# Exam AZ-900: Microsoft Azure Fundamentals – Skills Measured

**The content of this exam will be updated on May 28, 2020. Please continue scrolling to the red line section below to view the changes.**

## Audience Profile

This exam is designed for candidates looking to demonstrate foundational level knowledge of cloud services and how those services are provided with Microsoft Azure. The exam is intended for candidates with non-technical backgrounds, such as those involved in selling or purchasing cloud based solutions and services or who have some involvement with cloud based solutions and services, as well as those with a technical background who have a need to validate their foundational level knowledge around cloud services. Technical IT experience is not required however some general IT knowledge or experience would be beneficial.

This exam can be taken as an optional first step in learning about cloud services and how those concepts are exemplified by Microsoft Azure. It can be taken as a precursor to Microsoft Azure or Microsoft cloud services exams. While it would be a beneficial first step, validating foundational level knowledge, taking this exam is not a pre-requisite before taking any other Azure-based certifications.

## Skills Measured

NOTE: The bullets that appear below each of the skills measured are intended to illustrate how we are assessing that skill. This list is not definitive or exhaustive.

NOTE: In most cases, exams do NOT cover preview features, and some features will only be added to an exam when they are GA (General Availability).

## Understand cloud concepts (15-20%)

**Describe the benefits and considerations of using cloud services**

- understand terms such as high availability, scalability, elasticity, agility, fault tolerance, and disaster recovery
- understand the principles of economies of scale
- understand the differences between Capital Expenditure (CapEx) and Operational Expenditure (OpEx)
- understand the consumption-based model

**Describe the differences between Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS)**

- describe Infrastructure-as-a-Service (IaaS)
- describe Platform-as-a-Service (PaaS)
- describe Software-as-a-Service (SaaS)
- compare and contrast the three different service types

**Describe the differences between public, private and hybrid cloud models**

- describe public cloud
- describe private cloud
- describe hybrid cloud
- compare and contrast the three different cloud models

## Understand core Azure services (30-35%)

**Understand the core Azure architectural components**

- describe Regions
- describe Availability Zones
- describe Resource Groups
- describe Azure Resource Manager
- describe the benefits and usage of core Azure architectural components

**Describe some of the core products available in Azure**

- describe products available for Compute such as Virtual Machines, Virtual Machine Scale Sets, App Service Functions, Azure Container Instances (ACI) and Azure Kubernetes Service (AKS)
- describe products available for Networking such as Virtual Network, Load Balancer, VPN Gateway, Application Gateway and Content Delivery Network
- describe products available for Storage such as Blob Storage, Disk Storage, File Storage, and Archive Storage
- describe products available for Databases such as Cosmos DB, Azure SQL Database, Azure Database for MySQL, Azure Database for PostgreSQL, Azure Database Migration service
- describe the Azure Marketplace and its usage scenarios

**Describe some of the solutions available on Azure**

- describe Internet of Things (IoT) and products that are available for IoT on Azure such as IoT Hub and IoT Central
- describe Big Data and Analytics and products that are available for Big Data and Analytics such as SQL Data Warehouse, HDInsight, and Azure Databricks

- describe Artificial Intelligence (AI) and products that are available for AI such as Azure Machine Learning Service and Studio
- describe Serverless computing and Azure products that are available for serverless computing such as Azure Functions, Logic Apps, and Event Grid
- describe DevOps solutions available on Azure such as Azure DevOps and Azure DevTest Labs
- describe the benefits and outcomes of using Azure solutions

**Understand Azure management tools**

- understand Azure tools such as Azure Portal, Azure PowerShell, Azure CLI and Cloud Shell
- understand Azure Advisor

## Understand security, privacy, compliance, and trust (25-30%)

**Understand securing network connectivity in Azure**

- describe Network Security Groups (NSG)
- describe Application Security Groups (ASG)
- describe User Defined Rules (UDR)
- describe Azure Firewall
- describe Azure DDoS Protection
- choose an appropriate Azure security solution

**Describe core Azure Identity services**

- understand the difference between authentication and authorization
- describe Azure Active Directory
- describe Azure Multi-Factor Authentication

**Describe security tools and features of Azure**

- describe Azure Security Center
- understand Azure Security Center usage scenarios
- describe Key Vault
- describe Azure Information Protection (AIP)
- describe Azure Advanced Threat Protection (ATP)

**Describe Azure governance methodologies**

- describe policies and initiatives with Azure Policy
- describe Role-Based Access Control (RBAC)
- describe Locks

- describe Azure Advisor security assistance
- describe Azure Blueprints

**Understand monitoring and reporting options in Azure**

- describe Azure Monitor
- describe Azure Service Health
- understand the use cases and benefits of Azure Monitor and Azure Service Health

**Understand privacy, compliance and data protection standards in Azure**

- understand industry compliance terms such as GDPR, ISO and NIST
- understand the Microsoft Privacy Statement
- describe the Trust center
- describe the Service Trust Portal
- describe Compliance Manager
- determine if Azure is compliant for a business need
- understand Azure Government **cloud** services
- describe Azure China cloud services

## Understand Azure pricing and support (20-25%)

**Understand Azure subscriptions**

- describe an Azure subscription
- understand the uses and options with Azure subscriptions such access control and offer types
- understand subscription management using Management groups

**Understand planning and management of costs**

- understand options for purchasing Azure products and services
- understand options around Azure Free account
- understand the factors affecting costs such as resource types, services, locations, ingress and egress traffic
- understand Zones for billing purposes
- understand the Pricing calculator
- understand the Total Cost of Ownership (TCO) calculator
- understand best practices for minimizing Azure costs such as performing cost analysis, creating spending limits and quotas, using tags to identify cost owners, using Azure reservations and using Azure Advisor recommendations
- describe Azure Cost Management

**Understand the support options available with Azure**

- understand support plans that are available such as Dev, Standard, Professional Direct and Premier
- understand how to open a support ticket
- understand available support channels outside of support plan channels
- describe the Knowledge Center

**Describe Azure Service Level Agreements (SLAs)**

- describe a Service Level Agreement (SLA)
- understand Composite SLAs
- understand how to determine an appropriate SLA for an application

**Understand service lifecycle in Azure**

- understand public and private preview features
- understand the term General Availability (GA)
- understand how to monitor feature updates and product changes

**See below changes as of May 28, 2020**

## Audience Profile

This exam is designed for candidates ~~looking~~ who need to ~~demonstrate~~ validate foundational-level knowledge of cloud services and how those services are provided with Microsoft Azure. The exam is intended for candidates ~~with non-technical backgrounds, such as those involved in selling or purchasing cloud based solutions and services or who have some involvement with cloud based solutions and services, as well as those with a technical background who have a need to validate their foundational level knowledge around cloud services. Technical IT experience is not required however some general IT knowledge or experience would be beneficial~~ who are just beginning to work with cloud-based solutions and services. Candidates must be prepared to demonstrate a fundamental understanding of cloud concepts, Azure services, Azure workloads, security and privacy in Azure, as well as Azure pricing and support. Candidates should be familiar with the concepts of networking, storage, compute, application support, and application development.

~~This exam can be taken as an optional first step in learning about cloud services and how those concepts are exemplified by Microsoft Azure. It can be taken as a precursor to Microsoft Azure or Microsoft cloud services exams. While it would be a beneficial first step, validating foundational level knowledge, taking this exam is not a pre-requisite before taking any other Azure-based certifications~~This exam can be taken as a precursor to other Microsoft certifications, such as Azure Administrator. While it would be a beneficial first step, taking this exam is not a prerequisite before taking any other Azure-based certifications.

## Skills Measured

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NOTE: In most cases, exams do NOT cover preview features, and some features will only be added to an exam when they are GA (General Availability).

## ~~Understand~~ Describe cloud concepts (~~15~~ 20~~-25~~%)

**~~Describe~~ Identify the benefits and considerations of using cloud services**

- ~~Understand terms~~ Identify the benefits of cloud computing, such as high availability, scalability, elasticity, agility~~,~~ ~~Fault Tolerance,~~ and disaster recovery
- ~~Understand~~ Identify the principles of economies of scale
- ~~Understand~~ Identify the differences between Capital Expenditure (CapEx) and Operational Expenditure (OpEx)
- ~~Understand~~ Describe the consumption-based model

**Describe the differences between Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS)**

- Describe the shared responsibility model
- describe Infrastructure-as-a-Service (IaaS)
- describe Platform-as-a-Service (PaaS)
- describe Software-as-a-Service (SaaS)
- ~~compare and contrast the three different service types~~
- Identify a service type based on a use case

**Describe the differences between public, private and hybrid cloud models**

- Define cloud computing
- describe public cloud
- describe private cloud
- describe hybrid cloud
- compare and contrast the three different cloud models

## ~~Understand~~ Describe core Azure services (~~30-35~~15-20%)

**~~Understand~~ Describe the core Azure architectural components**

- describe the benefit and usage of Regions
- describe the benefit and usage of Availability Zones
- describe the benefit and usage of Resource Groups

- Describe the benefit and usage of Subscriptions
- Describe the benefit and usage of Management Groups
- describe the benefit and usage of Azure Resource Manager
- ~~Describe the benefits and usage of core Azure architectural components~~

**Describe ~~some of the~~ core workload products available in Azure**

- describe ~~products available for Compute such as~~ the benefits and usage of Virtual Machines, Azure App Services, ~~Virtual Machine Scale Sets, App Service Functions,~~ Azure Container Instances (ACI), ~~and~~ Azure Kubernetes Service (AKS) and Windows Virtual Desktop
- describe ~~products available for Networking such as~~as the benefits and usage of Virtual Network~~s~~, and Express Route~~Load Balancer, VPN Gateway, Application Gateway and Content Delivery Network~~
- describe the benefits and usage of Container (Blob) ~~products available for Storage such as Blob~~ Storage, Disk Storage, File Storage~~,~~ and ~~Archive Storage~~storage tiers
- describe the benefits and usage of ~~products available for Databases such as~~ Cosmos DB, Azure SQL Database, Azure Database for MySQL and~~,~~ Azure Database for PostgreSQL~~, Azure Database Migration service,~~
- describe the benefits and usage of Azure Marketplace ~~and its usage scenarios~~

**~~Describe some of the solutions available on Azure~~**

- ~~Describe Internet of Things (IoT) and products that are available for IoT on Azure such as IoT Hub and IoT Central~~
- ~~Describe Big Data and Analytics and products that are available for Big Data and Analytics such as SQL Data Warehouse, HDInsight and Azure Databricks~~
- ~~Describe Artificial Intelligence (AI) and products that are available for AI such as Azure Machine Learning Service and Studio~~
- ~~Describe Serverless computing and Azure products that are available for serverless computing such as Azure Functions, Logic Apps and Event Grid~~
- ~~Describe DevOps solutions available on Azure such as Azure DevOps and Azure DevTest Labs~~
- ~~Describe the benefits and outcomes of using Azure solutions~~

**~~Understand Azure management tools~~**

- ~~Understand Azure tools such as Azure Portal, Azure PowerShell, Azure CLI and Cloud Shell~~
- ~~Understand Azure Advisor~~

## Describe Core Solutions and Management Tools on Azure (10-15%)

### Describe core solutions available on Azure

- Describe the benefits and usage of IoT Hub, IoT Central and Azure Sphere
- Describe the benefits and usage of Azure Synapse Analytics, HDInsight and Azure Databricks
- Describe the benefits and usage of Azure Machine Learning, Cognitive Services and Azure Bot Service
- Describe the benefits and usage of serverless computing solutions that include Azure Functions, Logic Apps and Event Grid
- Describe solutions for software development including Azure DevOps and Azure DevTest Labs

### Describe Azure management tools

- Describe the functionality and usage of the Azure Portal, Azure PowerShell, Azure CLI, Cloud Shell and Azure Mobile App
- Describe the functionality and usage of Azure Advisor
- Describe the functionality and usage of Azure Monitor
- Describe the functionality and usage of Azure Service Health

## Describe General Security and Network Security Features (10-15%)

### Describe Azure security features

- Describe basic features of Azure Security Center, including policy compliance, security alerts, secure score, and resource hygiene)
- Describe the functionality and usage of Key Vault
- Describe the functionality and usage of Azure Sentinel

### Describe Azure network security

- Describe the concept of defense in depth
- Describe the functionality and usage of Network Security Groups (NSG)
- Describe the functionality and usage of Azure Firewall
- Describe the functionality and usage of Azure DDoS protection

## Describe Identity, Governance, Privacy and Compliance Features (20-25%)

### Describe core Azure identity services

- Explain the difference between authentication and authorization
- Describe the functionality and usage of Azure Active Directory
- Describe the functionality and usage of Conditional Access and Multi-Factor Authentication (MFA)
- Describe the functionality and usage of Role-Based Access Control (RBAC)

### Describe Azure governance features

- Describe the functionality and usage of Azure Policy
- Describe the functionality and usage of resource locks
- Describe the functionality and usage of tags
- Describe the functionality and usage of Azure Blueprints

### Describe privacy and compliance resources

- Describe the purpose of the Microsoft Privacy Statement and the Cloud Adoption Framework for Azure
- Describe the purpose of the Trust Center
- Describe the purpose of the Service Trust Portal
- Describe the purpose of Azure Sovereign Regions (Azure Government cloud services and Azure China cloud services)

## Describe Azure Pricing and Support (10-15%)

### Describe methods for planning and management of costs

- Identify the factors affecting costs (resource types, services, locations, ingress and egress traffic, reserved instances, hybrid use benefit)
- Describe the functionality and usage of the Pricing calculator and the Total Cost of Ownership (TCO) calculator
- Describe the functionality and usage of Azure Cost Management

### Describe Azure Service Level Agreements (SLAs) and service lifecycles

- Describe the purpose of an Azure Service Level Agreement (SLA)
- Interpret the terms of an SLA
- Describe the service lifecycle in Azure (Public Preview and General Availability)

## ~~Understand Security, Privacy, Compliance, and Trust (25-30%)~~

### ~~Understand securing network connectivity in Azure~~

- ~~Describe Network Security Groups (NSG)~~
- ~~Describe Application Security Groups (ASG)~~
- ~~Describe User Defined Rules (UDR)~~
- ~~Describe Azure Firewall~~
- ~~Describe Azure DDoS Protection~~
- ~~Choose an appropriate Azure security solution~~

### ~~Describe core Azure Identity services~~

- ~~Understand the difference between authentication and authorization~~
- ~~Describe Azure Active Directory~~
- ~~Describe Azure Multi-Factor Authentication~~

### ~~Describe security tools and features of Azure~~

- ~~Describe Azure Security Center~~
- ~~Understand Azure Security Center usage scenarios~~
- ~~Describe Key Vault~~
- ~~Describe Azure Information Protection (AIP)~~
- ~~Describe Azure Advanced Threat Protection (ATP)~~

### ~~Describe Azure governance methodologies~~

- ~~Describe policies and initiatives with Azure Policy~~
- ~~Describe Role-Based Access Control (RBAC)~~
- ~~Describe Locks~~
- ~~Describe Azure Advisor security assistance~~
- ~~Describe Azure Blueprints~~

### ~~Understand monitoring and reporting options in Azure~~

- ~~Describe Azure Monitor~~
- ~~Describe Azure Service Health~~
- ~~Understand the use cases and benefits of Azure Monitor and Azure Service Health~~

### ~~Understand privacy, compliance and data protection standards in Azure~~

- ~~Understand industry compliance terms such as GDPR, ISO and NIST~~
- ~~Understand the Microsoft Privacy Statement~~
- ~~Describe the Trust center~~
- ~~Describe the Service Trust Portal~~
- ~~Describe Compliance Manager~~
- ~~Determine if Azure is compliant for a business need~~
- ~~Understand Azure Government cloud services~~
- ~~Describe Azure China cloud services~~

## ~~Understand Azure Pricing and Support (20-25%)~~

### ~~Understand Azure subscriptions~~

- ~~Describe an Azure Subscription~~
- ~~Understand the uses and options with Azure subscriptions such access control and offer types~~
- ~~Understand subscription management using Management groups~~

**~~Understand planning and management of costs~~**

- ~~Understand options for purchasing Azure products and services~~
- ~~Understand options around Azure Free account~~
- ~~Understand the factors affecting costs such as resource types, services, locations, ingress and egress traffic~~
- ~~Understand Zones for billing purposes~~
- ~~Understand the Pricing calculator~~
- ~~Understand the Total Cost of Ownership (TCO) calculator~~
- ~~Understand best practices for minimizing Azure costs such as performing cost analysis, creating spending limits and quotas, using tags to identify cost owners, using Azure reservations and using Azure Advisor recommendations~~
- ~~Describe Azure Cost Management~~

**~~Understand the support options available with Azure~~**

- ~~Understand support plans that are available such as Dev, Standard, Professional Direct and Premier~~
- ~~Understand how to open a support ticket~~
- ~~Understand available support channels outside of support plan channels~~
- ~~Describe the Knowledge Center~~

**~~Describe Azure Service Level Agreements (SLAs)~~**

- ~~Describe a Service Level Agreement (SLA)~~
- ~~Understand Composite SLAs~~
- ~~Understand how to determine an appropriate SLA for an application~~

**~~Understand service lifecycle in Azure~~**

- ~~Understand Public and Private Preview features~~
- ~~Understand the term General Availability (GA)~~
- ~~Understand how to monitor feature updates and product changes~~