**Develop Azure compute solutions (20-25%)**

**Implement IaaS solutions**

* provision VMs
* create ARM templates
* create container images for solutions
* publish an image to the Azure Container Registry
* run containers by using Azure Container Instance

**Create Azure App Service Web Apps**

* create an Azure App Service Web App
* enable diagnostics logging
* deploy code to a web app
* configure web app settings
* implement auto scaling rules (schedule, operational/system metrics)

**Implement Azure functions**

* implement input and output bindings for a function
* implement function triggers by using data operations, timers, and web hooks
* implement Azure Durable Functions

**Develop for Azure storage (15-20%)**

**Develop solutions that use Cosmos DB storage**

* select the appropriate API for your solution
* implement partitioning schemes
* interact with data using the appropriate SDK
* set the appropriate consistency level for operations
* create Cosmos DB containers

**Develop solutions that use blob storage**

* move items in Blob storage between storage accounts or containers
* set and retrieve properties and metadata
* interact with data using the appropriate SDK
* implement data archiving and retention

**Implement Azure security (15-20%)**

**Implement user authentication and authorization**

* implement OAuth2 authentication
* create and implement shared access signatures
* register apps and use Azure Active Directory to authenticate users

**Implement secure cloud solutions**

* secure app configuration data by using the App Configuration and KeyVault API
* manage keys, secrets, and certificates by using the KeyVault API
* implement Managed Identities for Azure resources

**Monitor, troubleshoot, and optimize Azure solutions (10-15%)**

**Integrate caching and content delivery within solutions**

* develop code to implement CDN’s in solutions
* configure cache and expiration policies
* store and retrieve data in Azure Redis cache

**Instrument solutions to support monitoring and logging**

* configure instrumentation in an app or service by using Application Insights
* analyze and troubleshoot solutions by using Azure Monitor
* implement Application Insights Web Test and Alerts
* implement code that handles transient faults

**Connect to and consume Azure services and third-party services (20-25%)**

**Develop an App Service Logic App**

* create a Logic App
* create a custom connector for Logic Apps
* create a custom template for Logic Apps

**Implement API management**

* create an APIM instance
* configure authentication for APIs
* define policies for APIs

**Develop event-based solutions**

* implement solutions that use Azure Event Grid
* implement solutions that use Azure Notification Hubs
* implement solutions that use Azure Event Hub

**Develop message-based solutions**

* implement solutions that use Azure Service Bus
* implement solutions that use Azure Queue Storage queues

1. **Compute**
2. **IaaS**
3. **Provision VM**

What is a VM?

It is a machine on cloud, it can be used as a Web Server or App Server.

You can choose from thousands of images of any operating system that you wish to run on your VM such as Linux, Windows and the size you need.

Install whatever software you needed for your application to support

And host your web applications.

You can set it up in a few clicks, very quickly and remove it if you no longer need it and pay for what you have used.

Use case: When you need full control of the application’s infrastructure.

What is your responsibility and what is not?

You can create a VM from the azure portal, Azure CLI or Power shell.

Settings:

Basic:

Resource Group: a logical name to group two or more resources

Region/Location: example East us

Availability Options:

Image: example win2016datacenter

You can browse public and private templates.

Azure Sport Instances:

Size:

Admin account:

Authentication type: SSH Key or Password

User name:

Key pair name:

Inbound port rule:

Public inbound ports: Selected ports

Select inbound ports: SSH (22)

Disks:

OS disks: Premium SSD

Encryption type:

Data disks:

Use managed disk:

Network:

Virtual Network (VNet):

Subnet:

Network Security Group (NSG):

Network Interface Card (NIC):

Public IP:

Load balancing:

Monitoring:

Boot diagnostics:

OS guest diagnostics:

Identity:

Auto shutdown

Backup:

**Practice:** Install IIS on VM using Power shell command prompt

1. **ARM Templates**

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/overview>

Main sections:

* Schema
* contentVersion
* apiProfile
* parameters
* variables
* functions
* resources
* outputs

1. **Web Apps**
2. **Functions**