📘 Cloud Computing Unit–02 Notes

🚀 RGPV One-Night Exam Preparation Notes

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1. Utility Computing

Definition

Utility Computing is a computing model in which computing resources like storage, software, server and processing power are provided to users as services on demand and users pay only for what they use.

Easy Introduction

Utility computing ka concept electricity bill jaisa hai.

Jaise ghar me jitni electricity use karte ho utna bill aata hai, waise hi cloud resources ka payment usage ke according hota hai.

Why This Topic is Important

- Cloud computing ka basic business model hai
- Pay-as-you-use concept isi me aata hai
- RGPV me frequently asked topic hai

Detailed Explanation

Utility computing me companies servers aur infrastructure kharidne ki jagah rent par use karti hain.

Is model me:

- user ko resources instantly milte hain
- maintenance provider karta hai
- cost kam hoti hai

Cloud provider:

- AWS
- Azure
- Google Cloud

utility computing ka example hain.

Working / Steps

1. User internet ke through service request karta hai
2. Cloud provider resources allocate karta hai
3. User services use karta hai
4. Usage monitor hota hai
5. Bill generate hota hai

Diagram / Flowchart

```
User
  ↓
Internet
  ↓
Cloud Provider
  ↓
Resources Allocated
```

```
  ↓
Pay Per Use Billing
```

Real-Life Analogy

Electricity board se electricity lena = Utility computing.

Advantages

- Cost saving
- No hardware maintenance
- High scalability
- Fast deployment

Disadvantages

- Internet dependency
- Security concerns
- Downtime risk

Applications

- Cloud hosting
- Online storage
- SaaS applications

Important Keywords for Exam

Pay-as-you-use, On-demand service, Resource allocation, Metered service

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Conclusion

Utility computing cloud computing ka important service model hai jo cost-effective and flexible computing provide karta hai.

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2. Elastic Computing

Definition

Elastic computing is the ability of cloud systems to automatically increase or decrease computing resources according to workload demand.

Easy Introduction

Kabhi workload zyada hota hai aur kabhi kam.

Elastic computing automatically resources increase/decrease karta hai.

Why It Is Needed

- Traffic handle karne ke liye
- Performance maintain karne ke liye
- Resource wastage avoid karne ke liye

Detailed Explanation

Suppose Flipkart sale chal rahi hai.

Users suddenly increase ho gaye.

Elastic cloud:

- extra servers automatically add karega
- traffic kam hone par remove karega

Diagram

```
Low Load → Few Servers
High Load → More Servers
```

Advantages

- Automatic scaling
- Better performance
- Cost optimization

Disadvantages

- Complex management
- Monitoring required

Applications

- E-commerce websites
- Streaming platforms
- Banking systems

Important Keywords

Scalability, Auto-scaling, Dynamic resources

Conclusion

Elastic computing cloud systems ko intelligent and scalable banata hai.

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3. AJAX (Asynchronous Rich Interfaces)

Definition

AJAX is a web development technique used to create fast and interactive web applications without reloading the entire webpage.

Easy Introduction

AJAX webpage ko reload kiye bina data update karta hai.

Why It Is Needed

Traditional web pages slow hoti thi.

AJAX user experience improve karta hai.

Detailed Explanation

AJAX technologies:

- JavaScript
- XML
- HTML
- CSS

use karta hai.

Example:

Google search suggestions.

Working / Steps

1. User request bhejta hai
2. JavaScript background me server se communicate karta hai
3. Data receive hota hai
4. Page partially update hota hai

Diagram

```
Browser
   ↓
AJAX Engine
   ↓
Server
   ↓
Updated Data
```

Advantages

- Fast response
- Better UI
- Reduced bandwidth

Disadvantages

- Browser dependency
- Complex debugging

Applications

- Gmail
- Google Maps
- Facebook

Important Keywords

Asynchronous, Rich Interface, JavaScript, Partial page update

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Conclusion

AJAX interactive and responsive web applications develop karne me help karta hai.

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4. Mashups

Definition

Mashup is a web application that combines data or services from multiple sources into a single application.

Easy Introduction

Mashup alag-alag services ko combine karta hai.

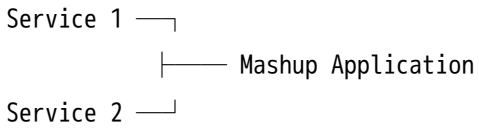
Example

Google Maps + Weather API = Travel Application.

Types / Classification

Type	Description
Data Mashup	Data combine karta hai
Business Mashup	Business services combine
Consumer Mashup	User-focused applications

Diagram



Advantages

- Better functionality
- Reusability
- Faster development

Disadvantages

- Security issues
- Dependency on APIs

Applications

- Travel websites
- Social media apps

Important Keywords

Integration, APIs, Combined services

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5. Virtualization Technology

Definition

Virtualization is the process of creating virtual versions of servers, storage, operating systems or networks.

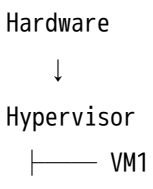
Why It Is Needed

- Better resource utilization
- Cost reduction
- Multiple OS support

Types

Type	Meaning
Server Virtualization	Multiple virtual servers
Storage Virtualization	Virtual storage
Network Virtualization	Virtual networks

Diagram



```
├── VM2
└── VM3
```

Applications in Enterprises

- Data centers
- Cloud computing
- Software testing

Advantages

- Resource optimization
- Isolation
- Scalability

Disadvantages

- Security risks
- Performance overhead

Conclusion

Virtualization cloud computing ka backbone hai.

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6. Pitfalls of Virtualization

Definition

Pitfalls are the limitations or problems of virtualization technology.

Common Pitfalls

- Security threats
- VM sprawl
- High initial setup
- Performance degradation

Easy Explanation

Agar bahut saare virtual machines bana diye jaye to system slow ho sakta hai.

Important Keywords

VM Sprawl, Performance Overhead, Security Issues

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7. Multitenant Software

Definition

Multitenant software is software architecture where a single application serves multiple users or organizations called tenants.

Easy Introduction

Ek hi software multiple customers use karte hain.

Example

Gmail:

Millions users same application use karte hain.

Advantages

- Cost reduction
- Easy maintenance
- Centralized updates

Disadvantages

- Security concerns
- Shared resources

Important Keywords

Tenant, Shared application, Resource sharing

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8. Multi-Entity Support

Definition

Multi-entity support allows different organizations or departments to work independently using the same software system.

Example

ERP software me:

- HR department
- Finance department

same system use karte hain but separate data maintain karte hain.

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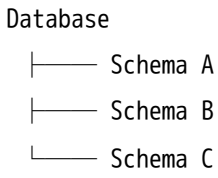
9. Multi-schema Approach

Definition

In multi-schema approach each tenant has a separate database schema inside a shared database.

Diagram



Advantages

- Better security
- Data isolation

Disadvantages

- Complex management

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10. Multi-tenancy using Cloud Data Stores

Definition

Multi-tenancy using cloud data stores means multiple tenants share cloud database resources efficiently.

Working

- Shared infrastructure
- Separate user access
- Data isolation maintained

Applications

- Salesforce
- Google Workspace

🔥 MOST IMPORTANT TOPICS

⭐ Utility Computing
⭐ Elastic Computing
⭐ AJAX
⭐ Virtualization
⭐ Multitenancy
⭐ Multi-schema Approach

⭐ MOST IMPORTANT 7-MARK QUESTIONS

1. Explain utility computing.
2. Explain elastic computing.
3. Explain AJAX architecture.

4. Explain virtualization technology.
5. Explain multitenant software.
6. Explain mashups with examples.
7. Explain multi-schema approach.

⭐ MOST IMPORTANT 14-MARK QUESTIONS

1. Explain virtualization technology and its applications in enterprises.
2. Explain multitenant architecture in cloud computing.
3. Explain AJAX and mashups in detail.
4. Explain utility and elastic computing with examples.

🎯 PYQ-BASED EXPECTED QUESTIONS

⭐ Very High Probability

✅ Virtualization
✅ Hypervisor
✅ Utility Computing
✅ Elastic Computing
✅ Multitenancy

⭐ High Probability

✅ AJAX
✅ Mashups
✅ Multi-schema approach

⭐ Medium Probability

✅ Cloud data stores

✅ Multi-entity support

⚡ ONE-NIGHT REVISION NOTES

Topic	Quick Revision
Utility Computing	Pay per use
Elastic Computing	Auto scaling
AJAX	Async webpage update
Mashup	Combined services
Virtualization	Virtual machines
Multitenancy	Shared software

🧠 MEMORY TRICKS

Cloud Features

👉 “SURE”

- S = Scalability
- U = Utility
- R = Resource pooling
- E = Elasticity

AJAX Components

👉 “JXHC”

- J = JavaScript

- X = XML
- H = HTML
- C = CSS

📌 SMART STUDY PLAN

⏰ 2-Hour Strategy

- 30 min → Virtualization
- 20 min → Utility + Elastic computing
- 20 min → AJAX
- 20 min → Multitenancy
- 30 min → PYQ revision

⏰ One-Night Preparation Plan

1. Read definitions first
2. Learn diagrams
3. Practice comparison tables
4. Revise keywords
5. Focus on repeated PYQs

🚀 TOPPER ANSWER WRITING TIPS

For 7 Marks

Write:

```
Definition
↓
```

Working
↓
Diagram
↓
Advantages
↓
Applications
↓
Conclusion

Keywords to Underline

Elasticity, Virtualization, Hypervisor, Multitenancy, AJAX, Resource Pooling, Utility Computing