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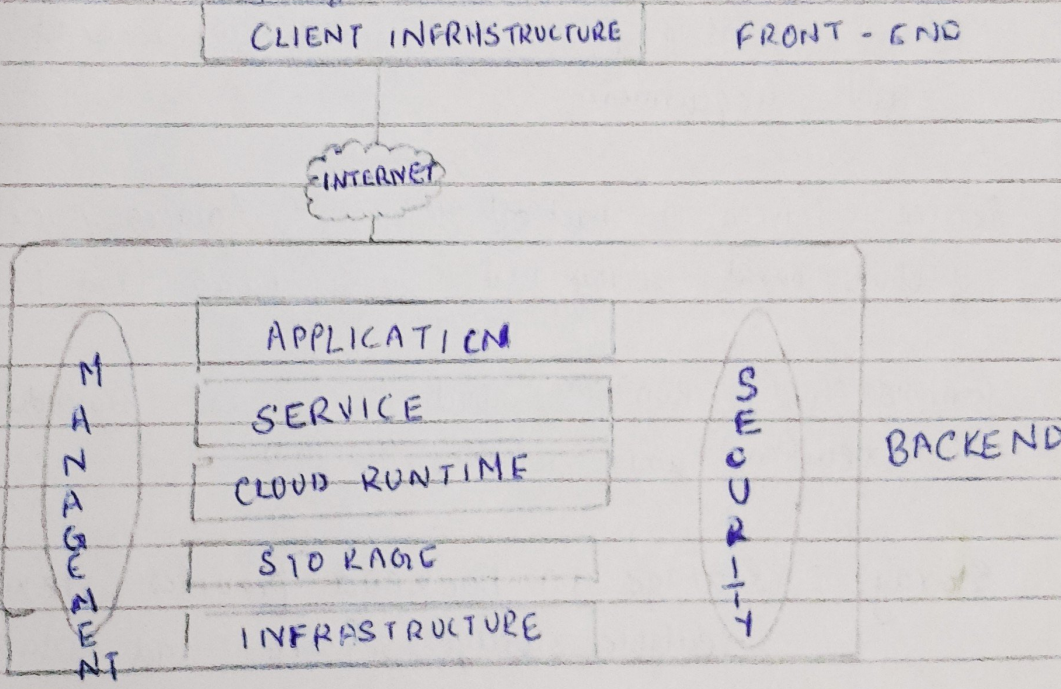
CLOUD COMPUTING PRACTICAL - 1

1) Cloud computing architecture.

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.
Below figure represents an internal architecture view of cloud computing.



1) Front end : Front-end 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 service.
ex: the use of web browser 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. It includes huge storage, virtual applications, virtual.

machines, deployment modes etc.

Components of cloud computing architecture:

1. Client infrastructure: client infrastructure is a part of the front-end component. It contains the applications and user interfaces which are required to access the cloud platform. Basically it provides a GUI to interact with the cloud

2) Application: Application is a part of backend component that refers to a software or platform to which client accesses. Means it provides the service in backend as per the client requirement

3) Service: Service in backend refers to major three types of cloud based services like SaaS, PaaS and IaaS

4) Runtime cloud: Runtime cloud in backend provides the execution and runtime platform.

5) Storage: Storage in backend provides flexible and scalable storage service and managment of stored data.

6) Infrastructure: Cloud infrastructure in backend refers to the hardware and software components of cloud like it includes servers, storage, network devices, virtualization software etc.

7) Management: Managment in backend refers to management of backend components like application, service runtime cloud, storage, infrastructure etc.

8) Security: Security in backend refers to implementations of different security mechanism in the backend for secure cloud resources.

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9) internet : Internet connection acts as the medium or a bridge b/w front end & backend and establishes the interaction & communication b/w front end & backend

10) Database : Database in backend refers to provide database for storing structured data, such as SQL and NOSQL databases.

11) Networking : Networking in backend services that provide networking infrastructure for application in the cloud, such as load balancing, DNS and virtual private networks.

12) Analytics : Analytics in backend service that provides analytics capabilities for data in the cloud such as warehousing.

2) IAAS is a infrastructure as a service (IaaS) is a form of cloud computing that provides virtualized computing resources over the internet. IaaS is one of the three main categories of cloud computing services, along side software as a service (SaaS) and platform as a service (PaaS). Now when tasks require high-powered computing, companies can simply purchase services from a cloud provider often at a lower cost than equivalent in-house infrastructure. This leaves their customers free to collect, process, store and retrieve data, but without having to buy and manage the computing hardware. This is useful for small & midsize companies that can't afford to implement their own infrastructure. In an IaaS service model, a cloud provider hosts the infrastructure components that are traditionally.

present in an on-premises data center. This includes physical servers, storage & networking hardware as well as the virtualization or hypervisor layer.

Iaas providers also supply a range of services to accompany those infrastructure components. These can include detailed billing, monitoring, log access, cloud security, load balancing, clustering. Iaas customers access resources and services through a wide area network, such as the internet and use the cloud provider's services to install the remaining elements of an application stack.

2) AWS - Amazon web services (AWS) is a cloud computing platform that offers a variety of services to businesses and organizations. AWS provides on-demand services such as storage, computing power, databases, and machine learning services, and is priced on a pay-as-per use basis. AWS includes a combination of infrastructure as a service (Iaas), platform as a service (Paas) and software as a service (Saas) offerings. AWS was launched in 2006 and is used by millions of customers, including start-ups, enterprises and government agencies. Some benefits of using AWS include: cost efficiency, scalability, Agility. The fundamentals of AWS keep on maintaining the applications reliable and scalable with services globally with coming to a strategic deployment of resources for optimal performance & resilience.

Some of the main fundamentals of AWS:

1) Regions: AWS provide the services with respective division of regions. The regions are divided based on geographical areas / locations & will establish data centers.
2) Availability Zones (AZ): To prevent the data centers for the natural calamities or any other disasters.
3) Global Network infrastructure: AWS ensures the reliability and scalability of services through setting up its own AWS Network infrastructure globally.

EC2: Stands for Elastic compute cloud. EC2 is an on demand computing service on the AWS cloud platform. Under computing, it includes all the services a computing device can offer to you along the flexibility of a virtual environment. It also allows the user to configure their instances as per their requirments ie allocate the RAM, ROM and storage according to the need of the current task. Even the user can dismantle the virtual device once its task is completed and is no more required. For providing., all these scalable resources AWS charges some bill amount at the end of every month, the bill amount is entirely dependent on your usage.
EC2 allows you to rent virtual computers. The provision of servers on AWS cloud is one of the easiest ways in EC2. EC2 has resizable capacity. EC2 offers security, reliability, high performance. EC2 is a web service which is.

provided by the AWS cloud which is secure, resizable and scalable. You can deploy your applications in EC2 servers without any worrying about the underlying infrastructure. You configure the EC2 instance in a very secure manner by using the VPC, subnets and security groups. You can scale the configuration of the EC2 instance you have configured based on the demand of the application.