Workshop on Cloud Computing

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Agenda

1

Cloud Computing Fundamentals

Understand the core concepts of cloud computing.

2

Getting Started with Azure

Create your Azure account, explore Subscriptions and Resource Groups.

3

Virtual Machines in Azure

Learn to deploy, access, and manage VMs. Host web pages and applications.

4

Azure Services in Action

Work with MySQL databases, BLOB storage, and Azure App Services.

5

Hands-On Lab & Q&A

Apply your knowledge in guided practice sessions and get your questions answered.

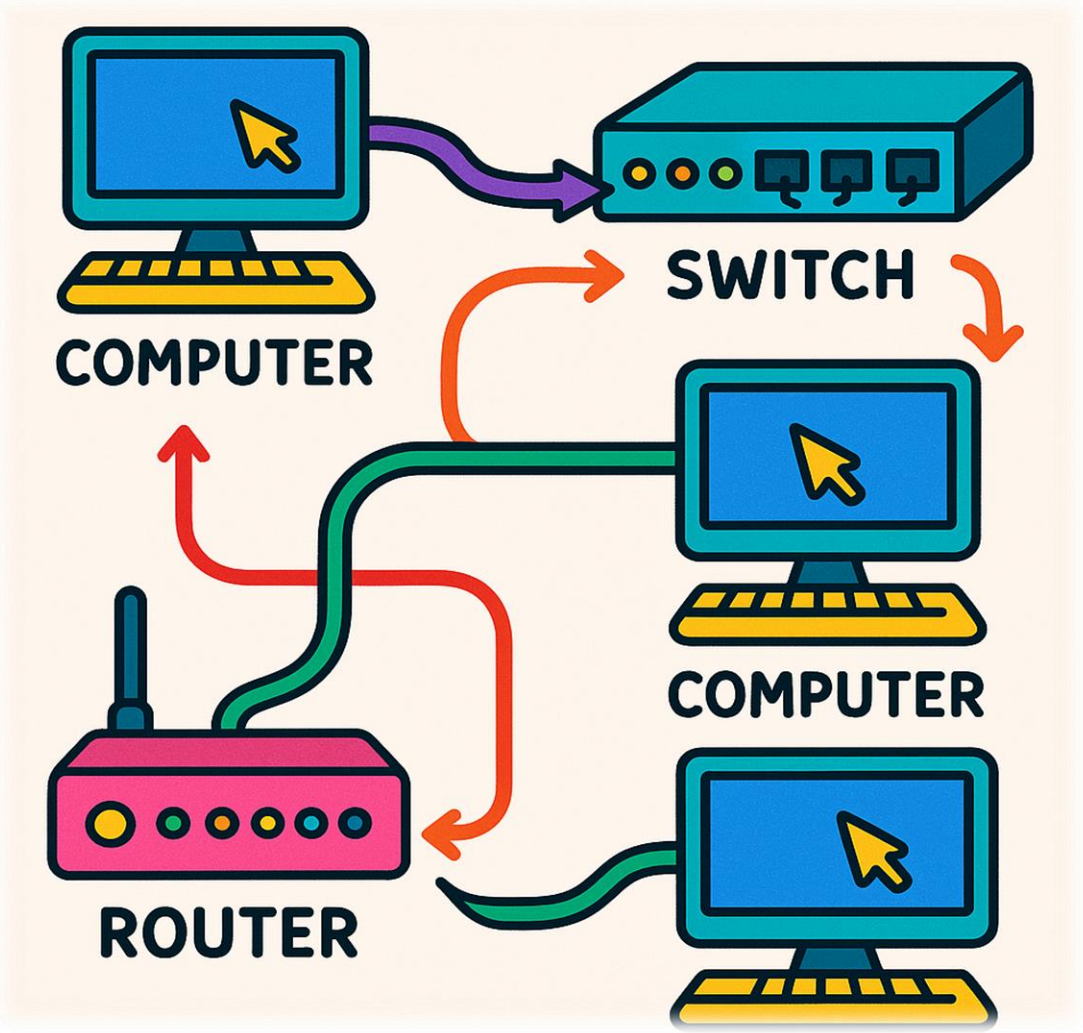
1

Network (N/w)

Network

A network is a system of interconnected devices that can communicate and share resources with each other.

Think of it like a group of friends passing notes to each other — each person (device) is connected and can send or receive messages.



Internet

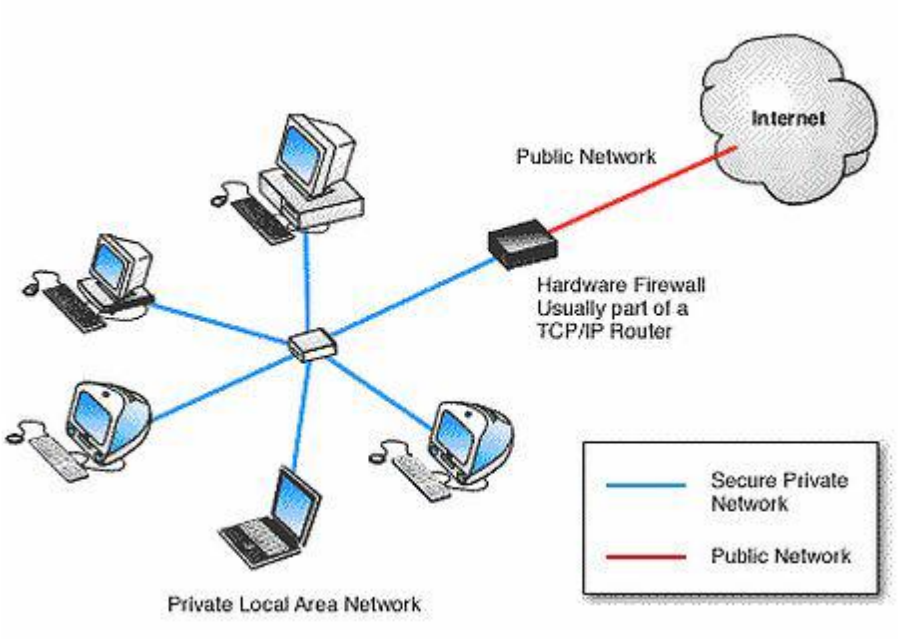
WAN (Wide Area Network)

WAN (Wide Area Network) is a type of computer network that covers a large geographic area, such as a city, country, or even the entire world.

Internet is a global network that connects millions of computers and devices, allowing them to communicate, share information, and access websites and services from anywhere in the world.

How to access device Globally ?

From Anywhere to Everywhere — Stay Connected



- Public IP Address
- Domain (www.example.com)
- Port Forwarding
- Dynamic DNS (DDNS)

What is a Server ?

A server is a computer or system that provides resources, services, or data to other computers, called clients, over a network.

Common Types of Servers

Web Server – Delivers websites (like Google, YouTube)
File Server – Stores and shares files
Database Server – Handles data storage and queries
Mail Server – Sends and receives emails

What's our approach to maintaining the server?

Physically

- At home
- At office
- At College
- At Hospitals

Virtually

- Virtually manage from Service Provider

Service Providers

Shared Services

- GoDaddy
- Bluehost
- DreamHost
- Hostinger
- Hostwinds
- IONOS

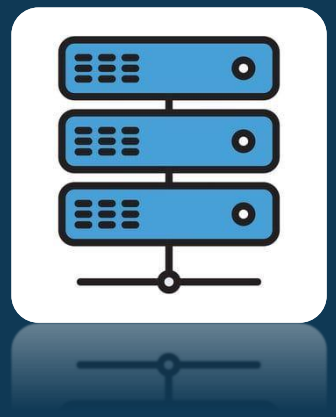
Cloud Services

- Azure
- AWS
- GCP
- Adobe
- Salesforce
- IBM
- Alibaba
- DigitalOcean

What is Cloud Computing ?

Cloud computing is the delivery of computing services—like servers, storage, databases, networking, software, and more—over the Internet ("the cloud") instead of your local computer or personal data center.

Servers



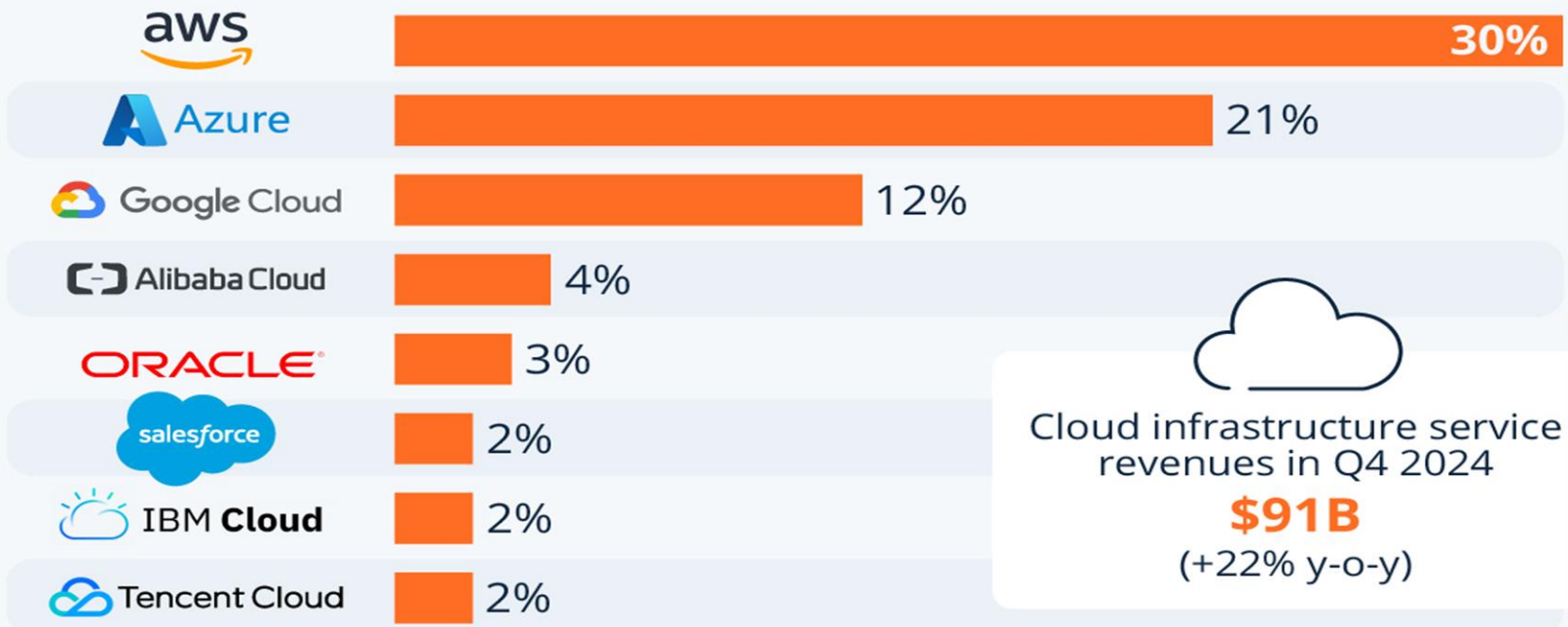
Storage

Databases

Networking

Amazon and Microsoft Stay Ahead in Global Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q4 2024*



Cloud infrastructure service revenues in Q4 2024

$91B

(+22% y-o-y)

* Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Synergy Research Group

statista

What is Azure ?

What is Azure ?

Microsoft Cloud Platform

Microsoft Azure is a cloud computing platform created by Microsoft. It provides a wide range of services that help individuals and businesses build, deploy, and manage applications through Microsoft's global network of data centers.

Think of Azure as:

A massive online toolbox where you can rent computing power, storage, databases, and more—without needing to own physical servers.

Key Features of Azure

1

Compute

Run virtual machines, containers, and apps

2

Storage

Save files, databases, and backups securely

3

Networking

Connect services and users across the globe

4

AI & Machine Learning

Build intelligent apps with built-in tools.

5

Security

Protect data with enterprise-grade security and compliance.

Key Features of Azure

Real-World Example:

A retail company uses Azure to host its website, store customer data, and analyze shopping trends using AI—all without owning a single physical server.

1. **Compute**
   Run virtual machines, containers, and apps
2. **Storage**
   Save files, databases, and backups securely
3. **Networking**
   Connect services and users across the globe
4. **AI & Machine Learning**
   Build intelligent apps with built-in tools.
5. **Security**
   Protect data with enterprise-grade security and compliance.


Developer Services
Visual Studio Team Services
Azure DevTest Labs
VS Application Insights*
HockeyApp
Developer Tools
Management & Security
Azure Portal
Scheduler
Operations Management Suite
Automation
Log Analytics
Key Vault
Security Center*
Compute
Virtual Machines
Virtual Machine Scale Sets
Cloud Services
Batch
RemoteApp
Service Fabric
Azure Container Service
Web & Mobile
Web Apps
Mobile Apps
Logic Apps*
API Apps
API Management
Notification Hubs
Mobile Engagement
Functions*
Data & Storage
SQL Database
DocumentDB
Redis Cache
Storage: Blobs, Tables, Queues, Files and Disks
StorSimple
Search
SQL Data Warehouse*
SQL Server Stretch Database
Analytics
Data Lake Analytics*
Data Lake Store*
HDInsight
Machine Learning
Stream Analytics
Data Factory
Data Catalog
Power BI Embedded*
Internet of Things & Intelligence
Azure IoT Suite
Azure IoT Hub
Event Hubs
Cortana Intelligence Suite
Cognitive Services*
Media & CDN
Media Services
Content Delivery Network
Identity & Access Management
Azure Active Directory
B2C*
Domain Services*
Multi-Factor Authentication
Hybrid Integration
BizTalk Services
Service Bus
Backup
Site Recovery
Networking
Virtual Network
ExpressRoute
Traffic Manager
Load Balancer
Azure DNS*
VPN Gateway
Application Gateway

aws	Azure	Google Cloud
Elastic Compute Cloud (EC2)	Virtual Machine	Compute Engine
Elastic Kubernetes Service (EKS)	Azure Kubernetes Service (AKS)	Google Kubernetes Engine (GKE)
Lambda	Azure Functions	Cloud Functions
Simple Storage Service (S3)	Blob Storage	Cloud Storage
Virtual Private Cloud	Virtual Network	Virtual Private Cloud
RDS	SQL Database	Cloud SQL
DynamoDB	Cosmos DB	Firebase Realtime Database
Simple Notification Service	Service Bus	Firebase Cloud Messaging
CloudWatch	Monitor	Cloud Monitoring
CloudFormation	Resource Manager	Deployment Manager
IAM	Active Directory	Cloud Identity
KMS	Key Vault	Cloud KMS

Bootcamp Objective

Virtual Machine

Blob Storage

SQL Databases

App Services

Bootcamp
Use case

Steps : 1 → 2 → 3

Getting Started with Azure

2

Azure for Students – Free Account Credit

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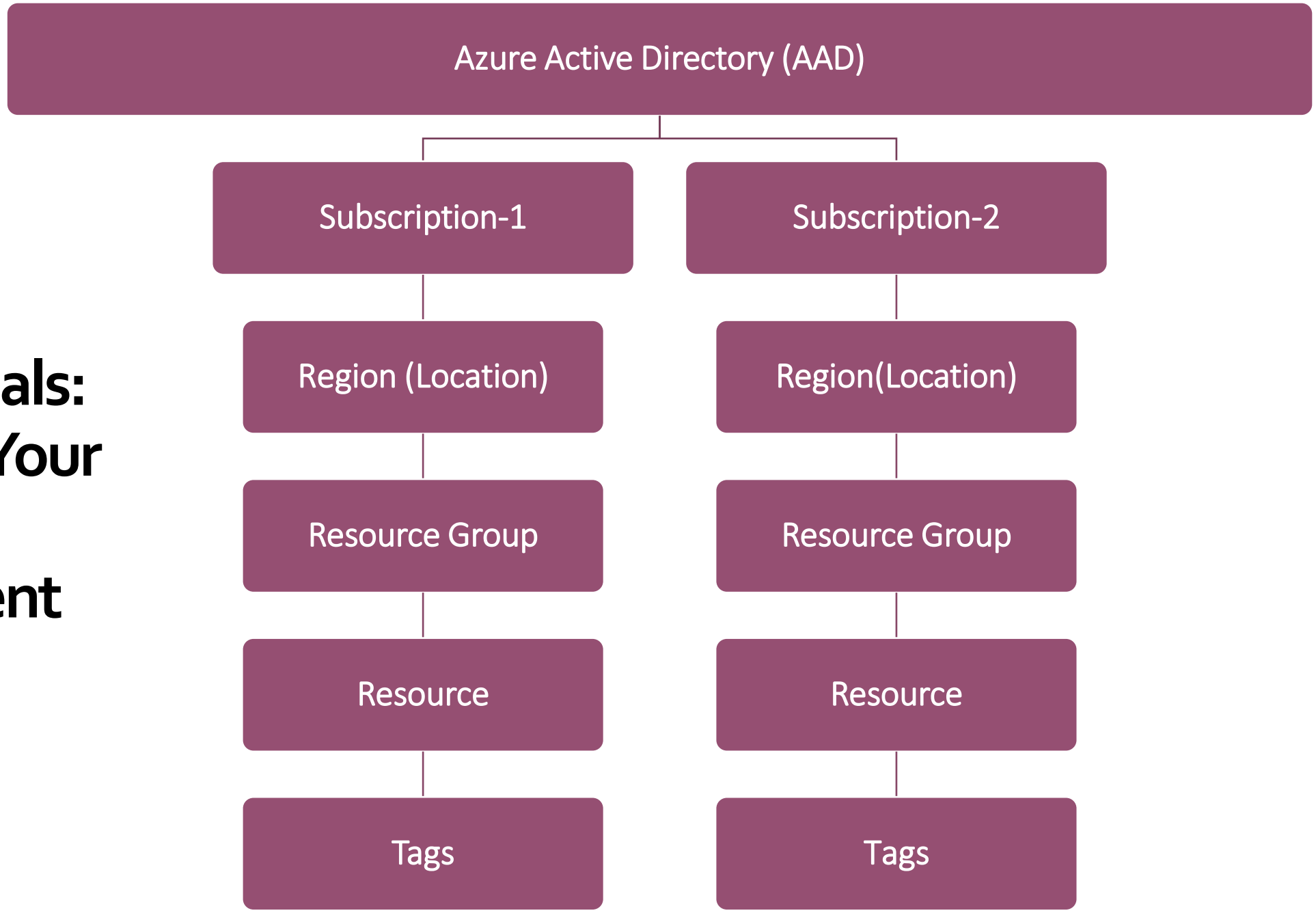
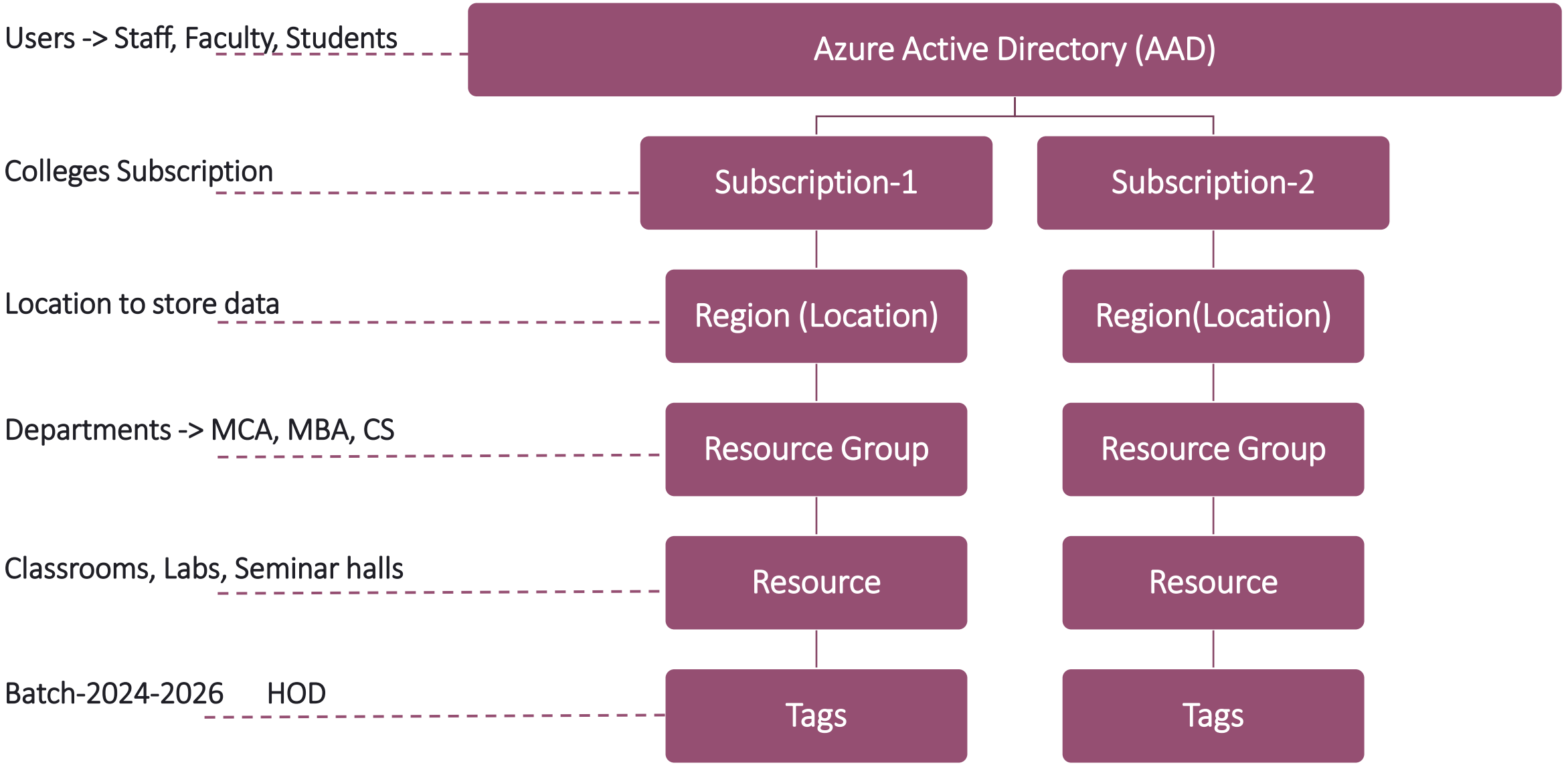
https://github.com/mcasit/mcasit.github.io/blob/main/AZURE/1.AZURE_FOR_STUDENTS_FREE_ACCOUNT_CREDIT.pdf

Azure Fundamentals: Structuring Your Cloud Environment




Users -> Staff, Faculty, Students
Azure Active Directory (AAD)
Colleges Subscription
Subscription-1
Subscription-2
Location to store data
Region (Location)
Region(Location)
Departments -> MCA, MBA, CS
Resource Group
Resource Group
Classrooms, Labs, Seminar halls
Resource
Resource
Batch-2024-2026 HOD
Tags
Tags

Organize your Azure Resources Effectively

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https://github.com/mcasit/mcasit.github.io/blob/main/AZURE/2.AZURE_SUBSCRIPTION_RESOURCES.pdf

Virtual Machines

3

Virtual Machines

Azure Virtual Machine (VM) is a cloud-based computing service that provides on-demand, scalable computing resources in Microsoft's Azure cloud platform.

Virtual machines allow you to run applications and operating systems in a virtualized environment without the need for physical hardware.

Key Benefits:

- **Cost-effective** Pay only for the resources you use
- **Scalable** Easily increase or decrease computing power as needed
- **Flexible** Choose from various operating systems (Windows, Linux distributions)
- **Accessible** Connect from anywhere with internet access
- **Managed** Azure handles the underlying infrastructure maintenance

Azure VMs are ideal for development, testing, hosting applications, and learning cloud technologies.

VM for Workshop

In this lab, we'll create both Ubuntu (Linux) and Windows virtual machines to demonstrate different use cases and connection methods.

Windows

Ubuntu

Virtual Machine

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https://github.com/mcasit/mcasit.github.io/blob/main/AZURE/3.AZURE_VIRTUAL_MACHINE.pdf

Database

4

Azure Databases

Azure offers a wide range of database services tailored for different needs—whether you're building web apps, enterprise systems, or analytics platforms. Here's a quick overview of the main types of Azure Databases.

1. Relational

- Azure SQL (SQL Server) Database
- Azure Database for PostgreSQL
- Azure Database for MySQL
- Azure Database for MariaDB
- Oracle Database@Azure

2. Non-Relational

- Azure Cosmos DB
- MongoDB
- Azure Table Storage

3. Data Warehouse

- Azure Synapse Analytics

Azure Database for MySQL

The world's most popular open-source database

Azure Database for MySQL is a fully managed relational database service based on the open-source MySQL Community Edition. It handles maintenance, backups, scaling, and security—so you can focus on building your applications.

- Key Features:
- ✅ **Managed Service**: No need to manage infrastructure or updates.
- 🔐 **Built-in Security**: Data encryption at rest and in transit.
- 📈 **Scalability**: Scale compute and storage independently.
- ♻️ **High Availability**: Automatic failover and backups.
- 💡 **Flexible Pricing**: Pay-as-you-go or reserved capacity.

Azure Database for MySQL

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https://github.com/mcasit/mcasit.github.io/blob/main/AZURE/4.AZURE_DATABASES.pdf

Azure Storage

5

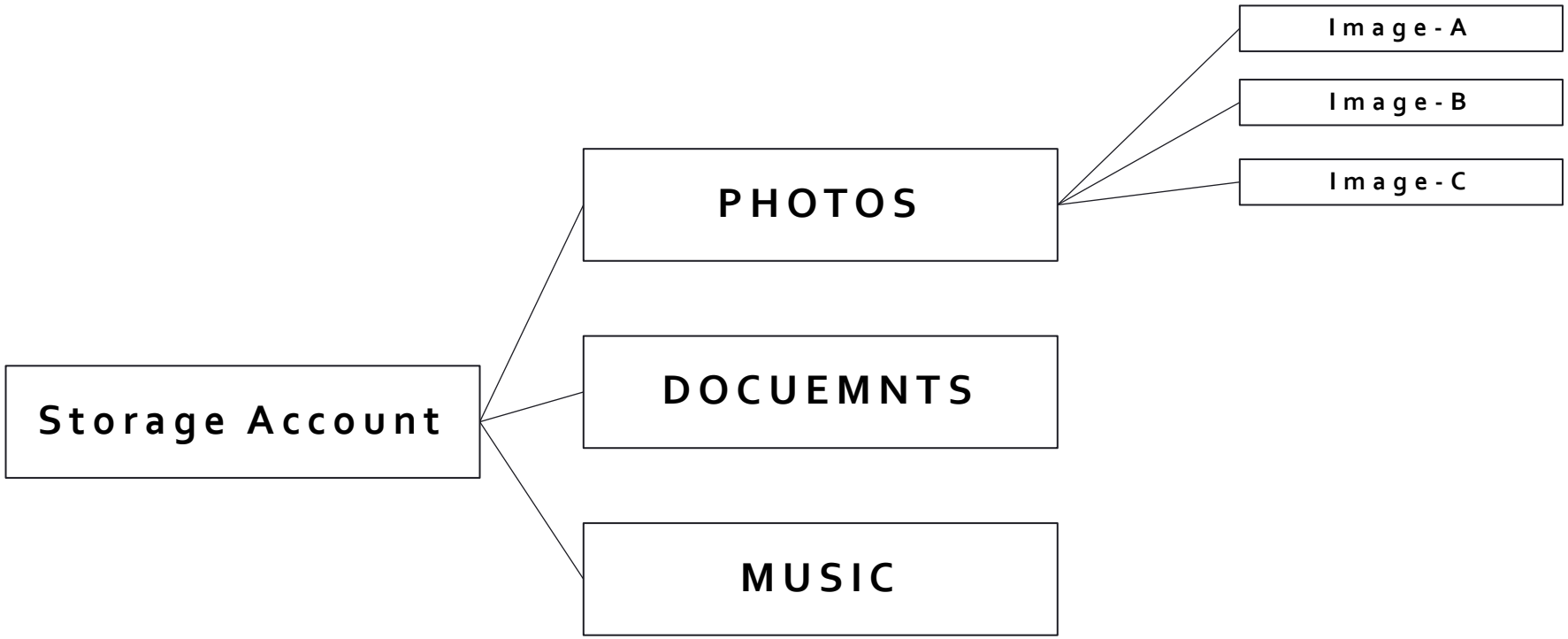
Azure Storage

- Azure Storage Account acts as a unique container within Azure, allowing you to store several types of data such as blobs, files, queues, and tables.

- It serves as a core building block for managing both structured and unstructured data—ensuring secure, durable, and scalable access.

Types of Storage:

1. Blob Storage
2. File Storage
3. Queue Storage
4. Table Storage



Storage Account

Container

BLOB

Azure Storage BLOB

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https://github.com/mcasit/mcasit.github.io/blob/main/AZURE/5.AZURE_STORAGE_BLOB.pdf

Thank you!

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