Management and deployment of Azure resources

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Important Notes

- Identify yourself in Zoom, using your name and last name
- Mute your microphone along the course unless you have questions
- Raise the hand if you have questions during the session
- Focus your questions on the presented topic
- Turn off your camera in case of connection issues

DSA Code of Conduct

Be respectful, there are no bad questions or ideas.

Be welcoming and patient

Be careful in the words that you choose

Session Goal

At the end of this session, you will be able to:

- Describe Azure portal
- Describe Azure Cloud Shell, including Azure CLI and Azure PowerShell
- Describe the purpose of Azure Arc
- Describe Azure Resource Manager (ARM) and Azure ARM templates

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Introduction

Introduction to features, tools for managing, and deploying resource

Managing your Azure resources

System administrators, developers, and managers can use these tools to perform different kinds of tasks in Azure, such as provisioning or creating new resources, configuring cloud services, monitoring Azure services, and checking the costs and health status of resources.

PowerShell

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Tools for interacting with Azure

Azure provides multiple tools for managing your environment

Categories of Tools in Azure

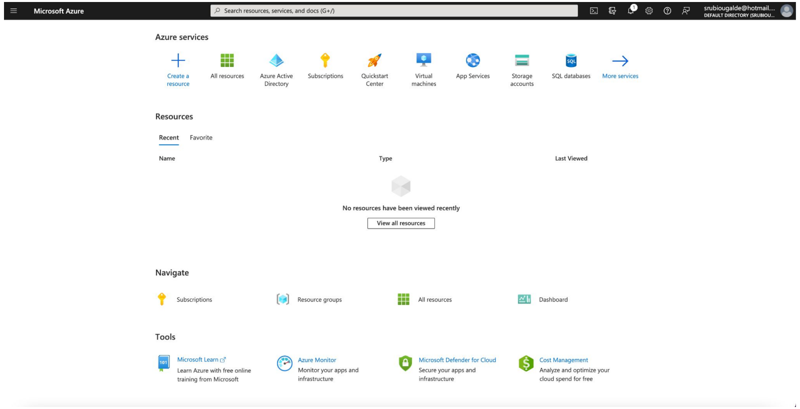
The management tools that Azure provides are broadly grouped into two main categories.

- Visual tools: Provide you with visually intuitive access to all Azure functionality.
- Code-based tools: Usually accessed via a terminal window, provide you with an easy way to provision infrastructure on a large scale.

Azure Portal

The Azure portal is a web-based, unified console where you can manage your Azure subscription by using a graphical user interface. You can:

- Build, manage, and monitor everything from simple web apps to complex cloud deployments
- Create custom dashboards for an organized view of resources
- Configure accessibility options for an optimal experience



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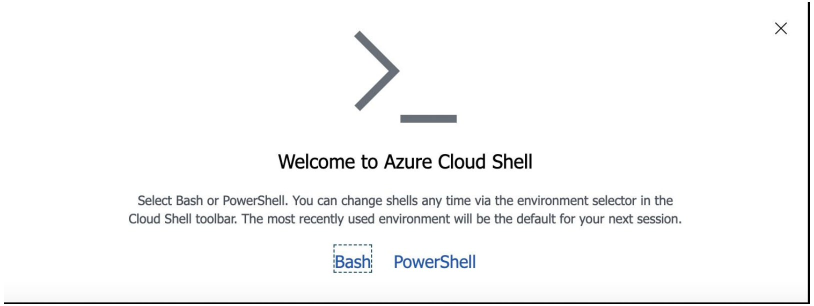
Azure Cloud Shell

Azure Cloud Shell is a browser-based shell tool that allows you to create, configure, and manage Azure resources using a shell. Azure Cloud Shell support both Azure PowerShell and the Azure Command Line Interface (CLI), which is a Bash shell.

- No local installation or configuration required.
- It is authenticated to your Azure credentials.
- You choose the shell you're most familiar with.



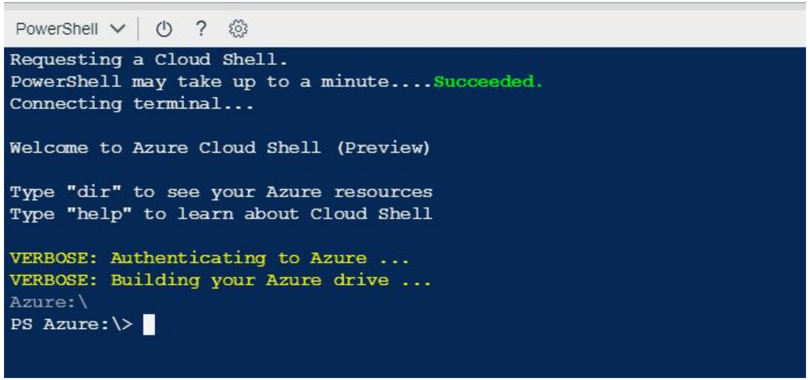
Welcome to Azure Cloud Shell

Select Bash or PowerShell. You can change shells any time via the environment selector in the Cloud Shell toolbar. The most recently used environment will be the default for your next session.

Azure PowerShell

Is a shell with which developers, DevOps, and IT professionals can run commands called command-lets (cmdlets). These commands call the Azure REST API to perform management tasks in Azure. Cmdlets can be run independently to handle one-off changes, or they may be combined to help orchestrate complex actions such as:

The routine setup, teardown, and maintenance of a single resource or multiple connected resources. The deployment of an entire infrastructure, which might contain dozens or hundreds of resources, from imperative code.

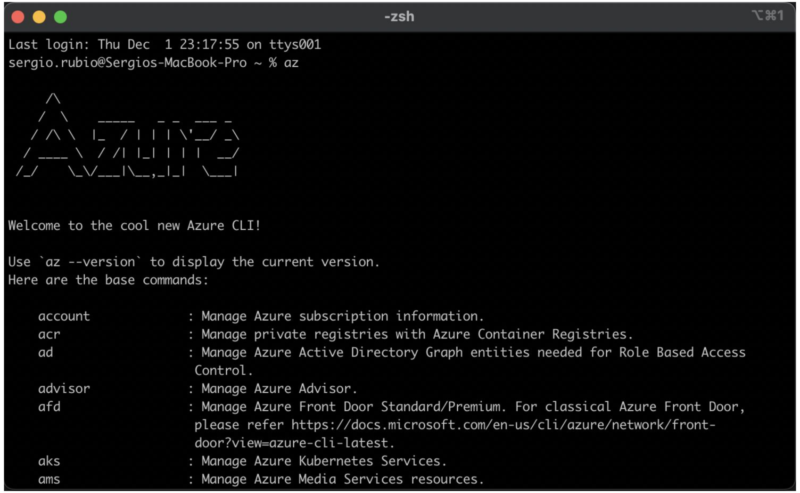


```
Requesting a Cloud Shell.
PowerShell may take up to a minute....Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell (Preview)

Type "dir" to see your Azure resources
Type "help" to learn about Cloud Shell

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
Azure:\
PS Azure:\>
```

Azure Command Line Interface (CLI)

The Azure CLI is functionally equivalent to Azure PowerShell, with the primary difference being the syntax of commands. While Azure PowerShell uses PowerShell commands, the Azure CLI uses Bash commands.

The Azure CLI provides the same benefits of handling discrete tasks or orchestrating complex operations through code. It's also installable on Windows, Linux, and Mac platforms, as well as through Azure Cloud Shell.



```
Last login: Thu Dec  1 23:17:55 on ttys001
sergio.rubio@Sergios-MacBook-Pro ~ % az

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Welcome to the cool new Azure CLI!

Use `az --version` to display the current version.
Here are the base commands:

    account             : Manage Azure subscription information.
    acr                 : Manage private registries with Azure Container Registries.
    ad                  : Manage Azure Active Directory Graph entities needed for Role Based Access
                         Control.
    advisor             : Manage Azure Advisor.
    afd                 : Manage Azure Front Door Standard/Premium. For classical Azure Front Door,
                         please refer https://docs.microsoft.com/en-us/cli/azure/network/front-
                         door?view=azure-cli-latest.
    aks                 : Manage Azure Kubernetes Services.
    ams                 : Manage Azure Media Services resources.
```

How to install the Azure CLI

The Azure CLI is available to install in Windows, macOS and Linux environments. It can also be run in a Docker container and Azure Cloud Shell.

For Windows, the Azure CLI is installed via a MSI, which gives you access to the CLI through the Windows Command Prompt (CMD) or PowerShell. When installing for Windows Subsystem for Linux (WSL), packages are available for your Linux distribution. See the main install page for the list of supported package managers or how to install manually under WSL.

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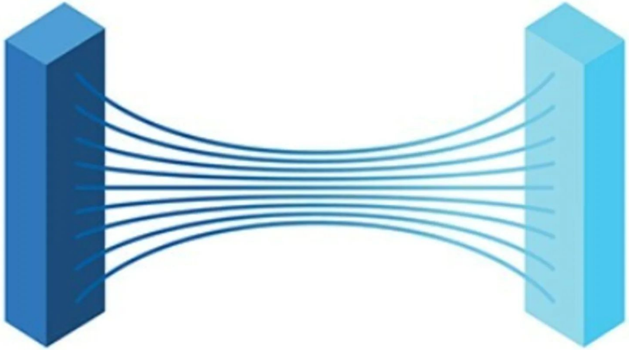
proprietary + confidential

Purpose of Azure Arc

Azure provides a host of tools to provision, configure, and monitor resources

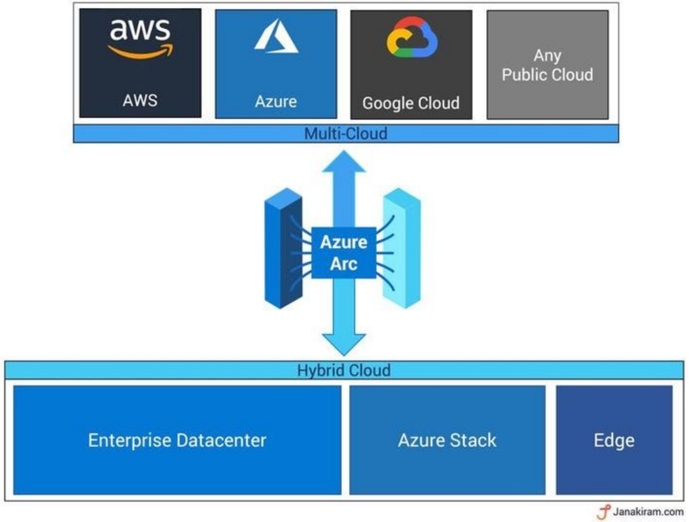
Azure Arc

Arc lets you extend your Azure compliance and monitoring to your hybrid and multi-cloud configurations. Azure Arc simplifies governance and management by delivering a consistent multi-cloud and on-premises management platform.



Azure Arc

- Manage your entire environment together by projecting your existing non-Azure resources into ARM.
- Manage multi-cloud and hybrid virtual machines, Kubernetes clusters, and databases as if they are running in Azure.
- Use familiar Azure services and management capabilities, regardless of where they live.
- Continue using traditional ITOps while introducing DevOps practices to support new cloud and native patterns in your environment.
- Configure custom locations as an abstraction layer on top of Azure Arc-enabled Kubernetes clusters and cluster extensions.



What can Azure Arc do outside of Azure?

Currently, Azure Arc allows you to manage the following resource types hosted outside of Azure:

- Servers
- Kubernetes clusters
- Azure data services
- SQL Server
- Virtual machines (preview)

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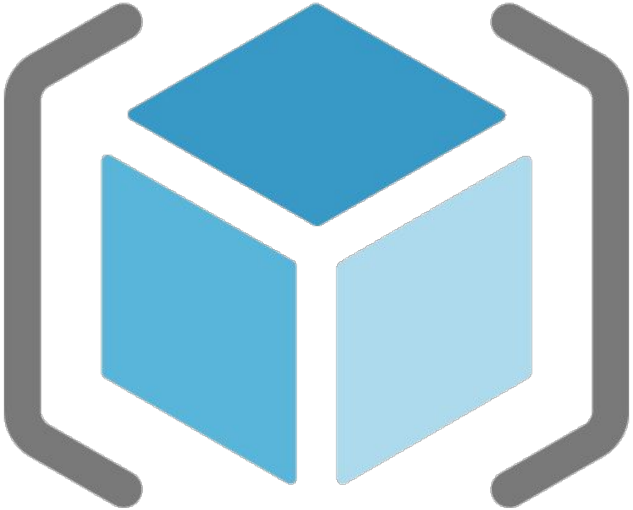
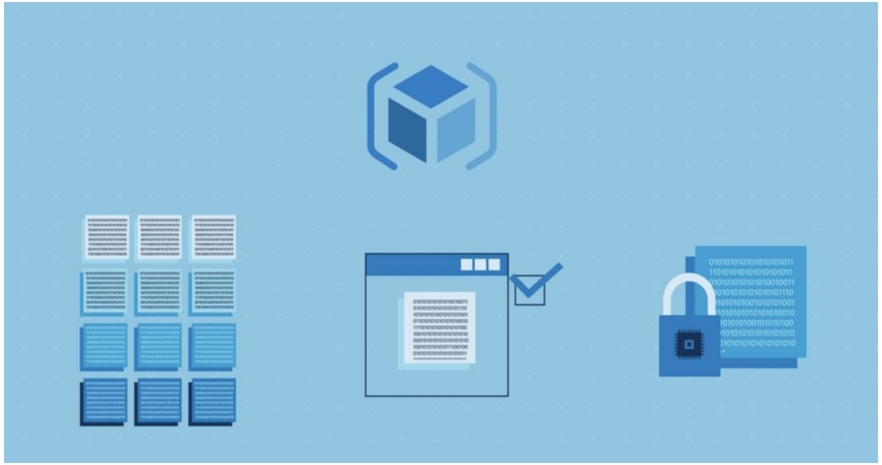
Azure Resource Manager and Azure ARM templates

Azure Resource Manager (ARM) is the deployment and management service for Azure. It provides a management layer that enables you to create, update, and delete resources in your Azure account. Anytime you do anything with your Azure resources, ARM is involved.



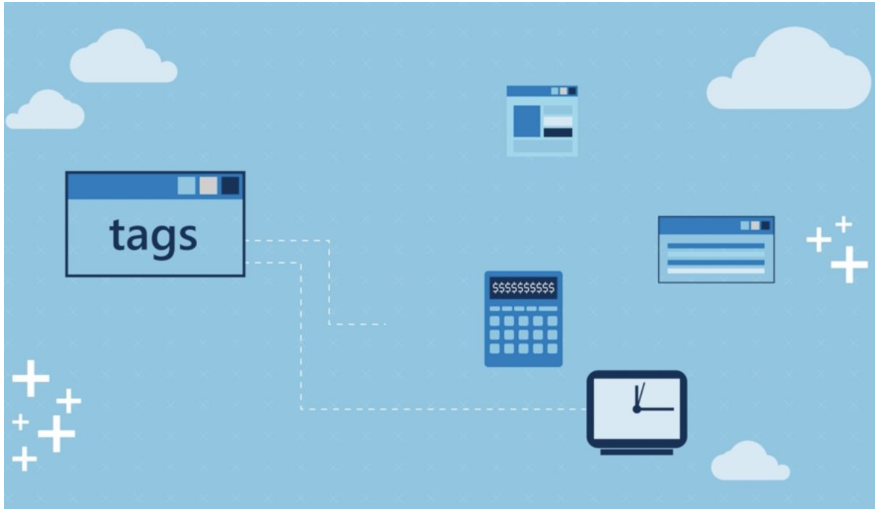
Azure Resource Manager benefits

- Manage your infrastructure through declarative templates rather than scripts. A Resource Manager template is a JSON file that defines what you want to deploy to Azure.
- Re-deploy your solution throughout the development life-cycle and have confidence your resources are deployed in a consistent state.
- Define the dependencies between resources, so they're deployed in the correct order.



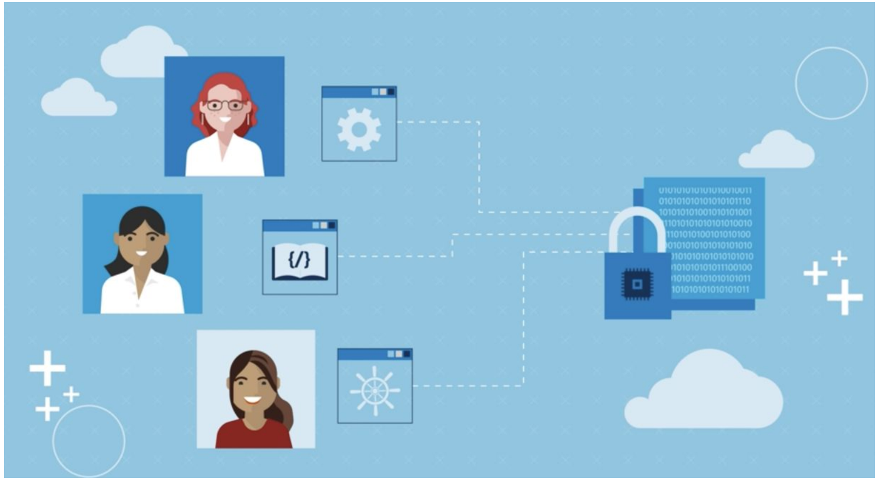
Azure Resource Manager benefits

- Deploy, manage, and monitor all the resources for your solution as a group, rather than handling these resources individually.
- Apply tags to resources to logically organize all the resources in your subscription.
- Clarify your organization's billing by viewing costs for a group of resources that share the same tag.



Azure Resource Manager benefits

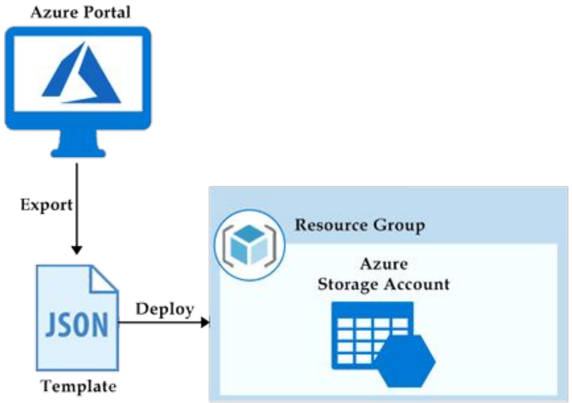
- Apply access control to all services because RBAC is natively integrated into the management platform.



ARM templates

Infrastructure as code is a concept where you manage your infrastructure as lines of code. Leveraging Azure Cloud Shell, Azure PowerShell, or the Azure CLI are some examples of using code to deploy cloud infrastructure. ARM templates are another example of infrastructure as code at work.

With an ARM template, the deployment code is verified before any code is run. This ensures that the resources will be created and connected correctly.



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Benefits of using ARM templates

- **Declarative syntax**: You declare what you want to deploy but don’t need to write the actual programming commands and sequence to deploy the resources.
- **Repeatable results**: Your resources are deployed in a consistent manner. You can deploy multiple dev/test environments, knowing that all the environments are the same.
- **Orchestration**: ARM orchestrates the deployment of interdependent resources, so they're created in the correct order.
- **Modular files**: You can break your templates into smaller, reusable components and link them together at deployment time.
- **Extensibility**: Deployment scripts give you the ability to complete your end-to-end environment setup in a single ARM template.

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Overall Recap and Takeaways

Recap:

- In this module, you were introduced to features and tools for managing and deploying Azure resources.
- You learned about the Azure portal (a graphic interface for managing Azure resources), command line, and scripting tools that help deploy or configure resources. You also learned about Azure services that help you manage your on-premises and multi-cloud environment from Azure.

Resources

References of interest:

- Install the Azure Az PowerShell module
- How to install the Azure CLI
- Azure Quickstart Templates
- ARM Templates Or HashiCorp Terraform

Q&A

Thank you