Azure Portfolio Projects Project 3 – Monitoring, Backup, and Recovery

Overview:
Each project in this 5-project portfolio is designed to demonstrate my hands-on experience with Azure and cloud technologies. The projects cover core aspects such as compute and identity management, networking and storage, monitoring, backup and recovery, identity integration, and app service deployment.

03 – Azure Monitoring, Backup, and Recovery

Project Summary

In this project, I implemented Azure's built-in monitoring, backup, and disaster recovery services to ensure operational visibility and business continuity. The setup includes VM insights, log analytics, alerting, backup automation, and site recovery, all with security best practices in mind.

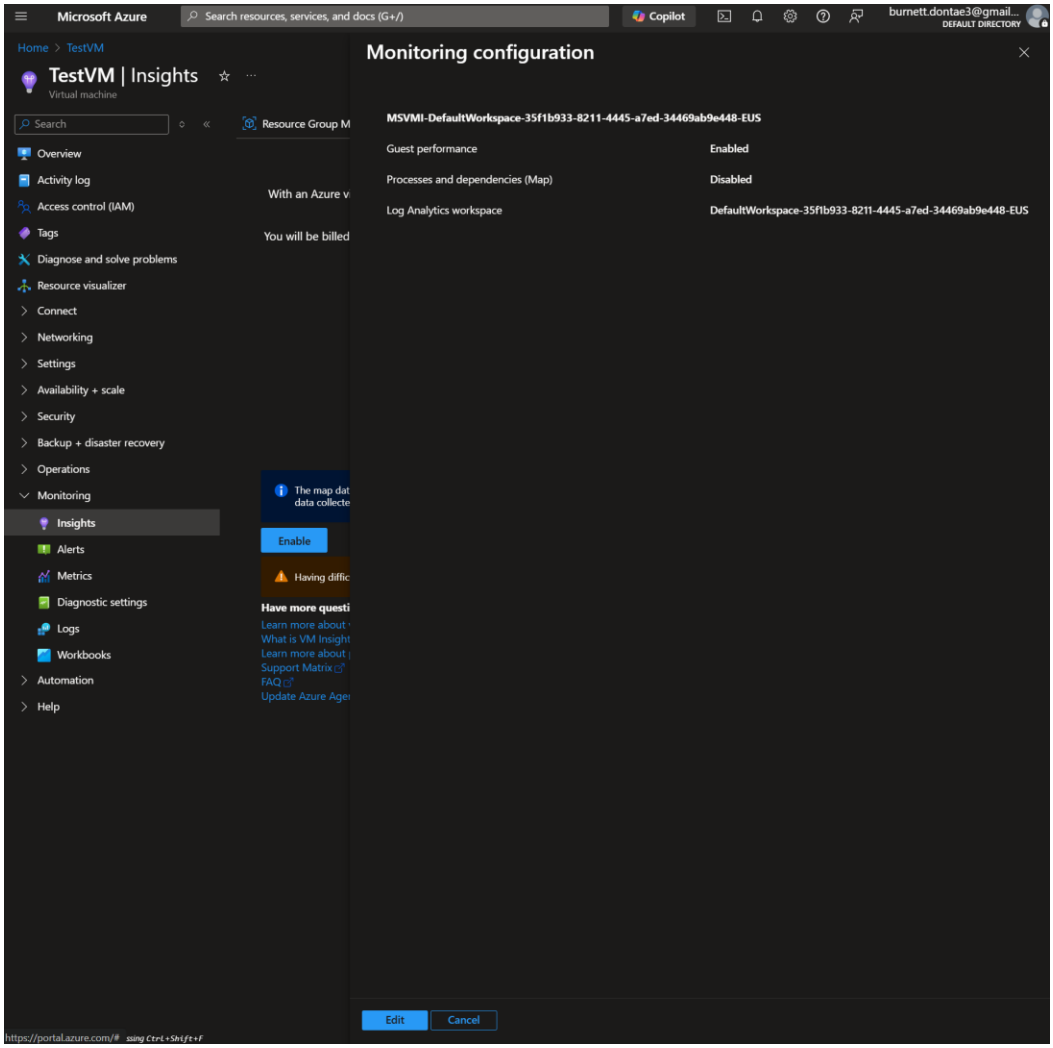
Project Tasks

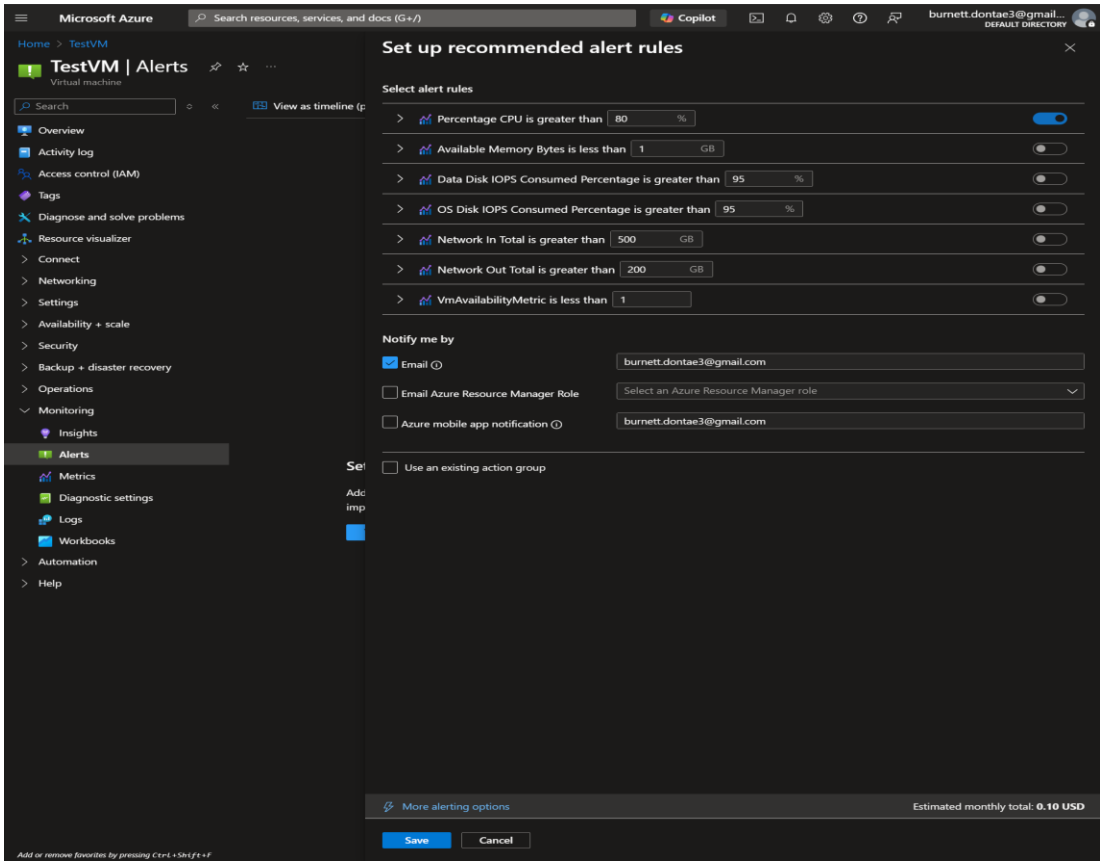
Task 1: Configure Azure Monitor for VMs

- Step 1: Enable VM Insights via Monitoring > Insights

- Step 2: Configure performance alerts for high CPU usage (Threshold: 80%)

- Step 3: Set up Action Groups for notifications

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Backup + disaster recovery
Operations
Monitoring
Insights
Alerts
Metrics
Diagnostic settings
Logs
Workbooks
Automation
Help
Add or remove favorites by pressing Ctrl+Shift+F
Set up recommended alert rules
Select alert rules
Percentage CPU is greater than 80 %
Available Memory Bytes is less than 1 GB
Data Disk IOPS Consumed Percentage is greater than 95 %
OS Disk IOPS Consumed Percentage is greater than 95 %
Network In Total is greater than 500 GB
Network Out Total is greater than 200 GB
VmAvailabilityMetric is less than 1
Notify me by
Email
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Email Azure Resource Manager Role
Select an Azure Resource Manager role
Azure mobile app notification
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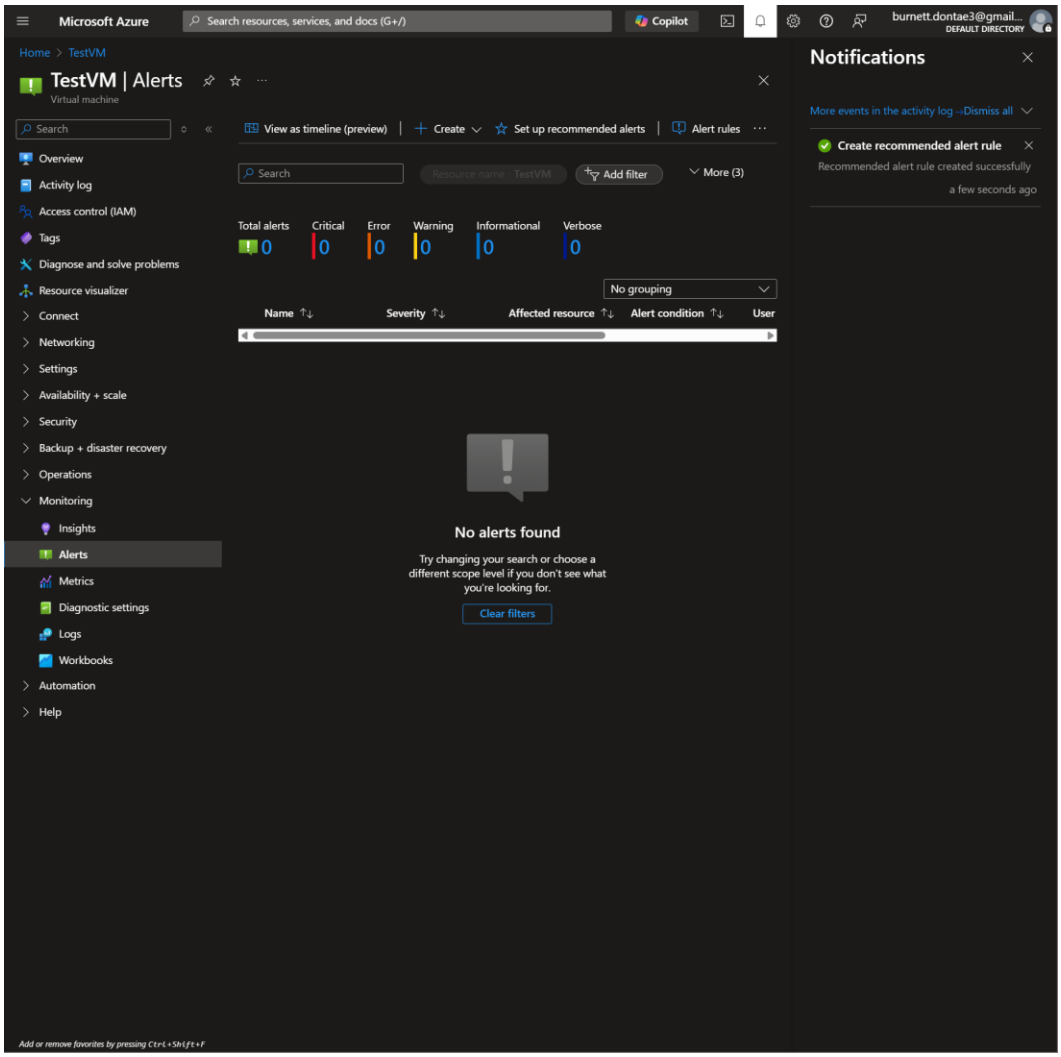
Use an existing action group
More alerting options
Estimated monthly total: 0.10 USD
Save
Cancel



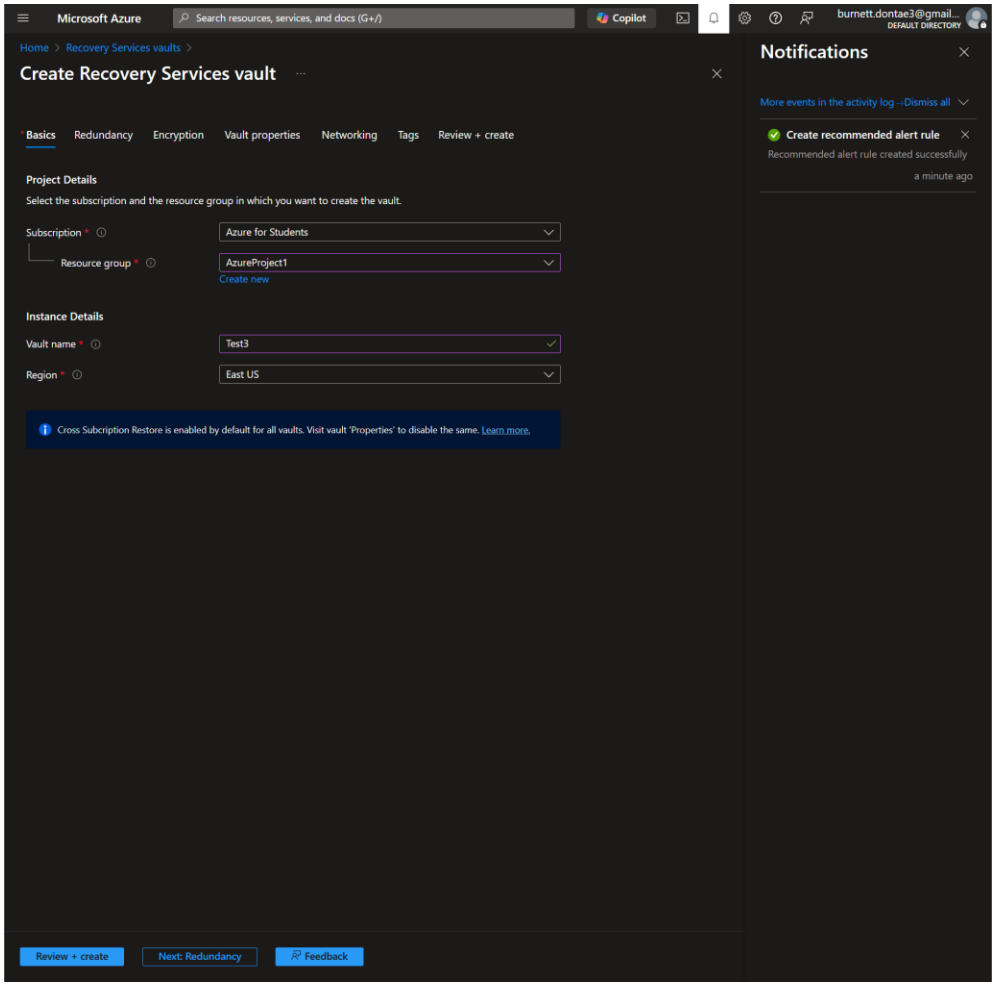
Task 2: Set Up Azure Backup

- Step 1: Create a Recovery Services Vault

- Step 2: Define and apply a daily backup policy with 7-day retention

- Step 3: Enable encryption for backups

- Step 4: Perform and verify a manual backup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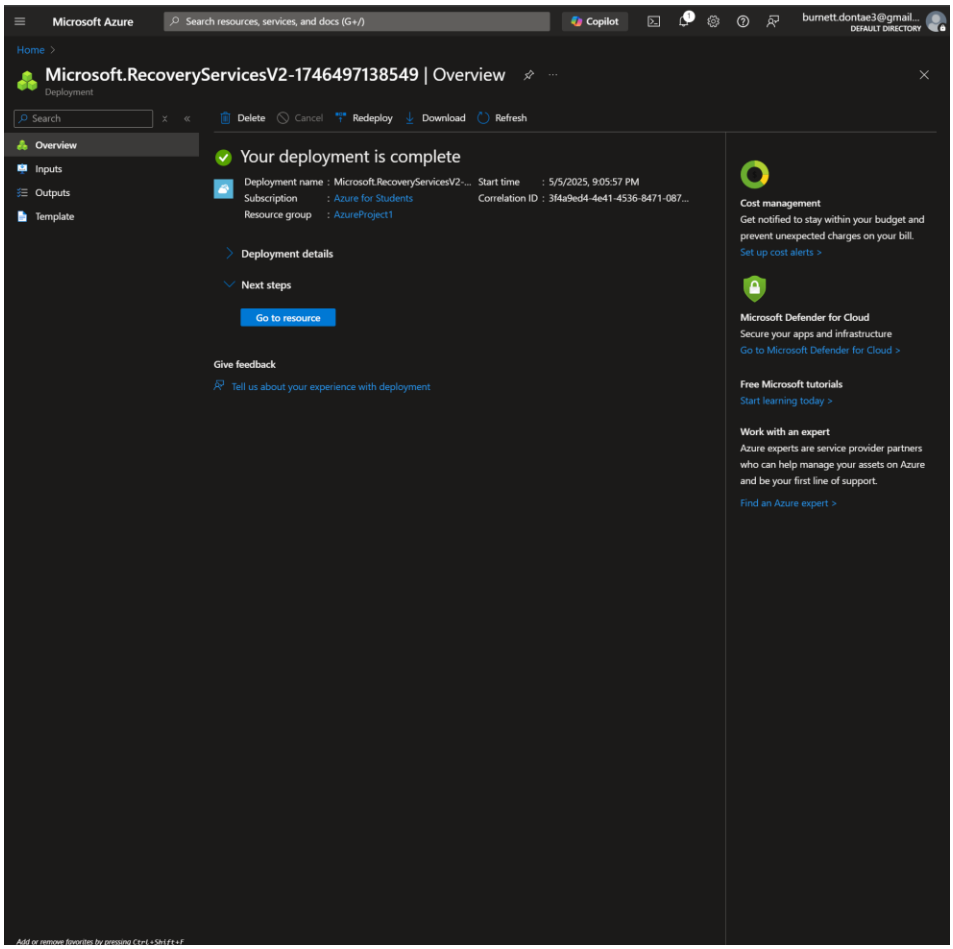
Home > Recovery Services vaults >
Create Recovery Services vault
Basics
Redundancy
Encryption
Vault properties
Networking
Tags
Review + create
Project Details
Select the subscription and the resource group in which you want to create the vault.
Subscription *
Azure for Students
Resource group *
AzureProject1
Create new
Instance Details
Vault name *
Test3
Region *
East US
Cross Subcription Restore is enabled by default for all vaults. Visit vault 'Properties' to disable the same. Learn more.
Review + create
Next: Redundancy
Feedback
Notifications
More events in the activity log → Dismiss all
Create recommended alert rule
Recommended alert rule created successfully
a minute ago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Home
Microsoft.RecoveryServicesV2-1746497138549 | Overview
Deployment
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Overview
Inputs
Outputs
Template
Delete
Cancel
Redeploy
Download
Refresh
Your deployment is complete
Deployment name : Microsoft.RecoveryServicesV2-...
Subscription : Azure for Students
Resource group : AzureProject1
Start time : 5/5/2025, 9:05:57 PM
Correlation ID : 3f4a9ed4-4e41-4536-8471-087...
Deployment details
Next steps
Go to resource
Give feedback
Tell us about your experience with deployment
Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >
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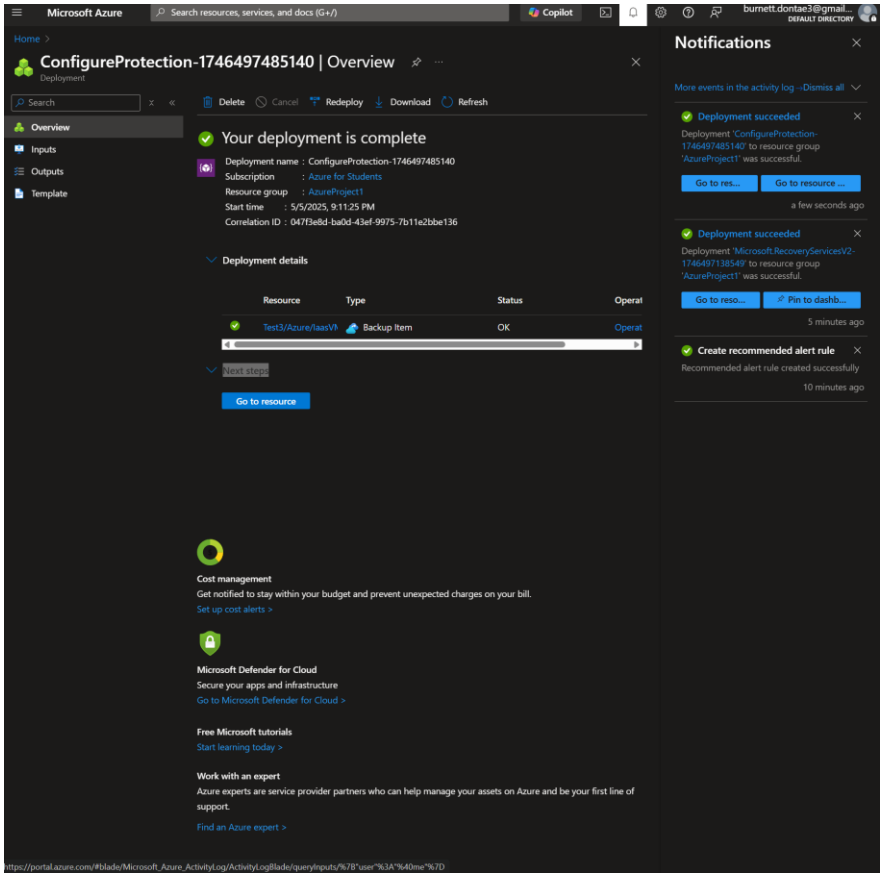
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Home
ConfigureProtection-1746497485140 | Overview
Deployment
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Inputs
Outputs
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Refresh
Your deployment is complete
Deployment name : ConfigureProtection-1746497485140
Subscription : Azure for Students
Resource group : AzureProject1
Start time : 5/5/2025, 9:11:25 PM
Correlation ID : 047f3e8d-ba0d-43ef-9975-7b11e2bbe136
Deployment details
Resource
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Status
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Backup Item
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Operat
Next steps
Go to resource
Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >
Microsoft Defender for Cloud
Secure your apps and infrastructure
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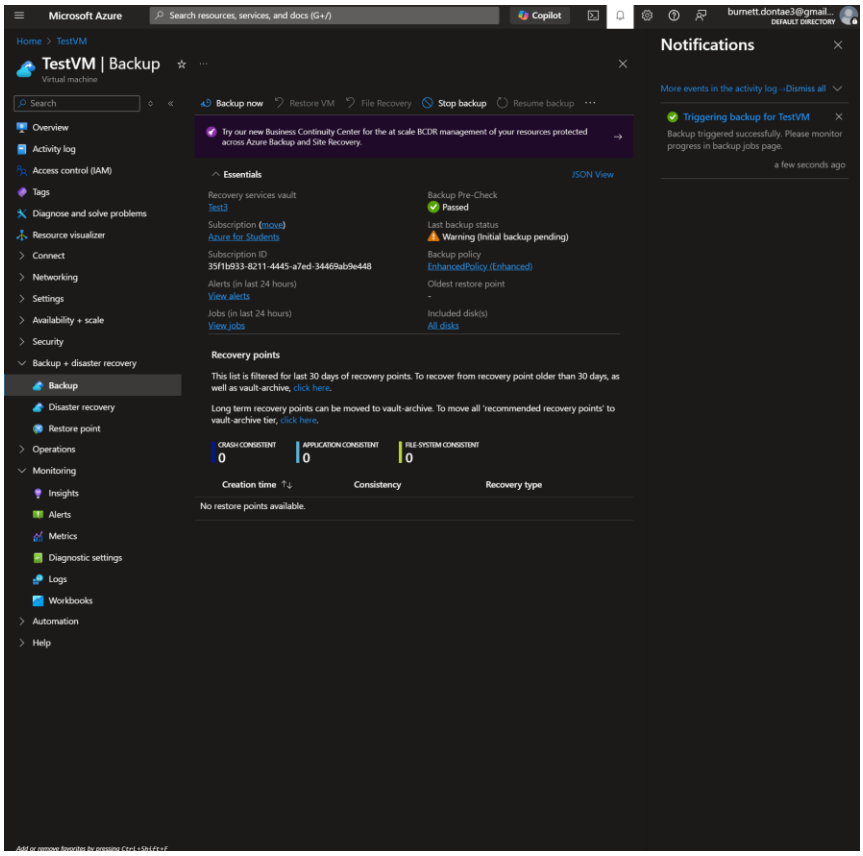
Free Microsoft tutorials
Start learning today >
Work with an expert
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.
Find an Azure expert >
Notifications
More events in the activity log →
Dismiss all
Deployment succeeded
Deployment 'ConfigureProtection-1746497485140' to resource group 'AzureProject1' was successful.
Go to res...
Go to resource ...
a few seconds ago
Deployment succeeded
Deployment 'Microsoft.RecoveryServicesV2-1746497138549' to resource group 'AzureProject1' was successful.
Go to reso...
Pin to dashb...
5 minutes ago
Create recommended alert rule
Recommended alert rule created successfully
10 minutes ago
https://portal.azure.com/#blade/Microsoft_Azure_ActivityLog/ActivityLogBlade/queryInputs/%7B"user"%3A"%40me"%7D

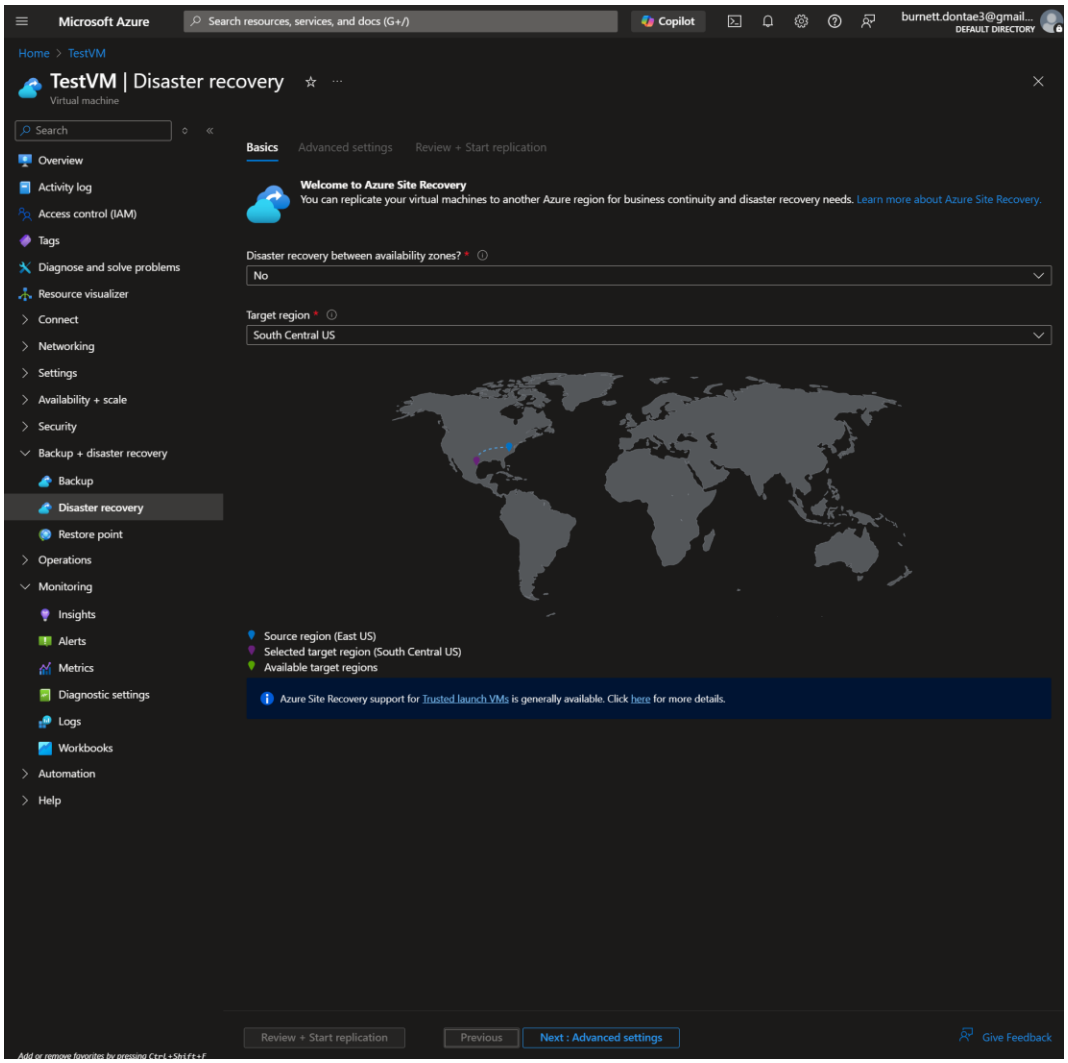


Task 3: Implement Azure Site Recovery

- Step 1: Enable disaster recovery for the VM

- Step 2: Configure replication to a secondary region

- Step 3: Test failover and monitor replication health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Access control (IAM)
Tags
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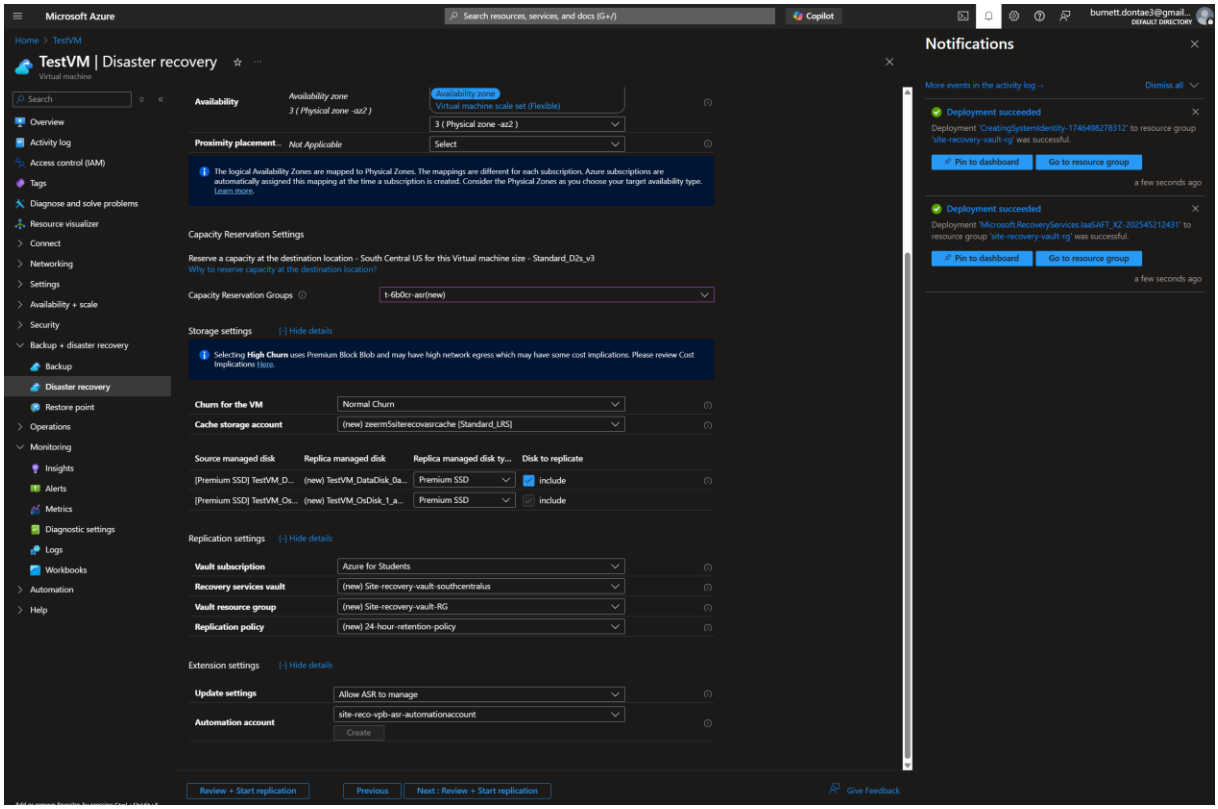
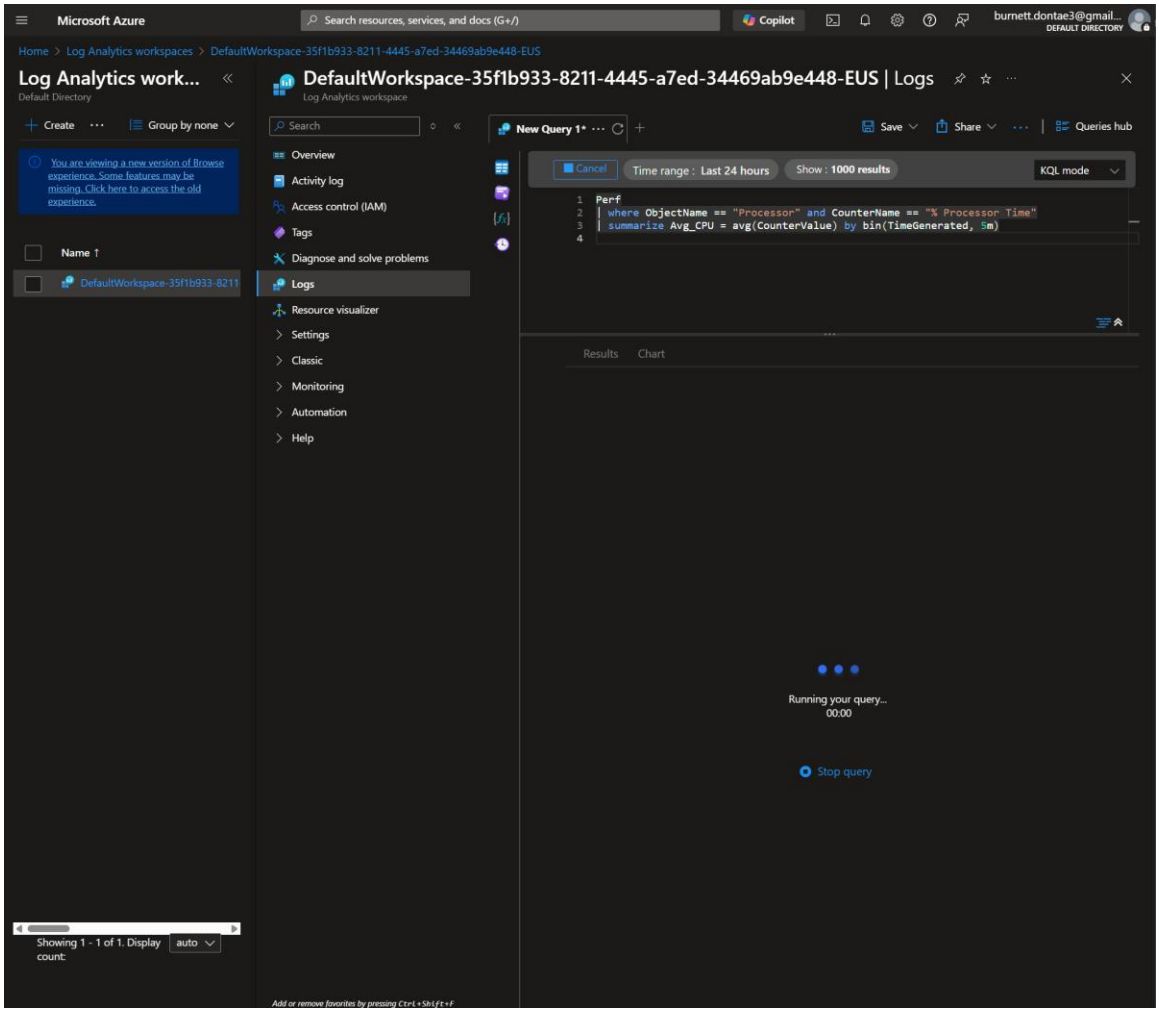
Resource visualizer
Connect
Networking
Settings
Availability + scale
Security
Backup + disaster recovery
Backup
Disaster recovery
Restore point
Operations
Monitoring
Insights
Alerts
Metrics
Diagnostic settings
Logs
Workbooks
Automation
Help
Basics
Advanced settings
Review + Start replication
Welcome to Azure Site Recovery
You can replicate your virtual machines to another Azure region for business continuity and disaster recovery needs. Learn more about Azure Site Recovery.
Disaster recovery between availability zones? *
No
Target region *
South Central US
Source region (East US)
Selected target region (South Central US)
Available target regions
Azure Site Recovery support for Trusted launch VMs is generally available. Click here for more details.
Review + Start replication
Previous
Next : Advanced settings
Give Feedback
Add or remove favorites by pressing Ctrl+Shift+F



Task 4: Query Logs in Azure Monitor

- Step 1: Access Log Analytics Workspace

Visualize results as charts for insights. In my case there was nothing to show



Task 5: Secure Backup and Recovery

- Step 1: Verify encryption settings in Recovery Services Vault

- **Encryption with Microsoft-Managed Keys (MMK)**:

  - Azure Recovery Services Vault uses encryption-at-rest by default with Microsoft-managed keys.
  - You can view and confirm the encryption settings by navigating to:
    Recovery Services Vault > Properties > Encryption Settings.

- This ensures all backup data is protected without the need for manual key management.