

# E-Healthcare System using SAC in Cloud Computing

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**Abstract**—Access control policies have become an important issue in the security field of cloud computing. Access control methods which considered the basic relations among different entities in the cloud computing. This project enriched the semantics web technology with access based control which is able to apply in the e-Healthcare System. The semantic approach of Semantic Access Control (SAC) and it is the foundation to achieve the access based control in cloud computing. SAC model is scalable and it is easier to solve the problem. It can be extended by RBAC (Role Based access control) which considered the semantics of object and also associates with the concepts of objects. This model is used some syntax elements like condition, object based on attributes and actions and also working on the implement of this approach in e-healthcare application.

**KEYWORDS**—Semantics access control, Role based access control, Semantic web based technologies, E-healthcare System.

## OBJECTIVES

To provides more security level and improve the efficiency of e-healthcare system. It reduces the time consumption and also it improves the productivity of healthcare system. Software implementation will be more inflexible.

## I. INTRODUCTION

Cloud computing allows users to put all data and services into cloud and gets all kinds of services from cloud. The term Cloud computing denotes the use of cloud or Internet-based

Computers are based on variety of services. Cloud provides different types of services with least cost. In fact, applications and information using of cloud hosting have the risk of loss of data or illegal access. Therefore, it needs to have appropriate permissions when users to access the applications or data. At present, they already have many security specification and technologies.

### Services are:

- A. Platform as the services
- B. Software as the services
- C. Infrastructure as the services

Some of the cloud services provide Google, Amazon etc. That makes the remote collaboration easier. It is used to store the information. It will be the significant changed in cloud computing environment. The development of cloud computing is still facing enormous challenges. Cloud computing is a great flexibility and ease of use; it makes the safety of data and cloud computing applications becoming one of the biggest problems. SaaS is a model of a Software Development where an application is hosted as a service provided to Customer across the Internet. By using the Cloud infrastructure a pay as used and On demands all of us can save in capital and operational investment. Cloud computing enables companies and application which are system infrastructure dependent to be infrastructure less.

### 1.1 Advantages of cloud computing

- Lower computer costs.
- Improved performance.
- Reduced software costs.
- In stand software Updates.
- Latest version availability.
- Device Independences.
- Unlimited storage capability.
- Increased data reliability.

### 1.2 Disadvantages of Cloud Computing

- Stored data can be lost
- Stored data might not be secure.
- Each cloud system contains different protocols and different API, may not be possible to run in application cloud based system.
- Even with a fast connection, web-based applications can sometimes be slower than accessing on our own pc.
- Amazon as created its own database system and work flow system.

### 1.3 Introduction of E-Health care

In the field of healthcare which needs proper and correct communication and record keeping, the use of information and computer technology lags behind other areas. If the medical data of a person or patient is stored for future use, it may help in diagnosis of future ailment for the individual patient and will also support for appropriate treatment. To deliver affordable and quality healthcare to human community it is essential to make effective and efficient use of information technology in healthcare systems.

#### Advancing Health care Sustaining Payor and Provider Business Models and Care Delivery

- Lower Costs
- Improve Outcomes
- Improve Data Quality
- Improve Processors
- Provide better Patient care

This E-Health care environment will focus on Patient centric system that reduce complexity, improve

efficiency, and provide better patient outcomes. The transition towards E-health Care a vision of personalized health care that encompasses everything from patient empower to having a single slice-through view of the patient ,will require a move away from an acute delivery platform to one that will focus more on managing the patient for life. The modern healthcare system has an extremely complex structure. With the rapidly evolving technologies that are reshaping medical knowledge and how diseases are detected and managed, healthcare will become even more complicated.

### 1.4 Background

The goal of healthcare systems is to be responsive to the expectations of the population and it should be at an affordable cost. A healthcare system consists of people, institutions and resources to deliver healthcare services to meet the health needs of the target population. The healthcare system can be evaluated on the basis of quality, efficiency, acceptability and equality. These can also be summarized with “the five C’s”: Cost, Coverage, Consistency, Complexity, and Chronic illness

### 1.5 Semantic Access Control

Semantic access control (SAC) is based upon RBAC. We use ontologies for the RBAC security model and implement access control system in semantic web environment. Our goal is to request and extend the RBAC model using semantic web technologies. RBAC involves additional effort from the host organizations in deciding which roles or users from remote organizations should have access to which object. Based on RBAC, a semantic authorization rule has the following definition. Ontology is used for cloud computing environment with highly heterogeneous and structured vocabularies. Using ontologies to describe relationships between data is increasingly used in information and knowledge management. Ontology is capable of describing concepts that exist in certain domain and relationships among them.

### 1.6 Drawback of E-Health Care

One of the major problems in healthcare today is that limited communication between the patient and the physician typically exists only within the physician's practice: once the patient leaves the office, communication is very limited. However, monitoring the recovery progress is essential for good healthcare. At present, the speed, flow, accuracy and access to vital health information is slow because the majority of healthcare communication is paper-based. With the advent of the digital age, the technology is available which has a potential to deliver health information about the right person to the right place at the right time in a safe and secure environment.

## II. LITERATURE SURVEY

The access control means monitoring all requests, which evaluating themselves with related policies and making a decision whether they need to access or not. The cloud computing models such as cloud, grid etc. The computing model is a security challenges which includes access control. We propose an architecture by using usage control (UCON) in cloud computing. This model is used to cover some drawback of traditional access control and also introduced a model for obligation enforcement which is used to support all the types such as subject or a system can be done [e1].

We propose an isolation enabled role based access control model (I-RBAC), the basic idea of this model to incorporate with the isolation concepts. This model can be executed inside the isolation environment or else the predefined operation can be done in the model. The National Institute of standards and Technology (NIST) used to elaborate the RBAC address. Different needs are present in commercial and government sectors. Research have been considering in many ways like MAC complexities. The implementation can be done with any application and it can be more flexible and dynamic to the access control model [e2].

In this paper we introduce an ongoing project that propose's the development of a pervasive health service system. The purpose of this project is to help patients using the healthcare system. By providing the healthcare services at home is an important issue which is used to improve the personal healthcare and save hospital resources. The personal healthcare status can be recorded and monitored by the preventive medicine. Our research expects to make use of technologies can create a personal healthcare system which helps to

prevent diseases, and then it improve the quality of healthcare and also to reduce the costs of healthcare [e3].

The semantic access and web services are based on security. Semantic web based form a new application under the open and close internet. It is used to identify the verification and the semantic web services. Assurance that there is no effective access control method which can be extendable in the security level. The variety of security technologies and the components can be used to achieve the security. Semantic web comes under three stages are

- Service discovery
- Service contact
- Service customization and management [e4].

This paper analyses the wireless network and the significant traffic loads, the protocols are based on random access algorithm. A MAC (Medium access control) protocol plays an important role regarding the throughput and energy efficient. In the proposed system they announced that timeslot allocation is avoided by the network co-ordinates. Experimental Tests are shown to reduce the packet delivery ratio which is more efficient to increase the retransmission than the frame size. It helps to improve the packet delivery ratio and reducing the energy consumption in the e-health wireless sensor network [e5].

Reviewing the current state of the art, and also used to identify some existing open issue which can be added functionalities desirable for the future in heart health wireless assistance. The efficient and effective wireless networks are forming commercial application. They reported and discussed about the expected future developments toward a wireless body area network. The overall representation of the state of the art in health care assistance which has been reported, with special focus to identify some open challenges and innovative solutions are given in heart health assistance [e6].

This paper focused on semantic interoperability for integration of various information systems. Semantic

enhancements can be captured in the information models. It analyses how to demonstrate the proposed approach like semantic design and we use scenarios in integrating. The semantic problems are more difficult one to use. This makes the consistent of interpretation. Software implementation can be more inflexible. Semantic objects can be encoding their information with the XML files. By using this ontology approach it has been developed [e7].

In this paper it analyses the recent concepts of ICT (INFORMATIONCOMMUNICATION TECHNOLOGY)The main goal of HER is to connect person and to display the health care database .This approach indicate the data structure, message development, communication ,architecture clinical documents, semantic contents, security and business requirements etc. The purpose of ELECTRONIC HEALTHCARE RECORD (EHR) is used to improve the evaluation of quality care, and public andpopulation health .It requires both the functional and semantic interoperability security. In future it develops the necessary standard as soon as possible [e8].

In this paper it analyses the basic concepts of Health Insurance Probability – And Accounting Abet (HIPAAA).Here the main aim is to improve productivity of health care system by improving the development of system based arrangement and financial data using EDI. It represents the development and user of MARS (Medical Automated Record System. This will be more effective and efficient operation of health care treatment. The health care industry globally is facing the challenge of exponentially increasing costs. We close here by strongly urging for an E-Knowledge perspective as a strategic imperative in health care [e9].

The design of proper models for authorization and access control for electronic patient record (EPR) is essential to a wide scale use of EPR in large health organizations. In this paper, we propose a contextual role-based access control authorization model aiming to increase the patient privacy and the confidentiality of patient data, whereas being flexible enough to consider specific cases. This model regulates user's access to EPR based on organizational roles. It supports a role-

tree hierarchy with authorization inheritance; positive and negative authorizations; static and dynamic separation of duties based on weak and strong role conflicts. The RBAC model has suitable capabilities to support the access control requirements of an EPR at enterprise level, such as a feasible fine-grain access policy administration for a large number of users and resources, policy neutrality and the need-to-know security principle The relationship between a user and an EPR can also be used to define an access policy to the role “patient,” so that users with this role can only see their own data. Automatic role activation leaves the user free from explicitly selecting a role, making RBAC transparent to final users. Finally, with adoption of open and distributed standards for implementation of this model, heterogeneous EPR components can request user authentication and access authorization services in a unified way across multiple platforms.[e10]

Virtual patient records provide a means for integrated access to patient information that may be scattered around different healthcare organizations (or hospital departments).As Intranets provide, among others, secure access to medical information; they constitute an appropriate technological infrastructure for a virtual patient record implementation. In such cases, a security policy can be enforced by combining the security features of the Intranet with the security features of the intra organizational systems. Thus, the virtual patient record acts as an enterprise integration application and its functionality is most useful with information from healthcare enterprise's existing information systems. Intranets can supply the infrastructure backbone that allows the coordination and integration of healthcare serviceswithin and across settings of care and healthcare providers. It has been shown that workflow information can be used to increase the confidentiality and availability of information in a virtual patient record implementation. The proposed system is intended to be used in conjunction with the local and Intranet security systems and uses workflow specifications to dynamically control authorization as a workflow process proceeds. An implementation of the system in Java is currently in progress.[e11].

As a response to the challenge of providing high-quality healthcare services with reasonable costs while the elderly population and the associated chronic diseases increase, SAPHIRE architecture provides an intelligent

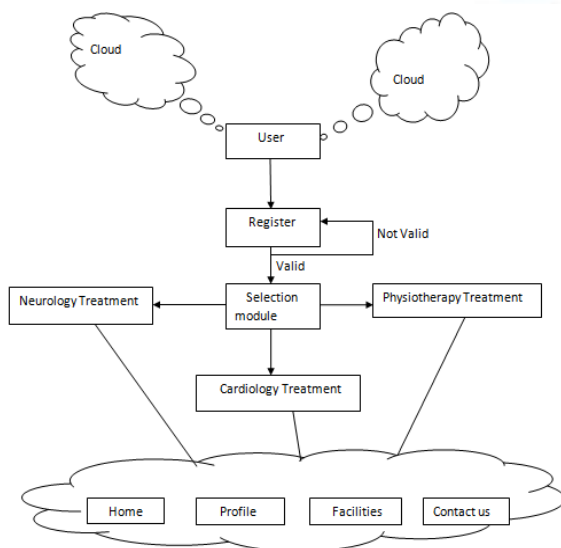
healthcare monitoring architecture. The monitoring of patients is achieved through a clinical decision support system based on clinical guidelines. SAPHIRE provides the necessary interoperability layers to access the patient's vital signs from wireless medical sensors and the electronic healthcare records of the patient in order to exploit them in the decision process seamlessly. Once the patient begins the exercise, leaving the state of rest, monitoring the status becomes even more crucial. During the training, the patient can signal events (such as pain and dyspnoea) at any time using the touch screen. This action will abort the training and trigger an alert that will be sent to the clinic. Sensor data are used to determine the patient's status during the exercise session.[e12].

### III. PROBLEM DEFINITION

E-healthcare information is a growing need for healthcare service to the consumer. In order to improve their efficiency, speed and the time factor will be more complex. For that Modification Semantic Access control is used. Key confidentiality is presented based on semantic access control using cloud computing. In this method the time complexity for large member of operation has been reduced.

### IV. EXPERIMENTAL PROCESS

The implementation of e-healthcare system is done by Semantic Access Control through cloud computing. It



provides more security for semantic access control and web based technologies. The process for E-health care system .The user need to register then only they can login to the form.If the registration is valid the homepage will be opened, if it's invalid they should register again.The homepage contains links .From the link user can prefer their own choices. The links are Cardiology treatment, Physiotherapy treatment and Neurology treatment. Each links contains profile, facilities and contacts. All these process is done by cloud computing environment.

### V. ARCHITECTURE

Fig-1E-HEALTHCARE SYSTEM IN CLOUD COMPUTING.

### VI. ALGORITHM

Step 1: start

Step 2: user should register first.

Step 3: If it is valid, it will go to the selection module.

Step 4: Otherwise user need to register again.

Step 5: Selection modules contain three links.

Step 6: Links are cardiology treatment, Neurology treatment, Physiotherapy treatment.

Step 7: User can go with any links as they need.

Step 8: Each and every links has home, profile, facilities and contacts.

Step 9: All process is done using cloud.

Step 10: End.

## VII. CONCLUSION

In this paper we have proposed the some semantic approach called Semantic access control. SAC is the foundation of access control in cloud computing environment. This paper introduces E-Health Care System using SAC. In this model we can add more elements, condition, rights and priority. Here we use some syntax elements such as attributes which are based on objects. This semantic approach can easy to solve the problem of access control. The implementation of this process is done by E-health care System.

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