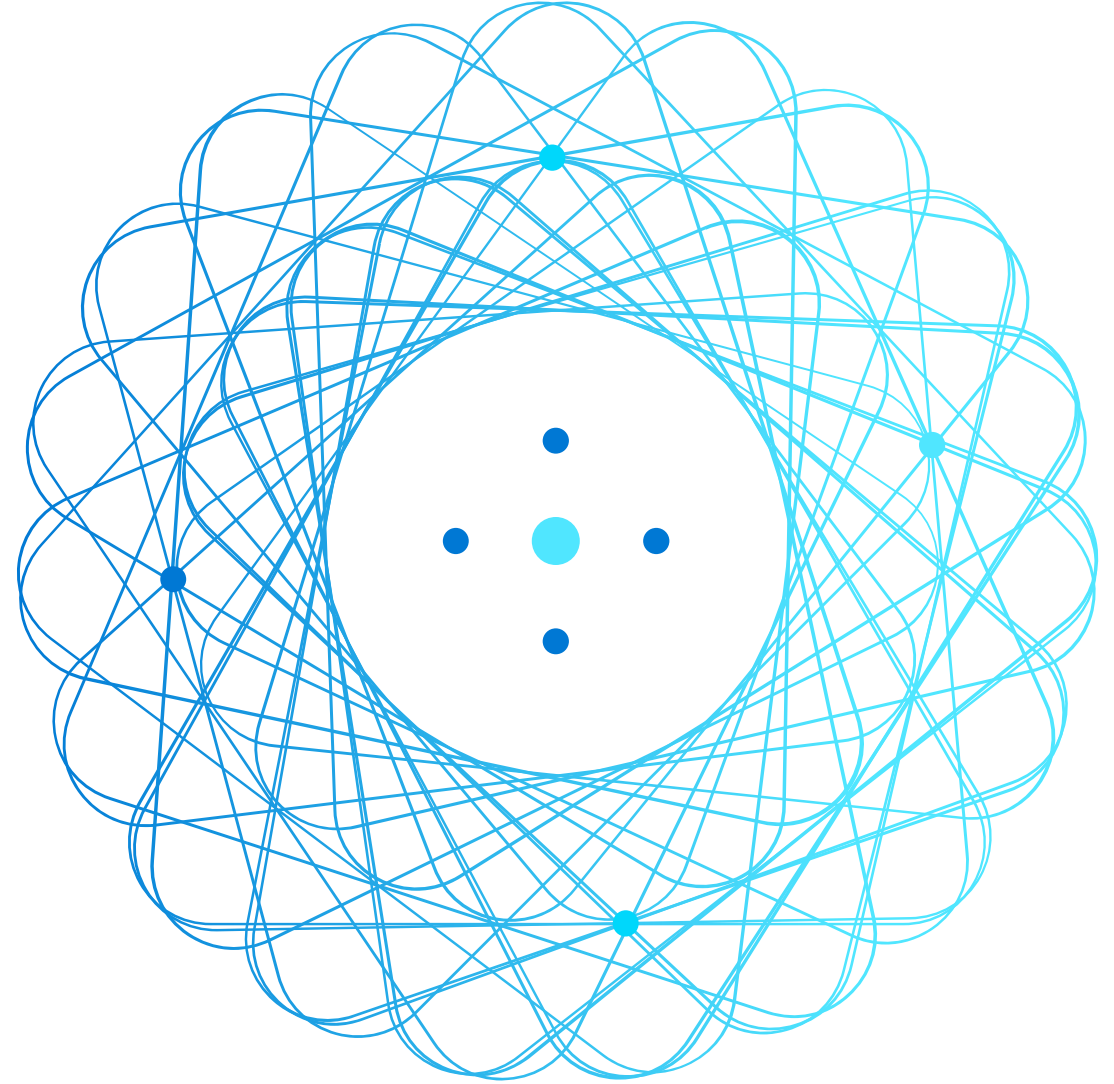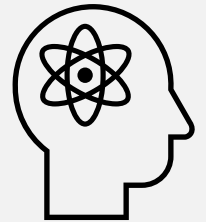# AZ-900T0x
Module 03:
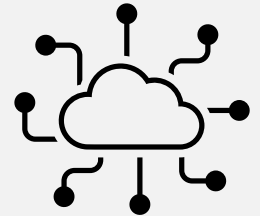# Core Solutions

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
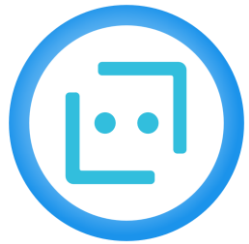
Apache Spark based analytics service.

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.

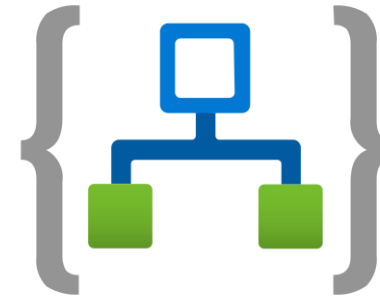**Azure Bot Service:** develop intelligent, enterprise-grade bots.

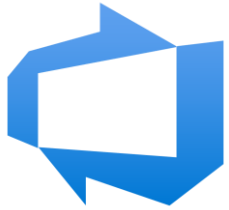# Serverless Computing

Azure Functions

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

Azure Logic Apps

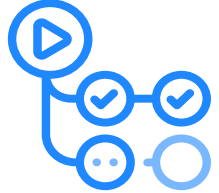Automate and orchestrate tasks, business processes, and workflows to integrate apps.

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

Azure Portal

Azure PowerShell

Azure Mobile App

Command-Line Interface (CLI)

Azure REST API

Azure Cloud Shell

Azure Resource Manager (ARM)
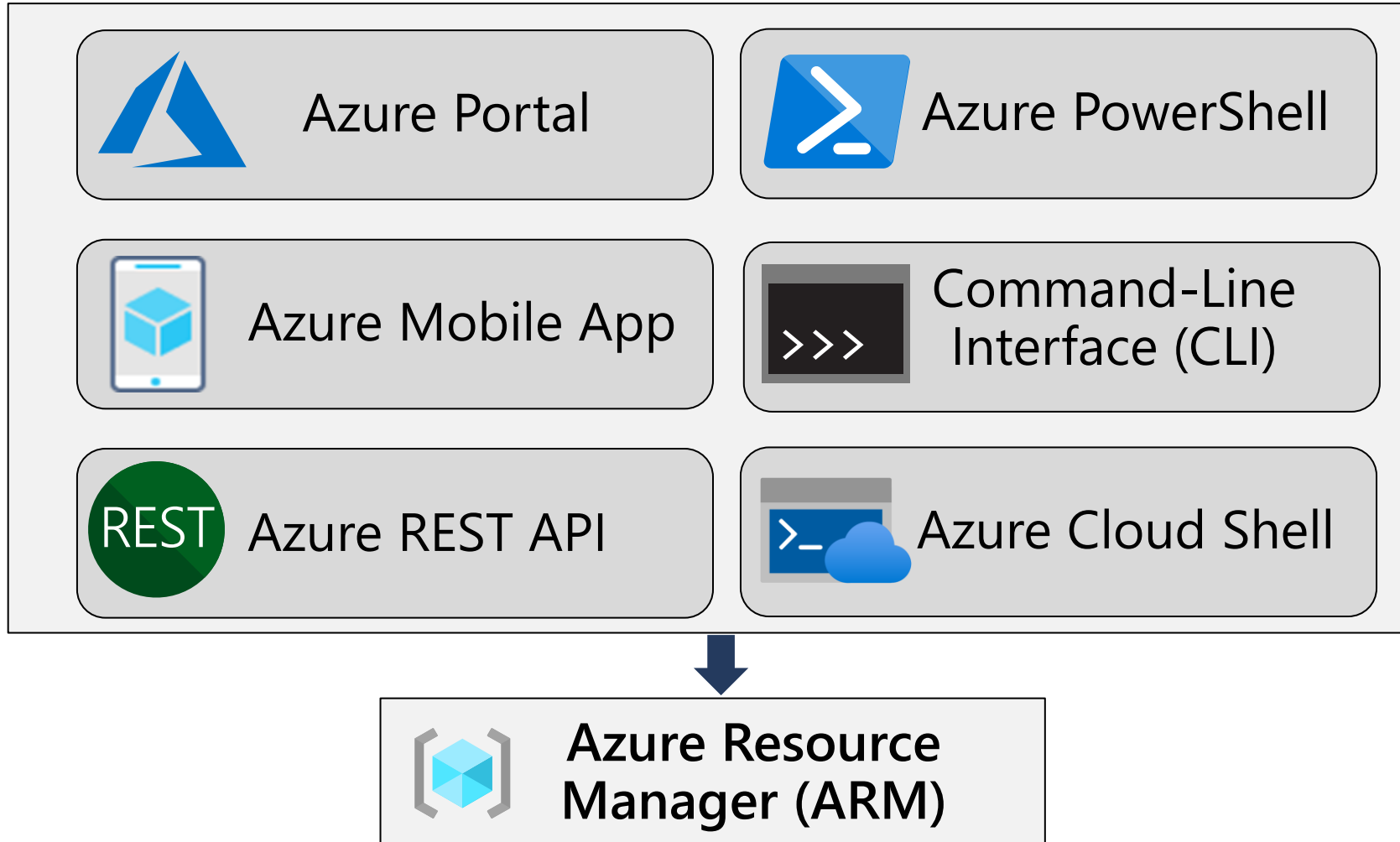
Azure Advisor

Azure Advisor analyzes deployed Azure resources and makes recommendations based on best practices to optimize Azure deployments.
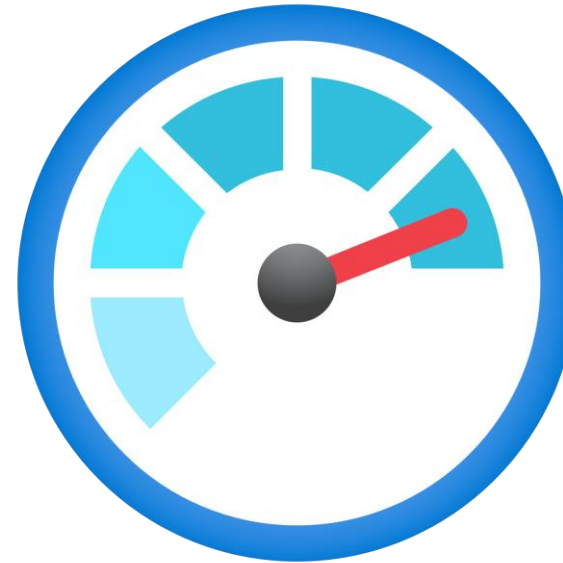
- Reliability
- Security
- Performance
- Cost
- Operational Excellence
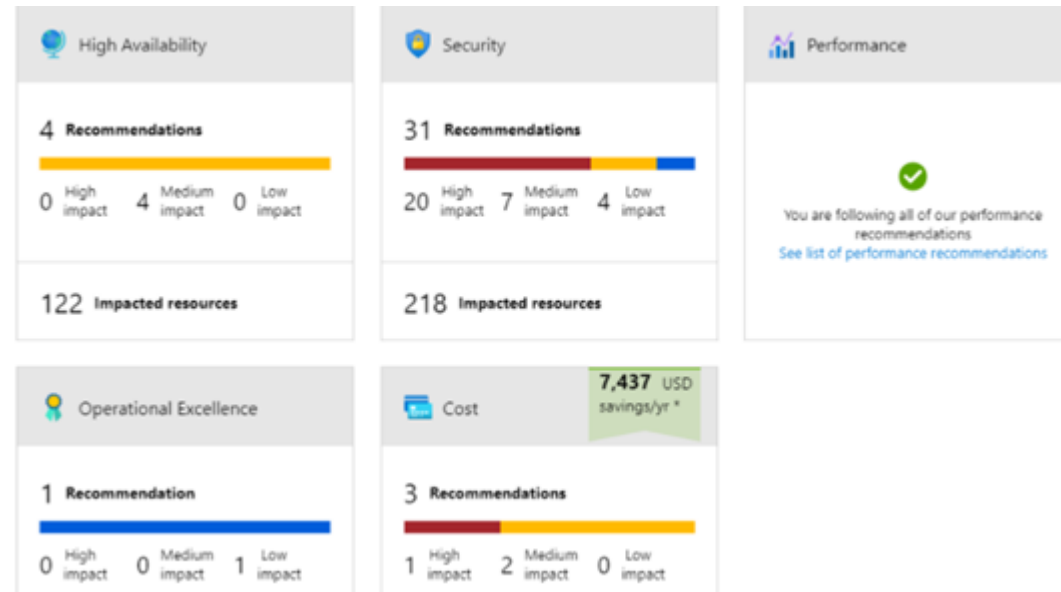
Azure Monitor

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

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

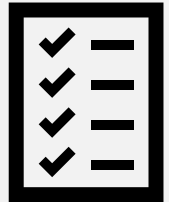| Microsoft Azure	Health Advisory Summary	2020-08-22T19:43:35Z
Title:	We have important information regarding your ExpressRoute service	
Tracking ID:	PLWN-F80	
Event type:	Health Advisory	
Status:	Ongoing as of 2020-08-22T19:43:34Z	
Service(s):	ExpressRoute \ ExpressRoute Circuits	
Region(s):	Australia 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	
Start time:	2020-08-18T00:00:00Z	
Resolve time:	Ongoing as of 2020-08-22T19:43:34Z	
Last update time:	2020-08-19T07:19:29Z	
Impacted subscriptions:	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 programing commands.
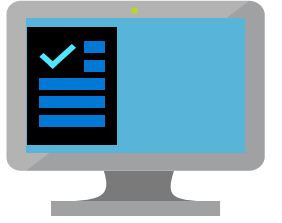
- Declarative syntax

- Repeatable results

- Orchestration

- Modular files

- Built-in validation

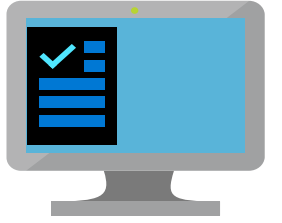- Exportable code
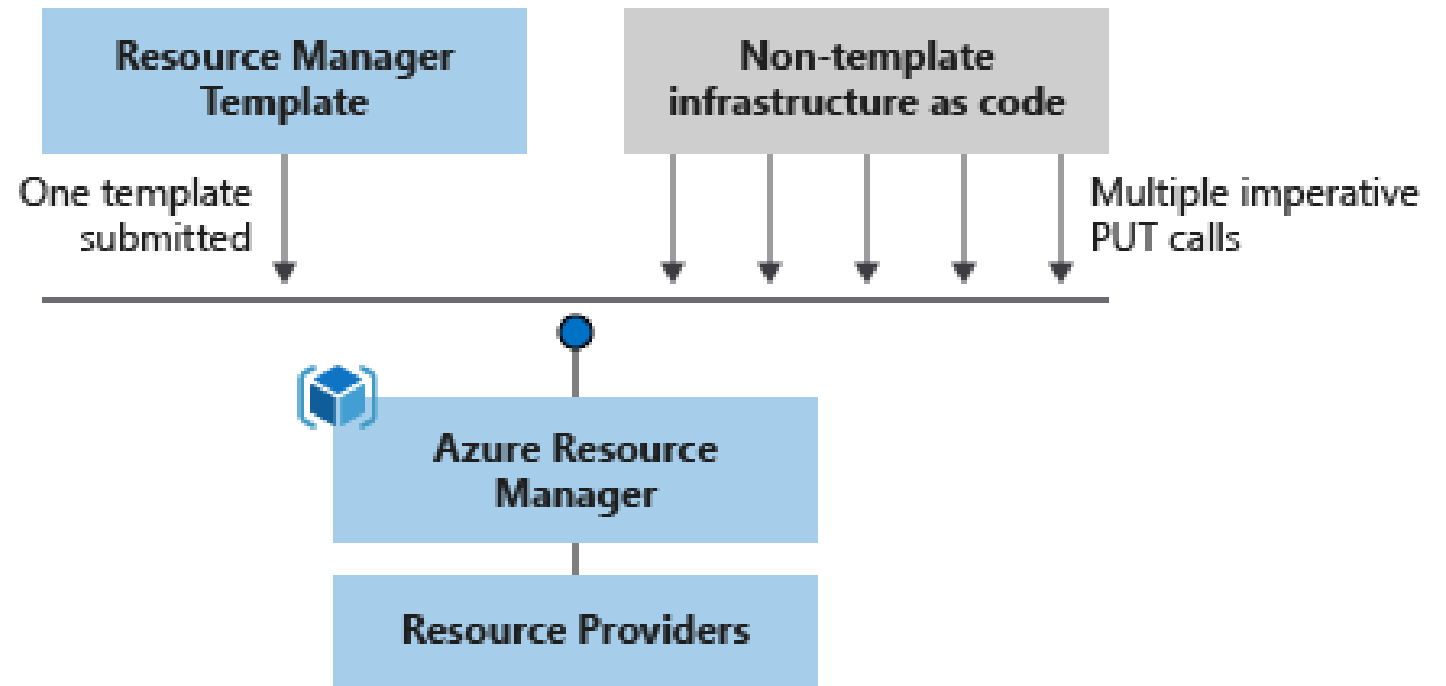
Knowledge Checks (5 min)

Knowledge Check

1. When using an Azure IoT Hub service, what does the term 'command and control' apply to?

a) device-to-cloud communication
b) file upload from devices
c) cloud-to-device communication
d) message routing

Knowledge Check
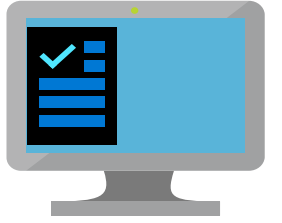
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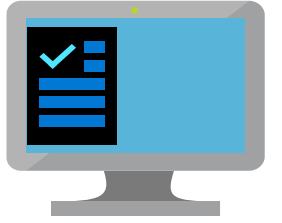c) cloud-to-device communication
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Knowledge Check

2. If your IoT solution cannot use one of the device SDKs or protocols supported by the Azure IoT hub, what Azure services can you use to support creating a custom protocol?

a) Azure IoT Sphere
b) Azure IoT Edge
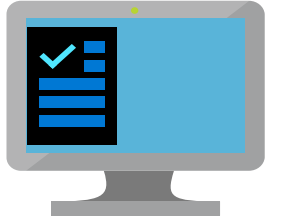c) Azure IoT Hub
d) Azure IoT Central

Knowledge Check

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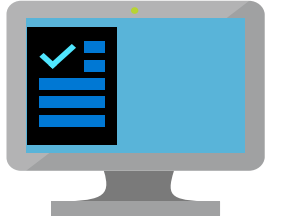b) Azure IoT Edge
c) Azure IoT Hub
d) Azure IoT Central

Knowledge Check

3. Which of the following Azure services has pre-trained models available for you to send data to for predictions?

a) Azure Cognitive Services
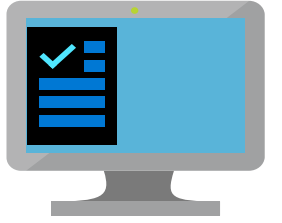b) Azure Advisor
c) Azure Machine Learning
d) Azure IoT Hub

Knowledge Check

3. Which of the following Azure services has pre-trained models available for you to send data to for predictions?

a) Azure Cognitive Services
b) Azure Advisor
c) Azure Machine Learning
d) Azure IoT Hub

Knowledge Check

4. As part of Azure DevOps, what service would you use for adopting CI/CD for a development team?

a)   Azure Advisor
b)   Azure Boards
c)   Azure Test Plans
d)   Azure Pipelines

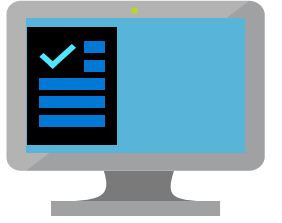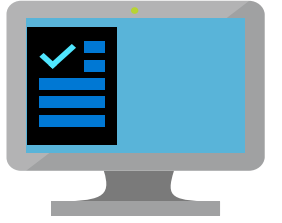# Knowledge Check

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Knowledge Check

5. Which of the following is an attribute of Azure Resource Manager (ARM) Templates?

a) YAML compatible
b) Repeatable results
c) Imperative syntax
d) Non-modular file structure

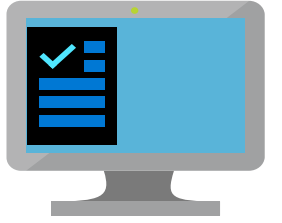# Knowledge Check

5. Which of the following is an attribute of Azure Resource Manager (ARM) Templates?

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c) Imperative syntax
d) Non-modular file structure

Lab Exercises - 7 to 11 (45 min)

Module 03 Review

Microsoft Learn Modules
(docs.microsoft.com/Learn)

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

- Azure Resource Manager.

- Azure Monitoring tools.