

# AZ-104 Administer Azure Resources

Tag 2

Guten Morgen !

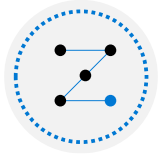




# About this course: Course Outline



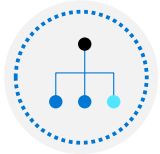
01: Administer Identity



02: Administer Governance and Compliance



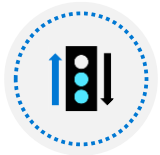
LP 03: Administer Azure Resources



04: Administer Virtual Networking



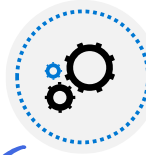
05: Administer Intersite Connectivity



06: Administer Network Traffic Management



07: Administer Azure Storage



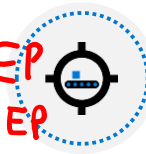
08: Administer Azure Virtual Machines



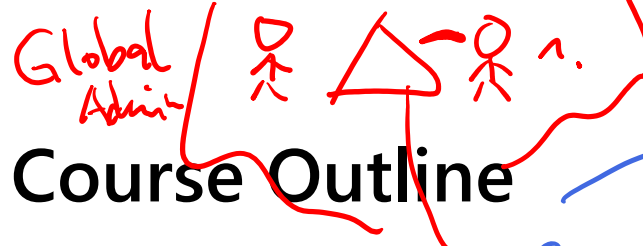
09: Administer PaaS Compute Options



10: Administer Data Protection



11: Administer Monitoring



# Administer Azure Resources Introduction

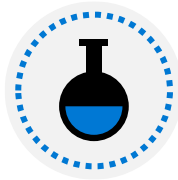


[Configure Azure Resources with Tools](#)

az.\*  
PowerShell Module  
Azure CLI Tool  
az

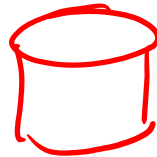


[Configure Resources with ARM Templates](#)



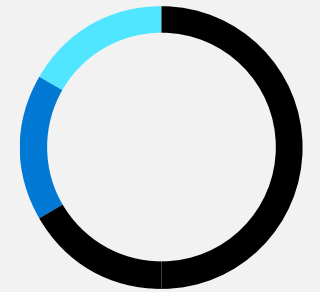
[Lab 03b - Manage Azure resources by Using ARM Templates](#)

[Lab 03c - Manage Azure resources by Using Azure PowerShell \(optional\)](#)

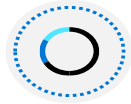


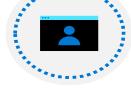




[Lab 03d - Manage Azure resources by Using Azure CLI \(optional\)](#)

# Configure Azure Resources with Tools



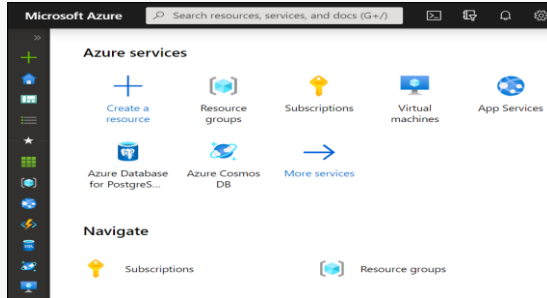
# Configure Azure Resources with Tools Introduction

-  Compare Administration tools (4 student topics)
-  Demonstration – Azure Portal
-  Demonstration – Azure Cloud Shell
-  Demonstration – Working with PowerShell locally (optional)
-  Demonstration – Azure CLI (optional)
-  Summary and Resources

# Compare Administrator tools

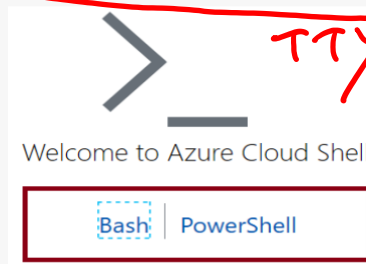
VS Code TTY Shell, azure.com Files  
ACI Compute Storage Account LRS

## Azure Portal



- View and manage resources
- Visual interface
- Unified hub – training and documentation
- Personalize your experience
- Mobile app
- Access the Cloud Shell
- One-off creation scenarios

## Azure Cloud Shell



- Interactive and browser-accessible
- Offers Bash or PowerShell
- Authenticates automatically
- Provided on a per-session and per-user basis
- Temporary - times out after 20 minutes

## Azure PowerShell and CLI

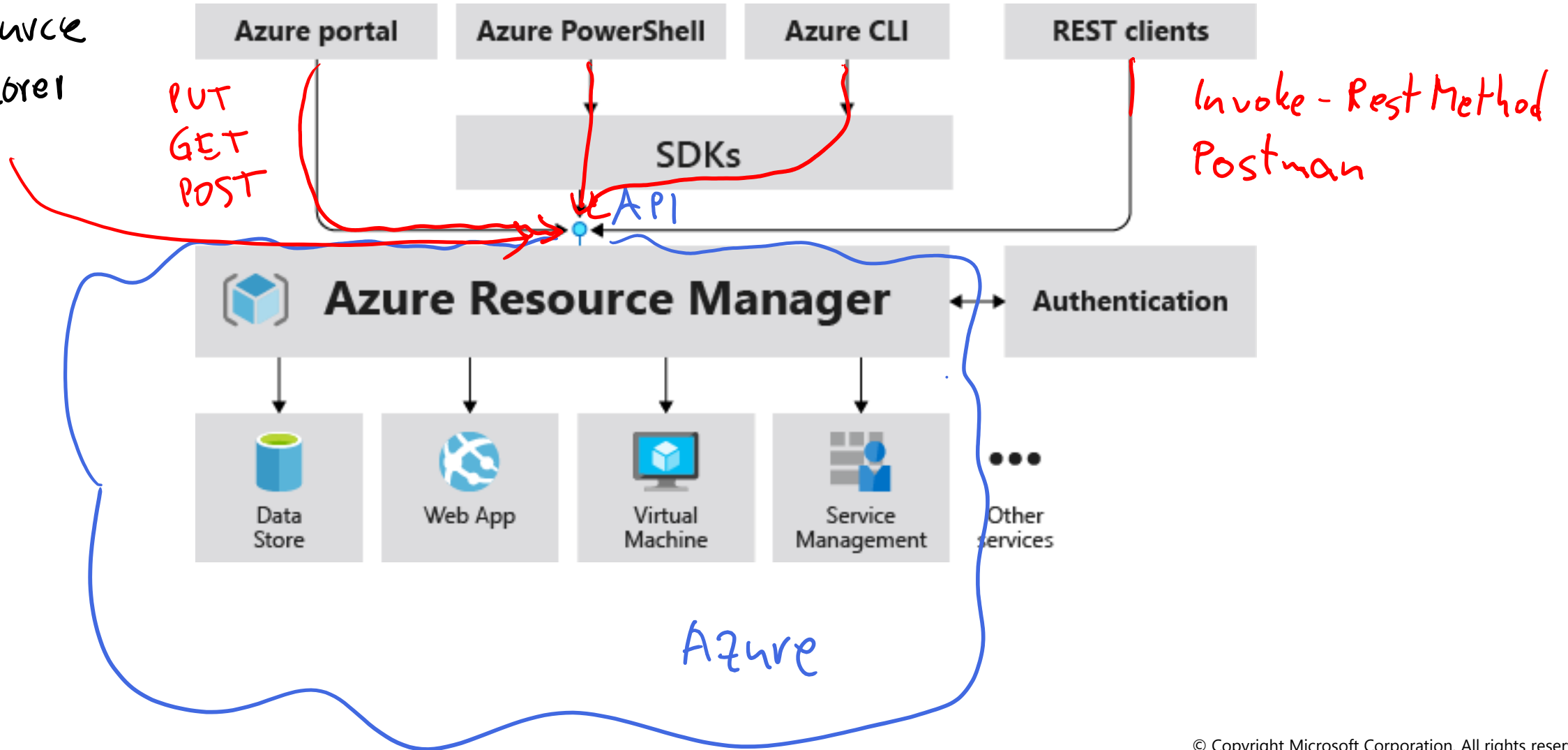
```
az vm restart -g  
MyResourceGroup -n MyVm
```

- Command line programs
- Interactive and scripting modes
- Cross-platform
- Good for repeatable deployments
- Familiar coding experience

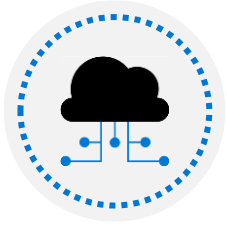
CLI  
PS  
AZ

Azure  
Resource  
Explorer

Get-Az Vm - Debug

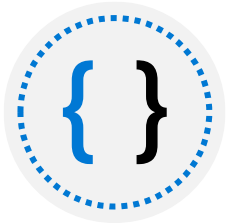


# Demonstration – Azure Portal (optional)



Help and keyboard shortcuts

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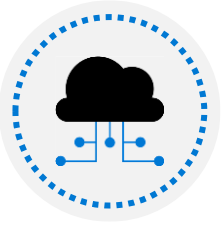


Customizing your experience

---



# Demonstration – Cloud Shell (optional)



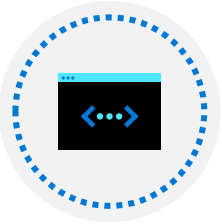
Configure the Cloud Shell

---



Experiment with Azure PowerShell

---



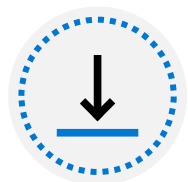
Experiment with Bash shell

---



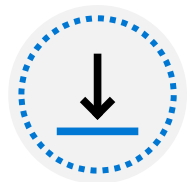
Experiment with the Cloud Editor

# Demonstration – Working with PowerShell (optional)



Install the Az module

---



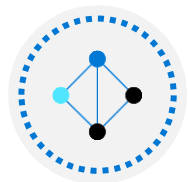
Install NuGet (if needed)

---



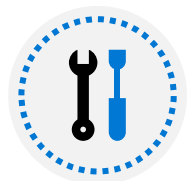
Trust the repository

---



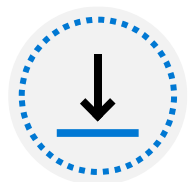
Connect to Azure and view your subscription information

---



Create resources

# Demonstration – Working with the CLI (optional)



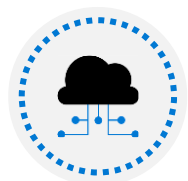
Install the CLI

---



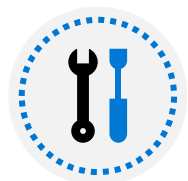
Verify the CLI installation

---



Login to Azure

---



Create a resource group

---



Verify the resource group

# Summary and Resources – Configure Azure Resources with Tools

## Knowledge Check Questions



## Microsoft Learn Modules ([docs.microsoft.com/Learn](https://docs.microsoft.com/Learn))

[Manage services with the Azure portal \(Sandbox\)](#)

---

[Introduction to PowerShell \(Sandbox\)](#)

---

[Control Azure services with the CLI \(Sandbox\)](#)

---

[Control and organize Azure resources with Azure Resource Manager](#)

---

*A sandbox indicates a hands-on exercise.*

Hashicorp  
Terraform  
plugin  
aws  
azure  
...

Bicep Lang  
Preprocessor

# Configure Resources with ARM Templates

↳ json

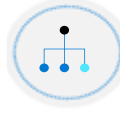




# Configure Resources with ARM Templates Introduction



Review ARM Template Advantages



Explore the JSON Template Schema



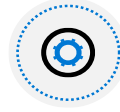
Explore the JSON Template Parameters



Consider Azure Bicep Templates



Demonstration – QuickStart Templates



Demonstration – Run Templates with PowerShell (optional)



Summary and Resources

# Review ARM Template Advantages

declarative  
idempotent

Text, wie Code  
"semper idem!"

Improves consistency and promotes reuse

Reduce manual, error prone, and repetitive tasks

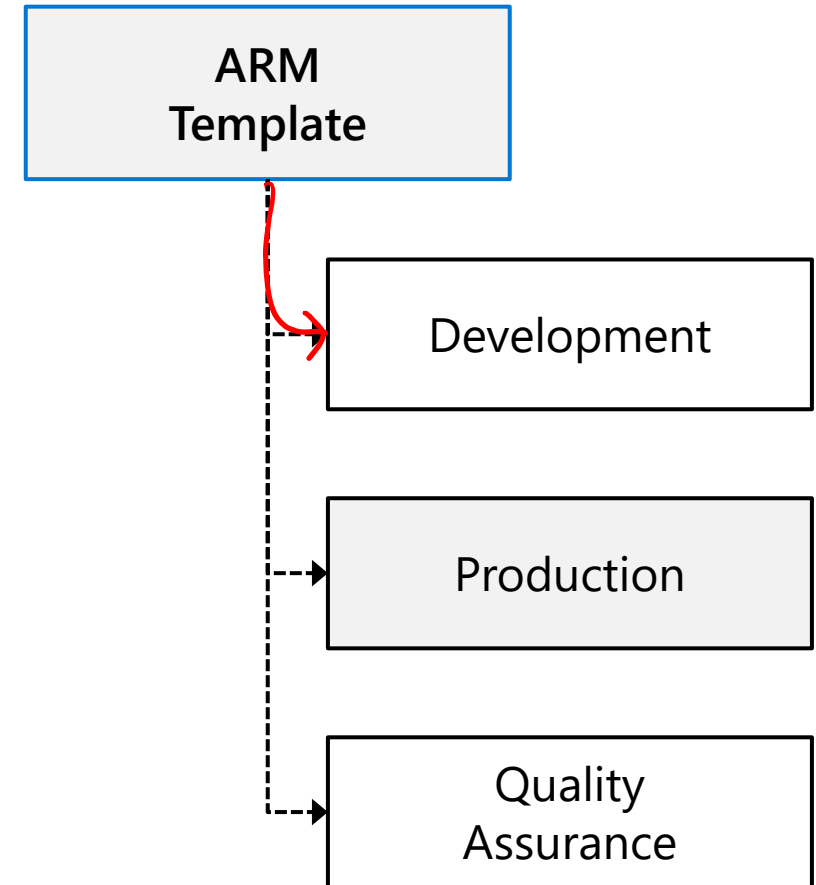
Express complex deployments

Express requirements through code

Provides validation tasks

Modular and can be linked

Simplifies orchestration



# Explore the JSON Template Schema

Defines all the Resource manager resources in a deployment

Written in JSON

A collection of key-value pairs

Each key is a string

Each value can be a string, number, Boolean expression, list of values, object

```
{
  "$schema":
    "http://schema.management.
    azure.com/schemas/2019-04-
    01/deploymentTemplate.json#",
  "contentVersion": "",
  "parameters": {},
  "variables": {},
  "functions": [],
  "resources": [],
  "outputs": {}
}
```

# Explore the JSON Template Parameters

Specify which values are configurable when the template runs

This example has two parameters: one for a VM's username (adminUsername), and one for its password (adminPassword)

```
"parameters": {  
  "adminUsername": {  
    "type": "string",  
    "metadata": {  
      "description": "Username for the VM."  
    }  
  },  
  "adminPassword": {  
    "type": "securestring",  
    "metadata": {  
      "description": "Password for the VM."  
    }  
  }  
}
```

# Consider Azure Bicep Templates !

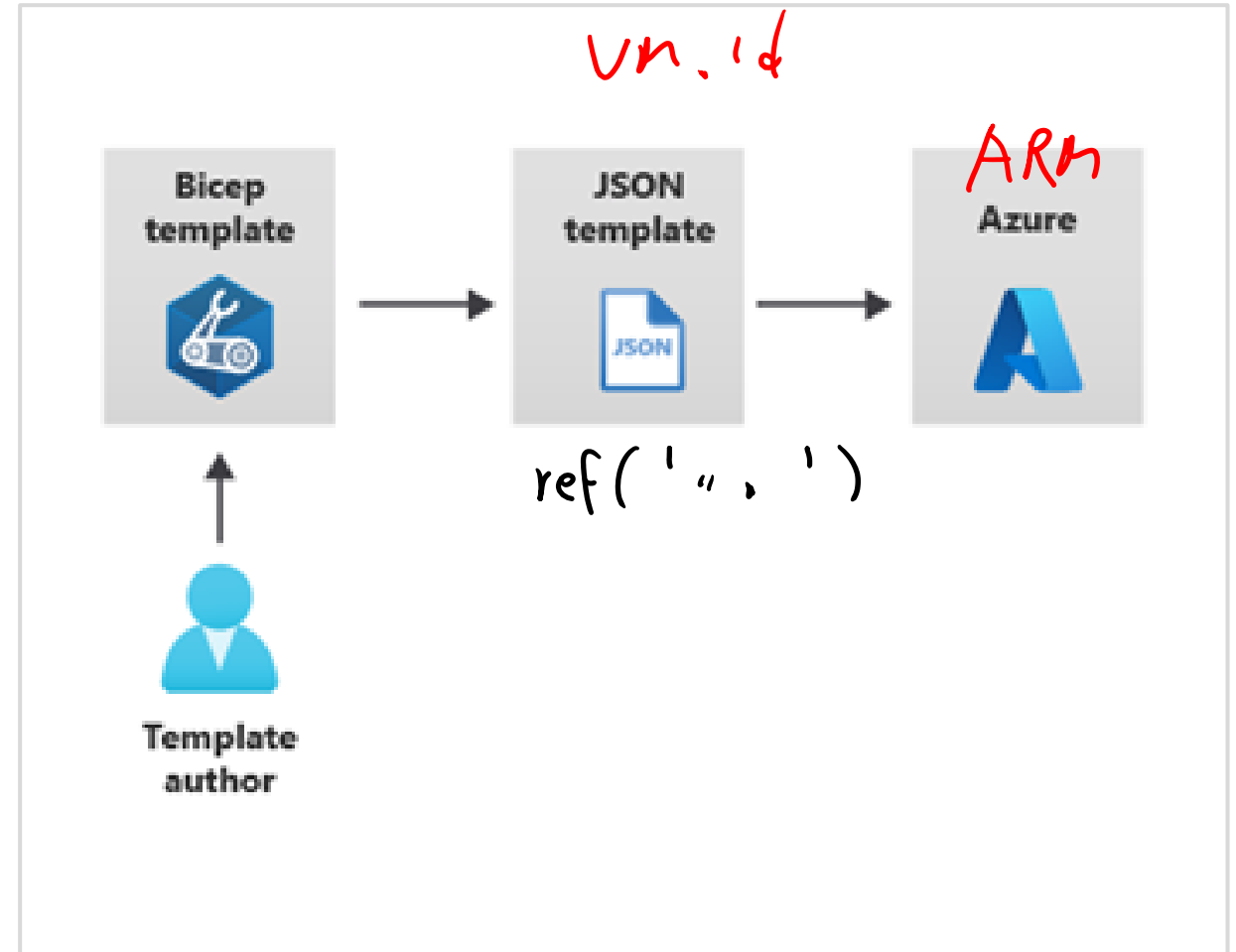
Schöner  
modular  
resource vn

Simpler syntax for writing templates

Smaller module files you can reference from a main template

Automatically detect dependencies between your resources

Visual Studio Code extension with validation and IntelliSense





# Demonstration - Quickstart templates

MS Learn

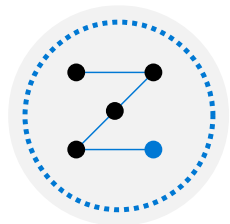
- ✓ Explore the QuickStart gallery
- ✓ Explore a template

1,037 Quickstart templates are currently in the gallery.

Most popular

<p><b>Migrate to Azure SQL database using Azure DMS</b></p> <p>The Azure Database Migration Service (DMS) is designed to streamline the process of migrating on-premises databases to Azure. DMS will simplify the migration of e...</p> <p>Last updated: 4/26/2021</p>	<p><b>Secure VM password with Key Vault</b></p> <p>This template allows you to deploy a simple Windows VM by retrieving the password that is stored in a Key Vault. Therefore the password is never put in plain text in the t...</p> <p>Last updated: 5/11/2021</p>
<p><b>Zookeeper cluster on Ubuntu VMs</b></p> <p>This template creates a 'n' node Zookeeper cluster on Ubuntu VMs. Use the scaleNumber parameter to specify the number of nodes in this cluster</p> <p>Last updated: 7/29/2021</p>	<p><b>Azure Machine Learning end-to-end secure setup</b></p> <p>This set of Bicep templates demonstrates how to set up Azure Machine Learning end-to-end in a secure set up. This reference implementation includes the Workspace, a...</p> <p>Last updated: 9/29/2021</p>

# Demonstration – Run Templates with PowerShell (optional)



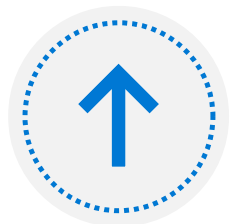
Connect to your subscription

---



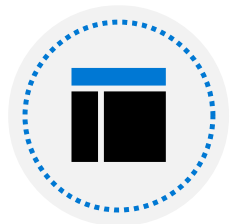
Create the resource group

---



Deploy the template into the resource group

---



Verify the template deployed

# Summary and Resources

## Knowledge Check Questions



## Microsoft Learn Modules ([docs.microsoft.com/Learn](https://docs.microsoft.com/Learn))

[Create Azure resources using Azure Resource Manager templates](#)

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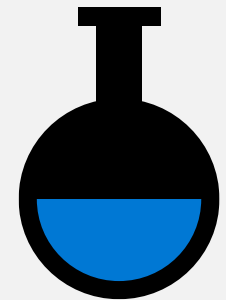
[Deploy Azure infrastructure by using JSON ARM templates \(Sandbox\)](#)

---

[Build your first Bicep template \(Sandbox\)](#)

*A sandbox indicates a hands-on exercise.*

Lab 03b - Manage Azure resources by Using ARM Templates  
Lab 03c - Manage Azure resources by Using Azure PowerShell (optional)  
Lab 03d - Manage Azure resources by Using Azure CLI (optional)



# Lab 03b – Manage Azure resources with templates

## Lab scenario

Now that you explored the basic Azure administration capabilities associated with provisioning resources and organizing them based on resource groups by using the Azure portal, you need to carry out the equivalent task by using Azure Resource Manager templates

## Objectives

### Task 1:

Review an ARM template for deployment of an Azure managed disk

### Task 2:

Create an Azure managed disk by using an ARM template

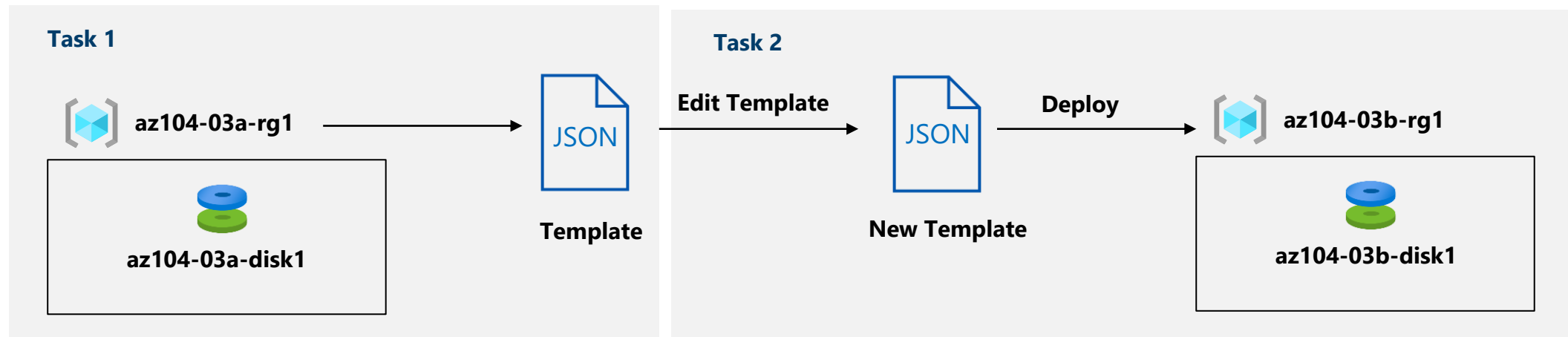
### Task 3:

Review the ARM template-based deployment of the managed disk

Next slide for an architecture diagram 



# Lab 03b – Architecture diagram



# Lab 03c – Manage Azure resources with PowerShell (optional)

## Lab scenario

Now that you explored the basic Azure administration capabilities associated with provisioning resources and organizing them based on resource groups by using the Azure portal and Azure Resource Manager templates, you want the equivalent tasks with Azure PowerShell. To avoid installing Azure PowerShell modules, you will leverage the Azure Cloud Shell

## Objectives

### Task 1:

Start a PowerShell session in Azure Cloud Shell

### Task 2:

Create a resource group and an Azure managed disk with Azure PowerShell

### Task 3:

Configure the managed disk by using Azure PowerShell

Next slide for an architecture diagram 

# Lab 03c – Architecture diagram

Task 1, Task 2, Task 3



**az104-03c-rg1**



**az104-03c-disk1**

# Lab 03d – Manage Azure resources with the Azure CLI (optional)

## Lab scenario

Now that you explored the basic Azure administration capabilities associated with provisioning resources and organizing them based on resource groups by using the Azure portal, Azure Resource Manager templates, and Azure PowerShell, you need to carry out the equivalent task by using Azure CLI. To avoid installing Azure CLI, you will leverage Bash environment available in Azure Cloud Shell

## Objectives

### Task 1:

Start a Bash session in Azure Cloud Shell

### Task 2:

Create a resource group and a managed disk by using Azure CLI

### Task 3:

Configure the managed disk by using Azure CLI

Next slide for an architecture diagram 

# Lab 03d – Architecture diagram

Task 1, Task 2, Task 3



az104-03d-rg1



az104-03d-disk1



# End of presentation



# Review QuickStart Templates

Resource Manager templates provided by the Azure community

Provides everything you need to deploy your solution or serves as a starting point for your template

<https://azure.microsoft.com/resources/templates/>

1,037 Quickstart templates are currently in the gallery.

Most popular

## Migrate to Azure SQL database using Azure DMS

The Azure Database Migration Service (DMS) is designed to streamline the process of migrating on-premises databases to Azure. DMS will simplify the migration of e...

Last updated: 4/26/2021

## Secure VM password with Key Vault

This template allows you to deploy a simple Windows VM by retrieving the password that is stored in a Key Vault. Therefore the password is never put in plain text in the t...

Last updated: 5/11/2021

## Zookeeper cluster on Ubuntu VMs

This template creates a 'n' node Zookeeper cluster on Ubuntu VMs. Use the scaleNumber parameter to specify the number of nodes in this cluster

Last updated: 7/29/2021

## Azure Machine Learning end-to-end secure setup

This set of Bicep templates demonstrates how to set up Azure Machine Learning end-to-end in a secure set up. This reference implementation includes the Workspace, a...

Last updated: 9/29/2021