

# Azure Backup and Disaster Recovery Implementation

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Cloud Platform: Microsoft Azure

## Overview

This project demonstrates how to implement a *complete backup and disaster recovery solution* for Azure Virtual Machines. Using *Azure Backup* and *Azure Site Recovery*, the project ensures that workloads are protected against accidental deletion, corruption, and regional outages. The solution provides business continuity by allowing data recovery and VM failover to a secondary region.

## Problem Statement

Organizations rely on cloud infrastructure for critical workloads. However, VMs can be accidentally deleted, corrupted, or affected by ransomware. Additionally, regional outages can disrupt service. The challenge is to:

- > Protect VM data with automated backups.
- > Ensure workloads can be restored quickly if failure occurs.
- > Maintain business continuity during regional outages through disaster recovery.

Step 1: Create a Resource Group

To group all related content.

# Create a resource group ...

Basics    Tags    Review + create

 Automation Link

### Basics

|                     |                    |
|---------------------|--------------------|
| Subscription        | ZEMBE              |
| Resource group name | ZeroTrustHub       |
| Region              | South Africa North |

### Tags

None

[Previous](#)    [Next](#)    [Create](#)

**Step 2: Create Recovery Services Vault**  
A secure container to store backups and replication configurations.

Home > Recovery Services vaults >

## Create Recovery Services vault

\* Basics Redundancy Encryption Vault properties Networking Tags Review + create

### Summary

#### Basics

|                |                    |
|----------------|--------------------|
| Subscription   | ZEMBE              |
| Resource group | ZeroTrustHub       |
| Vault name     | BackupVault1       |
| Region         | South Africa North |

#### Redundancy

|                           |               |
|---------------------------|---------------|
| Backup Storage Redundancy | Geo-redundant |
| Cross Region Restore      | Disable       |

#### Vault properties

|              |          |
|--------------|----------|
| Immutability | Disabled |
|--------------|----------|

#### Networking

|                     |                                       |
|---------------------|---------------------------------------|
| Connectivity method | Allow public access from all networks |
|---------------------|---------------------------------------|

Create

Previous: Tags

Feedback

Download a template for automation

## Step 3: Create a Virtual Machine

A cloud-based server to run workloads.

Home > CreateVM>MicrosoftWindowsServer>WindowsServer-2022-11-12-101907 > Overview >

WebServerVM

Virtual machine

Help me copy this VM in any region

Manage this VM with Azure CLI

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource monitor

Connect

Networking

Settings

Availability + scale

Security

Backup + disaster recovery

Operations

Monitoring

Insights

Alerts

Metrics

WebServerVM virtual machine agent status is not ready. Troubleshoot the issue.

Help me copy this VM in any region

Connect

Start

Restart

Stop

Hybridize

Capture

Delete

Refresh

Open in mobile

Feedback

CLI/PS

Essentials

Resource group (view) > ZeroTrustHub

Status > Running

Location > South Africa North (zone 1) > US

Subscription (view) > ZEMBE

Subscription ID > 6b3b117b-4b6b-4b6b-4b6b-4b6b117b117b

Availability zone > 1

Operating system > Windows

Size > Standard\_B1s (1 v-core, 1 GB memory)

Primary NIC (public IP) > 10.0.0.100

1 associated public IP

Virtual network/subnet > [vnet-1000/vnet-1000-subnet-1000](#)

DNS name > Not configured

Health state > -

Time created > 11/10/2025, 8:28 AM UTC

Tags (edit) > Add tags

Properties

Monitoring

Capabilities (0)

Recommendations

Tutorials

Virtual machine

Computer name > WebServerVM

Operating system > Windows

Networking

Public IP address > 102.37.147.240 (Network interface webservervms1)

1 associated public IP

## Step 4: Configure Backup for VM

Protect VM data from accidental deletion or corruption.

Home > BackupVault1

Recovery Services vault

Search

Backup + Enable Site Recovery + Update Vault Security + Delete + Refresh + Feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Help me copy this vault settings in any region

Show me virtual machines that can be protected

Analyze all backup job failures for this vault

Essentials

Resource group (move) : ZeroTrustHub

Location : South Africa North

Subscription (move) : ZIMBE

Subscription ID : 4cc5407c-69e8-48d9-baed1-3bd0016344d

Home > BackupVault1 > Backup items

Backup Items (Azure Virtual Machine)

Refresh + Add Filter Change policy Feedback

Show me the virtual machines that can be protected in this vault

Filter items

| Name        | Resource Group | Backup Pre-Check | Last Backup Status               | Latest restore point | Policy name            | Policy sub-type | Details      |
|-------------|----------------|------------------|----------------------------------|----------------------|------------------------|-----------------|--------------|
| WebServerVM | ZeroTrustHub   | Passed           | Warning (initial backup pending) |                      | EnhancedPolicy-mhwg7ev | Enhanced        | View details |

Previous Page 1 of 1 Next

<https://portal.azure.com/#>

## Step 5: Backup Recovery (Documented Step)

Verify that backups are recoverable without affecting the original VM.

### STEPS:

1. Recovery Service Vault – Backup items – Azure Virtual Machine.
2. Select (WebServerVM) – Restore VM
3. Restore Point – Create new VM
4. Configure new VM settings and click Restore.

## Step 6: Configure Azure Site Recovery (Disaster Recovery)

Ensure VM can continue running in case of primary region outage.

Home > Site-recovery-vault-BG

Automation Account

site-reco-4sa-asr-automationaccount

Use jobs executed by this Automation Account. How do I troubleshoot issues with this resource? Show me runbook status for this Automation Account.

Search

Try Runtime Environment Experience + Delete + Move + Explore in VS Code + Give feedback + Refresh

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Process Automation

Configuration Management

Control your job execution environment, manage Packages easily and update the Runtime version of your runbooks using Runtime environment. Learn more.

Azure Automation is revising the service and subscription limits starting 13 January 2023 to ensure fair share of cloud resources for all users. Learn more.

Essentials

Resource group (move) : site-reco-4sa-asr

Location : East US

Subscription (move) : ZIMBE

Tags (add) : Add tags

Subscription ID : 4cc5407c-69e8-48d9-baed1-3bd0016344d

Status : Active

Last modified : 11/12/2023, 11:03:34

JSON View

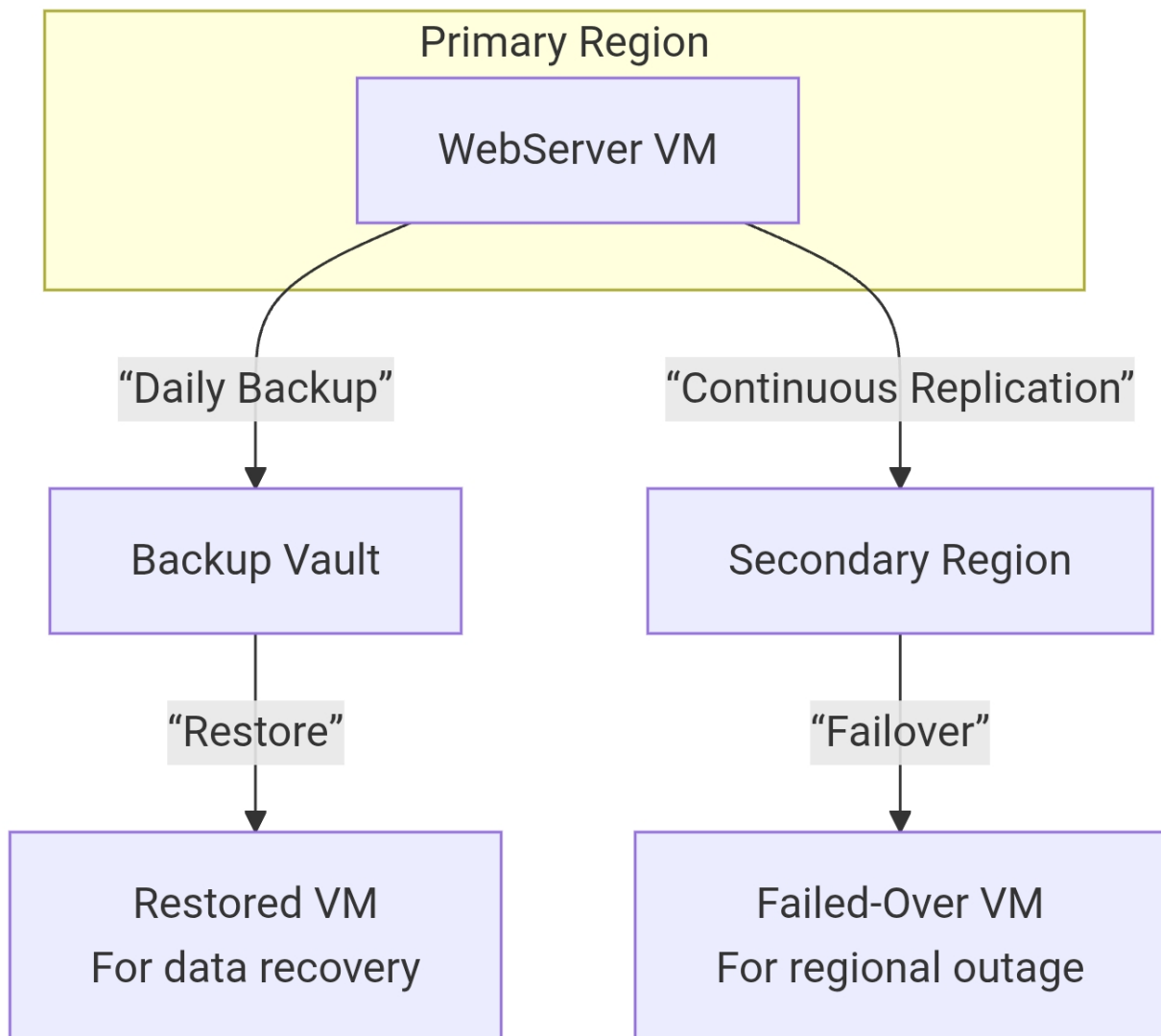
## Step 7: Test Failover (Documented steps)

Ensure disaster recovery works without impacting production VM.

**STEP:**

- 1.Recovery Service Vault – Site Recovery – Replicated items.
2. Select WebServerVM – Test Failover.
3. Choose the latest recovery point.
4. Select Virtual Network for the test VM.
5. Click OK to start test failover.
6. After verification, Clean up Test Failover

**DIAGRAM**



**OUTCOME**

- > Automated daily backup for WebServerVM enabled
- > Backup recovery steps documented and can be executed as needed.

- > **VM replication to a secondary region established for disaster recovery**
- > **Test failover steps documented to validate business continuity**