**Azure Class 1 Notes**

1. What is Azure?

* **Simple Definition**: Azure is Microsoft's cloud computing platform.
* **Uses**: It's used for building, testing, and managing applications and services through a global network of Microsoft-managed data centers.
* **For AZ-900**: Know that Azure is a comprehensive and flexible cloud platform offering a variety of services.

Key Concepts for Beginners

* **Cloud Computing**: Using remote servers on the internet to store, manage, and process data, instead of local servers or personal computers.
* **Scalability**: Easily scale resources up or down based on demand.
* **Global Reach**: Azure operates data centers worldwide for high availability.

Azure Service Models (AZ-900)

1. **Infrastructure as a Service (IaaS)**: Renting IT infrastructure like virtual machines and storage on a pay-as-you-use basis.
2. **Platform as a Service (PaaS)**: Using a platform to develop or host applications without worrying about underlying infrastructure.
3. **Software as a Service (SaaS)**: Using software applications over the internet on a subscription basis.

Getting Started with Azure

* **Azure Free Account**:
  + New users get a $200 USD credit and free access to popular services for 12 months.
  + Sign up with a Microsoft account and provide payment details for verification (no charge unless you upgrade).
* **Subscriptions and Resource Groups**:
  + **Subscription**: A billing unit. All Azure services are billed under a subscription.
  + **Resource Group**: A container that holds related resources for an Azure solution, like virtual machines or databases.

AZ-900 Relevance

* Understand basic Azure concepts, like what cloud computing is, the types of cloud services Azure offers, and how to start using Azure.
* Know the difference between IaaS, PaaS, and SaaS.
* Familiarize with Azure subscription and resource group concepts.

## Dividing Azure Services Among IaaS, PaaS, and SaaS

### Infrastructure as a Service (IaaS)

* **Compute Services**:
  + Azure Virtual Machines (VMs): Virtualized computing resources.
  + Azure Kubernetes Service (AKS): Manages containerized applications.
  + Azure Container Instances (ACI): Run containers without managing servers.
* **Networking Services**:
  + Azure Virtual Network: Isolates and segments network traffic.
  + Azure Load Balancer: Balances inbound and outbound connections.
  + Azure VPN Gateway: Connects Azure virtual networks to on-premises networks.
  + Azure Content Delivery Network (CDN): Delivers high-bandwidth content.
* **Storage Services**:
  + Azure Blob Storage: For storing large amounts of unstructured data.
  + Azure File Storage: Managed file shares.
  + Azure Queue Storage: Store and retrieve messages.
  + Azure Disk Storage: High-performance disk storage.
* **Management and Governance Tools**:
  + Azure Resource Manager: Manage and organize Azure resources.
  + Azure PowerShell and Azure CLI: Command-line tools for Azure management.

### Platform as a Service (PaaS)

* **Compute Services**:
  + Azure App Services: Building, deploying, and scaling web apps and APIs.
  + Azure Functions: Serverless computing service for running event-triggered code.
* **Networking Services**:
  + Azure Application Gateway: Load balancer for web traffic.
* **Database Services**:
  + Azure SQL Database: Fully-managed SQL database service.
  + Azure Cosmos DB: Globally distributed database service.
  + Azure Database for MySQL, PostgreSQL, MariaDB: Managed database services for MySQL, PostgreSQL, and MariaDB.
* **Management and Governance Tools**:
  + Azure Monitor: Provides full-stack monitoring.
  + Azure Advisor: Personalized cloud consultant.

Software as a Service (SaaS)

* **Identity Services**:
  + Azure Active Directory (Azure AD): Cloud-based identity and access management service.
  + Azure Multi-Factor Authentication: Additional security for verifying user sign-ins.

Cross-Cutting Services

Some services cross the boundaries between IaaS, PaaS, and SaaS:

* **Azure Portal**: Access and manage all Azure services and applications.
* **Azure Policy**: Create, assign, and manage policies to enforce compliance.
* **Azure Advisor**: Provides personalized recommendations for optimizing Azure deployments.

This categorization aligns the Azure services with the IaaS, PaaS, and SaaS models, making it easier to understand their functions and relevance, especially for the AZ-900 exam. Remember, the categorization can be fluid as some services might offer features of more than one model.

**Pro Tips:**

**IaaS (Infrastructure as a Service)**

* **Key Idea**: Basic building blocks for cloud IT, provides the infrastructure.
* **Shortcut**: Think of traditional hardware (servers, storage, networking) made available virtually. If you are managing the OS, then it's likely IaaS.
* **Examples**: Azure Virtual Machines, Azure Kubernetes Service (AKS), Azure Virtual Network.

**PaaS (Platform as a Service)**

* **Key Idea**: Higher-level service, abstracts and manages infrastructure.
* **Shortcut**: If it simplifies your development by managing infrastructure and allowing you to focus just on the code and deployment, it's PaaS.
* **Examples**: Azure App Services, Azure SQL Database, Azure Functions.

**SaaS (Software as a Service)**

* **Key Idea**: Software available over the internet.
* **Shortcut**: If it's a complete software solution that you simply use via a web browser or app without worrying about any backend, it’s SaaS.
* **Examples**: Azure Active Directory, Office 365.

**Quick Tips to Differentiate**

1. **Level of Control**: More control over the environment (like managing your own OS and network) leans towards IaaS, while less control (focus only on your application or using software) indicates PaaS or SaaS.
2. **Usage Scenario**:
   * Need servers or storage? Likely IaaS.
   * Developing an app without worrying about OS or server? PaaS.
   * Just using software online? SaaS.
3. **Responsibility**: Who is responsible for what?
   * IaaS: You manage the most (OS, middleware, runtime).
   * PaaS: Provider manages more (you care only about the application and data).
   * SaaS: Provider manages everything, you just use the software.