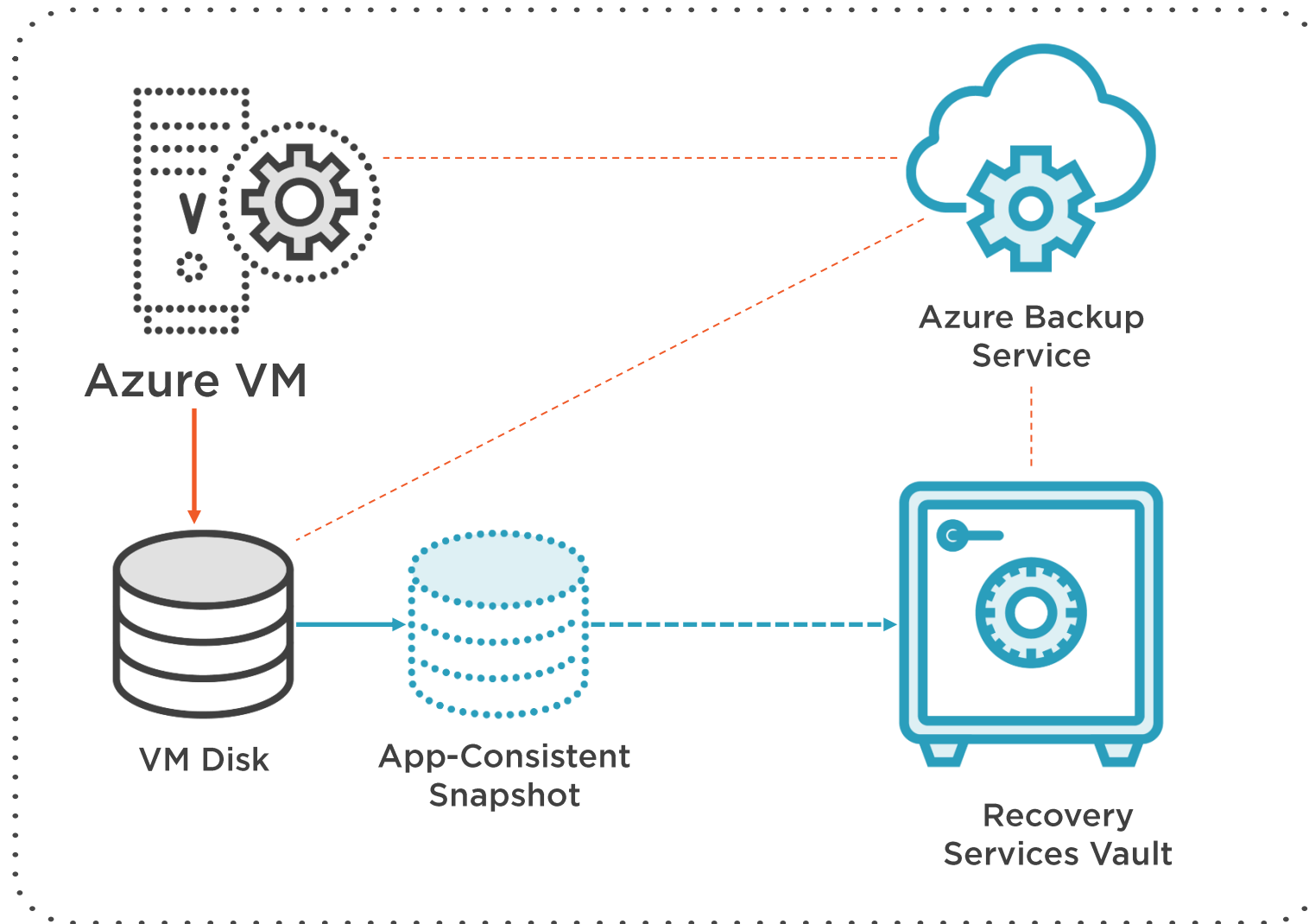
Azure Backup Extension

- All Azure VMs
- Installed on first backup

Microsoft Azure Recovery Services agent (Mars)

- On-Premises and AWS Windows VMs
- Supports various scenarios
- Download from Recovery Services Vault

Azure VM Backup Architecture



Demo



Backup an Azure VM

- Create a Backup
- Run Backup Manually

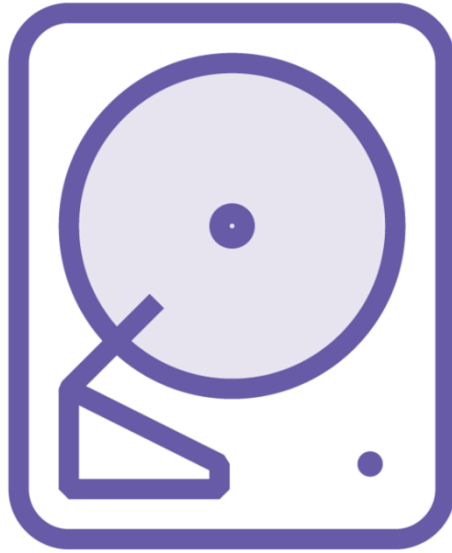


Azure VM Restore Options



VM

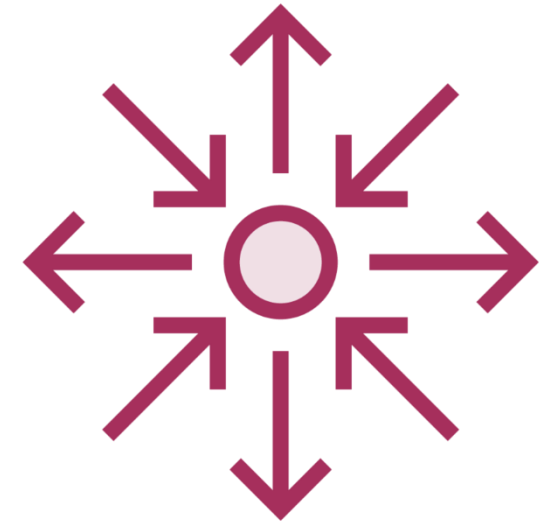
Create new or
replace



Disk



Files



Cross-Region
Restore

Virtual Machine Soft Delete

Protects against unintended VM deletions

Stored for up to 14 days

Requires a backup to have been completed

Multiple tools for completing

Disabling not recommended



Demo

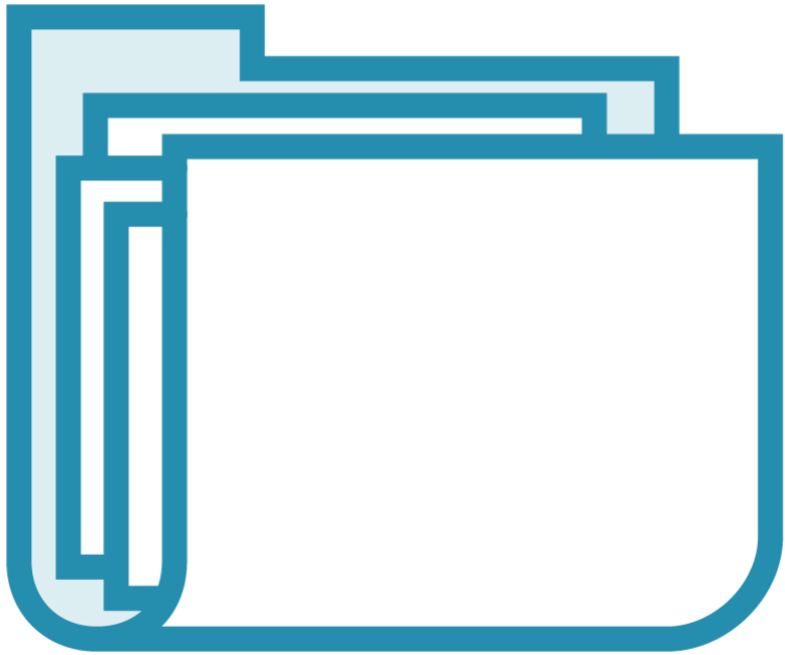


Performing restores with Azure Backup

- Restore a full VM
- Restore files
- Recover with soft delete



Azure Files Backup



Cloud-based backup for Azure Files

Integrates with Azure File Sync

Customized Retention

Instant Restore

Protection against accidentally deletion with soft Delete

Snapshot-based



Demo



Azure File Share Backup and Restore



Configure Azure Backup Reports

Supports multiple source options

Requires a Log Analytics workspace

Configure through diagnostic settings



Demo



Configuring Azure Backup Reports



Implementing Azure Site Recovery



Implementing Azure Site Recovery



Michael Bender

AUTHOR EVANGELIST - PLURALSIGHT

@michaelbender



Azure Site Recovery

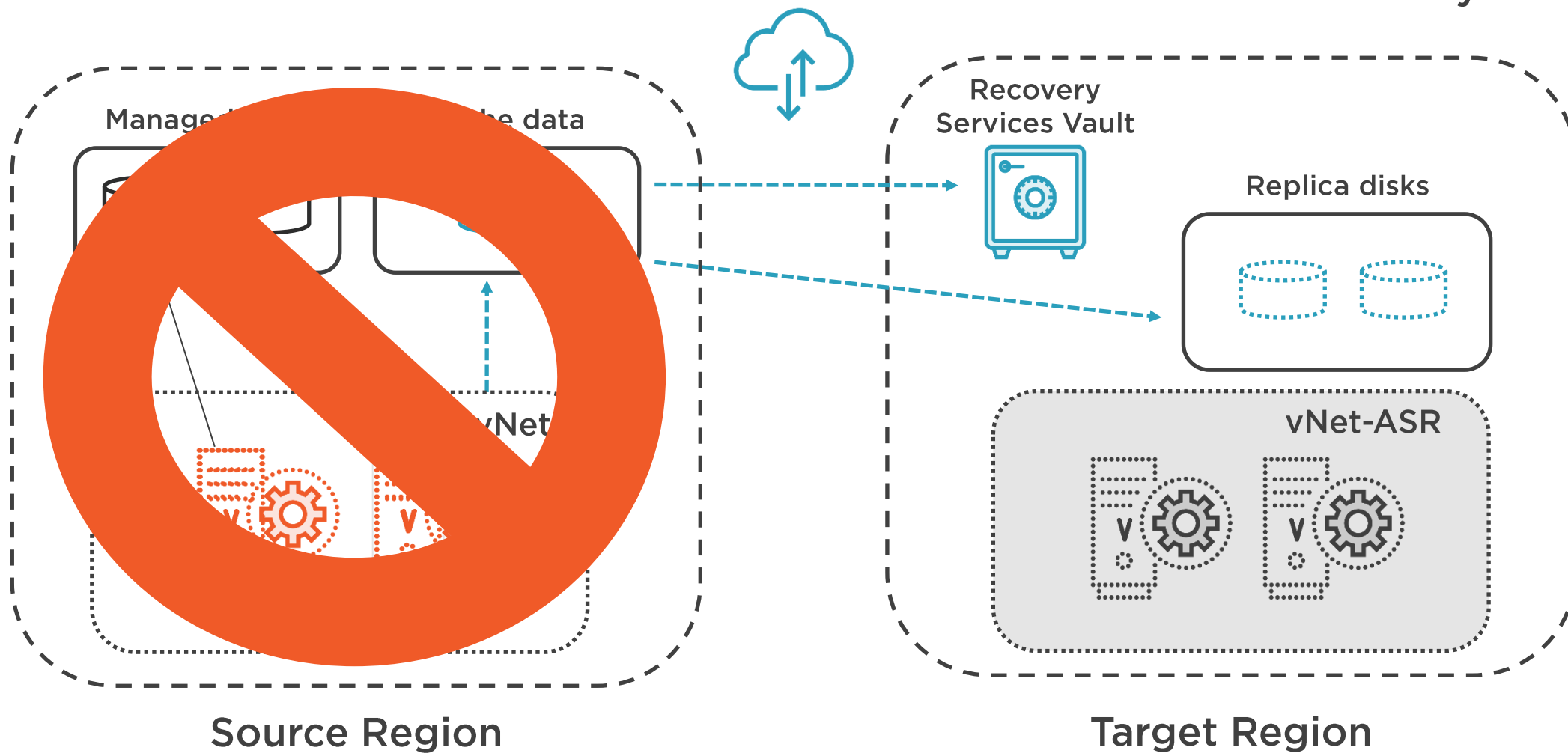
Designed for primary site outage

Replicates workloads

- On-Premises servers and virtualization hosts
- Azure Workloads
- AWS Windows VMs



Azure Site Recovery Topology



Demo



Setup up Azure Site Recovery for Azure VMs



Demo



Restore an Azure VM to a new Site



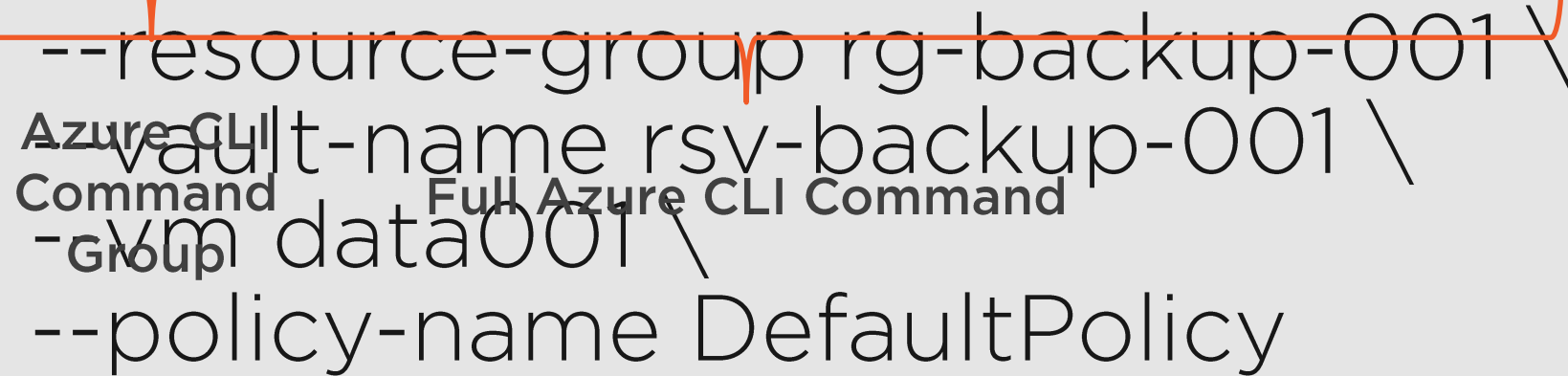
Demo



Initiate Azure Site Recovery failover



az backup protection enable-for-vm


--resource-group rg-backup-001 \
vault-name rsv-backup-001 \
vm data001 \
--policy-name DefaultPolicy

Parameters



Summary



- Recovery storage vaults only backup VMs in the same region
- Place Recovery Storage Vaults in a different region for ASR
- Use a different policy for each type of backup
- Use the MARS agent for On-Prem and AWS VM backups
- Review the CLI options
- Get some hands-on experience



For Further Learning

Azure Storage Accounts documentation at [docs.microsoft.com](https://docs.microsoft.com/en-us/azure/storage/common/storage-account-overview)
<https://docs.microsoft.com/en-us/azure/storage/common/storage-account-overview>

Creating and Configuring Microsoft Azure Storage Accounts by Neil Morrissey
<https://www.pluralsight.com/courses/microsoft-azure-creating-configuring-storage-accounts>

Remember the module exercise files

Questions? Join on the conversation at [pluralsight.com](https://www.pluralsight.com) or @Michaelbender on Twitter

