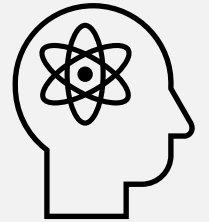


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# MOD 3: Azure Solutions and Management Tools

# Module Outline

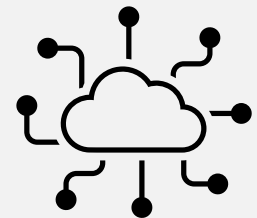


# Module 03 – Outline

You will learn the following concepts:

- **Core Azure solutions**
  - IoT to Azure Sphere
  - Synapse Analytics to Databricks
  - AI / ML
- **Azure management tools**
  - Portal, PowerShell, CLI, and others
  - Advisor, Monitor, and Service Health

# Azure solutions



# Azure Solutions - Objective Domain

**Describe the benefits and usage of:**

- Internet of Things (IoT) Hub, IoT Central, and Azure Sphere
- Azure Synapse Analytics, HDInsight, and Azure Databricks
- Azure Machine Learning, Cognitive Services, and Azure Bot Service
- Serverless computing solutions that include Azure Functions and Logic Apps
- Azure DevOps, GitHub, GitHub Actions, and Azure DevTest Labs

# Azure Internet of Things

**Internet of Things (IoT)** is the ability for devices to garner and then relay information for data analysis.



**Azure IoT Central** is a fully managed global IoT SaaS solution that makes it easy to connect, monitor, and manage IoT assets at scale.



**Azure IoT Hub** is a managed service hosted in the cloud that acts as a central message hub for bi-directional communication between IoT applications and the devices it manages.

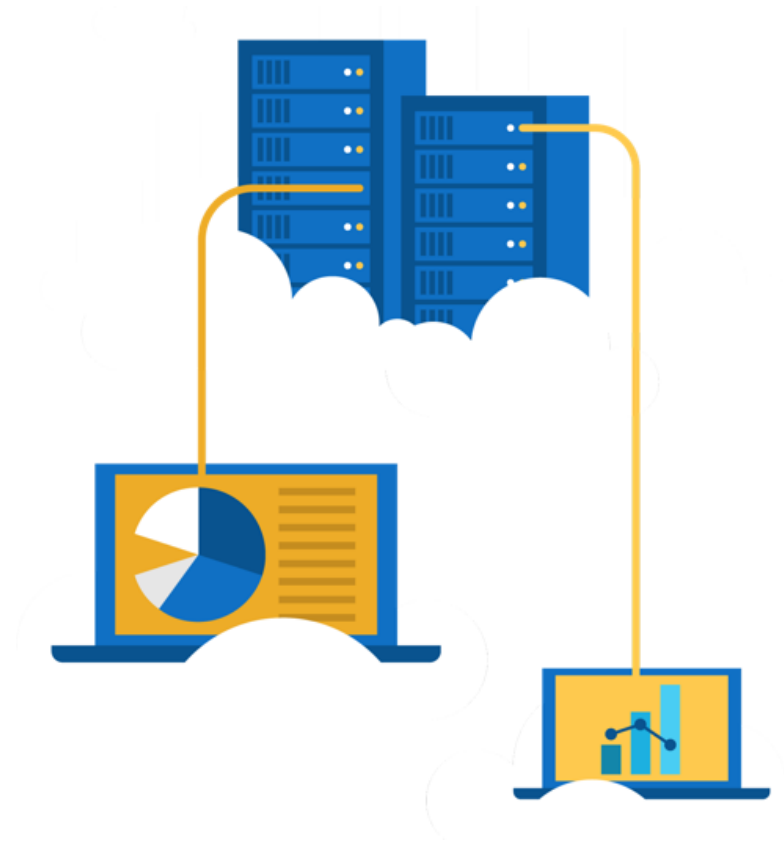


**Azure Sphere** is a secured, high-level application platform with built-in communication and security features for internet-connected devices.

# Walkthrough - Implement the Azure IoT Hub

Create an Azure IoT Hub in Azure Portal and configure the hub to authenticate a connection to an IoT device using the Raspberry Pi device simulator.

1. Create an IoT Hub.
2. Add an IoT device.
3. Test the device using the Raspberry Pi Simulator.





# Big data and analytics

## Azure Synapse Analytics



A cloud-based Enterprise Data Warehouse.

## Azure HDInsight



A fully-managed, open-source analytics service for enterprises.

## Azure Databricks



Apache Spark based analytics service.

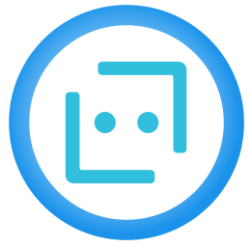
# Artificial Intelligence & Machine Learning



**Azure Machine Learning:** cloud-based to develop, train, and deploy machine learning models.



**Cognitive Services:** quickly enable apps to see, hear, speak, understand, and interpret a user's needs.



**Azure Bot Service:** develop intelligent, enterprise-grade bots.

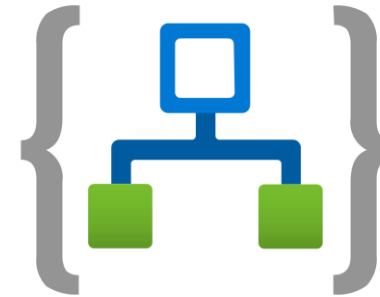
# Serverless Computing

## Azure Functions



Event based code running your service and not the underlying infrastructure.

## Azure Logic Apps

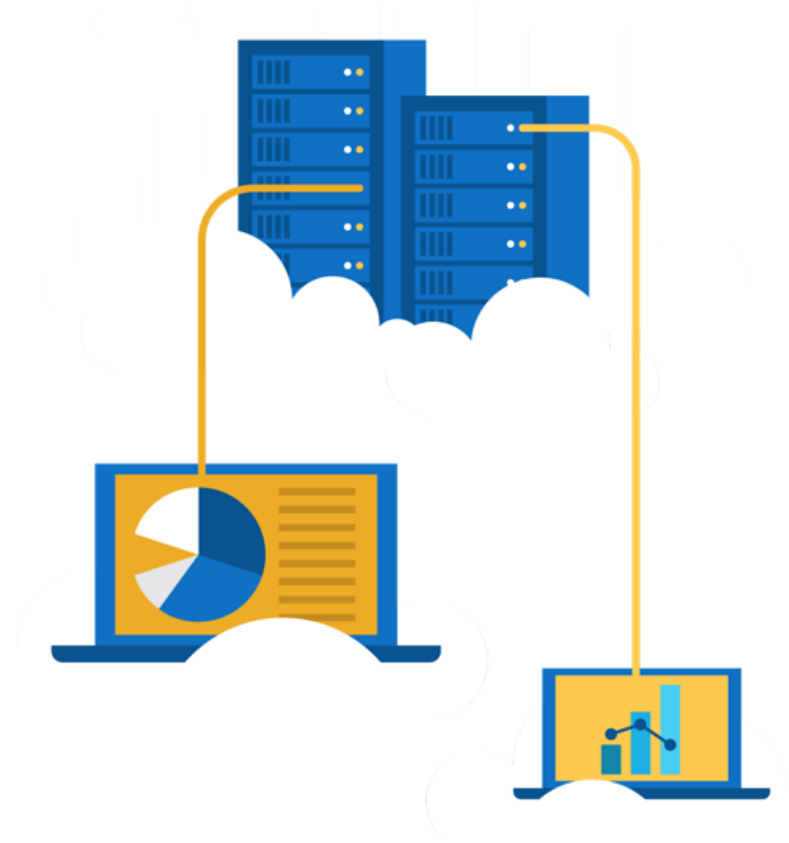


Automate and orchestrate tasks, business processes, and workflows to integrate apps.

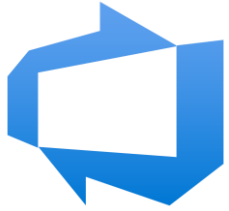
# Walkthrough - Implement Azure Functions

Create a Function app with a Webhook to provide a Hello message with your name.

1. Create a Function app.
2. Create a HTTP triggered event function and test.



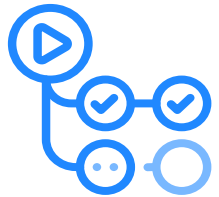
# Develop your apps with DevOps and GitHub



**Azure DevOps:** development collaboration tools including pipelines, Kanban boards, and automated cloud-based load testing.



**GitHub:** software development hosting with version control, source code management, and bug/task management.



**GitHub Actions for Azure:** automate software workflow to build, test, and deploy from within GitHub.



**Azure DevTest Labs:** quickly create environments in Azure while minimizing waste and controlling cost.

# Azure management tools

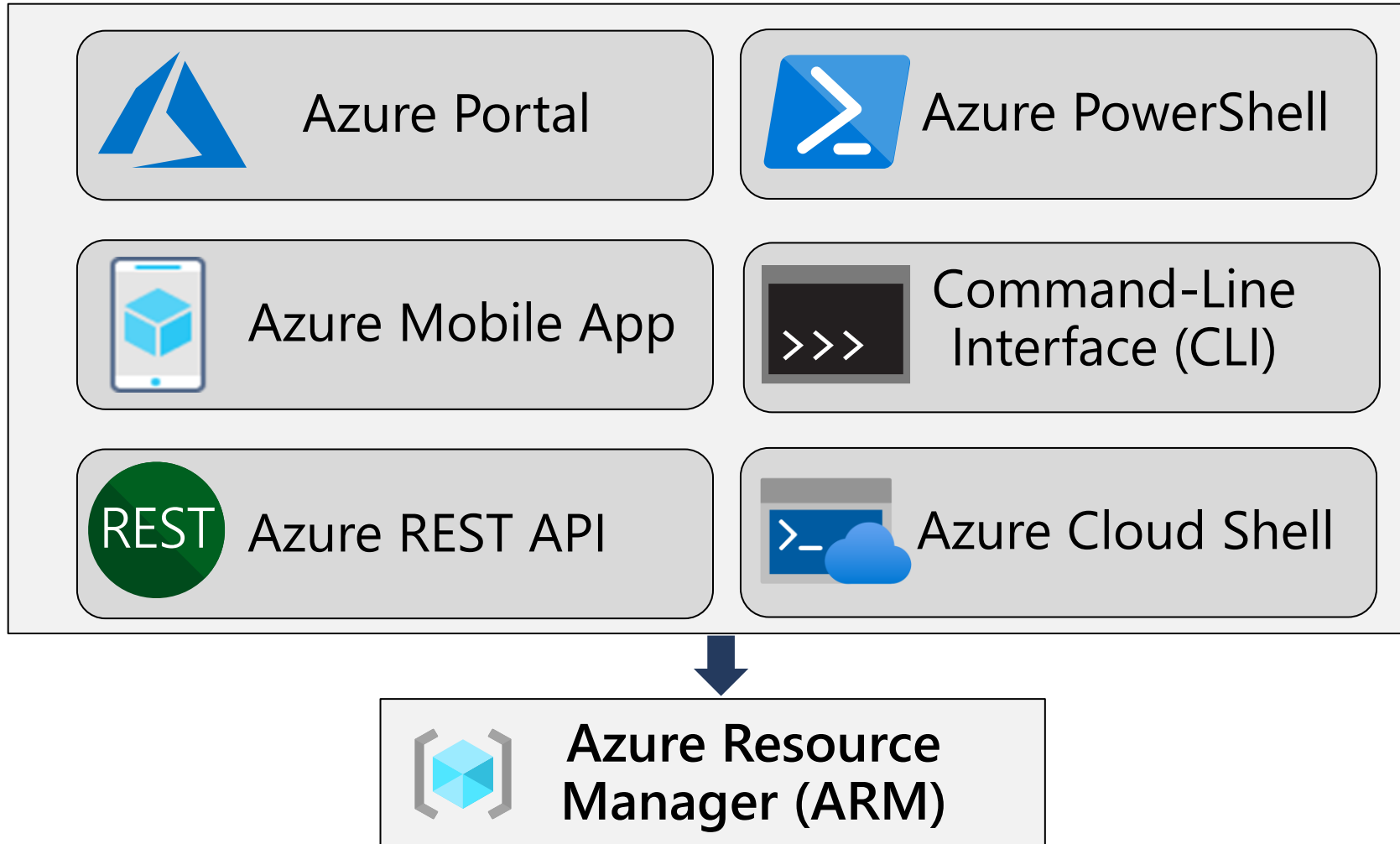


# Azure Management Tools - Objective Domain

Describe the functionality and usage of:

- Azure Portal, Azure PowerShell, Azure CLI, Cloud Shell, and Azure Mobile App.
- Azure Advisor.
- Azure Resource Manager (ARM) templates.
- Azure Monitor.
- Azure Service Health.

# Azure management tools

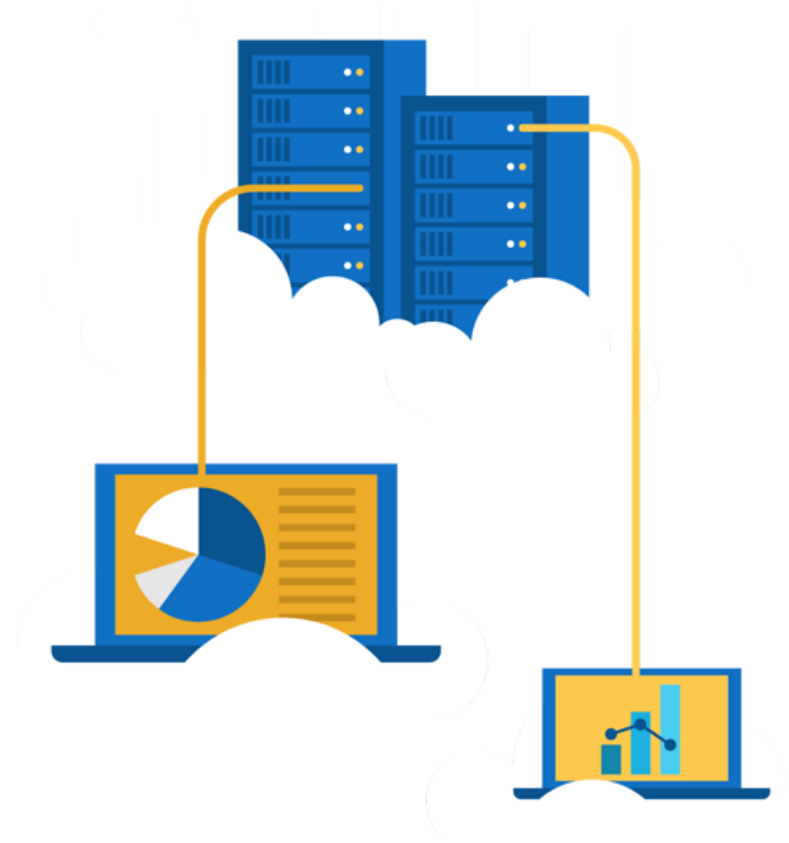




# Walkthrough – Create a VM with an ARM Template

Use the Azure QuickStart gallery to deploy a template that creates a virtual machine.

1. Explore the gallery and deploy a template.
2. Verify your virtual machine deployment.



# Walkthrough - Create a VM with PowerShell

Install PowerShell locally, create a resource group and virtual machine, access and use the Cloud Shell, and review Azure Advisor recommendations.

Use PowerShell to create a resource group and virtual machine.

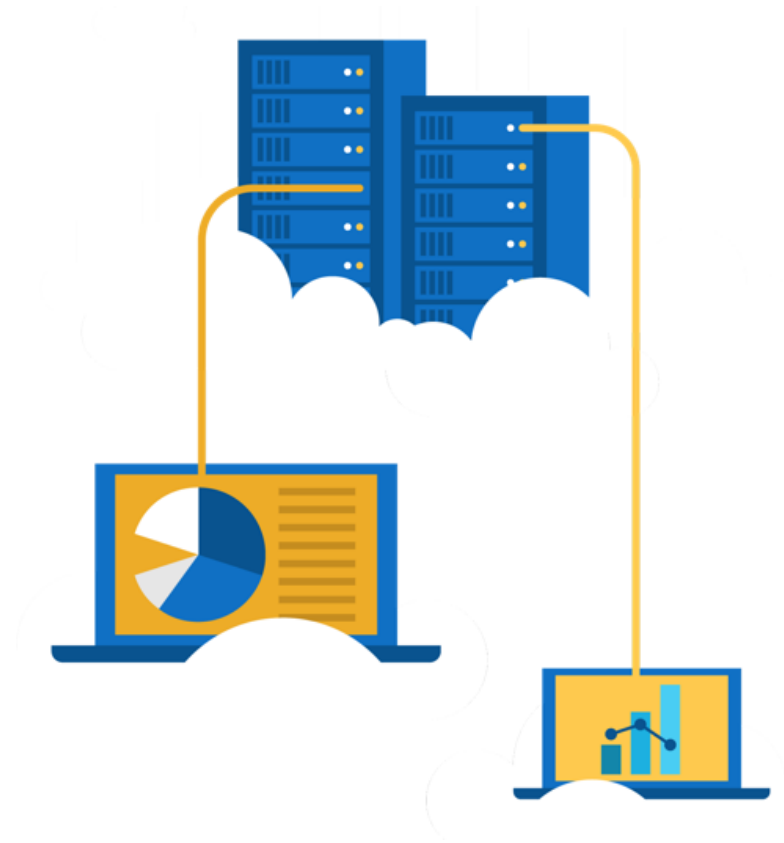
1. Execute PowerShell commands in the Cloud Shell.
2. Review Azure Advisor Recommendations.



# Walkthrough - Create a VM with the Azure CLI

Install the Azure CLI locally, create a resource group and virtual machine, use the Cloud Shell, and review Azure Advisor recommendations.

1. Install the CLI locally.
2. Use the CLI to create a resource group and virtual machine.
3. Execute commands in the Cloud Shell.
4. Review Azure Advisor Recommendations.

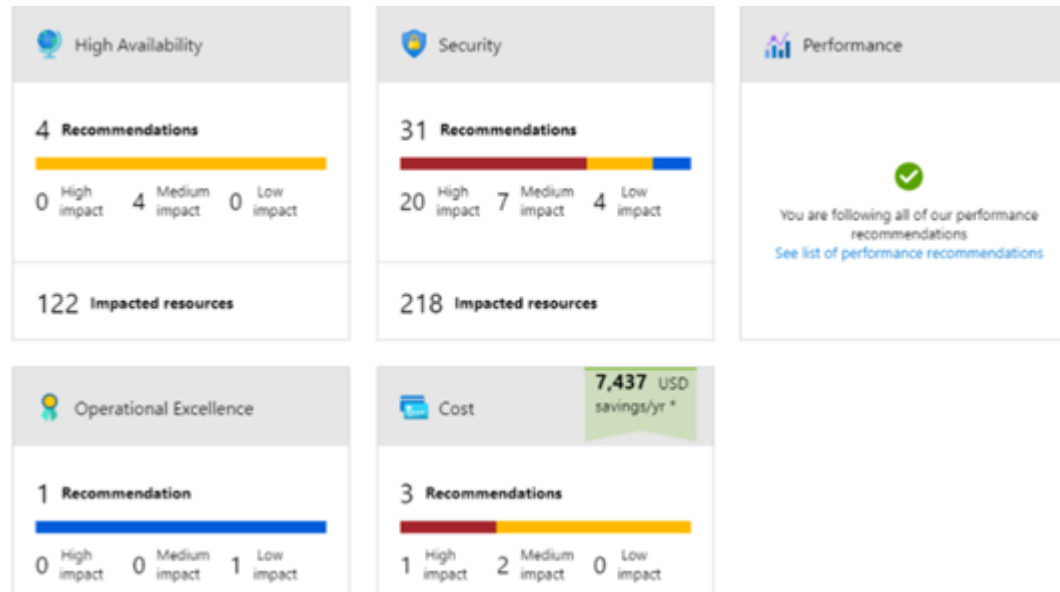


# Azure Advisor



**Azure Advisor** analyzes deployed Azure resources and makes recommendations based on best practices to optimize Azure deployments.

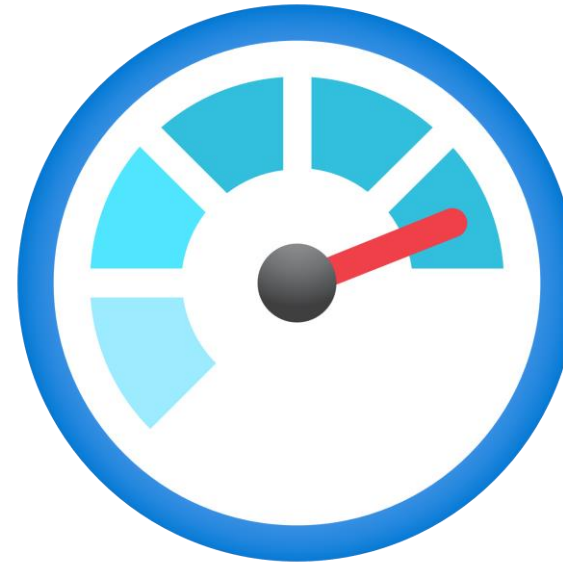
- Reliability
- Security
- Performance
- Cost
- Operational Excellence



# Azure Monitor

**Azure Monitor** maximizes the availability and performance of applications and services by collecting, analyzing, and acting on telemetry from cloud and on-premises environments.

- Application Insights
- Log Analytics
- Smart Alerts
- Automation Actions
- Customized Dashboards



# Azure Service Health

Microsoft Azure

Search resources, services, and docs (G+)

Home

Service Health | Service issues

Search (Ctrl+)

Save View Delete View Add service health alert

ACTIVE EVENTS

Service issues (4)

Planned maintenance (3)

Health advisories (5)

Security advisories (1)

HISTORY

Health history

RESOURCE HEALTH

Resource health

ALERTS

Health alerts

Subscription

28 selected

Region

28 selected

Service

170 selected

Issue Name	Tracking ID	Service(s)	Region(s)	Start Time	Updated
Availability issues – Storage	DTTL-HP8	Storage	West US,West US 2	2020-06-24T00:00:00Z (6 days ago)	3 hours ago
Allocation Failures – Virtual Machi...	TTTL-H90	SQL Database:Virtual...	East US,West Central...	2020-06-24T00:00:00Z (6 days ago)	3 hours ago

No permissions to read Service Health events for 22 subscription(s). To view Service Health events, users must have the reader role on a subscription. See 2 service issue(s) outside of your filter.

Service issue : Availability issues – Storage

Summary Potential impact Issue updates

Tracking ID

DTTL-HP8

Share the below link with your team or use it for reference in your problem management system

https://app.azure.com/h/DTTL-HP8/76c813

Impacted service(s)

Storage

Impacted region(s)

West US; West US 2

Impacted subscription(s)

Last update (3 hours ago)

Customers may have experience difficulties connecting to resources hosted in Central India. A number of Storage and Compute scale units had gone offline, impacting Virtual Machines and other Azure services with dependencies on these.

See all updates

Potential impact

60 resource(s) in 1 subscription(s)

View details

Download the issue summary as a PDF.

Request root cause

Track this issue on mobile.

Quickly connect with our problem-solving experts.

Tweet @AzureSupport

Contact Azure Support if you need additional help with this issue.

Create a support request

Was this helpful?



Evaluate the impact of Azure service issues with personalized guidance and support, notifications, and issue resolution updates.

# Azure Service Health

**Azure Service Health** provides a personalized view of the health of Azure services and the regions being used.

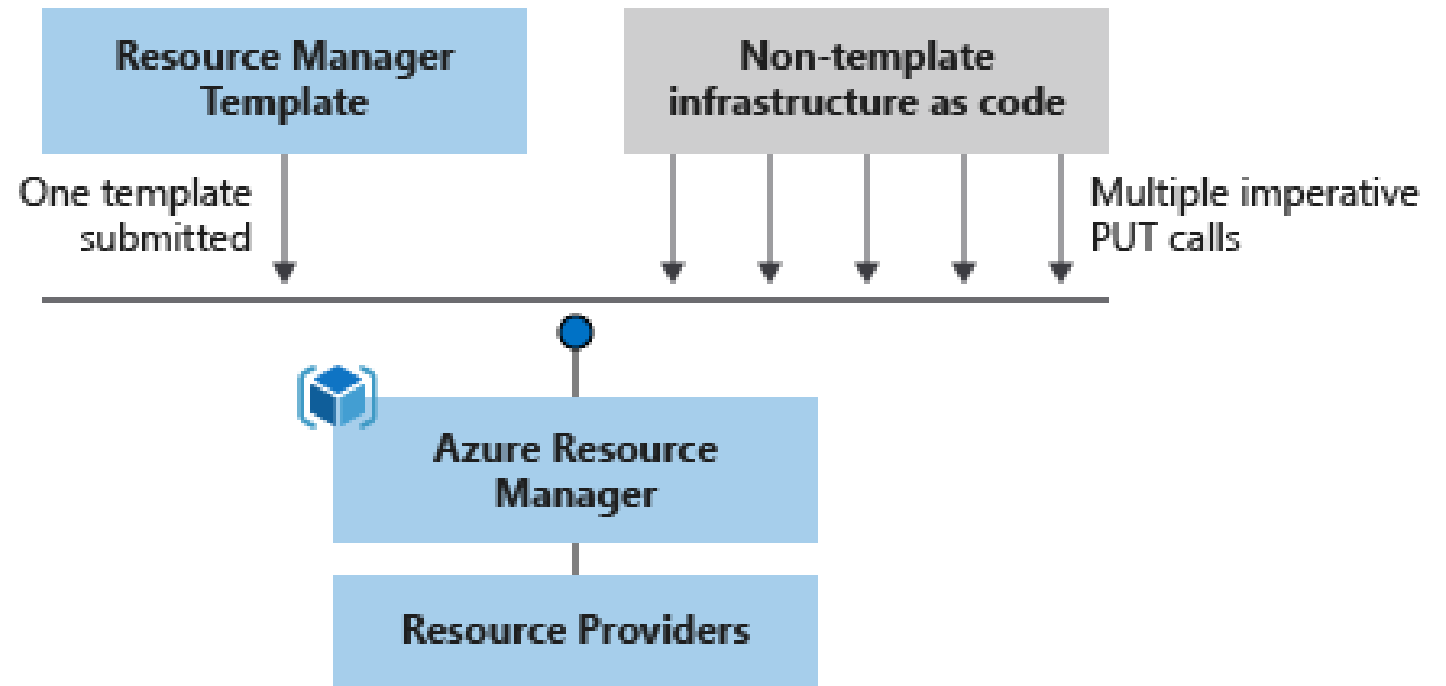
- Communication regarding outages
- Planned maintenance
- Other health advisories

Microsoft Azure	Health Advisory Summary	2020-08-22T19:43:35Z
<b>Title:</b>	We have important information regarding your ExpressRoute service	
<b>Tracking ID:</b>	<a href="#">PLWN-F80</a>	
<b>Event type:</b>	Health Advisory	
<b>Status:</b>	Ongoing as of 2020-08-22T19:43:34Z	
<b>Service(s):</b>	ExpressRoute \ ExpressRoute Circuits	
<b>Region(s):</b>	Australia Central, Australia Central 2, Australia East, Australia Southeast, Brazil South, Canada Central, Canada East, Central India, Central US, Central US EUAP, East Asia, East US, East US 2, East US 2 EUAP, France Central, France South, Germany North, Germany West Central, Global, Japan East, Japan West, Korea Central, Korea South, North Central US, North Europe, South Africa North, South Africa West, South Central US, Southeast Asia, South India, Switzerland North, Switzerland West, UAE Central, UAE North, UK South, UK West, West Central US, West Europe, West India, West US, West US 2	
<b>Start time:</b>	2020-08-18T00:00:00Z	
<b>Resolve time:</b>	Ongoing as of 2020-08-22T19:43:34Z	
<b>Last update time:</b>	2020-08-19T07:19:29Z	
<b>Impacted subscriptions:</b>	5733bcb3-7fde-4caf-8629-41dc15e3b352 (Contoso Hotels)	

# Azure Resource Manager (ARM) templates

Azure Resource Manager (ARM) templates are JavaScript Object Notation (JSON) files that can be used to create and deploy Azure infrastructure without having to write programming commands.

- Declarative syntax
- Repeatable results
- Orchestration
- Modular files
- Built-in validation
- Exportable code





# Module 03 Review



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

- Azure services: IoT, big data, analytics, and development tools.
- Azure Resource Manager.
- Azure Monitoring tools.