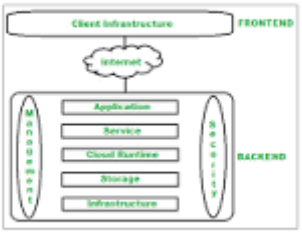
What is a cloud ecosystem?

A cloud ecosystem is **a complex system of interdependent components that all work together to enable cloud services**. ... In cloud computing, the ecosystem consists of hardware and software as well as cloud customers, cloud engineers, consultants, integrators and partners.

What are the elements of cloud ecosystem model?

The resulting model, named as Passau Cloud Computing Ecosystem Model (PaCE model), comprises 26 roles for market actors, which are grouped into **five categories – (1) client, (2) vendor, (3) hybrid role, (4) support and (5) environment** – and entails the relationships between the roles (Floerecke and Lehner 2016).२

What is the architecture 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, storage, infrastructure, management and security all these are the components of cloud computing architecture.

There are 4 main types of cloud computing: **private clouds, public clouds, hybrid clouds, and multiclouds**. There are also 3 main types of cloud computing services: Infrastructure-as-a-Service (IaaS), Platforms-as-a-Service (PaaS), and Software-as-a-Service (SaaS)

Architecture of a cloud computing ecosystem

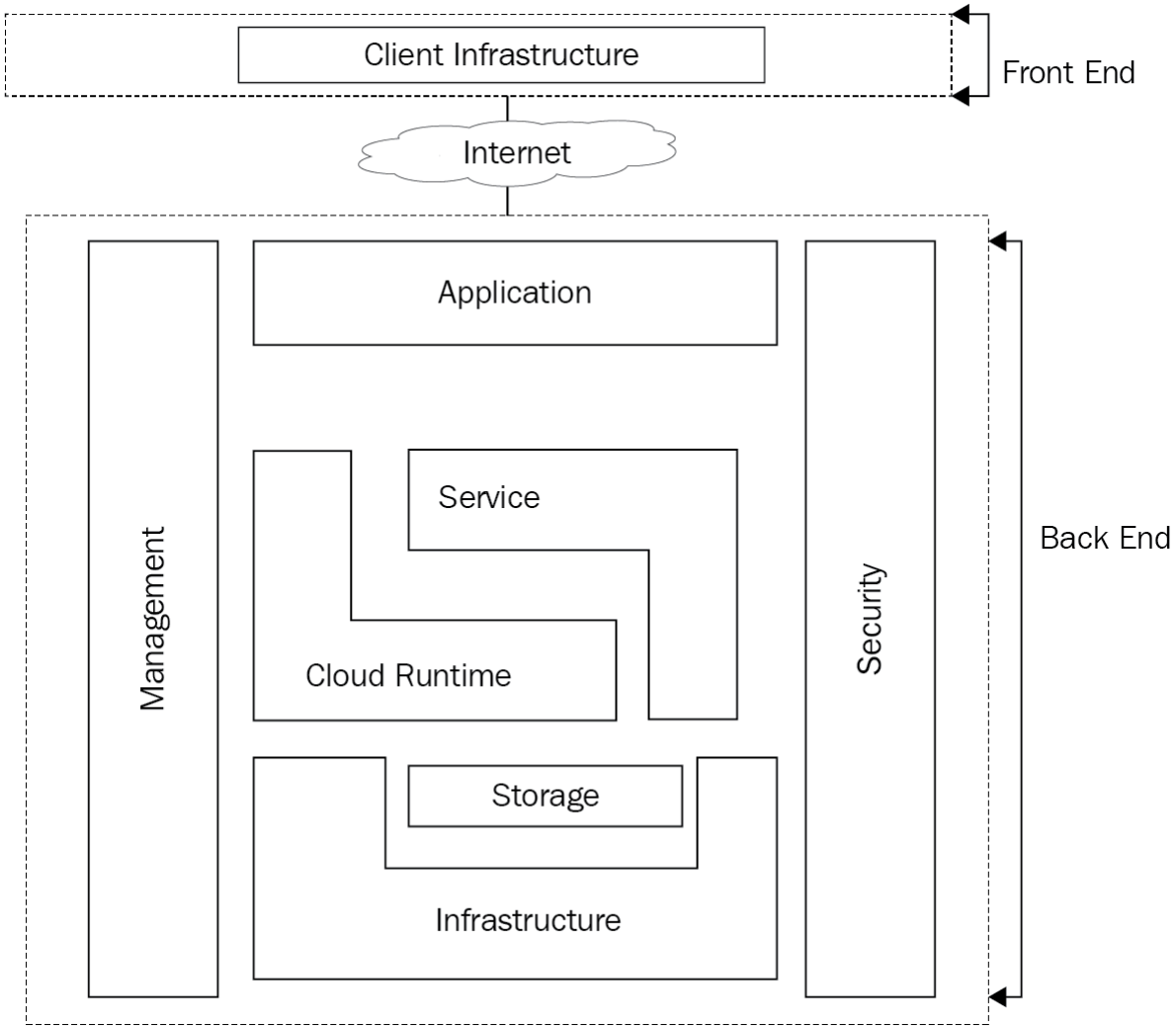
In a cloud computing ecosystem, there are a number of computers, servers, and data storage equipment that together make the *cloud* of computing services.

Cloud computing could incorporate any program (from data handling applications, to enterprise scale applications, to computer games). For the most part, every application has its own committed server paying little mind to the cloud provider you utilize.

To guarantee that everything works smoothly and proficiently, the cloud ecosystem utilizes a focal server (otherwise known as control server) to administer and monitor traffic and customer requests, which eventually includes the utilization of protocols (set of rules) and

middleware (special software). The reason why middleware is utilized here is to permit different networked computers in the ecosystem to exchange information with each other.

The following image can help you understand all the aspects that cloud computing has:



Cloud Computing Architecture

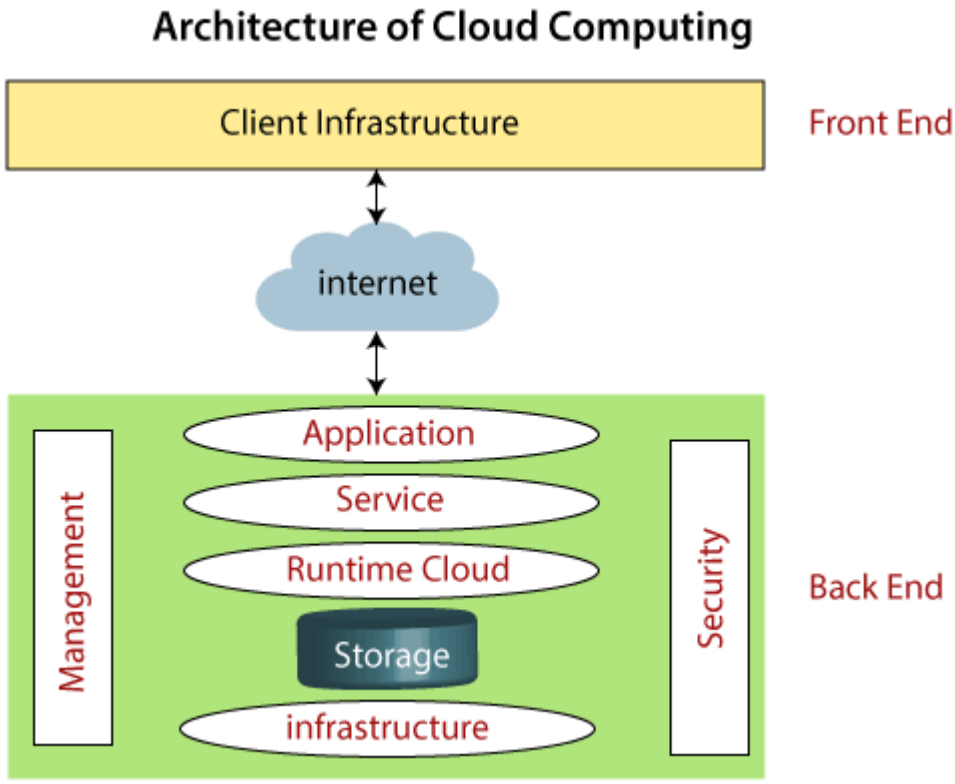
As we know, cloud computing technology is used by both small and large organizations to **store the information** in cloud and **access** it from anywhere at anytime using the internet connection.

Cloud computing architecture is a combination of **service-oriented architecture** and **event-driven architecture**.

Cloud computing architecture is divided into the following two parts -

- Front End
- Back End

The below diagram shows the architecture of cloud computing -



Front End

The front end is used by the client. It contains client-side interfaces and applications that are required to access the cloud computing platforms. The front end includes web servers (including Chrome, Firefox, internet explorer, etc.), thin & fat clients, tablets, and mobile devices.

Back End

The back end is used by the service provider. It manages all the resources that are required to provide cloud computing services. It includes a huge amount of data storage, security mechanism, virtual machines, deploying models, servers, traffic control mechanisms, etc.

Note: Both front end and back end are connected to others through a network, generally using the internet connection.

Components of Cloud Computing Architecture

There are the following components of cloud computing architecture -

1. Client Infrastructure

Client Infrastructure is a Front end component. It provides GUI (Graphical User Interface) to interact with the cloud.

2. Application

The application may be any software or platform that a client wants to access.

3. Service

A Cloud Services manages that which type of service you access according to the client's requirement.

Cloud computing offers the following three type of services:

i. Software as a Service (SaaS) – It is also known as **cloud application services**. Mostly, SaaS applications run directly through the web browser means we do not require to download and install these applications. Some important example of SaaS is given below –

Example: Google Apps, Salesforce Dropbox, Slack, Hubspot, Cisco WebEx.

ii. Platform as a Service (PaaS) – It is also known as **cloud platform services**. It is quite similar to SaaS, but the difference is that PaaS provides a platform for software creation, but using SaaS, we can access software over the internet without the need of any platform.

Example: Windows Azure, Force.com, Magento Commerce Cloud, OpenShift.

iii. Infrastructure as a Service (IaaS) – It is also known as **cloud infrastructure services**. It is responsible for managing applications data, middleware, and runtime environments.

Example: Amazon Web Services (AWS) EC2, Google Compute Engine (GCE), Cisco Metapod.

4. Runtime Cloud

Runtime Cloud provides the **execution and runtime environment** to the virtual machines.

5. Storage

Storage is one of the most important components of cloud computing. It provides a huge amount of storage capacity in the cloud to store and manage data.

6. Infrastructure

It provides services on the **host level**, **application level**, and **network level**. Cloud infrastructure includes hardware and software components such as servers, storage, network devices, virtualization software, and other storage resources that are needed to support the cloud computing model.

7. Management

Management is used to manage components such as application, service, runtime cloud, storage, infrastructure, and other security issues in the backend and establish coordination between them.

8. Security

Security is an in-built back end component of cloud computing. It implements a security mechanism in the back end.

9. Internet

The Internet is medium through which front end and back end can interact and communicate with each other.