

## Cloud Computing Assignment 1

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- Ans 1 -
- ① On demand self service
  - ② Broad Network Access
  - ③ Resource Pooling and Rapid Elasticity

⇒ Cloud differs from Traditional on-premise :

- ① cost - pay only for the resources used
- ② Scalability - with minimal effort
- ③ Maintenance & Upgradation - managed by service providers to handle support.
- ④ Security & Reliability. - robust mechanisms and disaster recovery solutions.

⇒ I would prefer (SaaS)-Software as a Service which provides immediate access to functional, cost efficient tools and help startup focus on core business activities rather than IT.

- Ans 2 -
- ① publisher - entity that produces and sends real time updates.
  - ② Subscriber - entity that receive updates
  - ③ Message broker - receives message like RabbitMQ, AWS SNS, etc.

⇒ Steps to set up Publisher - Subscriber model -

- 1 - setting up publisher - create logic using JSON format over HTTP.
- 2 - setting up subscriber - display notification, UI.

3 - Setting up message broker - choose RabbitMQ, configure and ensure support.

4 - communication mechanism - message: JSON, protocol: HTTP, acknowledgments.

Ans 3 - Types of virtualization -

① CPU - allows multiple OS and applications to share single CPU by abstracting hardware. Eg - VMWare, KVM, etc.

② Memory - abstracts physical memory, allowing machines to share memory dynamically and distributed. Eg - ESXi, etc.

③ I/O - abstract physical network interfaces, storage devices and other I/O devices. Eg - NSX, Open vSwitch (OVS), etc.

⇒ Approach to implement them -

- ① Access current resource usage
- ② Select virtualization tools (from above)
- ③ Implement dynamic resource allocation
- ④ monitor and scale resources.

⇒ Benefits of virtualization -

- ① Increased utilization
- ② Reduce cost and scalability



Ans 4 — we should recommend Hybrid Cloud :

- ① High security — (a) Private cloud for sensitive data, (b) Public cloud for less sensitive operations
- ② Flexibility — (a) Dynamic workload, (b) Seamless integration
- ③ Cost efficiency — (a) Pay as you go model, (b) efficient resource allocation
- ④ Real world example : General Electric (GE)

⇒ Implementation steps :

- ① Assess workload requirements
- ② Choose cloud providers (AWS, Azure, etc.)
- ③ Design cloud architecture
- ④ Set up cloud interconnectivity
- ⑤ Monitor and optimize.

Ans 5 — ① Design SaaS implementation —

↳ (a) cloud storage selection

(Amazon S3)

(b) Storage class (S3 standard, Glacier).

(c) Integration with enterprise

② steps to migrate existing data to cloud —

↳ (a) Data assessment

(b) Choose data migration strategy (CLI)

(c) Data synchronization

### ③ Ensuring data security -

- ↳ (a) Encryption (SSE), (KMS)
- ↳ (b) Access control (IAM)
- ↳ (c) Data backup (CRR)

<u>Step</u>	<u>Description</u>
Data Assessment	categorize
Migration tool	AWS Snowball, CLI
Synchronisation	DataSync or rsync
Cutover	shift workload to S3
Security	SSE S3 or SSE KMS
Cost optimization	S3 intelligent tiering
Backup/Recovery	CRR
Monitoring	CloudTrail