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Class: TY	**Division:** A	**Roll No:** 371069
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Subject Name & Code: Cloud Computing		
Title of Assignment: Assignment 1: Study of Cloud Computing & Architecture.		
Date of Performance: 5/12/2022	**Date of Submission:** 5/12/2022	

Aim: Study of Cloud Computing & Architecture.

Problem Statement: Study of Cloud Computing & Architecture.

Background Information:

Cloud Computing, which is one of the demanding technologies of the current time and which is giving a new shape to every organization by providing on demand virtualized services/resources. Starting from small to medium and medium to large, every organization use cloud computing services for storing information and accessing it from anywhere and anytime only with the help of internet. In this article, we will know more about the internal architecture of cloud computing.

Transparency, scalability, security, and intelligent monitoring are some of the most important constraints which every cloud infrastructure should experience. Current research on other important constraints is helping cloud computing system to come up with new features and strategies with a great capability of providing more advanced cloud solutions.

Cloud Computing Architecture:

The cloud architecture is divided into 2 parts i.e.

1. Frontend
2. Backend

The below figure represents an internal architectural view of cloud computing.
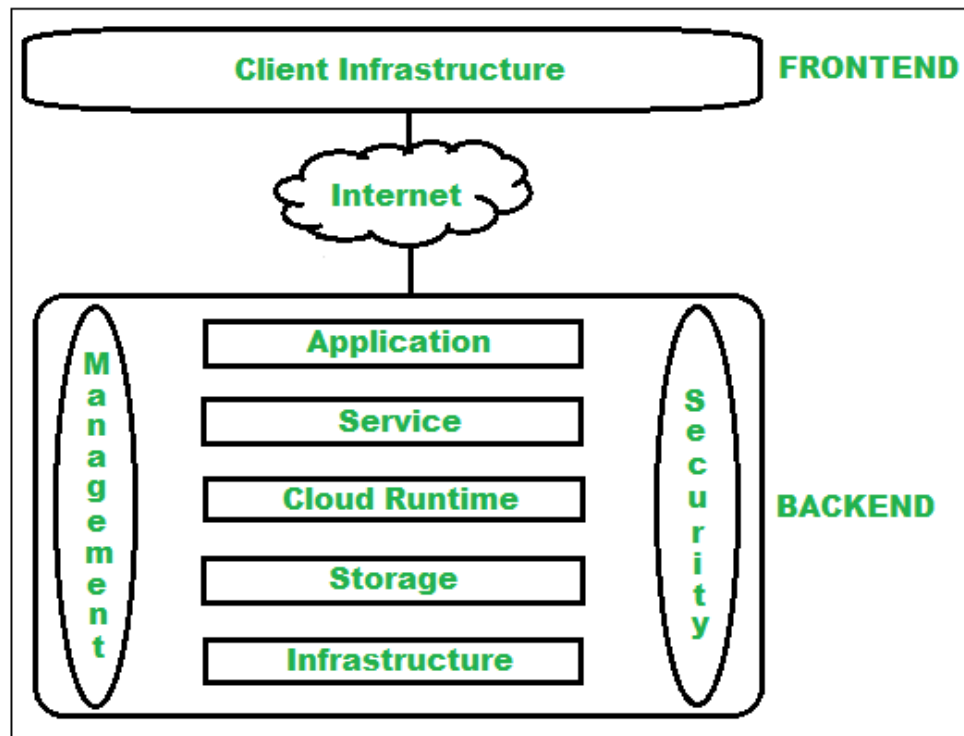
Architecture of cloud computing is the combination of both SOA (Service Oriented Architecture) and EDA (Event Driven Architecture). Client infrastructure, application, service, runtime cloud, storage, infrastructure, management, and security all these are the components of cloud computing architecture.

1. **Frontend**

   Frontend of the cloud architecture refers to the client side of cloud computing system. Means it contains all the user interfaces and applications which are used by the client to access the cloud computing services/resources. For example, use of a web browser to access the cloud platform.

- Client Infrastructure – Client Infrastructure is a part of the frontend component. It contains the applications and user interfaces which are required to access the cloud platform.

2. **Backend**

Backend refers to the cloud itself which is used by the service provider. It contains the resources as well as manages the resources and provides security mechanisms. Along with this, it includes huge storage, virtual applications, virtual machines, traffic control mechanisms, deployment models, etc.

i) Application

Application in backend refers to a software or platform to which client accesses. Means it provides the service in backend as per the client requirement.

ii) Service

Service in backend refers to the major three types of cloud-based services like SaaS, PaaS and IaaS.

iii) Runtime Cloud

Runtime cloud in backend provides the execution and Runtime platform/environment to the Virtual machine.

iv) Storage

Storage in backend provides flexible and scalable storage service and management of stored data.

v) Infrastructure

Infrastructure in backend refers to the hardware and software components of cloud like it includes servers, storage, virtualization software etc.

vi) Management

Management in backend refers to management of backend components like application, service, runtime cloud, storage and other security mechanisms etc.

vii) Security

Security in backend refers to implementation of different security mechanisms in the backend for secure cloud resources, systems, files and infrastructure to end-users.

Types of cloud computing:

There are three different kinds of cloud computing, where different services are being provided for you.

- **Infrastructure as a Service (IaaS)** means you're buying access to raw computing hardware over the Net, such as servers or storage. Since you buy what you need and pay-as-you-go, this is often referred to as utility computing.
- **Software as a Service (SaaS)** means you use a complete application running on someone else's system. Web-based email and Google Documents are perhaps the best-known examples.
- **Platform as a Service (PaaS)** means you develop applications using Web-based tools so they run on systems software and hardware provided by another company. Force.com (from salesforce.com) and the Google App Engine are examples of PaaS.

Benefits of Cloud Computing Architecture:
- Makes overall cloud computing system simpler.
- Improves data processing requirements.
- Helps in providing high security.
- Makes it more modularized.
- Results in better disaster recovery.
- Gives good user accessibility.
- Reduces IT operating costs.

GitHub Repo Link:
https://github.com/Vidhyapati/CCA-Assignments

Conclusion:
It is one of the demanding technologies of the current time and which is giving a new shape to every organization by providing on demand virtualized services/resources. It has many benefits like reduces IT costs, provide high security, etc.