

Mata Kuliah "Cloud Computing / Komputasi diAwan"

Slide : 2

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Slide 3 : Cloud Computing Architecture Management



Definiton Architecture Management?

- Architecture is the hierarchical view of describing a technology. (the components over which the existing technology is built and the components that are dependent on the technology.)
- Another topic that is related to architecture is anatomy., Anatomy describes the core structure of the cloud.
- Architecture Management describes the way an application and infrastructure in the cloud are managed. Management is important because of the quality of service (QoS) factors that are involved in the cloud.

Cloud Architecture?

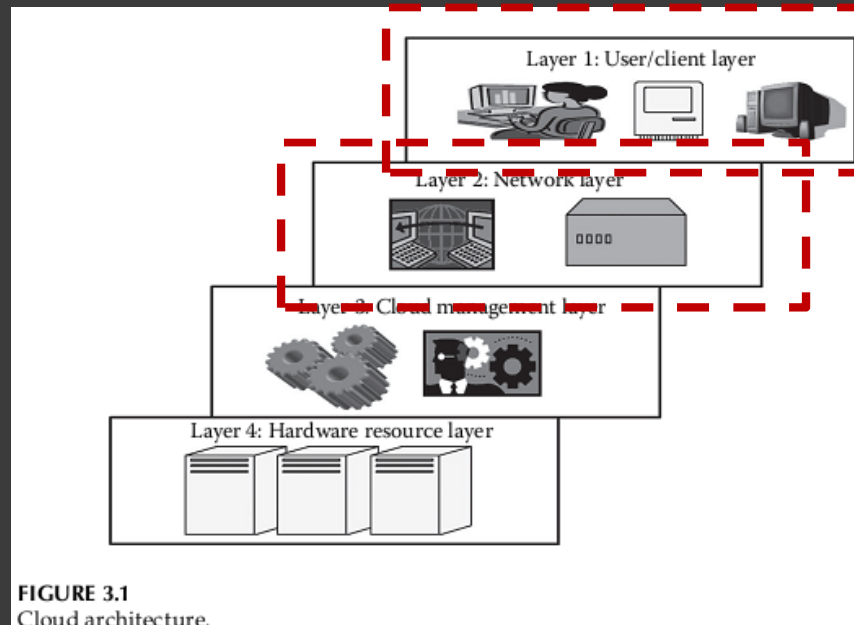


FIGURE 3.1
Cloud architecture.

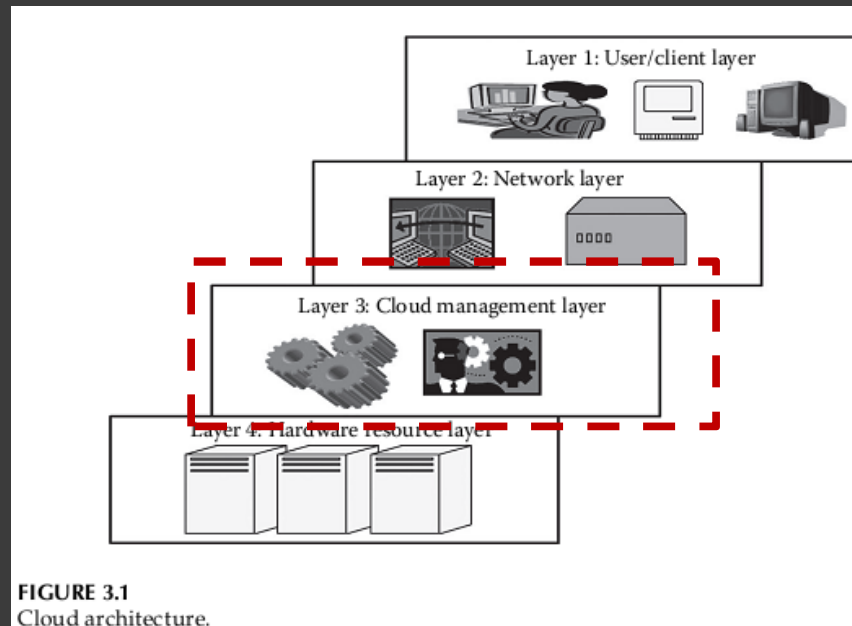
1. Layer 1 (User / Client Layer)

This layer is the lowest layer in the cloud architecture. All the users or client belong to this layer. The client can be any device such as a thin client, thick client, or mobile or any handheld device that would support basic functionalities to access a web application.

2. Layer 2 (Network Layer)

This layer allows the users to connect to the cloud. The whole cloud infrastructure is dependent on this connection where the services are offered to the customers. This is primarily the Internet in the case of a public cloud.

Cloud Architecture?



- 3. Layer 3 (Cloud Management Layer)**
This layer consists of softwares that are used in managing the cloud. The soft-wares can be a cloud operating system (OS), a software that acts as an interface between the data center (actual resources) and the user, or a management soft-ware that allows managing resources. These softwares usually allow resource management (scheduling, provisioning, etc.), optimization (server consolida-tion, storage workload consolidation). This layer comes under the purview of SLAs (Service Level Agreement),

Cloud Architecture?

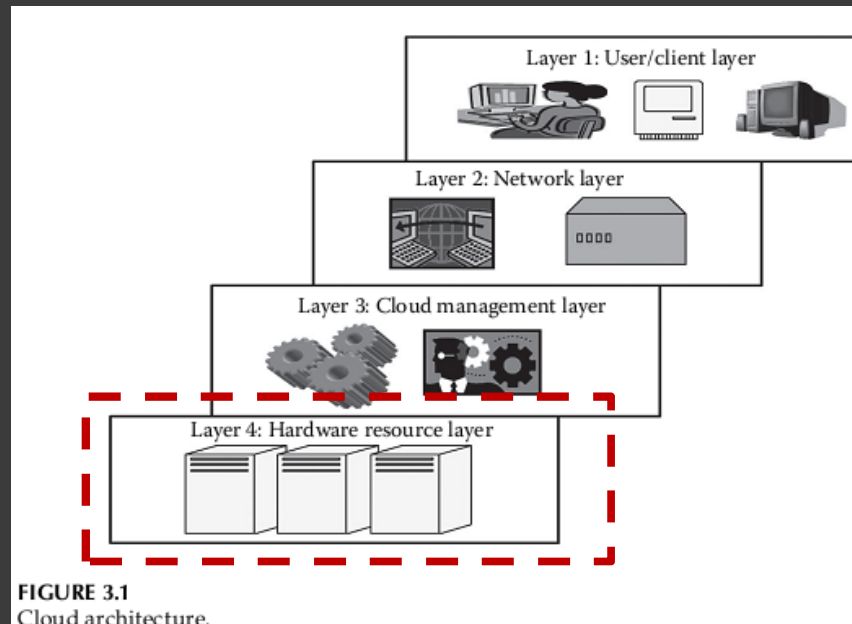


FIGURE 3.1
Cloud architecture.

4. **Layer 4 (Hardware Resource Layer)**
Layer 4 consists of provisions for actual hardware resources. Usually, in the case of a public cloud, a data center is used in the back end. Similarly, in a private cloud, it can be a data center, which is a huge collection of hardware resources interconnected to each other that is present in a specific location or a high configuration system. This layer comes under the purview of SLAs.

Anatomy of the Cloud?

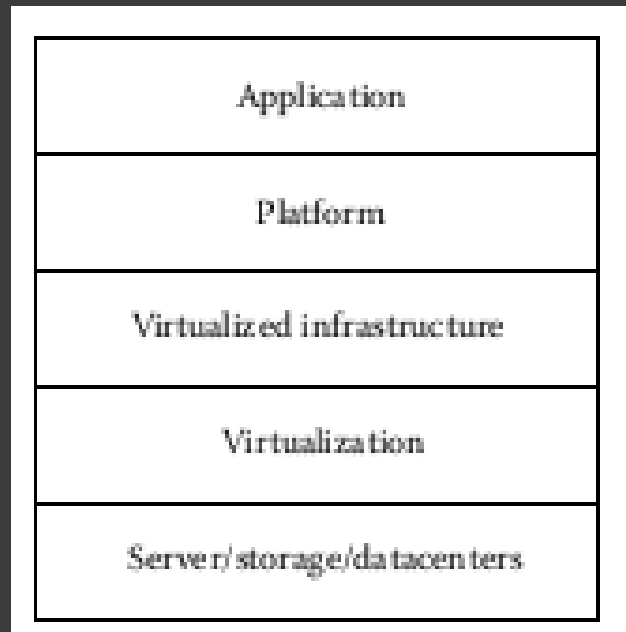


Figure : Cloud Structure

Architecture is a hierarchical structural view that defines the technology as well as the technology over which it is dependent or/and the technology that are dependent on it.

Anatomy can be considered as a part of architecture.

There are basically five components of the cloud:

1. **Application**: The upper layer is the application layer. In this layer, any applications are executed.
2. **Platform**: This component consists of platforms that are responsible for the execution of the application. This platform is **between the infrastructure and the application**.
3. **Infrastructure** : The infrastructure consists of resources over which the other components work. This provides computational capability to the user.
4. **Virtualization** : Virtualization is the process of making logical components of resources over the existing physical resources. The logical components are isolated and independent, which form the infrastructure.
5. **Physical hardware**: The physical hardware is provided by server and storage units.

Network Connectivity in Cloud Computing?

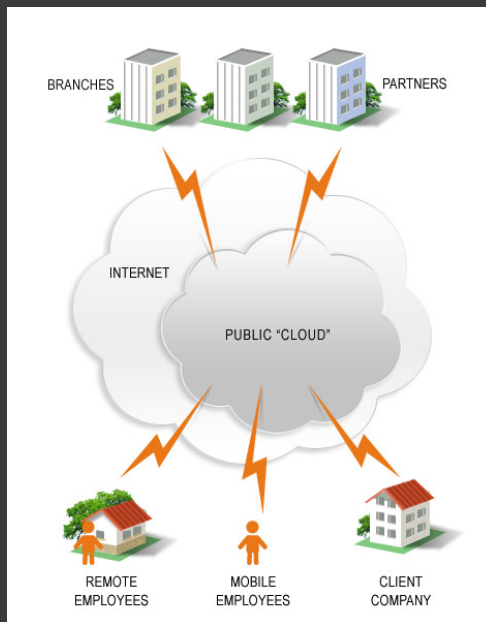
Cloud computing is a technique of resource sharing where servers, storage, and other computing infrastructure in multiple locations are connected by networks.

5 important aspects related to the cloud deployment models and their accessibility from the viewpoint of network connectivity :

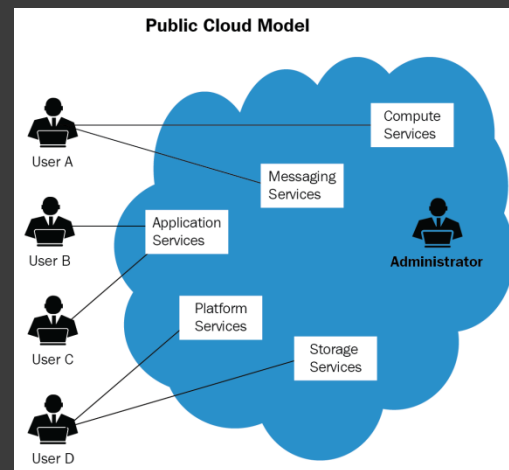
1. Public Cloud Access Networking
2. Private Cloud Access Networking
3. Intracloud Networking for Public Cloud Services
4. Private Intracloud Networking
5. New Facets in Private Networks

Network Connectivity in Cloud Computing?

1. Public Cloud Access Networking

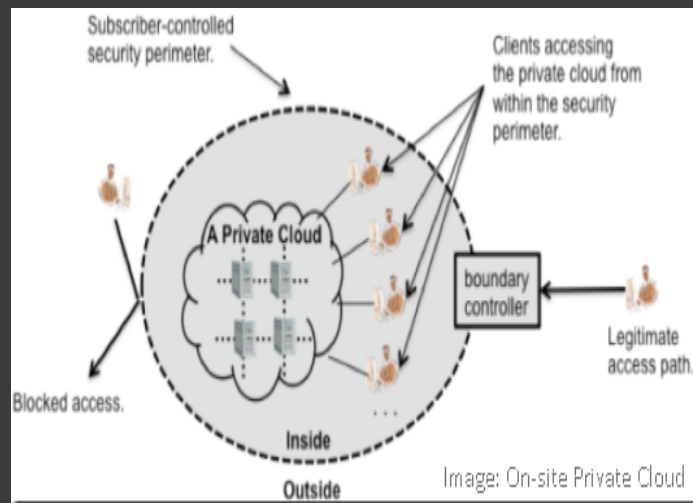


- a. the connectivity is often through the Internet
 - b. Accessing public cloud services will always create issues related to security
- Example : Dropbox, Google Drive, Apple iCloud



Network Connectivity in Cloud Computing?

2. Private Cloud Access Networking

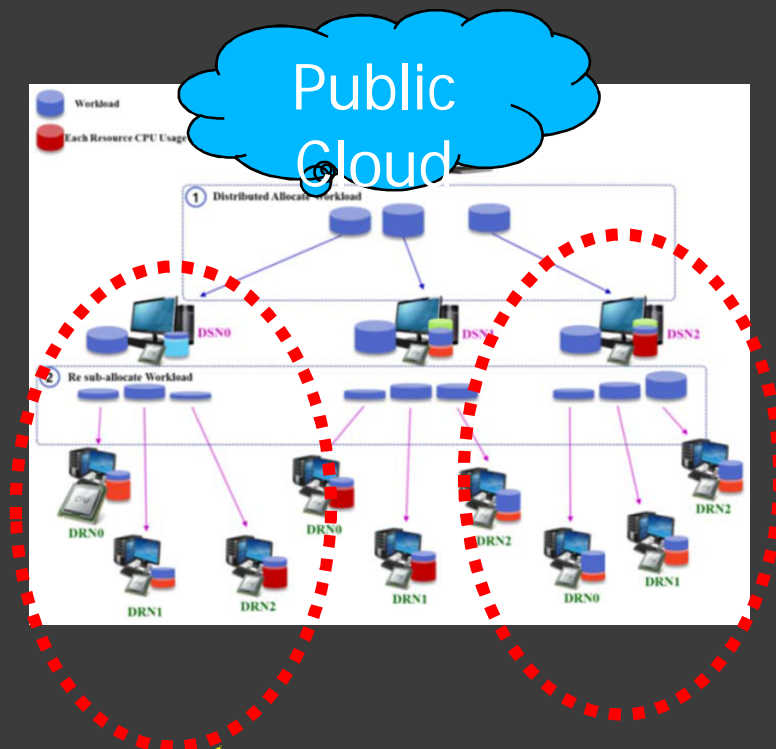


- Private cloud is operated solely for single organization
- Could be hosted internally or by third party
- Tight security

Example : company ABC Develop Private cloud for internal team

Network Connectivity in Cloud Computing?

3. Intracloud Networking for Public Cloud Services

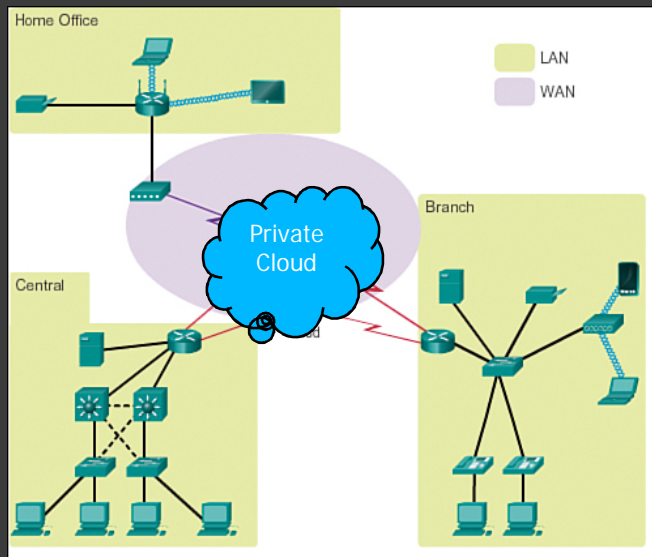


- a. The resources of the Cloud Computing Architecture and Management cloud provider and thus the cloud service to the customer are based on the resources that are geographically apart from each other but still connected via the Internet.
- b. The Security and QoS (Quality of Service) is important, SLA (service level Agreement)

Example : Cloud Service Provider (CSP) give Cloud services by regional geographics (by country, by regional)

Network Connectivity in Cloud Computing?

4. Private Intracloud Networking



- a. Private intra-cloud networking is usually supported over connectivity between the major data center sites owned by the company.
- b. In the other case used component SOA (Service Oriented Architecture)

Example : Group Company XYZ integrated private cloud, subsidiary company with others

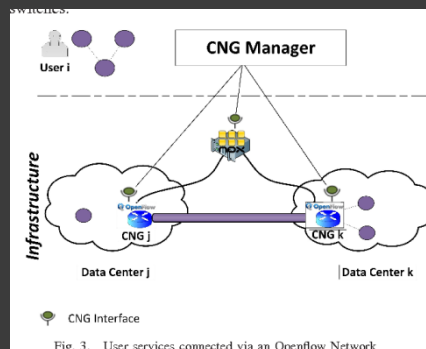
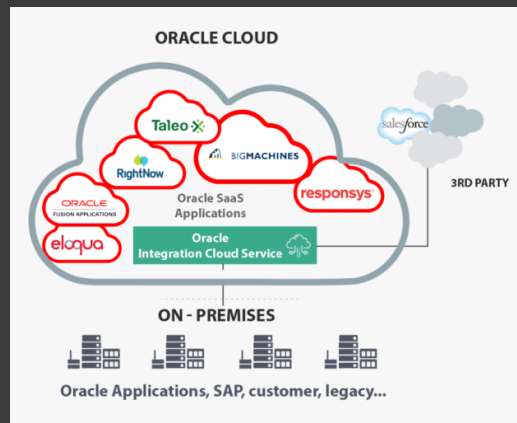


Fig. 3. User services connected via an Openflow Network

M.K KK

Network Connectivity in Cloud Computing?

5. New Facets in Private Networks



- Change concept on premise application (managed by user) to manage by cloud (Cloud Services Provider) (transitioning (moving) from on-premise based to cloud based,)
- For mission critical application : ERP (Software Enterprise Resources Planing)

**Terima Kasih,
Wassalam,
Thanks,**

