



Azure Spring Clean 2024

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**Using Azure Automation to
save money - a quick win!**





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**Using Azure Automation to
save money - a quick win!**

Hello!



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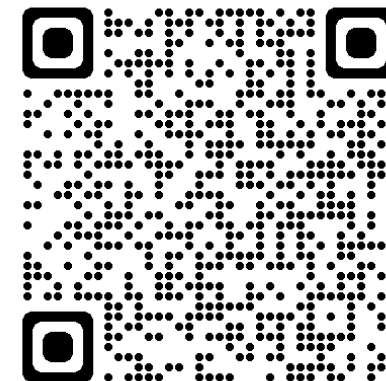
Please note – the views/opinions in this presentation are entirely my own. This presentation will not be kept updated after Azure Spring Clean 2024 (March 2024) – so may be outdated if downloaded afterwards.

If in any doubt, please check latest documentation and MS Links for updated info!

```
core.tf > ...
1 # Resource Groups
2 resource "azurerm_resource_group" "rg-ide" {
3   name     = "rg-baselabv2-${var.region1code}-identity-01"
4   location = var.region1
5   tags = {
6     Environment = var.environment_tag
7     Function    = "BaseLabv2Identity"
8   }
9 }
10 resource "azurerm_resource_group" "rg-con" {
11   name     = "rg-baselabv2-${var.region1code}-identity-01"
12   location = var.region1
13   tags = {
14     Environment = var.environment_tag
15     Function    = "BaseLabv2Identity"
16   }
17 }
18 resource "azurerm_resource_group" "rg-con" {
19   name     = "rg-baselabv2-${var.region1code}-identity-01"
20   location = var.region1
21   tags = {
22     Environment = var.environment_tag
23     Function    = "BaseLabv2Security"
24   }
25 }
26 # Key Vault
27 resource "random_bytes" "random_bytes" {
28   byte_length = 6
29   prefix      = "kv"
30 }
31 data "azurerm_client_config" "current" {}
32
33
34
35
36
37
38
39
40
41 sku_name = "standard"
42
```



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Jake Walsh Cloud, DevOps, EUC, Infrastructure and more...

Deploying, securing, and monitoring Azure OpenAI with Terraform

February 13, 2024 · Azure, Azure AI, Azure OpenAI, CloudFamily, Community, DevOps, HashiCorp, HashiCorp Ambassador, Learning, Microsoft, Terraform

Tagged: AI, Azure, Azure AI, Azure OpenAI, CloudFamily, Community, DevOps, HashiCorp, HashiCorp Ambassador, Microsoft, OpenAI, Terraform

```
# Cognitive Services - with Private Networking
resource "azurerm_cognitive_account" "cn-cognitiveai" {
  count           = var.privatenetworking ? 1 : 0
  name            = "cn-${random_id.ac-cognitive-ai}"
  location        = azurerm_resource_group.rg1.location
  resource_group_name = azurerm_resource_group.rg1.name
  sku_name        = "F0"
  role            = "Owner"
  custom_subdomain_name = "cn-${random_id.ac-cognitive-ai}"

  network_access {
    default_action = "Deny"
    virtual_network {
      subnet_id = azurerm_subnet.subnet1-ai[0].id
    }
  }
}
```

created my [...]

[Continue Reading →](#)

In this post I wanted to summarise some of my recent activities deploying, securing, and monitoring Azure OpenAI with Terraform. This is an area I am regularly discussing with Clients – talking about possibilities, delivering demos, and looking at different options to integrate the range of Azure AI and Azure OpenAI Services into business applications and processes. I've

Search:



Starting 2024 the right way, again! 5 great resources to help create a successful Azure Environment

January 23, 2024 · Azure, Cloud Adoption Framework, Cloud Foundation, CloudFamily, Community, Enterprise Scale, FinOps, Landing Zones, Microsoft

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[Azure Firewall](#) [Azure Lab Services](#) [Azure OpenAI](#)
[Azure Virtual Desktop](#) [Azure Virtual WAN](#)
[CAF Certification](#) [Citrix](#) [Cloud](#)



Using Azure Automation to save money – a quick win!

- What is Azure Automation?
- How does Azure Automation help save cost?
- Why use Terraform and Azure Automation?
- Demo Environment
- Learning more about Azure Terraform
- Resources / Links / Code



What is Azure Automation?



One of ***many*** ways to automate within Azure – Logic Apps, Power Apps, Event Grid, Power Automate etc.



Cloud-based automation, OS updates, and configuration.



Works across Azure and non-Azure environments.



Process Automation, Configuration Management, Update Management, Shared Capabilities, and Heterogeneous features.



Very cost effective – minimal cost to run!

What is Azure Automation?



The screenshot displays the Microsoft Learn page for 'What is Azure Automation?'. The page includes a navigation sidebar on the left with links to 'Overview', 'What is Azure Automation?', 'FAQ', 'What's new?', and 'Archive for What's new'. The main content area features the article title, a breadcrumb trail 'Learn / Azure / Automation /', and a list of topics covered in the article: 'Process Automation', 'Configuration Management', 'Update Management', and 'Shared capabilities'. Below this, the article text explains that automation is needed in three broad areas of cloud operations: Deploy and manage, Response, and Orchestrate. A diagram at the bottom illustrates the components of Azure Automation, including Configuration Management, Azure Arc, Azure Alerts, Azure Site Recovery, and 3rd Party Integration.

Microsoft | Learn | Documentation | Training | Credentials | Q&A | Code Samples | Assessments | Shows

Azure | Products | Architecture | Develop | Learn Azure | Troubleshooting | Resources

Filter by title

Azure Automation User Documentation

Overview

What is Azure Automation?

What are the various Automation services in Azure?

FAQ

What's new?

Archive for What's new

Quickstarts

Tutorials

Concepts

How-to guides

Reference

Resources

Learn / Azure / Automation /

What is Azure Automation?

Article • 10/18/2022 • 9 contributors

Feedback

In this article

- Process Automation
- Configuration Management
- Update Management
- Shared capabilities

Show 4 more

Automation is needed in three broad areas of cloud operations:

- Deploy and manage - Deliver repeatable and consistent infrastructure as code.
- Response - Create event-based automation to diagnose and resolve issues.
- Orchestrate - Orchestrate and integrate your automation with other Azure or third party services and products.

Azure Automation delivers a cloud-based automation, operating system updates, and configuration service that supports consistent management across your Azure and non-Azure environments. It includes process automation, configuration management, update management, shared capabilities, and heterogeneous features.

Configuration Management
Collect inventory
Track changes
Configure desired state

Azure Arc

Azure Alerts

Azure Site Recovery

3rd Party Integration

Download PDF

<https://learn.microsoft.com/en-us/azure/automation/overview>

How does this help save cost?



- Automate the Power State of Virtual Machines.



- Schedule VMs to be Powered Off when not in use = a saving on compute costs.



- We can Power On and Off VMs on a scheduled basis using Tags.



- Allows our environments to optimise compute time and therefore cost.



- Handy for Lab / Dev / Test environments – but also has many use cases in Production.

Why use Terraform and Azure Automation?

- **Cost** – Terraform enables more rapid deployment, changes, test environments etc. Automation provides the ability for Power Management of VMs (and beyond).
- **Speed** – faster deployment due to less manual intervention (no ClickOps), easy testing, less human error etc. Enables DevOps methods/practices. VMs shut down in a timely fashion by Automation – not just when we remember!
- **Risk** – reduced through testing, consistency of deployments, version control etc. Automation runs on a scheduled basis.



Azure Automation

+



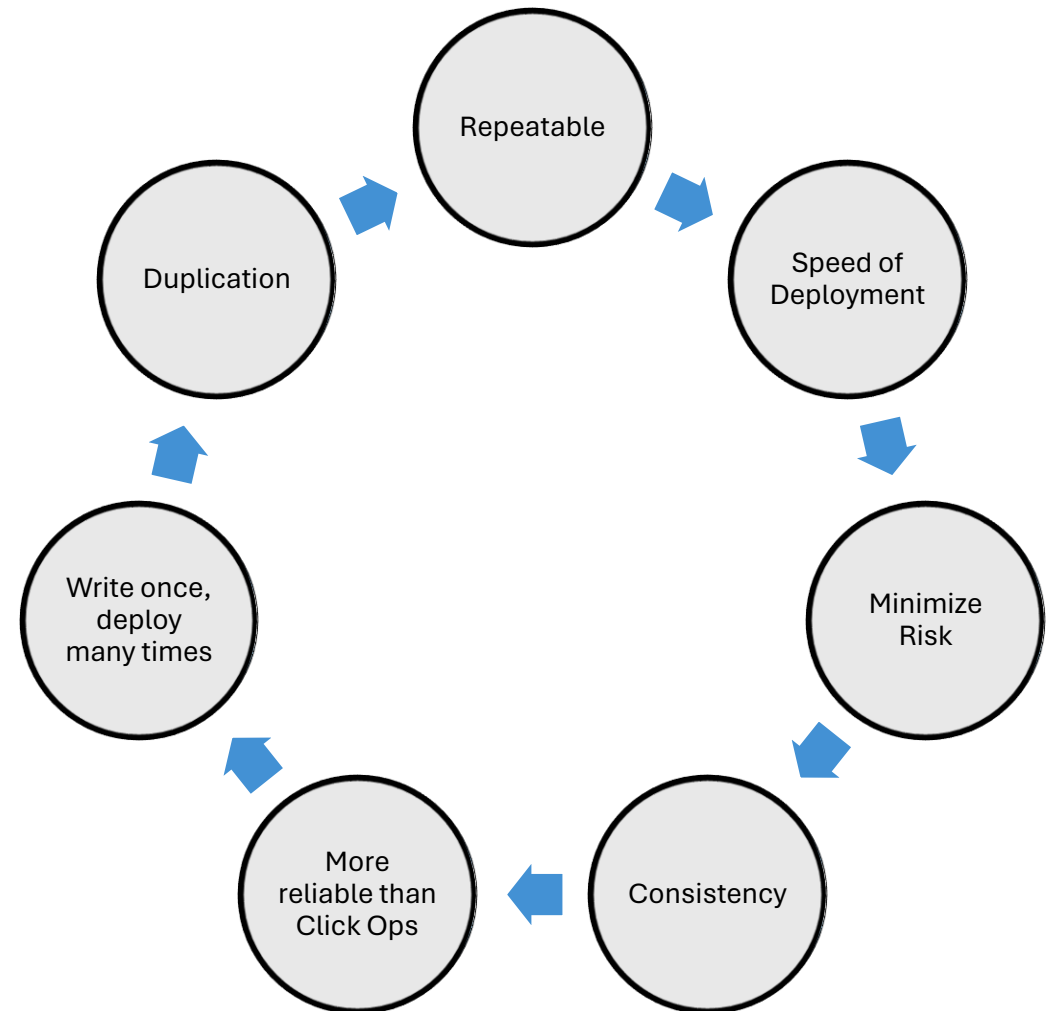
Terraform

=

A great combination!

Why use Terraform and Azure Automation?

Infrastructure as Code:
Benefits Cycle



Demo Environment

Azure Resources

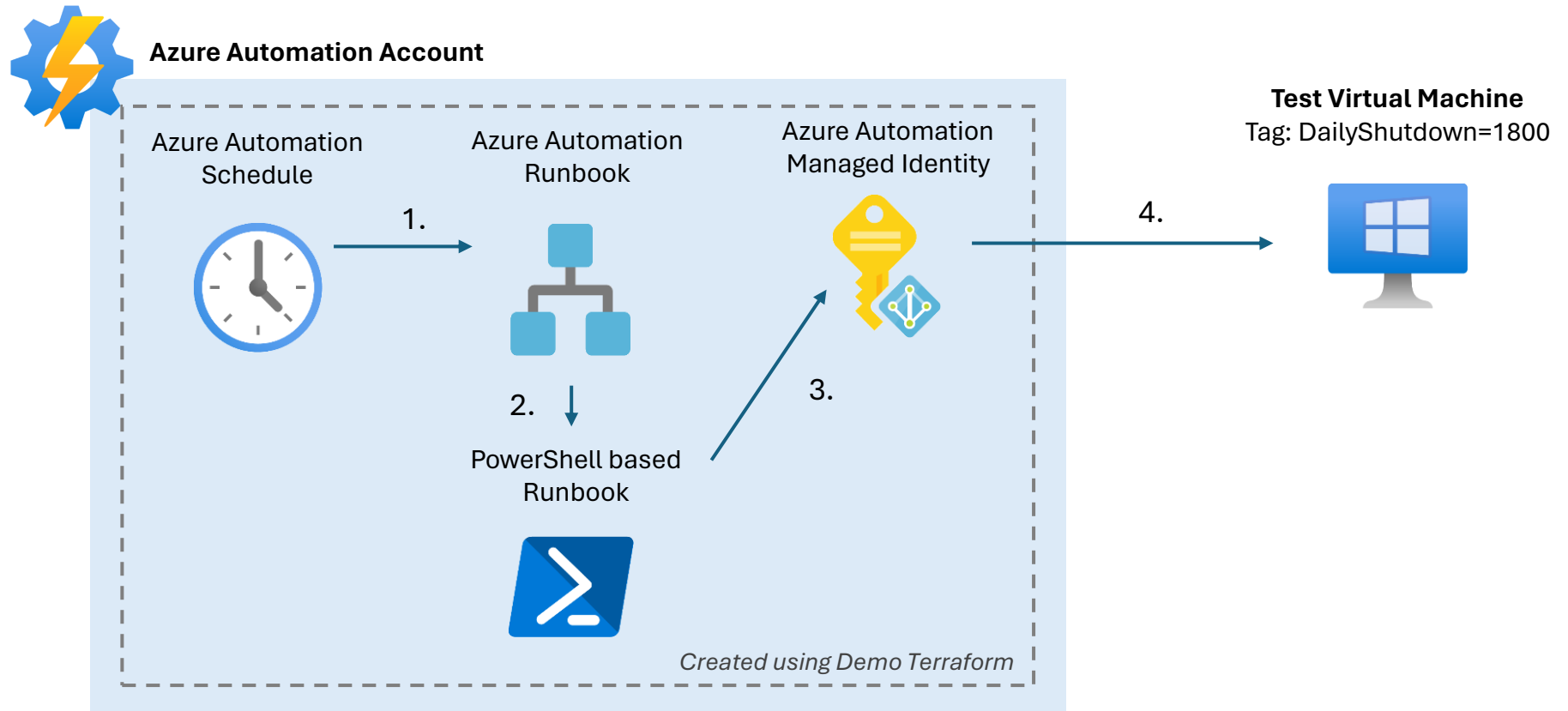


1. A Resource Group.
2. Azure Automation Account.
3. Azure Automation Runbook.
4. PowerShell script to shutdown VMs with a specific tag.
5. Azure Automation Schedule.
6. Azure Automation Managed Identity (for Azure Automation Runbook, which assigns Contributor permissions to the current Subscription).
7. Schedule applied to Runbook to shut down our test VM.
8. A VM we can test on, with a Tag set! *(Not created by Terraform)*

Demo Environment

Azure Automation

1. Automation Runbook runs at scheduled time
2. Runs PowerShell script to find VMs with correct Tag.
3. Uses Managed Identity to interact with Azure Resources
4. Runs Power Off on discovered VMs.



Demo Environment

PowerShell



Azure Automation Account

PowerShell based
Runbook



```
1  param (  
2      [Parameter(Mandatory=$true)]  
3      [string]$dailyshutdowntime  
4  )  
5  
6  Disable-AzContextAutosave -Scope Process  
7  $AzureContext = (Connect-AzAccount -Identity ).context  
8  $AzureContext = Set-AzContext -SubscriptionName $AzureContext.Subscription -DefaultProfile $AzureContext  
9  
10 $VMs = Get-AzVM | Where-Object {$_.Tags.DailyShutdown -eq "$dailyshutdowntime"}  
11 $VMs | Stop-AzVM -Force  
12 Write-Output "Stopped VMs are $($VMs.Name)"
```

Created using Demo Terraform (from GitHub Repo PowerShell folder)

Terraform Deployment

```
core.tf > ...
1 # Resource Groups
2 resource "azurerm_resource_group" "rg-ide" {
3   name     = "rg-baselabv2-${var.region1code}-identity-01"
4   location = var.region1
5   tags = {
6     Environment = var.environment_tag
7     Function    = "BaseLabv2-identity"
8   }
9 }
10 resource "azurerm_resource_group" "rg-con" {
11   name     = "rg-baselabv2-${var.region1code}-connectivity-01"
12   location = var.region1
13   tags = {
14     Environment = var.environment_tag
15     Function    = "BaseLabv2-connectivity"
16   }
17 }
18 resource "azurerm_resource_group" "rg-sec" {
19   name     = "rg-baselabv2-${var.region1code}-security-01"
20   location = var.region1
21   tags = {
22     Environment = var.environment_tag
23     Function    = "BaseLabv2-security"
24   }
25 }
26 # Key Vault
27 resource "random_id" "kv-name" {
28   byte_length = 6
29   prefix      = "kv"
30 }
31 data "azurerm_client_config" "current" {}
32 resource "azurerm_key_vault" "kv1" {
33   name                = random_id.kv-name.hex
34   location             = var.region1
35   resource_group_name = azurerm_resource_group.rg-sec.name
36   enabled_for_disk_encryption = true
37   tenant_id           = data.azurerm_client_config.current.tenant_id
38   soft_delete_retention_days = 7
39   purge_protection_enabled = false
40 }
41 sku_name = "standard"
42
```

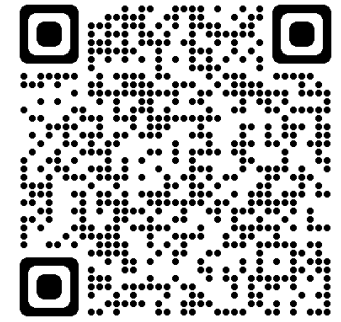
- Everything I am using today is available here: <https://github.com/jakewalsh90/Terraform-Azure/tree/main/Azure-Automation-Demo>
- All you need is Terraform, VSCode, Azure CLI, and an Azure Subscription.

```
choco install vscode -y -no-desktopshortcuts
choco install terraform -y -no-desktopshortcuts
choco install azure-cli -y -no-desktopshortcuts
```

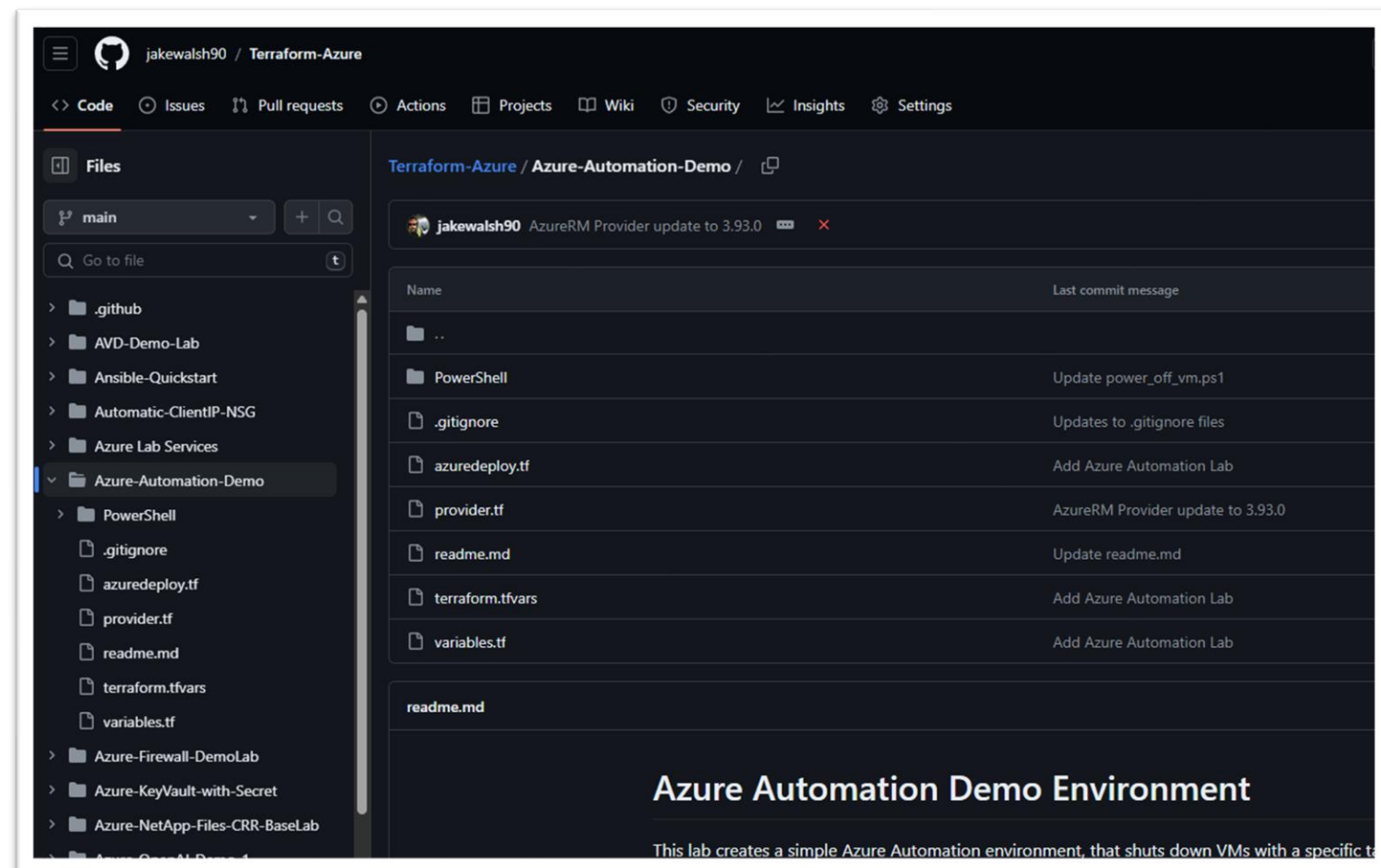
<https://chocolatey.org/install#individual>

- We will explore & demo the following:
 - Deployment of an Automation Account, Runbook and Schedule
 - Editing the time of the Schedule – this is important!
 - Testing the Runbook

Terraform Deployment



- <https://github.com/jakewalsh90/Terraform-Azure/tree/main/Azure-Automation-Demo>



Demo Time!

Note – the demo section of this presentation is not included within these slides. Please refer to the original blog post for the video!

Learning more about Azure Terraform

```
core.tf > ...
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38   soft_delete_retention_days = 7
39   purge_protection_enabled = false
40 }
41 sku_name = "standard"
42
```

- Azure / Terraform Blog Posts:

<https://jakewalsh.co.uk/category/terraform/>

<https://jakewalsh.co.uk/category/azure/>

- HashiCorp Learn – Azure Tutorial:

<https://developer.hashicorp.com/terraform/tutorials/azure-get-started>

- Try Some Sample Environments:

<https://github.com/jakewalsh90/Terraform-Azure>

Resources

- GitHub Repo for my demo: <https://github.com/jakewalsh90/Terraform-Azure/tree/main/Azure-Automation-Demo>
- An Introduction to Azure Terraform – Festive Tech Calendar Session: <https://jakewalsh.co.uk/festive-tech-calendar-2023-an-introduction-to-azure-terraform/>
- Azure Terraform Repo – lots of labs, demos, and sample code to try: <https://github.com/jakewalsh90/Terraform-Azure>
- Upcoming Welsh Azure User Group – Azure Terraform Session: <https://www.meetup.com/msft-stack/events/299361444/>



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Thank You!

