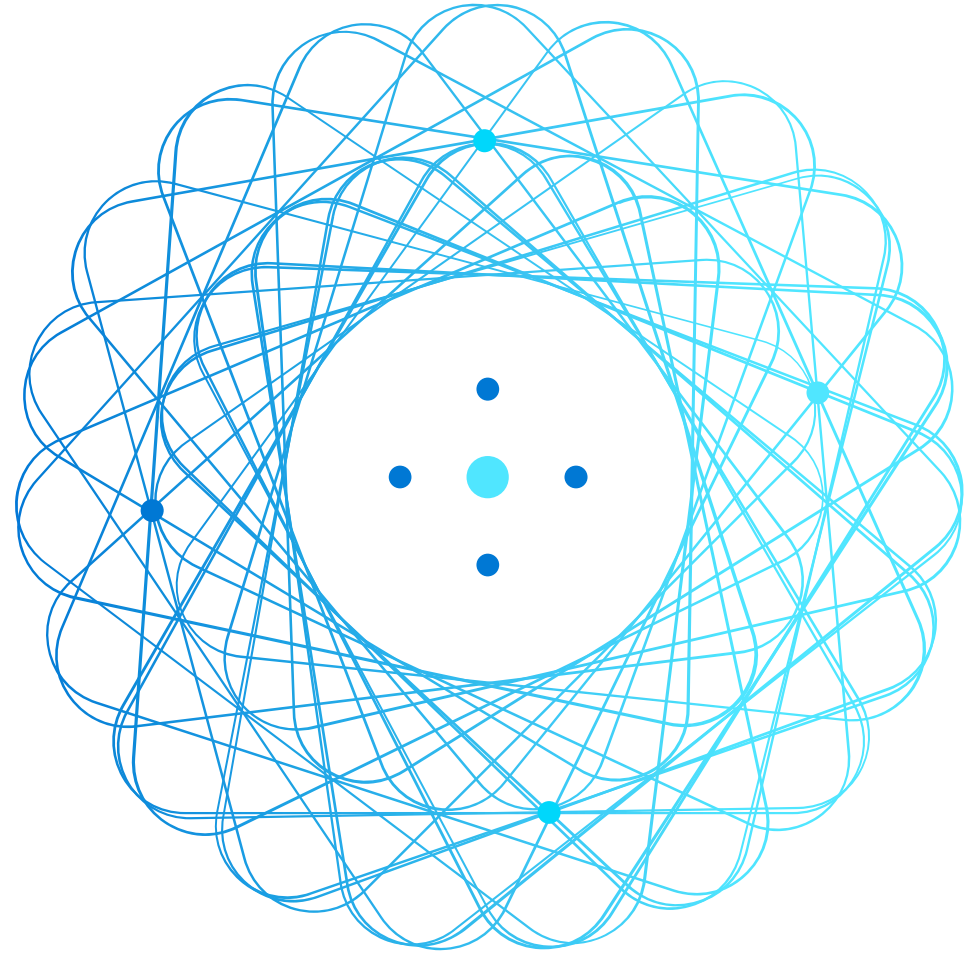


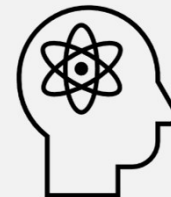
# AZ-900T0x

## Module 03:

### Core Solutions



# 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.

# Big data and analytics

## Azure Synapse Analytics



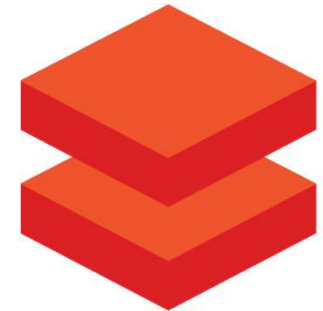
A cloud-based Enterprise Data Warehouse.

## Azure HDInsight



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

## Azure Databricks



Apache Spark based analytics service.

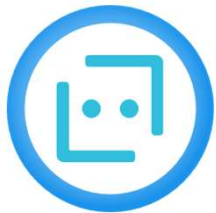
# Artificial Intelligence & Machine Learning



**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.



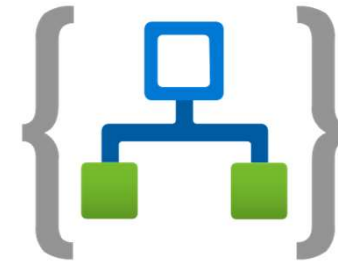
# Serverless Computing

## 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.

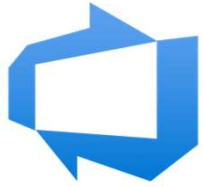
# Walkthrough - Implement Azure Functions

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

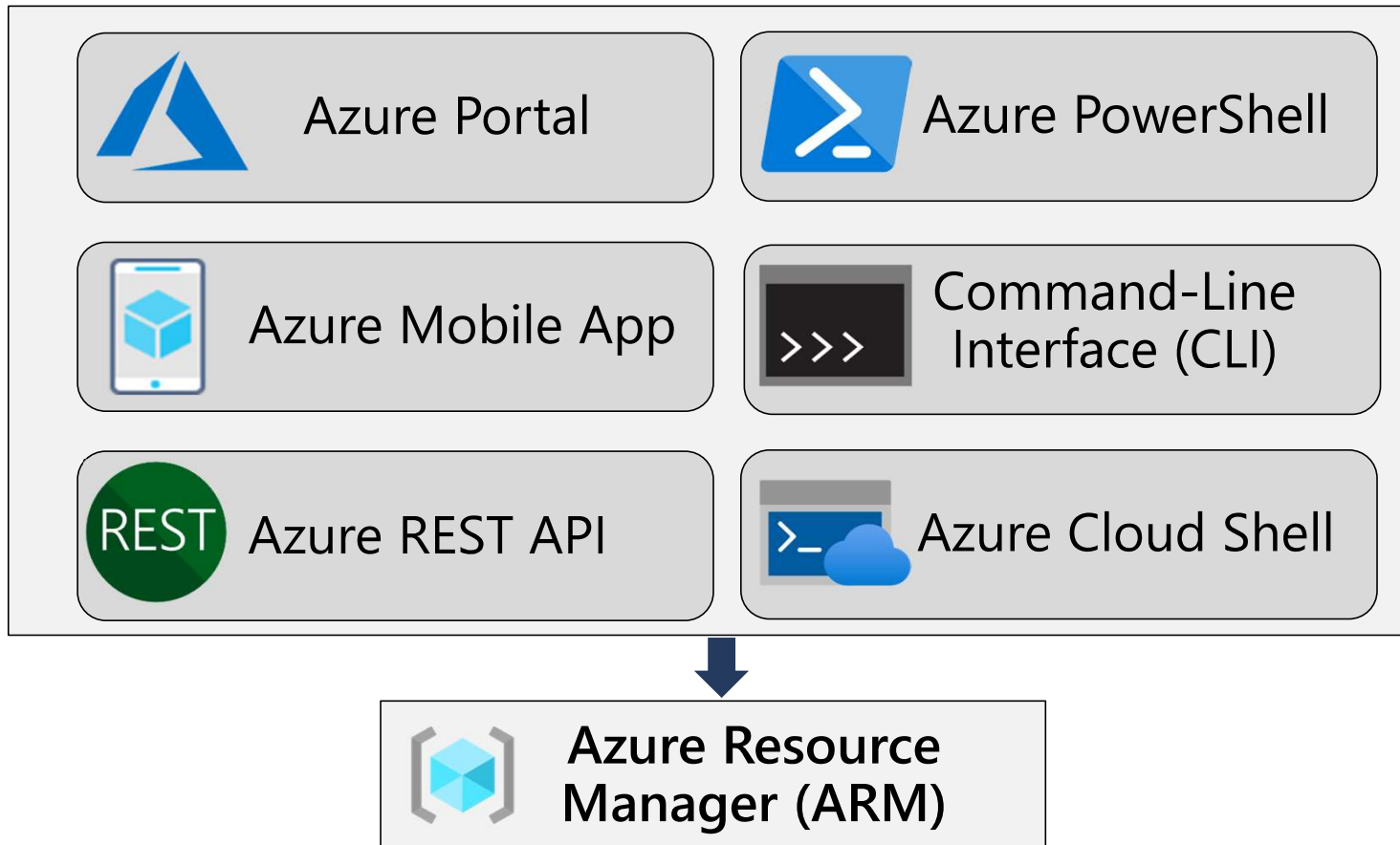


# Azure Management Tools - Objective Domain

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.

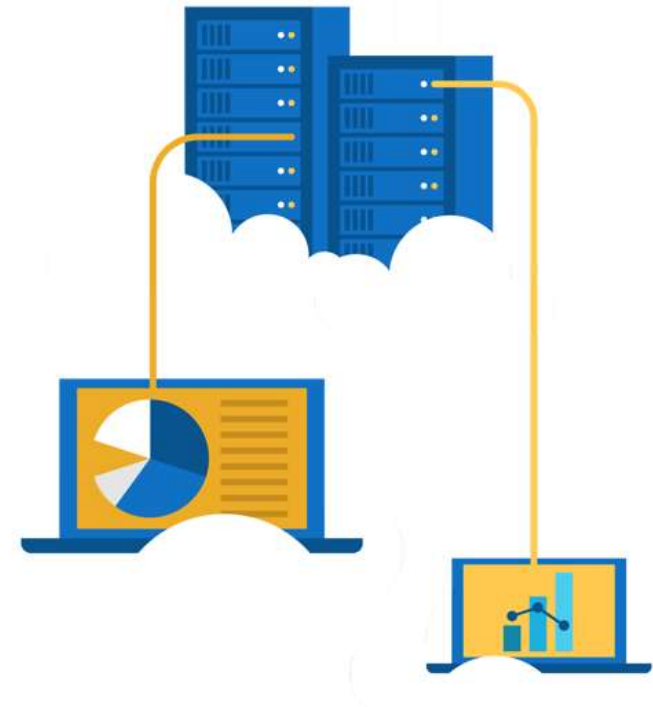
# Management tools available in Azure



# 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.

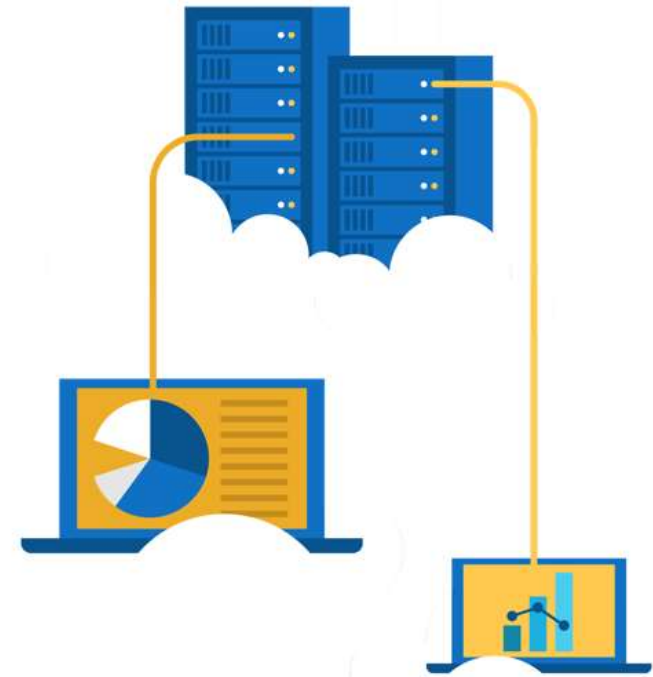




# Walkthrough - Create a VM with the Azure CLI

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.

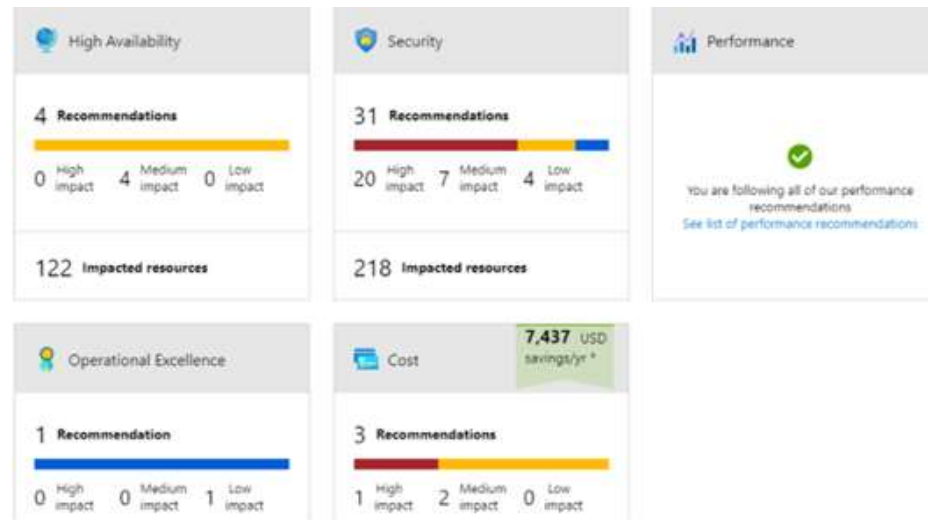


# Azure Advisor



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

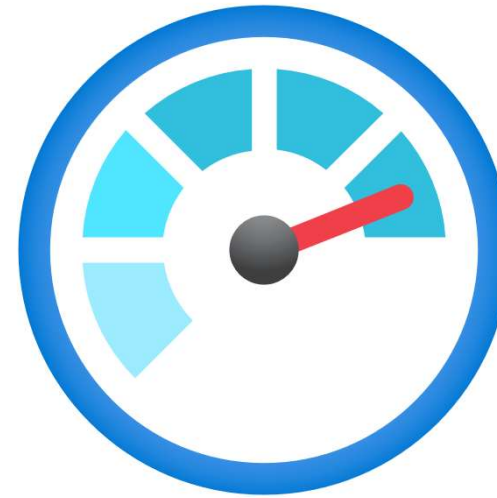
- Reliability
- Security
- Performance
- Cost
- Operational Excellence



# 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

The screenshot displays the Microsoft Azure Service Health interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and various utility icons. The main header shows 'Service Health | Service issues'. On the left, a sidebar lists navigation options: 'ACTIVE EVENTS' (Service issues (4), Planned maintenance (3), Health advisories (5), Security advisories (1)), 'HISTORY' (Health history), 'RESOURCE HEALTH' (Resource health), and 'ALERTS' (Health alerts).

The 'ACTIVE EVENTS' section is active, showing a table of service issues. The table has columns for Issue Name, Tracking ID, Service(s), Region(s), Start Time, and Updated. Two issues are listed: 'Availability issues - Storage' (Tracking ID: DTTL-HP8) and 'Allocation Failures - Virtual Machi...' (Tracking ID: TTTL-H90). A red box highlights the first issue.

Below the table, a message states: '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.' A world map on the right shows the issue's location.

The detailed view for the 'Availability issues - Storage' issue (Tracking ID: DTTL-HP8) is shown below. It includes a 'Summary' tab, a 'Potential impact' section, and a 'Last update' section. The 'Last update' section is highlighted with a red box and contains the following text: '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'.

On the right side of the detailed view, there are several action buttons: 'Download the issue summary as a PDF.', 'Request root cause', 'Track this issue on mobile.' (with a QR code), 'Quickly connect with our problem-solving experts. Tweet @AzureSupport', and 'Contact Azure Support if you need additional help with this issue. Create a support request'.

At the bottom right, there is a 'Was this helpful?' button.



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

# Azure Service Health (continued)

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

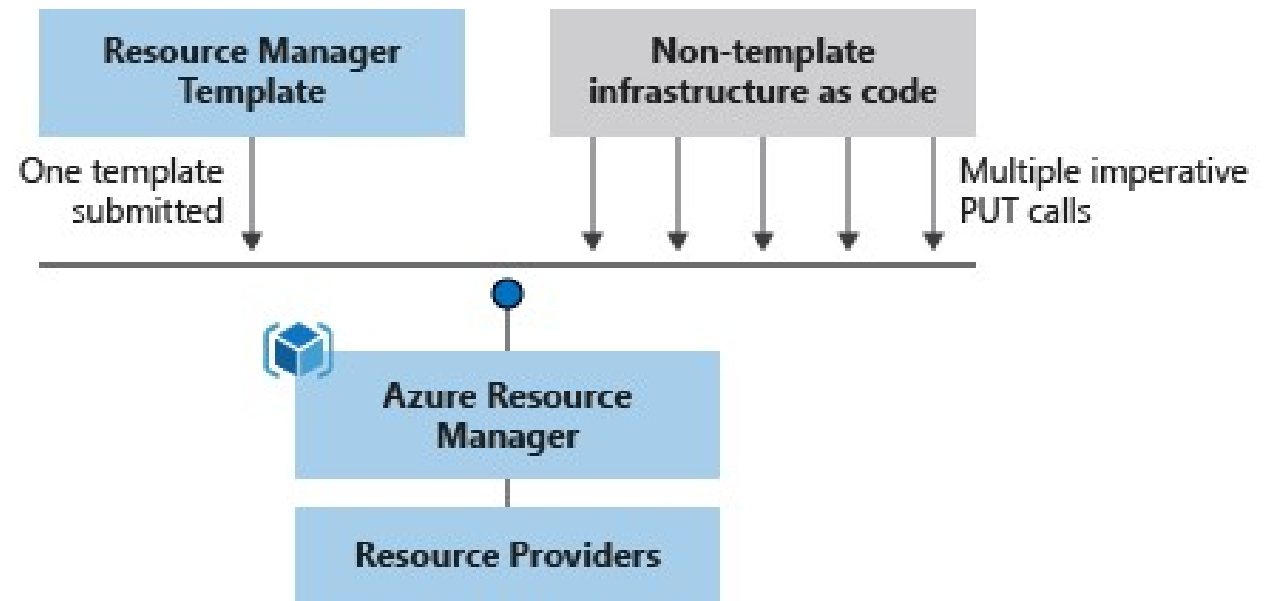
- Communication regarding outages
- Planned maintenance
- Other health advisories

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.