MODULE 1: Cloud Concepts

1. Introduction to cloud computing
2. Advantages of cloud computing
3. Introduction to amazon web services
4. Moving to the AWS Cloud AWS-Cloud Adoption Framework

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https://docs.aws.amazon.com

https://aws.amazon.com/whitepapers

1. Introduction to cloud computing

Cloud Computing: On demand delivery of compute power, database, storage, application and other IT resources via the internet with pay as you go model.

Infrastructure as Software: Cloud computing enables you to stop thinking of your infrastructure as hardware and instead think of it as software.

Traditional Computing Model

Infrastructure as Hardware

- ➔ It requires space
- ➔ Staff
- ➔ Physical Security
- ➔ Planning
- ➔ Capital Expenditure
- ➔ It requires estimation of resources such as capacity etc.

Infrastructure as Software

- ➔ Softwares are flexible
- ➔ Can change more quickly, easily and cost effectively than hardware solutions
- ➔ It eliminates the undifferentiated heavy lifting tasks

Cloud Service Model

- ➔ IaaS: control of IT resources (EC2)
- ➔ SaaS
- ➔ PaaS

Cloud Computing Deployment Models

- ➔ Cloud
- ➔ Hybrid
- ➔ On-premises (Private)

Similarities between Traditional IT and AWS

- ➔ **Security**
    a. **Traditional IT:** Firewall, ACLS, Administrators
    b. **AWS:** Security group, NACLS, IAM

➔ **Networking**
   a. **Traditional IT:** Routers, network pipeline, switch
   b. **AWS:** Elastic Load Balancing, Amazon Virtual Private Cloud

➔ **Compute**
   a. **Traditional IT:** on premises servers
   b. **AWS:** AMI -> EC2

➔ **Storage and Database**
   a. **Traditional IT:** Database Administration Server, Network-attached storage (NAS), storage area network (SAN), RDBMS
   b. **AWS:** EBS, EFS, S3, RDS

NOTE: Anything that you can implement with Traditional IT can be implemented with AWS as well.

2. Advantages of Cloud Computing

➔ Trade capital expense with variable expense (data centres investment based on forecast, pay only for the amount you consume)/opex
➔ Massive economies of scale (because of aggregated usage from all customers, AWS can achieve higher economies of scale and pass saving onto customers)
➔ Stop guessing capacity
➔ Increase Speed and Agility
➔ Stop spending money on running and maintaining data centres
➔ Go global in minutes

3. Introduction to AWS

➔ Web service is any piece of software that makes itself available over the internet and uses a standardised format. Its standardised format: Extensible markup language and Javascript object notation. But its response is in API format.
➔ AWS is a secure cloud format that offers a broad set of global cloud based products. AWS provides you with on demand access to compute storage network, database and other IT resources and management tools. It offers flexibility. It works like building blocks. You pay only for the individual service that you need for as long as you use them.

Categories of AWS services
➔ Analytics
➔ Applications integration
➔ AR-VR
➔ Blockchain
➔ Business Application
➔ Compute
➔ Cost management

- ➔ Customer engagement
- ➔ Database
- ➔ Developer tools
- ➔ End user computing
- ➔ Game tech
- ➔ IOT
- ➔ ML
- ➔ Management and governance
- ➔ Media services
- ➔ Migration and transfer
- ➔ Mobile
- ➔ Networking and content deliver
- ➔ Robotics
- ➔ Satellite
- ➔ Security Identity and compliance
- ➔ Storage

3 ways to interact with AWS

- ➔ SDK
- ➔ AWS CLI
- ➔ AWS Management Console

4. AWS Cloud Adoption Framework

- ➔ Provides guidance and best practises to help organisations build a comprehensive approach to cloud computing the organisations and throughout the IT Life Cycle to accelerate successful cloud adoption.
- ➔ Organised in 6 perspectives which consist of sets of capabilities.

1. **Business capabilities**
    - ➔ **Business:** we must ensure that IT is aligned with Business needs and that IT investment can be traced to demonstrable business results.
        a. IT finance
        b. IT strategies
        c. Benefits realisation
        d. Risk management
    - ➔ **People:** We must prioritise training, staffing, and organisational changes to build an agile organisation.
        a. Resource management
        b. Incentive management
        c. Career management
        d. Training management
        e. Organisational change management

    - ➔ **Governance:** We must ensure that skills and processes align IT strategy and goals with business strategy and goals so the organisation can maximise the business value of its IT investment and minimise business risks.
        a. Portfolio management

b. Program and project management
c. Business performance measurement
d. Licence management

2. **Technical capabilities**

➔ **Platform:** We must understand and communicate the nature of IT systems and their relationships. We must be able to describe the architecture of the target state environment in detail.

a. Compute provisioning
b. Network provisioning
c. Storage provisioning
d. Database provisioning
e. System and solutions architectures
f. Application development

➔ **Security:** We must ensure that the organisation meets its security objectives.

a. IAM
b. Detective Control
c. Infrastructure security
d. Data protection
e. Incident Response

➔ **Operation:** We align with and support the operations of the business and define how day to day and quarter to quarter the business will be conducted.

a. Service Monitoring
b. Application performance monitoring
c. Resource inventory management
d. Release management
e. Reporting and analytics
f. Disaster recovery
g. IT service catalogue