CDA Generation and Integration on Cloud
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Abstract—The patient’s details about its safety and quality care are laugh as successfully is necessary for the clinic, but it has the need of interoperability between Health Information Exchange at different hospitals. The Clinical Document Architecture (CDA) developed by HL7 is a core document standard to assure such interoperability, and extension of this document format is critical for interoperability. Badly, not interested hospitals for adopt interoperable. The data spread in different documents are hard to manage for that problem HIS more hospitals start using the CDA document format. In this, Open API service based on cloud computing we describe our CDA document generation and integration, through which hospitals are allow to suitably generate CDA documents without having to purchase proprietary software. Our CDA document compromise structure facilitates distinctive CDA reports per tireless into a lone CDA record and master and patients can examine the clinical data in consecutive demand. Our arrangement of CDA report age and combination depends on distributed computing and the administration is offered in Open API. Engineers utilizing distinctive stages in this manner can utilize our framework to build interoperability leakage detection, examination of the purity of petrol will employ.

Key words: Health Information Exchange, HL7, CDA, Cloud Computing, Software as a Service, Open API

I. INTRODUCTION
One of the key features of the cloud includes the flexibility, so we used the clouds for large data storage system. At the point when a patient is perceive at a center, a CDA archive recording the analysis is produced. The CDA document can be shared with other clinics if the patient agrees. The concept of family doctor does not exist in some countries; therefore it is common for a patient to visit a number of different clinics. The interchange of CDA document is triggered in the following cases: when a physician needs to study a patient’s medical history; when referral and response letters are drafted for a patient cared by multiple clinics; when a patient is in urgent situation and the medical history needs to be more documents means that data are distributed in different documents. This significantly holds up the medical personnel in making decisions.

Thus, when the greater part of the CDA reports are incorporated into a solitary archive, the medicinal work force is enabled to survey the patient's clinical history helpfully in sequential request per clinical area and the subsequent care administration can be conveyed all the more viably. Shockingly for the time being, an answer that coordinates different CDA records into one doesn’t exist yet to the best of our insight and there is a handy constraint for singular healing facilities to create and actualize a CDA report combination innovation.

II. LITERATURE REVIEW
K Ashish et.al [1] Access to multiple users should be provided only to authorize users.

The flexibility of choosing operating system. We found that requirement of access control model for healthcare can support task and multiple cloud applications.


S.M Huff et.al [3] Health information exchange based on cloud computing

Claim by author: Scattered data of patient is the big problem. CDA Document integration system minimize the processing time to make decision faster for patient.

J.D’ Amore et.al [4] secure sharing of personal health record in cloud using attribute based encryption. Securing personal healthcare files and their privacy is the big issues. Attribute based encryption can solve the problem of security and privacy in better way.

III. EXISTING METHODOLOGY
A. Advance Encryption Standard
Implementation of advance encryption standard algorithm (AES)” but these system is using symmetric key that’s why it cannot secure the system in better way.

Advance Encryption standard algorithm is a symmetric block cipher. In which used only one secret key. The same key is used for encryption as well as decryption. Basically AES standard key sizes are 128 bit, 192 bit and 256 bit. For 128 bit key size but the data size uses by The AES was not sufficient for computation but these can be sold from RSA.RSA better security than the AES. RSA use 245 byte i.e 2048 bits, in this way it can overcome the problem of small data size.

B. Genetic Algorithm
Genetic algorithm such as the multi agent genetic algorithm can offer superior performance over traditional genetic Algorithm very large scale and dynamic optimization problems are concerned. Likewise improve genetic algorithm (IGA) has been shown to be nearly twice as fast as finding optimized solution as a purely genetic algorithm placement solution.

− A strategies in view of open source devices for actualizing distributed computing framework with high adaptability and completely adjustable.
− Simple, flexible, and hierarchical.
− Management and application interfaces at different levels.
IV. PROPOSED WORK

An answer that incorporates numerous CDA archives into one doesn't exist yet to the best of our insight. There is a useful constraint for singular doctor's facilities to create and execute a CDA report combination innovation.

We proposed following systems:

- A CDA document generation system that generates
- CDA report reconciliation framework that coordinates numerous CDA archives scattered in various doctor's facilities for every specialist and patient.
- STEP 1: Select two prime number P&Q
- STEP 2: Calculate N=P*Q
- STEP 3: Select the public key, E=(P-1)*(Q-1)
- STEP 4: Select the private key D,(D*E)mod(P-1)(Q-1)=1
- STEP 5: For encryption, calculate the text (CT) from plaintext (PT).
- STEP 6: Send CT to the receiver.
- STEP 7: For decryption, calculate the plaintext (PT) from the cipher text (CT)

A. Proposed Architecture

![Architecture Diagram](image)

Fig. 1: Architecture of CDA

1) Description
   a) Healthcare service provider
      1) view received CDA and send per req to cloud.
      2) access all CDA report from cloud.
      3) send replay latter for CDA report.
      4) view all replay latter for corresponding CDA report.
   b) E-Health Cloud Server
      1) view all CDA from corresponding hospital.
      2) select corresponding and send CDA report.
      3) view authorized doctor and end user.
      4) view CDA req and give permission.
      5) view all CDA search key from user and generate.
      6) view all CDA replay from doctor.
      7) view transaction and doctor and user hospitals.
      8) view chart result based on cda allergies family history.

c) Hospital A
   1) login.
   2) Generate CDA encrypted and upload to cloud.
   3) view all generate CDA generation.
   4) view all CDA replay from doctors/helthcare service provider.

d) Hospital B
   1) login.
   2) generate and CDA encrypted and upload to cloud.
   3) view all generated CDA generation.
   4) view all replay doctor/helthcare provider.

e) Patient/Enduser
   Register & Logine.
   1) search key and enter search key to search for special CDA.
   2) request for CDA view for cloud.
   3) view all CDA generation and replay from doctor.

B. Process Flow

![Process Flow](image)

Fig. 2: Process Flow of CDA

C. Data Flow

![Data Flow](image)

Fig. 3: Data Flow of CDA
V. PROPOSED METHODOLOGY
A. Software Requirements
- Tools: Net beans 7.2.1
- Database: MYSQL

B. Module Distribution
1) Healthcare Provider
   In this module, Provider needs to enlist to cloud and View all
   the CDA got and demand to the cloud to get to the produced
   CDA from healing facility - An and doctor's facility - B.
2) Patient/End User
   In this module, the user/patient Registers to cloud and is
   authorized by the cloud and Logs in the user/patient has to
   request the search key to search the patient CDA. [3] And also
   request for the view permission from the cloud.
3) Hospital – A
   Log In this module, CDA is generated, encrypted as hospital-
   A document and then uploaded to cloud. [5] And also can
   view the CDA replies from Healthcare service
4) Hospital - B
   In this module, CDA is created, scrambled as doctor's facility
   B archive and after that transferred to cloud. [6] And
   additionally can see the CDA answers from Healthcare
   specialist organization. Furthermore, can see all the created
   CDA's.
5) Cloud Server
   In this module the cloud will authorize both the doctor and
   the patient/user Receive all CDA generated from the hospitals
   and store. Select the specialist and Sends the CDA report for
   relating specialist. [8] Provide permission for the CDA
   requests requested by the provider and also generates the
   search key requested by the user. This module shows the
   charts/Results based on the CDA allergies.

C. Use of AES Algorithm for Security
1) Work Done
   We have done with the work of home page, admin, doctor,
   and patient login and these database connectivity.
2) Remaining Work Done
   In the remaining work we have left with hospital work, cloud
   work remaining with the encryption work to encrypt
document RSA algorithm.

VI. OUTCOME POSSIBLE RESULT
The possible outcome will be a structure of a basic, simple
document including both a header and the body.
Document components may be nested. Documents are
“written” in Extensible Markup Language (XML), a
language that supports both human and machine readable
formats.
The header component provides information about
- The type of CDA and the basic structure
- Who the document is about
- Who “wrote” it
- Where it came from
- Where it is going
- When it was created

The body contains the information about the person
who is subject of the document. In a simple document, it may
be a basic piece of information such as an X-ray image or a
PDF document. Such basic pieces of information are called a
non-XML body.

VII. CONCLUSION & FUTURE SCOPE
The CDA record organize for clinical data in ordinary plan to
guarantee interoperability between doctor's facilities.
Our distributed computing based CDA creation and mix structure
has a couple enunciated points of interest over other exits.
CDA record era and mix framework in light of cloud server
is more helpful over open administrations for CDA document
if the assortment of CDA document increments

A. Future Scope
The CDA record organize for clinical data in ordinary plan to
guarantee interoperability between doctor's facilities.
Our distributed computing based CDA creation and mix structure
has a couple enunciated points of interest over other exits.
CDA record time and blend system in light of cloud
server is more useful over open organizations for CDA
archive if the combination of CDA report increases.

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