

CLOUD COMPUTING AND ITS APPLICATIONS IN HEALTHCARE

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Abstract- Cloud Computing is a promising field that allows its users to access the shared pool of resources, infrastructure, services, applications etc. with on-demand and pay-as-you-go basis. It decreases the cost of the IT uses and also provides flexibility, reliability, elasticity in computing. It has a wide range of applications in Computation, Data processing, Business Analytics, Machine Learning, Disaster recovery, Data protection and many more. In recent days Cloud Computing has been adopted at a chaotic pace by Healthcare industries. It helps in collecting a large volume of data, processed, stored and retrieves using Electronic Health Records (ERHs) which improves the quality of treatment with high availability of patient's records. Cloud computing offers a wide range of benefits in Healthcare systems which are Collaboration, Speed, Mobility, Cost effective, Scalability, Security and Privacy standards such as HIPAA (Health Insurance Portability and Accountability Act) etc. Cloud computing model as Software as a Service (SaaS), can offer healthcare organizations on-demand hosted services, by providing quick access to business applications and fulfilling customer relationship management. As an Infrastructure as a Service (IaaS), Cloud solutions can offer on-demand computing and large storage for medical facilities. As Platform as a Service (PaaS), it can offer a security-enhanced environment for web-based services and the deployment of cloud applications. So through this paper we want to enlighten how Cloud Computing services can be beneficial to the modern Healthcare system.

Keywords- Cloud Computing, Healthcare system

1. INTRODUCTION

Cloud is a term refers to access computer, information technology (IT), and software applications through a network connection, often by accessing data centers using wide area

networking or Internet connectivity. In simple terms, 'cloud' is a metaphor for the Internet.

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud Computing is a general term used to describe a new class of network based computing that takes place over the Internet,

- Basically a step on from Utility Computing
- A collection/group of integrated and networked hardware, software and Internet infrastructure (called a platform).
- Using the Internet for communication and transport provides hardware, software and networking services to clients

These platforms hide the complexity and details of the underlying infrastructure from users and applications by providing very simple graphical interface or API (Applications Programming Interface).

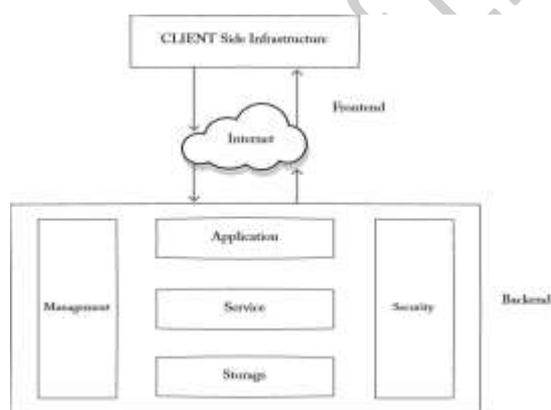
- In addition, the platform provides on demand services, that are always on, anywhere, anytime and anyplace.
- Pay for use and as needed, elastic
 - scale up and down in capacity and functionalities
- The hardware and software services are available to
 - general public, enterprises, corporations and businesses markets

Cloud computing is shared pools of configurable computer system resources and higher-level services that can be rapidly provisioned with minimal management

effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.

- Cloud computing is an umbrella term used to refer to Internet based development and services
- A number of characteristics define cloud data, applications services and infrastructure:
 - Remotely hosted: Services or data are hosted on remote infrastructure.
 - Ubiquitous: Services or data are available from anywhere.
 - Commodified: The result is a utility computing model similar to traditional that of traditional utilities, like gas and electricity - you pay for what you would want!

Cloud computing architecture refers to the components and subcomponents required for cloud computing. These components typically consist of a front end platform (fat client, thin client, mobile device), back end platforms (servers, storage), a cloud based delivery, and a network (Internet, Intranet, Intercloud). Combined, these components make up cloud computing architecture.



Common Characteristics for Cloud Computing

- Massive Scale
- Resilient Computing
- Homogeneity
- Geographic Distribution
- Virtualization
- Service Orientation
- Low Cost Software

- Advanced Security

Essential Characteristics

- On demand self-services:
- Broad network access:
- Resource pooling:
- Rapid elasticity:
- Measured service (pay per use)

Benefits of cloud computing

- Scalability
- Elasticity
- Availability
- Reduced IT costs
- Automatic backup and recovery
- Flexibility
- Productivity
- Security
- Mobility
- Collaboration

2. CLOUD COMPUTING IN HEALTHCARE

Now a day's Cloud computing technologies hugely applicable in health care industries. The demand has increased during the past few years due its benefits. Health Insurance Portability and Accountability Act (HIPAA) was basically designed to protect the privacy of patient's medical health records.

HIPAA does the following:

- It provides the ability to transfer and continue the health insurance coverage for millions of American workers and their families when they change or lose their jobs.
- It reduces fraud and abuse of healthcare.
- It mandates industry-wide standards for health care information on electronic billing and other processes.
- Requires the protection and confidential handling of protected health information.

HIPAA omnibus and the American Recovery and Reinvestment Act (ARRA) requirements demanded everyone in the healthcare industry to begin the movement of patient's records and other data to cloud computing technologies.

3. BENEFITS OF CLOUD COMPUTING IN HEALTHCARE

- Flexibility
- Reliability
- Mobility of records
- Speed
- Security and Privacy
- Low latency
- Reduction of costs

4. CONCLUSION

Cloud computing in healthcare increases the efficiency of the industry, while decreasing costs. Cloud computing makes medical record-sharing easier and safer, automates backend operations and even facilitates the creation, and maintenance of, telehealth apps. The cloud computing solutions in healthcare can help the physicians to stay in touch with their patients and examine their health condition effectively at a low cost.

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