1) Public cloud vs private cloud for hosting mobile application.

→ Advantages of using a public cloud

- Cost effectiveness
- Scalability
- Maintenance free
- Global reach
- Advanced security features

♥ Disadvantages
- Shared resources
- Data security risk
- Limited customization

~ Advantages of using a private cloud
- Enhanced security
- Customization
- Predictable performance
- Compliance

~ Disadvantages
- High costs
- Limited scalability
- Management overhead

Thus a hybrid cloud approach might be the best solution. We can use public cloud for its scalability and cost effectiveness while hosting sensitive data and critical components in private

2. <u>Case Study</u> : Addressing connectivity issues and ensuring high availability

Root cause of connectivity issue

* Network organisation
- Insufficient resources
- Cloud provider outages
- Inefficient load distribution

Steps to resolve the issue

1. Diagnose the problem
2. Optimize resource allocation
3. Implement load balancing
4. Improve redundancy
5. Enhance monitoring and alerts.

Ensuring High availability and Performance

- Load Balancing
- Auto-Scaling
- Content delivery network
- Database optimization
- Disaster recovery plan.

Comparison of major cloud providers :

Providers	Strengths	Weakness	Pricing-Model
AWS	- Extensive service offerings - Global infrastructure - Strong security	- Complex pricing structure - Steep learning curve	- Pay-as-you-go with free tier for beginners
Azure	- Strong integration with microsoft products - Hybrid cloud capabilities	- Limited global reach compared to AWS - Less mature AI/ML tools	- Pay as you go with discounts for long term commitments.
Google Cloud	- Superior AI/ML and data analytics tools - Competitive pricing	- Smaller market share - Fewer enterprise focused features	Pay as you go with sustained use discounts

Thus, AWS is the biggest fit. It offers a robust global infrastructure, advanced security features, and extensive scalability options, which are critical for handling high traffic volumes and ensures high availability.

1. Scenario: Cyber attack recovery using IaaS.

- Disaster recovery - Saas offers cloud-based backup and disaster recovery solutions to restore data quickly.

- Redundancy - Ensures data is replicated over multiple locations

- Security - Saas providers offer robust security features like firewalls, encryption, and intrusion detection.

- Scalability - Allows rapid scaling of resources for future growth and resilience

2. Scenario: Cost reduction via virtualization.

- Resource optimization - Consolidates multiple servers into fewer physical machines, reducing hardware costs.

- Energy savings - Less physical hardware leads to lower energy consumption

- Scalability - Easier to add virtual machines.

3. Scenario: Load Balancing during high traffic.

- Traffic Distribution - Spreads incoming traffic across multiple servers to prevent overload.

- Improved uptime - Automatically directs user to healthy servers if one fails

- Auto scaling Integration - can trigger additional server instances during peak traffic periods

4) Scenario: High availability for banking app.

• Multiple Availability zones - Distribute servers across different geographic locations for redundancy.

• Health Monitoring - Regularly checks server status and routes traffic to healthy servers.

• failover mechanism - Automatically reroutes traffic to backup servers during server failures.

5. Scenario: Small Bakery website hosting.

Recommendation:
  shared host or managed wordpress hosting.

Reason:
  - Cost effective
  - Ease of use
  - Sufficient resources
  - Scalability