


VIT

Vellore Institute of Technology
Advanced Learning and Research Institute
Final Assessment Test - November 2024

Course: SWE4002 - Cloud Computing

Slot: B2

Class NBR(s): 8110

Max. Marks: 100

Time: Three Hours

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

Answer ALL Questions

(10 X 10 = 100 Marks)

1. A non-profit organization wants to lower its IT expenses while giving its remote team members better access to its data and apps. They're thinking about implementing cloud computing. List out the main benefits in migrating to cloud environment? Discuss the potential risks in a cloud environment that the people should be aware of?
2. In order to organize its hybrid cloud strategy, a financial institution is looking to adapt NIST Cloud Computing Reference Architecture. Discuss the NIST-defined roles and components that apply to their hybrid cloud setup.
3. A mid-sized company is evaluating the total cost of ownership (TCO) between on-premise and cloud infrastructure for their growing IT needs over a period of 12, 24, and 36 months. They need a cost-efficient solution that factors in both up-front and ongoing costs. Below are the itemized costs for each option:

Itemized Monthly Costs	Up-Front (On-premise)	Up-Front (Cloud)	On-Going (On-premise)	On-Going (Cloud)
Data Center Space	\$5,000	\$0	\$200	\$0
Network Equipment	\$3,500	\$0	\$150	\$0
Servers	\$15,000	\$0	\$500	\$1,200
Storage	\$8,000	\$0	\$300	\$800
Security Software	\$2,000	\$0	\$100	\$0
Maintenance and Support	\$0	\$0	\$0	\$600
Backup Solution	\$4,000	\$0	\$150	\$300
Labor and Management	\$1,200	\$1,000	\$800	\$500
Performance Degradation	\$0	\$0	\$0	\$0

Calculate the total cost of ownership for both on-premise and cloud infrastructure over 12, 24, and 36 months. Based on your findings, recommend the most cost-effective solution for each usage period.

4. An Organization is looking for a cloud solution to serve its multiple users, requiring a storage capacity in the range of Terabytes, and also would like to have an infrastructure to deploy their applications. Suggest a cloud deployment model with justification.
5. There are performance problems with an e-commerce company's website during periods of high usage. Identify the type of virtualization that would address the performance problems, and how would you go about putting it into practice?
6. A broadcasting company intends to virtualize its production servers but is facing challenges with I/O performance during live broadcasts. What strategies could they employ to enhance I/O device virtualization and ensure uninterrupted service?
7. A startup with a tight budget and limited cloud management experience is deciding between Google App Engine, Amazon AWS, and Azure for deploying its first application. Considering their budget constraints and lack of expertise, which platform would you recommend? Additionally, what specific open-source tools could they leverage to streamline their development and deployment process?
8. A multinational financial services company operates in multiple regions worldwide and relies on different cloud providers (such as AWS, Google Cloud, and Azure) to meet regulatory, performance, and cost requirements. Each region has unique compliance standards, workload demands, and latency constraints. The company aims to implement an inter-cloud resource management system to ensure seamless workload distribution, minimize costs, and maintain high availability. How would you design an inter-cloud resource management strategy to address the company's regulatory, performance, and cost requirements across multiple regions and cloud providers? What techniques would you use to handle workload distribution, data synchronization, and security across these clouds, and what impact might this have on the company's disaster recovery and latency performance?
- 9.a) Workers are complaining about how hard it is to keep track of several authentication schemes for various cloud apps. Recommend a centralized identity management system to improve security and streamline the access control?

OR

- 9.b) Your application needs to store sensitive data, and you want to ensure that the data is encrypted at rest on EC2 instances. How can you enable the encryption? Explain the organization and features of Amazon EC2.

- 10.a) You discover that a third-party provider of cloud services has a history of security breaches during a standard risk review. What standards would you apply to determine whether to keep the collaboration going or not, and how would you handle risk management for the vendor?

OR

- 10.b) A client requires a scalable, cost-effective, and secure platform for their e-commerce application. They expect high user traffic during peak sales seasons. How would you approach resource provisioning on AWS/Azure to handle both normal and peak traffic loads? What deployment model would you suggest for optimal performance and reliability?

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