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A Cloud Computing Solution for Human Health Diagnosis and Generating Test Result for Current Test Prediction

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Abstract: ***In recent year, when human being goes under the patient circumstances they face complex treatment process. Treatment process may contain one or more treatment cycle. It depends on improvement of patient health. To maintain such treatment historical data i.e. health data is tedious job. During the treatment to maintained relationship among treatment entities is difficult. This research papers mainly focus on how relationships maintain among treatment entities within single treatment segment or multiple treatment segments. Segment is collection of treatment entities such as patient → hospital → pathology lab → pharmacy → home in sequence. All segments contain same kind of entities with the exception of characteristics. By using historical health data prediction of current treatment is easy and current prediction result must store for next prediction result..***

Keywords: Treatment cycle, Treatment historical data, Treatment entities, Treatment segment.

I. INTRODUCTION

Now a day cloud computing play important role in online application. Initial setup of this research paper each treatment entities must register in experiment server called as PHR (Personal Health Record) server. Treatment entities such as Doctor, Pharmacy department and Pathology lab register in open environment with the exception of some parameter like hospital registration number, shoepack license, laboratory registration number, etc. therefore such entity are called as open environment entities. After the registration is done PHR server generate id credential for later transaction. On the other hand patient registration must take under doctor entity with patient details such as name, address, date of birth, blood group, etc. therefore such entities is called as close environment entities . Once registration is done PHR server generate the patient public key this key must share within treatment process. Registration process of both open and close environment entities at one time if any updating is required it performed within his/her account. After registration process complete both entities ready for transaction. Generally patient treatment process performs in sequence i.e. patient → hospital → pharmacy→ home and sometime pathology lab involved in this sequence [1].

By using concept of cloud computing treatment process is shared by above defined sequence. Treatment sequence is part of treatment segment. Treatment segment is collection of treatment sequence for patient. Treatment sequence flow at once or multiple times it depends on improvement of patient health. The treatment sequence is under the observation of doctor and sometime treatment process move between segments. Each entity in sequence generates the result according to patient public key. This result called as instance of PHR record. Collection of treatment sequence data for patient called as Personal Health Record. PHR is store in PHR server according to entities credential for later reference. PHR called as historical data of patient. Historical data is share within treatment entities for current prediction.

Representation of historical data during current prediction is depending on coordination of current and past prediction of that PHR instant. Comparing the current PHR instance with past PHR instance is done with help of symptoms parameter and personal details according to patient credential. Representation of current prediction is done into the two ways i.e. graphical and grid view [4].

II. NEED OF CLOUD COMPUTING

In response to this paper, patient treatment required all the resources which are geographically allocated at different location. Millions of transaction may strike on the server concurrently. Increasing concurrent transaction decreasing response time of server and vice versa. Table I show our experimental result of basic web contents over the share pool server.

TABLE I
Show response time of basic web contain

Destination	Request Count	Minimum	Average	Maximum
/index.html	550	1.1s	1.3s	5.8s
/support/resurce.html	98	32ms	2.1s	11.2s
/viewcard.jsp	218	4.8s	9.9s	5.1s

To overcome such problem we use the cloud computing concept. Cloud computing is nothing but grid computing it share resources between communication network to get performance of application. Each resource dedicated for particular operation [2]. During the concurrent transaction to avoid the conjunction of resources acts dedicated pool process rather than shared pool process.

TABLE II
Relationship between experiment and cloud computing

	Experiment	Cloud Computing
Infrastructure	Need to huge infrastructure which is collection of treatment segments and different type of server.	A cloud computing is collection computing units which is referred as resources and shared between them.
Storage	In the application storage is dividing into multiple servers which are monitor on storage. By using server data can be easily access within storage.	To store the large amount of data into computing units and access efficiently.
Information	Integrate the every instance of information and form PHR record which is store into PHR server and represent historical data according to past prediction information.	Support user integrated the information form different computing units.
Development Tendency	Share the PHR record within credential person and minimise current prediction analysis time.	Share the distributed information from single location.

Following are service model of cloud computing which is essential to enhanced the operations of application i.e. research paper topic [3].

A) Software as a Service (SaaS): SaaS service method provides service to consumer to run the application on cloud infrastructure. Application must provide the client interface to communicate with resources. Treatment process is essential to access resources quickly. To provide fast communication with resources interface GUI must provide on the quick basis tools e.g. auto fill process. The application is also accessible through thin client interface such as web browser. Consumer is restricted from background of application infrastructure including networks, server, operating system, storage, etc.

B) Platform as a Service (PaaS): Responsibility of application developer must deploy the application over cloud infrastructure. During the development of application developer must check all the criteria of cloud computing infrastructure. There are so many platform uses during development of application such as language, library, operating system, etc. End user is aware from the entire development platform about application. Application enables the end user to configure the GUI on client side on the other hand application administrator must configure application-hosting environment.

C) Infrastructure as a Service (IaaS): Thinks of IaaS implementation must remember during the documentation of application. After the development of application all application units put into single bucket and perform black box and white box testing over it to check how the cloud computing infrastructure support to application.

There are so many development models in cloud computing and now move toward which is preferable for application [4].

A) Public cloud: Public cloud infrastructure is openly used within organization or outside the organization. Public could computing is collection of one or more computer network they have no restriction of its user. Each Network owner is not able to configure the cloud without the other network owner permission.

B) Private cloud: Private cloud is use within single organization with personal credential of computing units. Network owner must be able to configure network.

C) Community cloud: Community cloud is the collection of virtual human transaction account to achieve the particular objective. All virtual transaction account share between them for communication. Community cloud infrastructure is use within multiple organizations some time third party network involved in it. Each Network owner is not able to configure the cloud without the other network owner permission.

D) Hybrid cloud: Hybrid cloud infrastructure is able to combine the other cloud infrastructure such as (Private, public and community) and this new cloud infrastructure called as hybrid cloud

By analysis within experiment we observe that. "A Cloud Computing Solution for Human Health Diagnosis and Generating Test Result for Current Test Prediction" application uses the Hybrid cloud computing.

III. System Design

"A Cloud Computing Solution for Human Health Diagnosis and Generating Test Result for Current Test Prediction" is the collection of Treatment segment, PHR server, Prediction analysis server, GSM server and all they are communicated with each other through cloud computing.

Terminology of resources required for experiment is given below.

A) Treatment segment: Treatment segment is the collection of treatment entities (home, patient, doctor, pharmacy pathology lab). Experiment environment contains the multiple segment in which patient is move according to its health. Movement of patient within segment is single loop or multiple loops. By using doctor credential doctor can easily move the patient from one segment to another.

B) PHR server (Personal Health Record): PHR server is nothing but the collection of Personal Health Record. Each instance within treatment segment must be capture by PHR server for later reference. It makes the snapshot of whole treatment process. To overcome the problem of storage and accessing speed PHR server is always work on object oriented pattern rather than process oriented [5] .

C) PAS (Prediction analysis server): Experiment also required dedicated prediction server called PAS server. Traditional treatment process is more time consuming because to generate the current prediction we must analysis the past prediction. Past prediction is maintained on hard copy (prescription, test report, X-ray, etc.). Traditional treatment process does not provide any intelligence system to coordinates the current treatment and past prediction to generate the current prediction. Prediction analysis server provides such intelligence to current prediction result with the help of past prediction.

D) GSM server: Now a days human life is very fast to remember its daily needs some of application provide modern technology such as notebook, remember book, etc. To use this principle experiment maintained the GSM server which is useful to send the notification regarding the treatment process (prescription time, appointment time, etc.) [6].

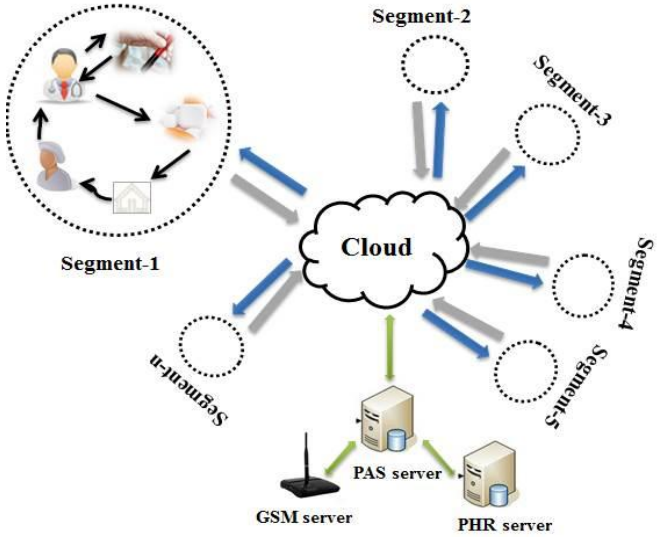

Figure 1 Structure of cloud computing with experiment server.

To understand the operation of experiment we can consider the example. Initial setup of experiment must create the identity within PHR server. To create the identity within PHR server all the entities within treatment segment must register into centralized server. We consider the patient which use the service of experiment that means patient enters into treatment segment using his/her public key. Doctor entity performs the treatment process on patient with the help of resources. Resources provide the past prediction result by using them, doctor generate the current prediction and store them into resources for later reference. After treatment process is over patient move to next entity that is pharmacy department (medical shop). By using patient public key owner of pharmacy entity is able to open patient sharable account to give the medicine. After completion of this two process patient move to his/her original place i.e. home. If patient health is improve with this treatment process then treatment process is over. All this operation is done into single treatment segment [1].

If patient health is not improved then multiple loop of treatment segment is done. Instead of that patient is not able to improve the health. Treatment segment is change by self-decision or doctor decision through doctor credential. All this process is done under the observation of other resources such as PHR server, PAS server.

IV. ANALYSIS OF PREDICTION

In our simulation, to represent result analysis experiment must use graphical and grid representation. But behind that analysis prediction server must generate the log file for every instant within the treatment process. Database recovery during transaction must be essential part. Log file is mechanism to store inappropriate change of transaction by using Rollforward and Rollback method [7]. Rollforward is the process when all the transaction is done successfully it update all the value in database on the other hand Rollback is method when any part of transaction is inappropriate all the transaction is rollback that means no any value update within database. Log file mechanism is useful for preventing both the PHR server and Prediction analysis server.

Experiment PAS server monitoring the every request which is flow on the direction of PHR server. That means each request to PHR server must be pass through Prediction Analysis server. Request is nothing but the required domain for each instance. Each value in the instance is called as domain which is store into the PHR server database. Following services provided by PAS server.

A) Analysis of current prediction: PAS server must maintain the index for each transaction. Index in database creates metadata by using existence one. By using index approach we can improve the performance and accessibility of database [7]. During the request of current prediction, server uses the index of past prediction. Sever perform the coordination among current prediction

parameter and past prediction result and form new current prediction result. New current prediction result must be store within index for later prediction result. Representation of current prediction must graphical or grid form. Graphical and Grid representation is depend on session timeout principle. Less time required to establishing the connection between server and client then graphical representation is occur is as shown in fig 2.

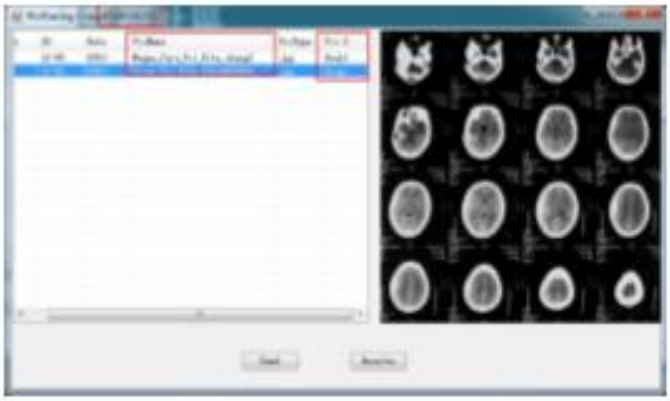

Figure 2 Graphical View

On the other hand, if more time required for establishing the connection between client and server then grid structure is occur as shown in fig 3.

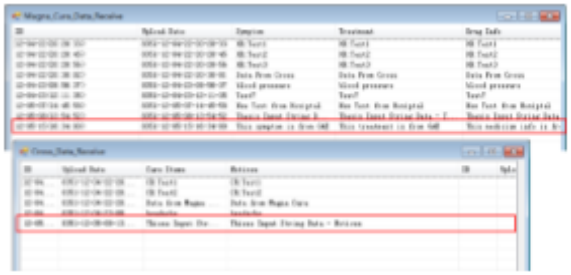

Figure 3 Grid View

Latency and stability of operation must be depending on pixel size of picture. In our experiment we access the 16 .jpg file to PAS server in the range of 20KB to 2.0 MB. After the analysis of experiment, result is found. The size of picture less than 600KB must access quickly and fast and greater than 600KB then it occur timeout problem. To avoid such problem we use the optional grid view representation as shown in fig3.

B) Searching of past test result: Searching of past test result is depending on the basis of web crawling technic e.g. Google search engine. Web crawling is nothing but searching technic in which controls finding the stack of URL that are already exist called as seeds. Finding the URL within stack, control finding the entire hyperlink within the page and this hyperlink URL is once again re-insert into URL stack. PAS Sever uses same approach for finding the past test result to open environment entities with the help of instance parameter rather than URL.

C) Monitoring on treatment segment entities: The application within the cloud computing is spread in wide area and it performs the millions of transaction. On the other hand traditional treatment process also performs millions of transaction per day. But so many doctor and pharmacy entities do misdeed process within it and easily leave this process without aware of any one. To overcome such problem PAS server monitors such transaction by using some parameter such as number of death during transaction process and identify which entities involved in transaction quickly. Such misdeed transaction must be block from single location with transparent process.

V. Conclusion and Future Work

In traditional treatment process is tedious job to maintained health data. Information sharing between entities such as patient, doctor, pharmacy and pathology lab is difficult and they have no way to share the information among them. For sharing the information between them it uses the lots of paper work and it's difficult to maintain the patient. To accomplish sharing of e-health information we use the base of Cloud Computing solution with PHR and PAS server. Cloud computing technic its powerful solution to access and store the e-health information quickly. Our research mainly focus on the implementation of cloud computing over experimental server i.e. PHR and PAS server. During the implementation of cloud computing over the server it needs SaaS model of cloud computing to solve the problem of high availability of data, quick access and support of thin client interface. To avoid such traditional complicated process we must divide the treatment process within treatment segment.

By using this clustering process conjunction of data is avoided. Multiple clustering data can easily handle by experimental server simultaneously. Experimental server can easily generate the current prediction result by using past prediction result.

By using this we observe that latency and stability of representation of graphical data is less. To solve this problem we currently use optional grid representation of data rather than graphical representation. But graphical representation is very easy to understand and analysis.

References

1. K E Kearley, G K Freeman and A Heath, "An exploration of the value of the personal doctor–patient relationship in general practice".
2. Sven Bugiel1, Stefan Nu¨rnberger1, Ahmad-Reza. "Twin Clouds: An Architecture for Secure Cloud Computing".
3. Dominik Birk January 12, 2011." Technical Challenges of Forensic Investigations in Cloud Computing Environments".
4. Yan Hu, Fangjie Lu, Israr Khan, Guohua Bai (2012). "A Cloud Computing Solution for Sharing Healthcare Information.
5. Kohei Honda and Mario tokro. " An object calculus for asynchronous communication, volume 512, 1991, pp 133-147".
6. Qiang Liu ; Inst. of Transp. Eng., Tsinghua Univ., Beijing ; Huapu Lu ; Hongliang Zhang ; Bo Zou "Research and Design of Intelligent Vehicle Monitoring System Base on GPS/GSM ".2006 6th International Conference at Chengdu.
7. Zaiane, O.R. ; Sch. of Comput. Sci., Simon Fraser Univ., Burnaby, BC, Canada; Man Xin ; Jiawei Han. "Discovering Web access patterns and trends by applying OLAP and data mining technology on Web logs" (22-24 Apr 1998).

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