Lab Deploy a storage account and container using an ARM template

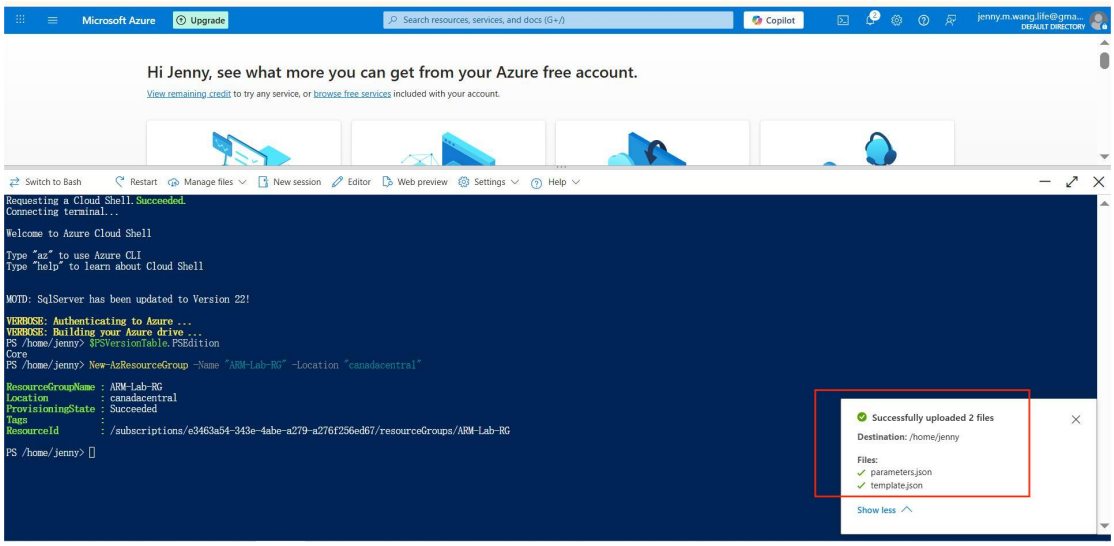
Methods: Deployed a storage account and blob container using an ARM template.
Purpose: Learn how to automate Azure resource creation through Infrastructure as Code.
Tools: Used Azure Cloud Shell with PowerShell to deploy and verify resources.
Skills Covered: Created, parameterized, and redeployed ARM templates for secure storage setup.

Step 1 – Preparing files

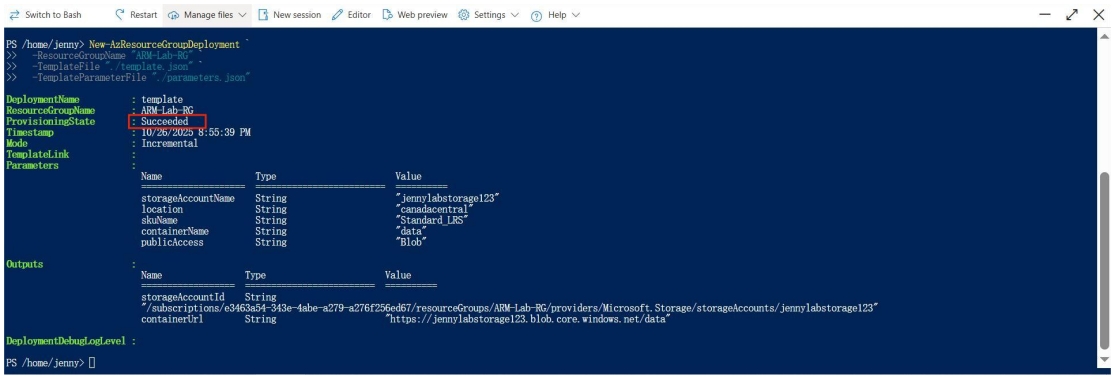
Create template.json and parameters.json under the lab file.

Step 2 – Deploy using CloudShell

Create a resource group, Upload both template.json and parameters.json to Cloud Shell:

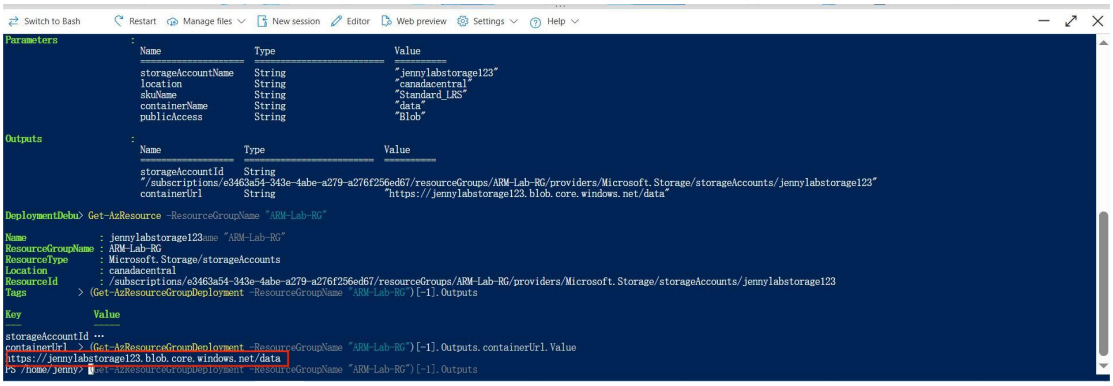


Deploy:

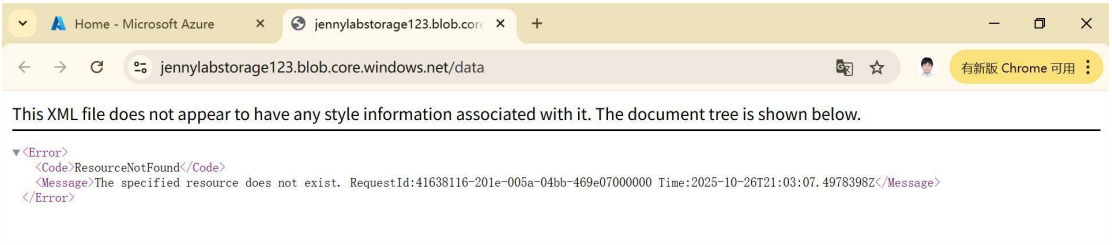


Step 3 – Verify deployment

List resources in the group, and get the output values from the deployment:



Click the link:



It means the storage account exists but the container is empty.

Azure Blob Storage returns that XML when there are no blobs to show.

To confirm the container really exists:

My ARM template declared “allowBlobPublicAccess: true” and “publicAccess: "Blob"" sets the container so its blobs can be read without authentication. That’s why the container is publicly readable, and the browser can directly open the URL.

The container data exists with public access: Blob -- deployment is successful.

To make the container private, I need to disable public access in both the container and storage account by editing the two parts in my template.json: "allowBlobPublicAccess": false and "publicAccess": "None":

```
  "kind": "StorageV2",
  "sku": { "name": "[parameters('skuName')]" },
  "properties": {
   "minimumTlsVersion": "TLS1_2",
   "allowBlobPublicAccess": false
  }
 },
 {
  "type": "Microsoft.Storage/storageAccounts/blobServices/containers",
  "apiVersion": "2023-01-01",
  "name": "[format('{0}/default/{1}', parameters('storageAccountName'), parameters('containerName'))]",
  "dependsOn": [
   "[resourceId('Microsoft.Storage/storageAccounts', parameters('storageAccountName'))]"
  ],
  "properties": {
   "publicAccess": "None"
  }
 }
```

then redeploy:

```
PS /home/jenny> New-AzResourceGroupDeployment `
>>   -ResourceGroupName "ARM-Lab-RG" `
>>   -TemplateFile "./template.json" `
>>   -TemplateParameterFile "./parameters.json"

DeploymentName          : template
ResourceGroupName       : ARM-Lab-RG
ProvisioningState       : Succeeded
Timestamp               : 10/26/2025 9:24:45 PM
Mode                    : Incremental
TemplateLink            :
Parameters              :
                          Name             Type                       Value
                          ===============  =========================  ==========
                          storageAccountName  String                  "jennylabstorage123"
                          location         String                     "canadacentral"
                          skuName          String                     "Standard_LRS"
                          containerName    String                     "data"
                          publicAccess     String                     "Blob"

Outputs                 :
                          Name             Type                       Value
                          ===============  =========================  ==========
                          storageAccountId  String
                          "/subscriptions/e3463a54-343e-4abe-a279-a276f256ed67/resourceGroups/ARM-Lab-RG/providers/Microsoft.Storage/storageAccounts/jennylabstorage123"
                          containerUrl     String                     "https://jennylabstorage123.blob.core.windows.net/data"

DeploymentDebugLogLevel :

PS /home/jenny>
```

The redeployment didn't overwrite the container's access setting. Fix it manually:

```
Microsoft Azure  Upgrade   Search resources, services, and docs (G+/)   Copilot   jenny.m.wang.life@gma...  DEFAULT DIRECTORY
Switch to Bash  Restart  Manage files  New session  Editor  Web preview  Settings  Help

PS /home/jenny> Get-AzStorageAccount -ResourceGroupName "ARM-Lab-RG"

StorageAccountName ResourceGroupName PrimaryLocation SkuName      Kind      AccessTier CreationTime         ProvisioningState EnableHttpsTrafficOnly LargeFileShares
------------------ ----------------- --------------- -------      ----      ---------- ------------         ----------------- ---------------------- ---------------
jennylabstorage123 ARM-Lab-RG        canadacentral   Standard_LRS StorageV2 Hot        10/26/2025 8:55:17 PM Succeeded         True

PS /home/jenny> $ctx = New-AzStorageContext -StorageAccountName "jennylabstorage123" -UseConnectedAccount
PS /home/jenny> Get-AzStorageContainer -Context $ctx | Format-List

CloudBlobContainer      : Microsoft.Azure.Storage.Blob.CloudBlobContainer
Permission              : Microsoft.Azure.Storage.Blob.BlobContainerPermissions
AccessPolicy            : Azure.Storage.Blobs.Models.BlobContainerAccessPolicy
PublicAccess            : Blob
LastModified            : 10/26/2025 9:24:44 PM +00:00
ContinuationToken       :
IsDeleted               :
VersionId               :
BlobContainerClient     : Azure.Storage.Blobs.BlobContainerClient
BlobContainerProperties : Azure.Storage.Blobs.Models.BlobContainerProperties
Context                 : Microsoft.WindowsAzure.Commands.Storage.Common.AzureStorageContext
Name                    : data

PS /home/jenny> $ctx = New-AzStorageContext -StorageAccountName "jennylabstorage123" -UseConnectedAccount
PS /home/jenny> Set-AzStorageContainerAcl -Name "data" -PublicAccess Off -Context $ctx
PS /home/jenny> Get-AzStorageContainer -Context $ctx | Format-List

CloudBlobContainer      : Microsoft.Azure.Storage.Blob.CloudBlobContainer
Permission              : Microsoft.Azure.Storage.Blob.BlobContainerPermissions
AccessPolicy            : Azure.Storage.Blobs.Models.BlobContainerAccessPolicy
PublicAccess            : Off
LastModified            : 10/26/2025 9:38:39 PM +00:00
ContinuationToken       :
IsDeleted               :
VersionId               :
BlobContainerClient     : Azure.Storage.Blobs.BlobContainerClient
BlobContainerProperties : Azure.Storage.Blobs.Models.BlobContainerProperties
Context                 : Microsoft.WindowsAzure.Commands.Storage.Common.AzureStorageContext
Name                    : data

PS /home/jenny>
```

My container is now private.