Azure Fundamentals (AZ - 900)

Manjunath Prasad Holenarasipura Rajiv

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Chapter 1

Describe Cloud Concepts

1.1 Describe Cloud Computing

1.1.1 Introduction to Cloud Computing

- Cloud Computing is a delivery of computing services over the internet

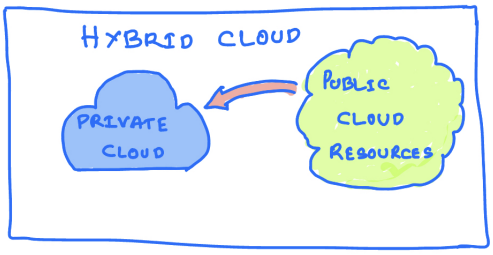
1.1.2 Shared Responsibility Model

- Cloud Provider Responsibility
  - Physical Security
  - Power
  - Cooling
  - Network Connectivity
- Consumer Responsibility
  - Data and Information stored in the cloud
  - Devices
  - Acccounts and Identities
  - Access Security – Give access to those who need it

1.1.3 Cloud Models

- Private Cloud
  - Used by single entity
  - Provides more control
  - Greater cost and fewer benefits of public Cloud
  - It can be hosted from onsite or offsite data center
- Public Cloud
  - Built, controlled and maintained by third party cloud Provider
  - Purchase and access cloud resources
- Hybrid Cloud

- Uses both private and public clouds in an inter − connected environment
- Allow a private cloud to surge for increased, temporary demand by deploying public cloud resources



- Multi Cloud
  - Multiple cloud providers are used.
- Azure Arc
  - Azure arc is a set of technologies helps to mange cloud environment.

1.1.4 Consumption-based Model

- Types of Expenses
  - Capital Expense (CapEx) is one-time up-front expenditure to purchase resources.
  - Operation Expense (OpEx) is spending over time for resources. Cloud Computing is OpEx and pay-as-you-go model.

1.2 Describe Benefits of Cloud Computing

1.2.1 Describe the benefits of Availability and Scalability in the cloud

- High Availability
  - High availability focuses on ensuring maximum availability, regardless of disruptions or events that may occur.
- Scalability
  - Scalability refers to the ability to adjust resources to meet demand. The ability to scale means you can add more resources to better handle the increased demand.
  - **Vertical Scalability** − With vertical scaling, if you were developing an app and you needed more processing power, you could vertically scale up to add more CPUs or RAM to the virtual machine. Conversely, if you realized you had over-specified the needs, you could vertically scale down by lowering the CPU or RAM specifications.
  - **Horizontal Scalability** − With horizontal scaling, if you suddenly experienced a steep jump in demand, your deployed resources could be scaled out.

1.2.2 Describe the benefits of reliability and predictability in the cloud

- Reliability
  - Reliability is the ability of a system to recover from failures and continue to function.
- Predictability
  - Predictability can be focused on performance predictability or cost predictability
  - Cost predictability is focused on predicting or forecasting the cost of the cloud spend.
  - Performance predictability focuses on predicting the resources needed to deliver a positive experience for your customers.

1.2.3 Describe the benefits of security and governance in the cloud

- Security – Find a cloud solution that matches your security needs.
- Governance – By establishing a good governance footprint early, you can keep your cloud footprint updated, secure, and well managed.

1.2.4 Describe the benefits of manageability in the cloud

- Management of the cloud
  - Automatically scale resource deployment based on need.
  - Deploy resources based on a preconfigured template, removing the need for manual configuration.
  - Monitor the health of resources and automatically replace failing resources.
  - Receive automatic alerts based on configured metrics, so you're aware of performance in real time.
- Management in the cloud
  - Through a web portal.
  - Using a command line interface.
  - Using APIs.
  - Using PowerShell.

1.3 Describe cloud service types

1.3.1 Describe Infrastructure as a Service

- Provides you the maximum amount of control for your cloud resources
- The cloud provider is responsible for maintaining the physical infrastructure and its access to the internet. You're responsible for installation and configuration, patching and updates, and security.
- Scenarios

- Lift-and-shift migration: You're standing up cloud resources similar to your on-prem datacenter, and then simply moving the things running on-prem to running on the IaaS infrastructure.
- Testing and development: You have established configurations for development and test environments that you need to rapidly replicate. You can stand up or shut down the different environments rapidly with an IaaS structure, while maintaining complete control.

1.3.2 Describe Platform as a Service

- In a PaaS environment, the cloud provider maintains the physical infrastructure, physical security, and connection to the internet.
- They also maintain the operating systems, middleware, development tools, and business intelligence services that make up a cloud solution.
- The cloud provider is responsible for maintaining the physical infrastructure and its access to the internet, just like in IaaS.
- In the PaaS model, the cloud provider will also maintain the operating systems, databases, and development tools.
- Scenarios
  - Development framework: PaaS provides a framework that developers can build upon to develop or customize cloud-based applications.
  - Analytics or business intelligence: Tools provided as a service with PaaS allow organizations to analyze and mine their data, finding insights and patterns and predicting outcomes to improve forecasting, product design decisions, investment returns, and other business decisions.

1.3.3 Describe Software as a Service

- Software as a service (SaaS) is the most complete cloud service model from a product perspective.
- SaaS is the model that places the most responsibility with the cloud provider and the least responsibility with the user.
- In a SaaS environment you're responsible for the data that you put into the system, the devices that you allow to connect to the system, and the users that have access. Nearly everything else falls to the cloud provider.
- The cloud provider is responsible for physical security of the datacenters, power, network connectivity, and application development and patching.
- Scenarios
  - Email and messaging.
  - Business productivity applications.
  - Finance and expense tracking.

Chapter 2

Describe Azure Architecture and Services

2.1

Chapter 3

Describe Azure Management and Governance

3.1

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