Architecture of Cloud Computing

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Cloud Computing, is one of the most demanding technologies of the current time and 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 uses cloud computing services for storing information and accessing it from anywhere and at any time only with the help of the internet. In this article, we will learn more about the internal architecture of cloud computing.

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What is Cloud Computing?

Cloud Computing means storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. Cloud computing is also referred to as Internet-based computing, it is a technology where the resource is provided as a service through the Internet to the user. The data that is stored can be files, images, documents, or any other storable document. 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.

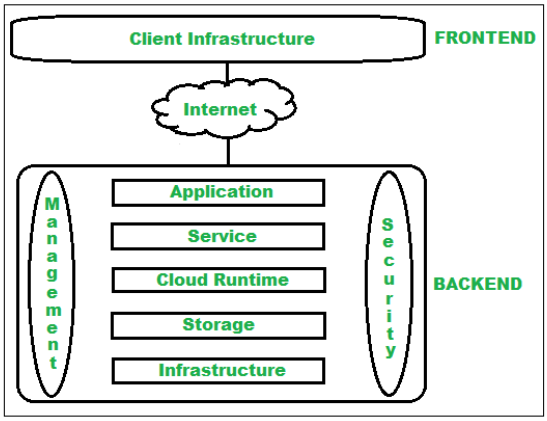
Cloud Computing Architecture

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.

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

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.

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.

Components of Cloud Computing Architecture

Following are the components of Cloud Computing Architecture

1. **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. In other words, it provides a GUI(Graphical User Interface) 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 the major three types of cloud based services like SaaS, PaaS and IaaS. Also manages which type of service the user accesses.
4. **Runtime Cloud**: Runtime cloud in backend provides the execution and Runtime platform/environment to the Virtual machine.
5. **Storage:** Storage in backend provides flexible and scalable storage service and management 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:** Management in backend refers to management of backend components like application, service, runtime cloud, storage, infrastructure, and other security mechanisms etc.
8. **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.

9. **Internet:** Internet connection acts as the medium or a bridge between frontend and backend and establishes the interaction and communication between frontend and backend.
10. **Database:** Database in backend refers to provide database for storing structured data, such as SQL and NOSQL databases. Example of Databases services include Amazon RDS, Microsoft Azure SQL database and Google CLoud SQL.
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, business intelligence and machine learning.

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.
- Provides high level reliability.
- Scalability.

Conclusion

Cloud Computing architecture provides a structural framework for designing, implementing and managing cloud-based solutions. Cloud Computing Architecture provides benefits like scalability, flexibility, and cost-effectiveness. It also solve related to security, reliability, and performance.

Frequently Asked Questions related to Cloud Computing Architecture

What are the 4 layers of cloud architecture in cloud computing?

The 4 layer of cloud computing architectures are:

1. Physical Layer

2. Infrastructure Layer

3. Platform Layer

4. Application Layer

What are the four types of cloud architecture?

The four type of cloud architecture are:

1. Private Cloud

2. Public Cloud

3. Hybrid Cloud

4. Multi Clouds

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