**Fundamentals for Microsoft Azure**

1. cloud concepts
2. core azure services
3. security privacy, compliance and trust
4. pricing and support

**questions for certification**

* understanding cloud concepts-15-20%
* understanding core azure services-30-35%
* understand security, privacy, compliance and trust-25-30%
* understand azure pricing support- 25-30%

**Module 01:cloud concepts**

course objectives

* describe and understand cloud services and their benefits
* understand key terms and you will encounter

why cloud services?

* Gives you computing power
* gives you storage- through db and files
* networking-secure connectivity
* Analytics- such as data visualization, t elementary and performance data

key concepts under clouding

* High availability
* Scalability- able to increase with demand and decrease with reduced demand
* Global reach
* Agility- you can access your services when you need it
* Disaster recovery
* Fault tolerance
* Elasticity- able to expand
* customer latency capabilities-
* predictive cost considerations
* security

**Economies of scale**

Microsoft Azure gives you more services at a reduced cost, as compared to setting up your own data centers.

**CapEx vs. OpEX**

* Capital Expenditure(CapEx

-spend on physical infrastructure upfront

-Deduct the expense from your tax bill

-High upfront cost, value of investment reduces over time

* Operational Expenditure(OpEx)

-Spend on services or products as needed

-Get billed immediately

-Deduct the expense from your tax bill in the same year.

-No upfront cost, pay-as-you use.

Azure is a consumption based model.

* No upfront costs
* No need to purchase and manage costly infrastructure
* Ability to pay for additional resources as they are needed
* Ability to stop paying for resources that are no longer needed

**Types of cloud Models**

1. Public clouds
   * Owned by cloud services or hosting providers
   * provides resources and services
2. private cloud

* owned and operated by the organization that uses cloud resources
* Hybrid cloud- combines both public and private clouds to allow applications to run in the most appropriate location
* Infrastructure as a service

services

* Data and Access
* Applications
* Runtime
* Operating Systems
* Virtual Machine
* Compute
* Networking
* Storage

Platform as a a service

1. provide environment to building, testing and deploying software applications
2. Helps create applications quickly without focusing on managing underlying infrastructure

Software as a service(Saas)

* centrally hosted and managed software

Iaas

* flexible to configure

**Module 2: Core Azure Services**

**Regions**

* A region represent a collection of data centers
* provide flexibility and scale
* preserves data residency
* Select religions close to your users
* be aware of region deployment availability
* There are global services that region independent.
* Region pairs- does replication of regions for redundancy purposes. The paired regions should be members from the same geographical location except Brazil.
* Geographies-Discrete markets that preserve data residency and compliance boundaries. Contain two or more regions. Helps to determine region prices depending on taxes, cost of maintenance and labor

1. Availability options
2. Availability sets-keep applications online during maintenance or hardware failure.
   * Update domains(UD): Scheduled maintenance, performance or security updates are sequenced through update domain
   * Fault Domains(FD): Provide physical separation of workloads across different hardware in a data center.
3. Availability Zones
4. Resource Groups-containers for multiple resources that share the same life cycle. It aggregates resources into a single manageable unit. It is secured using role based access control(RBAC)
5. Azure Resource Manager- provide a management layer that enables you to create, update and delete resources in your Azure Subscription. Create, Configure, manage and delete resources and resource groups. Organize resources. Control access and resources. Automate using different tools and SDKs.

**Lesson3: Core Azure services and products**

Azure compute- resources that allow you to compute work. It is on demand computing service for running cloud-based

they include Azure VM, VM scale, APP SERVICES

Container services- they a virtualization environment. They do not manage OS like virtual machines. They are light weight and they are designed to be created, scaled out(creating more instances of it) and stopped dynamically. They include Azure Container Instances and Azure Kubernetes Service.

Azure network services- enables you to communicate with Azure resources.

* Azure Virtual Network- provides a secure communication between Azure resources
* Azure Load Balancer- automatically scales to create highly-available access to application on resources
* VPN Gateway- is a platform managed scalable and highly available application delivery controller
* Azure Application Gateway- provides for the management of traffic to web applications
* Content Delivery Network- provides a distributed network of servers that efficiently deliver web content in their local region.

**Azure data categories**

|  |  |  |  |
| --- | --- | --- | --- |
|  | schema | Data relationship | Example |
| Structured data |  |  | Sensor data and financial data |
| Semi-structured data |  |  | Books, blogs, JSON, HTML |
| Unstructured data |  |  | PDFs, JPGs, Videos |

**Azure storage services**

1. IaaS
2. Paas

**Azure Database services**

1. Azure Cosmos DB
2. Azure SQL Database
3. Azure Database Migration

**Azure Marketplace**

* connects end user with Microsoft partners, Independent software vendors(ISVs) and start-ups that offer solutions and services fro Azure
* Azure customers, IT professionals and cloud developers can find, try, purchase and provisions Azure applications

**Lesson4: Azure solutions**

**internet of Things**

* Azure IoT Central
* Azure IoT Hub

**Big data analytics**

* Azure SQL Data Warehouse
* Azure HDInsight
* Azure Data Lake Analytics

**Artificial Intelligence**

* Azure Machine learning service
* Azure Machine Learning Studio

**Serverless computing-**works by only starting server services when only then need it

* Azure Functions-requires coding
* Azure Logic Apps-uses developed apps
* Azure Event Grid

**DevOPs**

* Azure DevOPs services
* Azure DevTest Labs

**Azure App Service**

Quickly and easily build web and mobile apps for any platform or device

* Multiple languages and frameworks
* DevOPs optimization

Azure management tools

* Azure portal
* azure powersell
* Azure Cloud shell
* Azure mobile app
* Azure REST API
* Azure SDK

**Azure Security**

* shared security

the customer has the reposnibility to protect themselves on premises while on SaaS the customer is only responsible for Data governance, clients end point and Account access management