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1. Service Oriented Architecture with a diagram
2. Explain SaaS, PaaS, IaaS with its features
3. Explain Elastic compute cloud (EC2)
4. Explain the concept of on demand computing
5. Stetch the cloud architecture.
6. Explain virtualization in cloud.

I

1 Service Oriented Architecture with a diagram

→ SOA is a diagram pattern / software architecture which provides application functionality as a service to other application

→ the basic principle of SOA are Independent of vendors products and technologies

→ it is only a concept and not limited to any programming language or platform.

What is service ?

→ A service is a well-defined, self-contained function that represents a unit of functionality.

→ A service can is a program we interact with via message exchanges

→ A system is a set of deployed services cooperating in a given task.

SOA Architecture

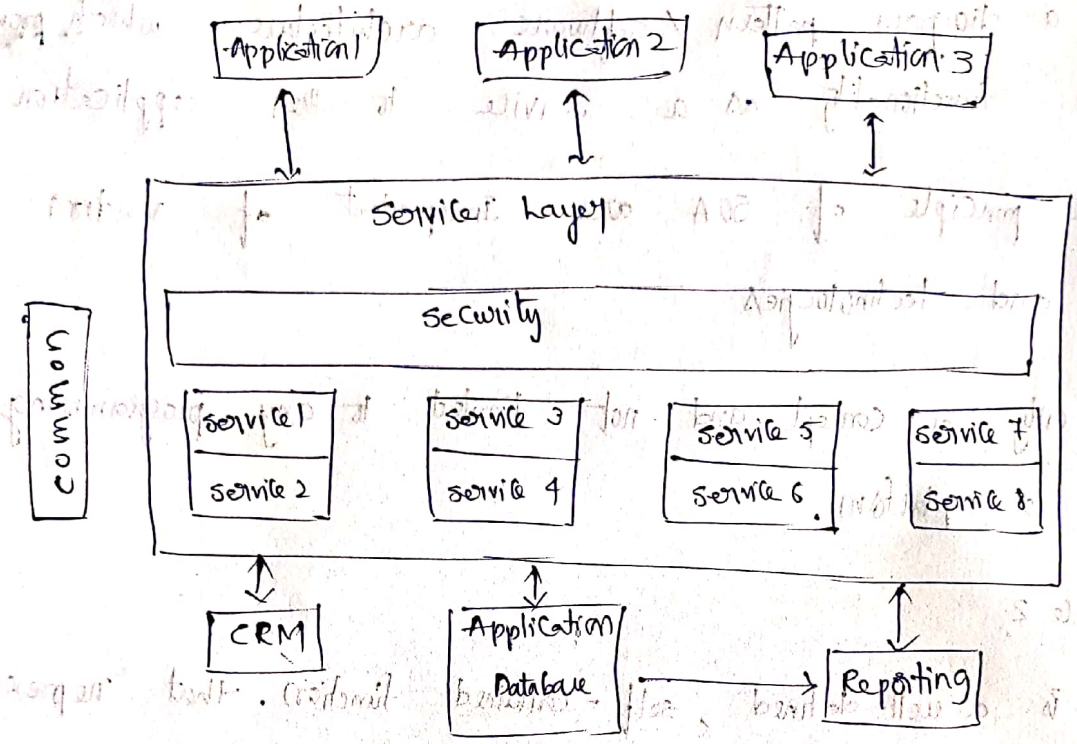
Consumer Interface Layer - this layer is used by the customer

Business process Layer - it provides the business process flow

Service Layer - this Layer comprises of all the services in the enterprises

Component Layer - this Layer has the actual service to be provided

Operational system Layer - this Layer contains the data model.



Detailed SOA

Applications

Manufacturing – Eg. Inventory management

Insurance – Take up the Insurance of the employees in companies

Companies using SOA

- ICICI Bank
- HDFC Bank

principles

* Service loose coupling –
* Service reusability
* Service statelessness
* Service discoverability

Advantages

- parallel application development
- Modular approach
- Easy maintenance
- Greater Reliability
- Improved software Quality
- platform Independence
- Increased productivity

Disadvantages

- stand alone, non-distributed applications
- Homogenous application environments
- GUI based applications
- short lived applications
- Real time applications
- One-way asynchronous communication applications.

2.

1. Software as a Service (SaaS)

- It is a public service cloud model where applications are managed by the cloud provider
- It removes the need for organization to install and run applications on their own computer
- It is one of the fastest growing concepts
- SaaS is also known as "On-Demand software".
- These services are available to end-users over the Internet
- End-users do not need to install any software on their devices to access these services.

Providers

- Salesforce.com
- Microsoft office 365
- Google Apps
- Oracle CRM .. etc

Features

1. Multi-tenancy model
2. Automated provisioning
3. Single sign on
4. Subscription based billing
5. High availability
6. Elastic infrastructure

Advantages

1. Flexible payment
2. Automatic updates
3. scalable usage
4. Accessibility and persistance
5. On Demand Computing

Disadvantages

1. Security
2. Total Dependency on Internet
3. Switching b/t SaaS vendors is difficult

2. Platform as a Service (PaaS)

- It is the way to rent computing platform (i.e OS, middleware, etc) and solution stack (everything a developer needs to build an application) as a service
- it helps to deploy application without the cost and complexity of buying and managing s/w & H/w
- It provides all support to complete s/w life cycle and services
- it allows programmers to easily Create, test, run and deploy web applications.

* You can purchase these applications from a cloud service provider on a pay-as-per use basis and access them using the Internet connection.

Paas Providers

1. SalesForce.com
2. Google App Engine
3. Windows Azure
4. Oracle

Advantages

1. Simplified Development
2. Lower risk
3. Prebuilt functionality
4. Scalability

DisAdvantages

1. Vendor lock-in
2. Data Privacy

Features

1. Multi-tenant architecture
2. Customizable / programmable user Interface
3. Unlimited Database Customization
4. Robust workflow engine / capabilities

3. Infrastructure as a service (IaaS)

- It offers Computing architecture and Infrastructure (i.e all types of Computing resource) as a service
- Vendors are responsible for managing all the Computing resource.
- Enhanced scalability i.e dynamic work load are supported
- Flexible to use
- Iaas is also known as Hardware as a service (HaaS)
- Iaas is offered in three models : public, private, hybrid

Iaas Providers

1. Amazon web services
2. Netmagic solutions
3. Tata communications
4. Reliance communications

features

1. Automated administrative tasks
2. Dynamic scaling
3. platform virtualization technology
4. GUI and API-based access
5. Internet connectivity

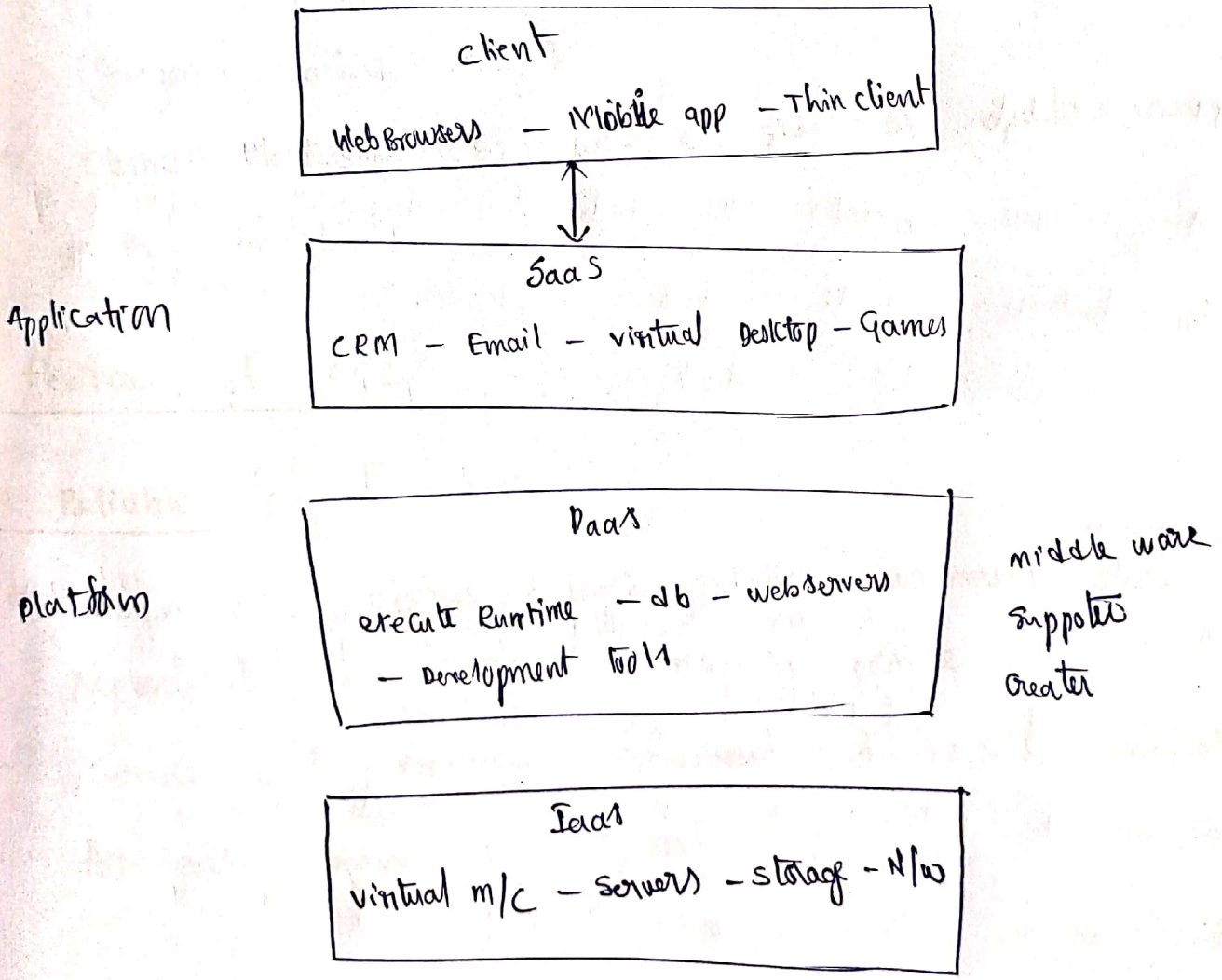
Advantages

1. shared Infrastructure
2. web access to the resources
3. pay-as-per-use model
4. on-demand scalability

Disadvantages

1. Security
2. Maintenance & upgrade
3. Interoperability issues.

Service Models



3. Elastic Compute cloud (Amazon EC2)

⇒ EC2 is the Engine room for AWS (Amazon web services)

⇒ It is where servers will operate and run on day-to-day basis

⇒ EC2 provides resizable Compute capacity which can scale computing resources depending on the capacity at a particular point in time

⇒ EC2 has the ability to start and stop multiple servers from a single server image.

⇒ Remote Desktop protocol (RDP) is used to login into AMI (Amazon Machine image)

⇒ Elastic Block store (EBS) used to store the updates made in the image.

features of EC2

1. Reliable :

⇒ Amazon EC2 offers a highly reliable environment where replacement of instances is rapidly possible.

⇒ Service level Agreement commitment is 99.9% availability for each Amazon EC2 region

2. Designed for Amazon web services

- Amazon EC2 works fine with Amazon services like Amazon S3, Amazon RDS, Amazon DynamoDB, and Amazon SQS.
- it provides the complete solution for computing, query processing and storage across a wide range of applications

3. Secure

- Amazon EC2 works in Amazon virtual Private cloud to provide a secure and robust network to resources

4. Flexible tools

- Amazon EC2 provides the tools for developers and system administrators to build failure applications and isolate themselves from common failure situations.

5. Inexpensive

- Amazon EC2 wants us to pay only for the resources that we use, it includes multiple purchase plans such as on-Demand instances, Reserved Instances, Spot instances, etc.
- which we can choose as per our requirement.

Advantages

1. Reliability
2. Safety
3. Adaptability
4. Cost cutting
5. Full-service computing solution
6. Elastic web-scale computing

Disadvantages

1. Security limitations
2. General cloud computing issues
3. Technical support fee