



Máster en Ingeniería MultiCloud, DevOps y Seguridad.

AZURE LAB #3

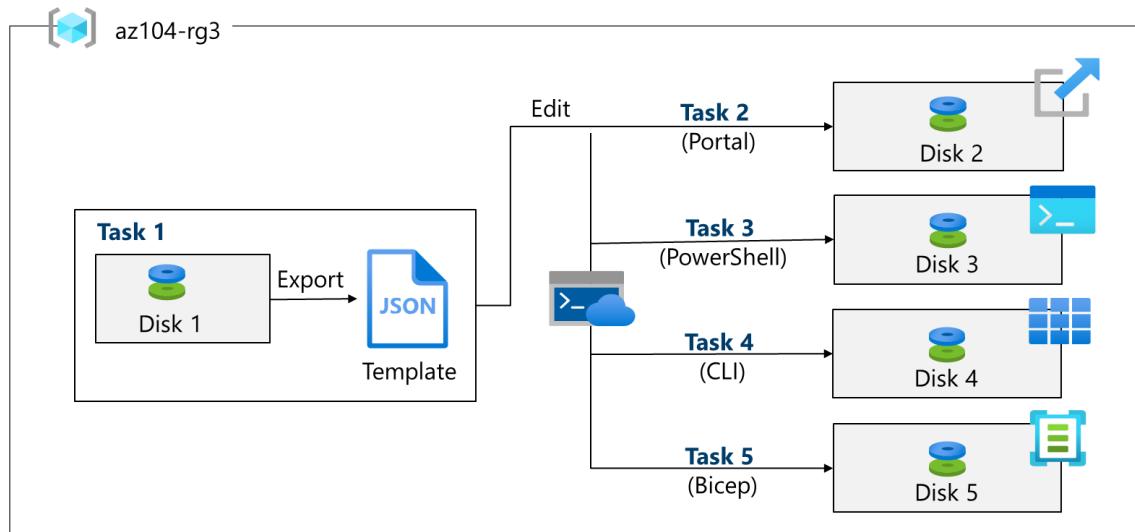
Desplegando recursos de Azure utilizando ARM.



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Esquema del laboratorio





Crear una Azure Resource Manager.

Home > Storage center | Azure Disks >

Create a managed disk ...

Basics Encryption Networking Advanced Tags Review + create

Select the disk type and size needed for your workload. Azure disks are designed for 99.999% availability. Azure managed disks encrypt your data at rest, by default, using Storage Service Encryption. [Learn more about disks.](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ Azure for Students

Resource group * ⓘ az104-rg3 Create new

Disk details

Disk name * ⓘ az104-disk1

Region * ⓘ (Europe) Spain Central

Availability zone No infrastructure redundancy required

Source type ⓘ None

Size * ⓘ 32 GiB (S4 performance tier)
Standard HDD LRS
[Change size](#)

Creamos un disco de forma manual para que azure nos proporcione el formato de plantilla que vamos a utilizar para crear el resto de los discos utilizando ARM.

Importante seleccionar la suscripción y el grupo de recursos donde vamos a crear los recursos.



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The screenshot shows the Azure portal interface for managing a disk. The left sidebar lists various management options like Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Settings, Monitoring, and Automation. Under Automation, the 'Tasks' option is selected and highlighted with a red box. Within the Tasks section, there is a 'Export template' button, which is also highlighted with a red box. The main content area displays the disk's properties under the 'Essentials' tab. Key details include:

Property	Value
Resource group	az104-rg1
Disk state	Unattached
Last ownership update time	-
Location	Spain Central
Subscription	Azure for Students
Subscription ID	e34f79e4-03aa-4981-a9d2-f3c7e4dd3fb
Time created	28/11/2025, 10:23:11
Tags (edit)	Add tags
Disk size	32 GiB
Storage type	Standard HDD LRS
Managed by	-
Operating system	-
Max shares	0
Availability zone	No infrastructure redundancy required
Security type	Standard

The screenshot shows a file explorer window with the path: Desktop > AZ-104 > ExportedTemplate-az104-rg3. The left sidebar has 'Home' and 'Gallery' options. The main area displays a list of files:

Name	Date modified	Type	Size
parameters	11/28/2025 10:24 AM	JSON Source File	1 KB
template	11/28/2025 10:24 AM	JSON Source File	2 KB

Dentro del recurso accedemos a /automation/ donde exportaremos la plantilla para crear los discos



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Editar una plantilla de Azure Resource Manager y, a continuación, implementar la plantilla.

```
1 {  
2   "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json",  
3   "contentVersion": "1.0.0.0",  
4   "parameters": {  
5     "disks_az104_disk1_name": {  
6       "defaultValue": "az104-disk2",  
7       "type": "String"  
8     }  
9   },  
10  "variables": {},  
11  "resources": [  
12    {  
13      "type": "Microsoft.Compute/disks",  
14      "apiVersion": "2025-01-02",  
15      "name": "[parameters('disks_az104_disk2_name')]",  
16      "location": "spaincentral",  
17      "sku": {  
18        "name": "Standard_LRS",  
19        "tier": "Standard"  
20      },  
21      "properties": {  
22        "creationData": {  
23          "createOption": "Empty"  
24        },  
25        "diskSizeGB": 32,  
26        "diskTiersReadWrite": 500,  
27        "diskTiersReadWrite": 60,  
28        "encryption": {  
29          "type": "EncryptionAtRestWithPlatformKey"  
30        },  
31        "networkAccessPolicy": "AllowAll",  
32        "publicNetworkAccess": "Enabled",  
33        "dataAccessAuthMode": "None"  
34      }  
35    }  
36  ]  
37}
```

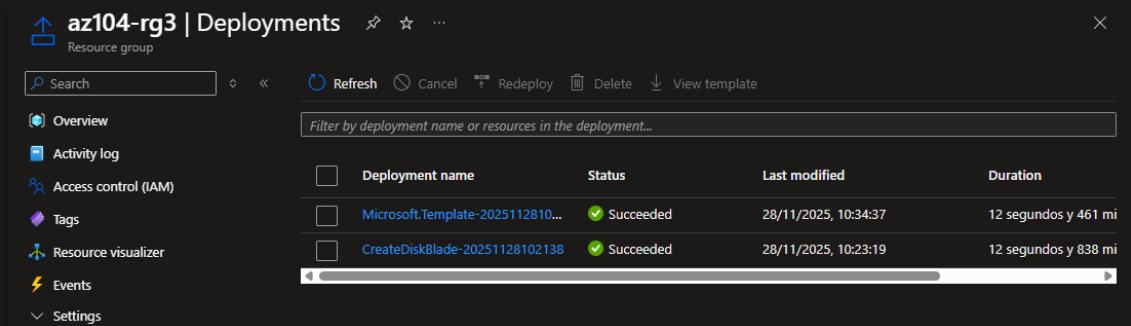
```
1 {  
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentParameters.json",  
3   "contentVersion": "1.0.0.0",  
4   "parameters": {  
5     "disks_az104_disk2_name": {  
6       "value": null  
7     }  
8   }  
9 }
```

Subimos las plantillas que hemos descargado del despliegue de disco anterior.

Cambiamos el nombre del disco.

Resource	Type	Status	Operation details
az104-disk2	Disk	OK	Operation details

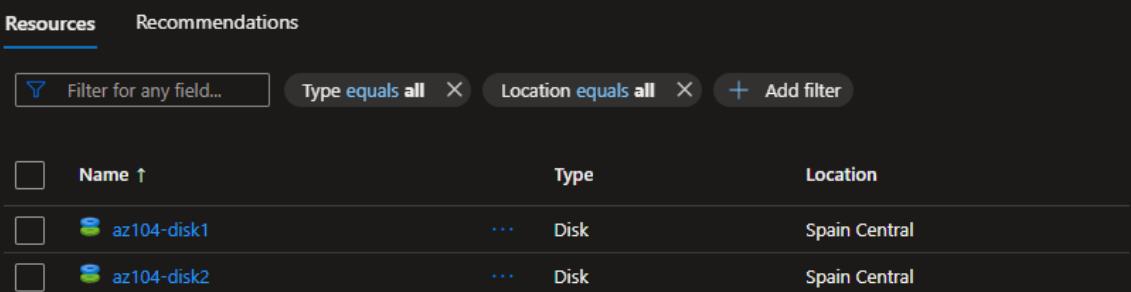
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The screenshot shows the 'az104-rg3 | Deployments' blade in the Azure portal. The left sidebar includes links for Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, and Settings. The main area displays a table of deployments:

Deployment name	Status	Last modified	Duration
Microsoft.Template-2025112810...	Succeeded	28/11/2025, 10:34:37	12 segundos y 461 mi
CreateDiskBlade-20251128102138	Succeeded	28/11/2025, 10:23:19	12 segundos y 838 mi

Vemos que el despliegue ha sido correcto.

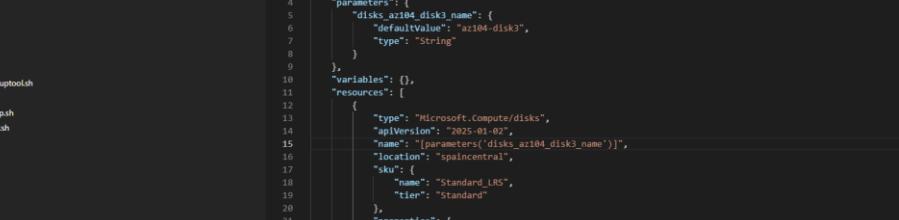


The screenshot shows the 'Resources' blade in the Azure portal. The left sidebar has tabs for Resources and Recommendations. The main area shows a table of resources:

Name ↑	Type	Location
az104-disk1	Disk	Spain Central
az104-disk2	Disk	Spain Central

Verificamos la creación del segundo disco.

Configuración de Cloud Shell e implementación de una plantilla con PowerShell



The screenshot shows a PowerShell window with the title bar "PowerShell". The left sidebar lists files in the current directory, including "template.json". The main pane displays the JSON content of "template.json".

```
template.json
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3      "contentVersion": "1.0.0.0",
4      "parameters": {
5          "disks_az104_disk3_name": {
6              "defaultValue": "az104-disk3",
7              "type": "String"
8          }
9      },
10     "variables": {},
11     "resources": [
12         {
13             "type": "Microsoft.Compute/disks",
14             "apiVersion": "2023-01-07",
15             "name": "[parameters('disks_az104_disk3_name')]",
16             "location": "spaincentral",
17             "sku": {
18                 "name": "Standard_LRS",
19                 "tier": "Standard"
20             },
21             "properties": {
22                 "creationData": {
23                     "createOption": "Empty"
24                 },
25                 "diskSizeGB": 32,
26                 "diskTOSRReadWrite": 500,
27                 "diskUBSRReadWrite": 60,
28                 "encryption": {
29                     "type": "EncryptionAtRestWithPlatformKey"
30                 },
31                 "networkAccessPolicy": "AllowAll",
32                 "publicNetworkAccess": "Enabled",
33                 "dataAccessAuthMode": "None"
34             }
35         }
36     ]
37 }
```

Accedemos a cloud Shell, donde vamos a utilizar powershell.

Vamos a subir los archivos de template y parameters donde en el mismo Shell podemos editar estos archivos.

```

PS /home/raul_casado> New-AzResourceGroupDeployment -ResourceGroupName az104-rg3 -TemplateFile template.json -TemplateParameterFile parameters.json

DeploymentName      : template
ResourceGroupName  : az104-rg3
ProvisioningState  : Succeeded
Timestamp          : 11/28/2025 9:46:20 AM
Mode               : Incremental
TemplateLink       :
Parameters         :
    Name           Type        Value
    ======        ======      =====
    disks_az104_disk3_name String     "az104-disk3"
Outputs            :
DeploymentLogLevel : 

PS /home/raul_casado> []

PS /home/raul_casado> Get-AzDisk | ft

ResourceGroupName ManagedBy ManagedByExtended Sku
Zones TimeCreated          OsType HyperVGeneration CreationData
----- -----          ----- -----
A104-RG3   {} Microsoft.Azure.Management.Compute.Models.DiskSku 11/28/2025 9:23:11 AM Microsoft.Azure.Management.Compute.Models.CreationData
A104-RG3   {} Microsoft.Azure.Management.Compute.Models.DiskSku 11/28/2025 9:34:29 AM Microsoft.Azure.Management.Compute.Models.CreationData
A104-RG3   {} Microsoft.Azure.Management.Compute.Models.DiskSku 11/28/2025 9:46:13 AM Microsoft.Azure.Management.Compute.Models.CreationData

PS /home/raul_casado> []

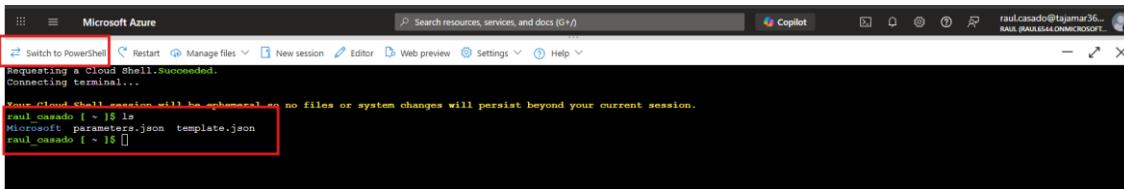
```

```
New-AzResourceGroupDeployment -ResourceGroupName az104-rg3 -TemplateFile template.json -TemplateParameterFile parameters.json
```

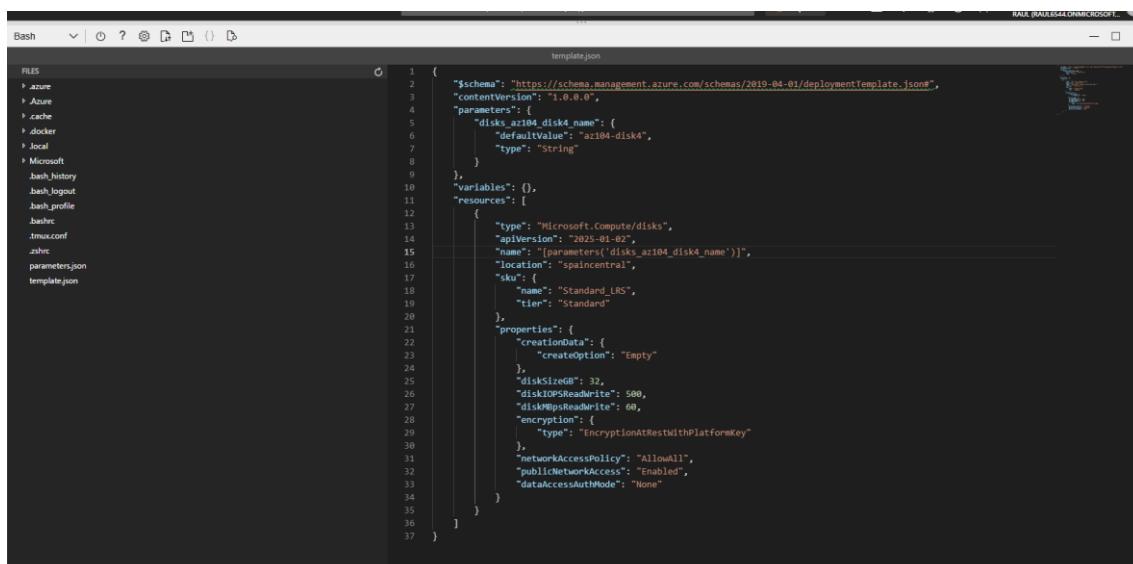
Comando de ps para crear un recursos mediante plantilla dentro de un grupo de recursos.

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Implementación de una plantilla con la CLI



Dentro de cloud Shell podemos cambiar entre cli y powershell con un solo click.



Modificamos el template y los parámetros para crear otro disco, debemos poner un nombre diferente.

```
raul_casado [ ~ ]$ az deployment group create --resource-group az104-rg3 --template-file template.json --parameters parameters.json
```

az deployment group create --resource-group az104-rg3 --template-file template.json --parameters parameters.json

Comando de cli para crear un recursos mediante plantilla dentro de un grupo de recursos.



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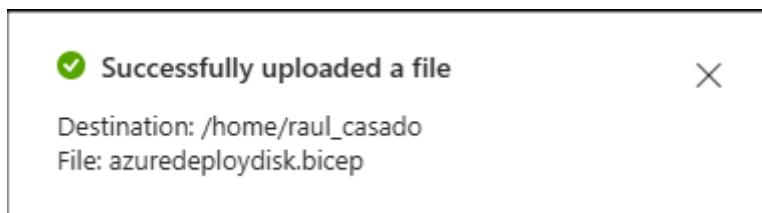
```
raul_casado [ ~ ]$ az disk list --resource-group az104-rg3 --output table
Name      ResourceGroup    Location     Zones   Sku        SizeGb  ProvisioningState
az104-disk1  az104-rg3    spaincentral Standard_LRS 32       Succeeded
az104-disk2  az104-rg3    spaincentral Standard_LRS 32       Succeeded
az104-disk3  az104-rg3    spaincentral Standard_LRS 32       Succeeded
az104-disk4  az104-rg3    spaincentral Standard_LRS 32       Succeeded
raul_casado [ ~ ]$ []
```

Listamos todos los discos creados, comprobamos que se ha creado el disco 4 utilizando azure cli.

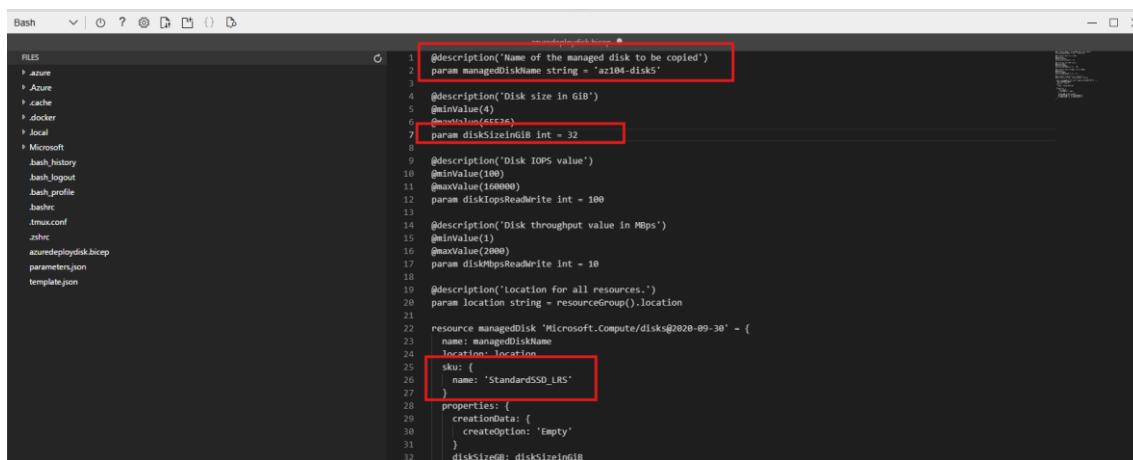
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Implementación de un recurso mediante Azure Bicep

Azure Bicep es un lenguaje de programación de infraestructura como código (IaC) desarrollado por Microsoft para la creación, implementación y gestión de recursos en Azure. Está diseñado para ser una alternativa más sencilla, limpia y fácil de mantener frente a las tradicionales plantillas JSON de Azure Resource Manager (ARM).



Subimos el archivo de deploy.bicep a nuestro cloud Shell.



```

@description('Name of the managed disk to be copied')
param managedDiskName string = "az104-disk5"

@description('Disk size in GiB')
@minValue(4)
@maxValue(64)
param diskSizeInGB int = 32

@description('Disk IOPS value')
@minValue(100)
@maxValue(16000)
param diskIopsReadWrite int = 100

@description('Disk throughput value in Mbps')
@minValue(1)
@maxValue(2000)
param diskMbpsReadWrite int = 10

@description('Location for all resources.')
param location string = resourceGroup().location
resource managedDisk 'Microsoft.Compute/disks@2020-09-30' = {
  name: managedDiskName
  location: location
  sku: {
    name: 'StandardSSD_LRS'
  }
  properties: {
    creationData: {
      createOption: 'Empty'
    }
    diskSizeGB: diskSizeInGB
  }
}

```

Modificamos el archivo, el nombre de disco que va a tener, el tamaño del disco y el tipo de disco.

```
raul_casado [ ~ ]$ az deployment group create --resource-group az104-rg3 --template-file azuredeploydisk.bicep
```

az deployment group create --resource-group az104-rg3 --template-file
azuredeploydisk.bicep

Comando de azure cli para desplegar la plantilla bicep dentro del grupo de recursos



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```
raul_casado [ ~ ]$ az disk list --resource-group az104-rg3 --output table
Name      ResourceGroup    Location     Zones   Sku        SizeGb  ProvisioningState
-----  -----  -----  -----  -----  -----  -----
az104-disk1  az104-rg3  spaincentral  Standard_LRS  32  Succeeded
az104-disk2  az104-rg3  spaincentral  Standard_LRS  32  Succeeded
az104-disk3  az104-rg3  spaincentral  Standard_LRS  32  Succeeded
az104-disk4  az104-rg3  spaincentral  Standard_LRS  32  Succeeded
az104-disk5  az104-rg3  spaincentral  StandardSSD_LRS  32  Succeeded
```

Comprobamos que el despliegue se ha ejecutado correctamente viendo el disco
5. Vemos el resto de discos creados anteriormente.

```
raul_casado [ ~ ]$ az group delete --resource-group az104-rg3
```

Borramos el grupo de recursos para borrar todos los recursos en él.