



Efficient Secure Group Communication in Cloud Computing Environment

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Abstract— Cloud Computing has been envisioned as the next-generation architecture of IT Enterprise. In our day today life we are using many web applications. Many of us know to create web application which is very useful for our society. After creating our web application we don't know how to deploy our web application in cloud computing environment. Cloud provide different kind of services to us such as Software as a Service (SaaS) which uses a provider's applications over a network and Platform as a Service (PaaS) which deploys customer-created applications to a cloud and Infrastructure as a Service (IaaS) which rents processing, storage, network capacity, and other fundamental computing resources. The proposed system is deploying our web application in cloud computing is coming under the Platform as a service (PaaS). Cloud provides a different platform for us to install our web application. Proposed system uses Google App Engine as a cloud service provider for deploying a web application. As a result of this paper the proposed system only the group of people can access the web site without having any platform and the secret information, messages, images can be sent through internet with high security.

Keywords— Cloud Computing, Deploying Web application, Security, Group communication, Google App Engine

I. INTRODUCTION

In Alexander Zahariev "Google App Engine" [1] it say the application environment provide in Google App Engine that is web servicing is done dynamically manner and scaling and loading automatically and it can distribute web application request to many servers so many people can access at same time how to use python in Google App engine, and also say about sandbox, data store and development work flow but they does not say about how to deploy our web application in Google App engine. In Navraj Chohan , Chris Bunch, Sydney Pang, Chandra Krintz, Nagy Mostafa, Sunil Soman Rich Wolski "AppScale: Scalable and Open AppEngine Application Development and Deployment" [2] it say only how to deploy our web sites in Google App engine and procedure to install Google plug-in in eclipse SDK but it does not teach how to create our own web application and run it in cloud environment.

In Chieu , T.C. , Mohindra,A. , Karve, A.A. "Scalability and Performance of Web Applications in a Compute Cloud " [3] say us to create our own web application in eclipse SDK with Google plug-in but does not say about the security measure in Google App engine. In Prodan.R, Sperk.m, Oysterman.s "Evaluating High-Performance Computing on Google App Engine" [4] says the high-performance of cloud computing on Google App Engine. They use a graph to measure the high performance in Google App Engine by deploying many web applications but not about the security. But proposed paper will solve this entire problem. This paper divided into four sections 1. To create a photo collection (web application) and allow the user to use this photo collection website only by the valid person by sending the automatic email check to the user who register in this site. 2. Security provide to this photo collection web site in Google App Engine and security while sending email through Google 3.Deploying this photo collection web site in Google App Engine. 4. Accessing the photo collection web site through internet with the help of Appspot.com.

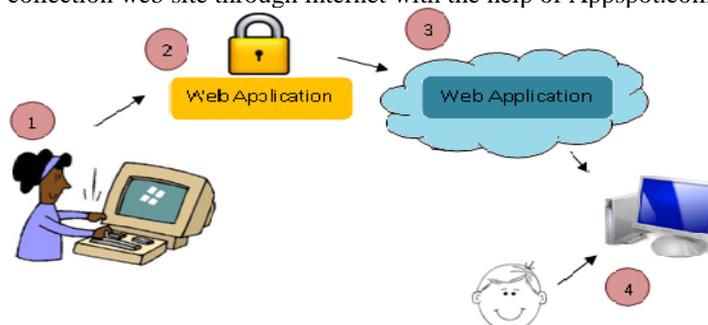


Fig.1 A architectural diagram of this proposed system

II. Creating Our Web Application

In Google App engine we can develop our web application in two languages they are python and java. Photo collection web application is developed by eclipse SDK 3.5 using java advanced programming language. Since it is a web application we need to use HTML and JavaScript in our application in order to make it more users friendly.

In Home page user have to register their details after form validation it will post to photo servlet then in photo servlet it will send automatic mail to user email id then valid user will enter in to Photo Collection web site. Block diagram of working flow is mentioned in fig.2.

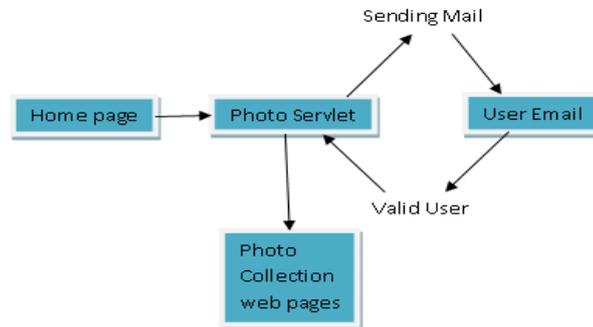


Fig.2 Work flow of application

Sending automatic email in Google App Engine is transfer through several layers of network it involves session, transport layers. Session layer will create a default instance with properties and it's a MIME messages and send through transport layer Fig.3.

```

Properties props = new Properties();
Session session = Session.getDefaultInstance(props, null);
String msgBody = "Thanks for register in this Website..";
try {
    Message msg = new MimeMessage(session);
    msg.setFrom(new InternetAddress(
        "cpriyadarshin:61@gmail.com",
        "Photo Collection.com Admin"));
    msg.addRecipient(Message.RecipientType.TO, new
    InternetAddress(emailid, name));
    msg.setSubject("Your Photo Collection.com account
    has been activated");
    msg.setText(msgBody);
    Transport.send(msg);
}
  
```

Fig.3 Source code for email sending.

III. SECURITY FOR WEB APPLICATION

Since we are deploying our web application in cloud we need to concentrate on security provide for our web sites. In Google App Engine they provide security by using Secure Data Connector which encrypt our data and then save it. It uses Tunnel protocol for encrypting and decrypting our data from this the administrator alone has the control over accessing the data it involve four steps (Fig.4). They are,

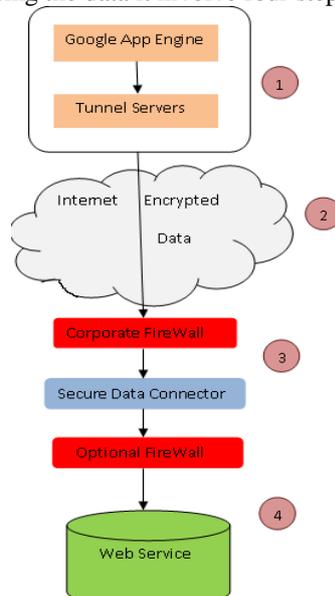


Fig.4 Security provided for Google app engine

- Step 1:** Google App Engine will forward valid user request from Google service to Tunnel Protocol. The Google tunnel server will transfer the user encrypted data to secure data connector.
- Step 2:** Connection between Secure Data Connector and Google tunnel server will be done by Tunnel protocol.
- Step 3:** Firewall will provide an extra security to our network. Secure Data Connector is validate user by using resource rules
- Step 4:** Secure Data Connector will request the network to provide a web service.

IV. Deploying In Google App Engine

Deploying our web application in Google App Engine is very easy. For this we have to create a new account in Google App Engine and application id for our web application. By following the instruction given in [5] we can deploy our web application in Google App Engine.

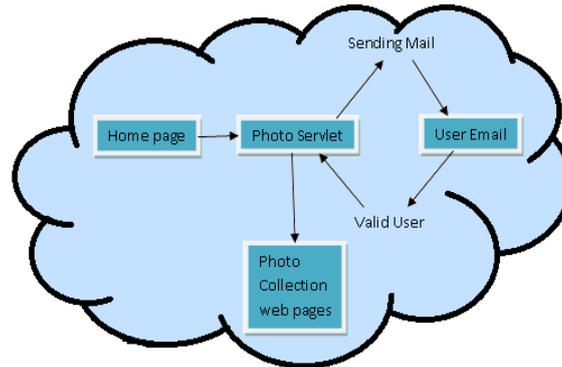


Fig.5 After deployed in cloud

V. Accessing Our Web Application In Cloud

After deployed in cloud with the help of application id (which we created while deploying our application) and appspot.com we get a website address like photocollection.appspot.com. Using this web site address we can access our web application not only we can access others who know our web site address can also use our web application through internet. Accessing our photo collection website using photocollection.appspot.com is shown in Fig.6 (a), Fig.6 (b), Fig.6 (c).

VI. Conclusion

Cloud computing is one of the most developing and useful area for us. Using Google App Engine we can deploy our web application in efficient manner. It provide great platform for our web application. It also provides security to our data. Using the free service provide by Google App Engine we can deploy our own web application in cloud environment so that other people who need a help of our web application can use it and get the help. Hence we can create many web applications which are most needed by our society and deploy it in cloud.

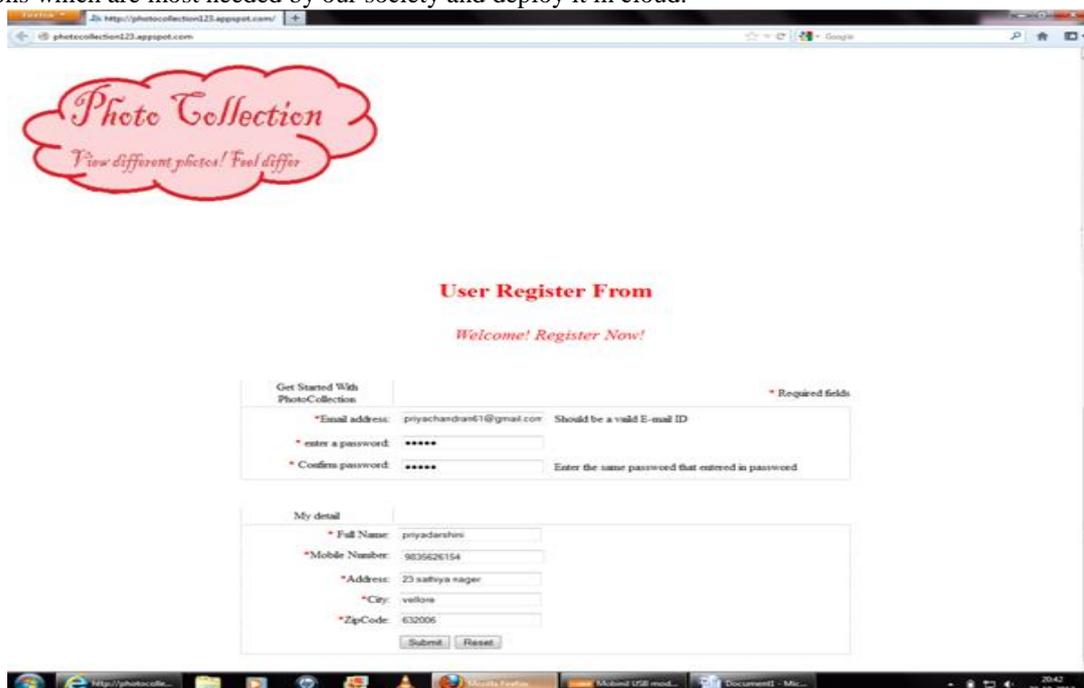


Fig.6 (a)

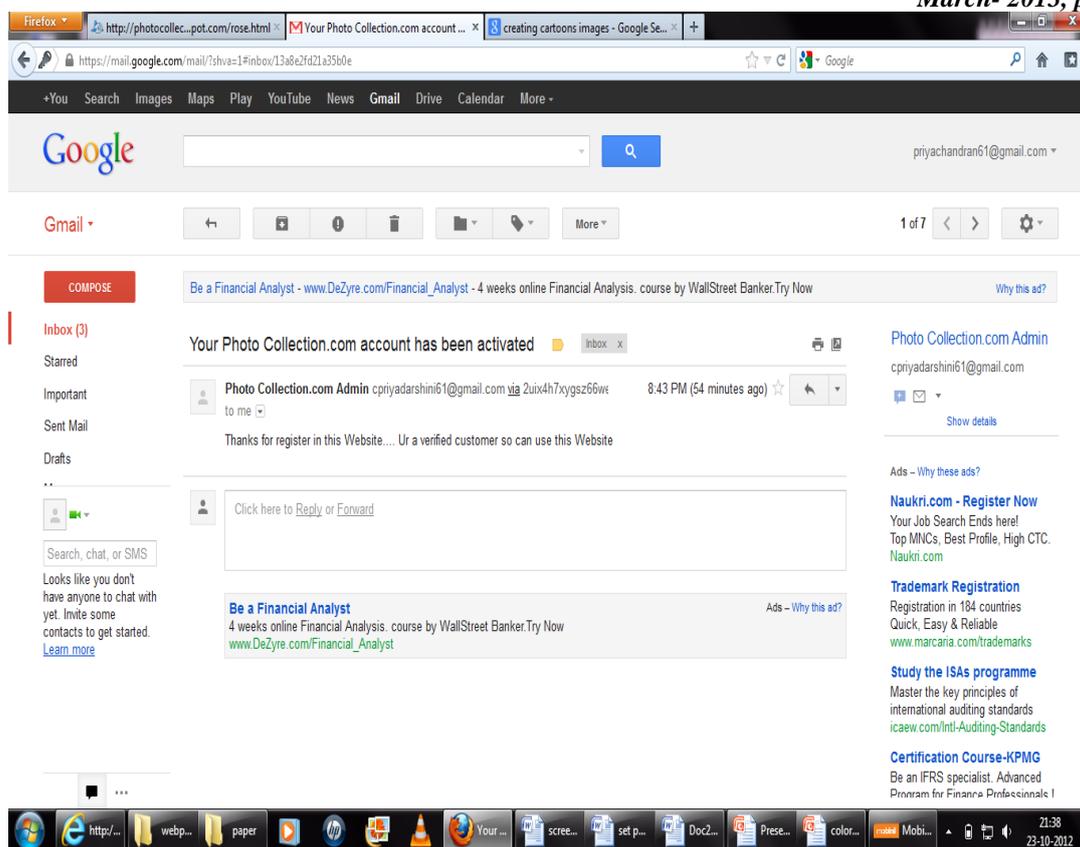


Fig.6 (b)

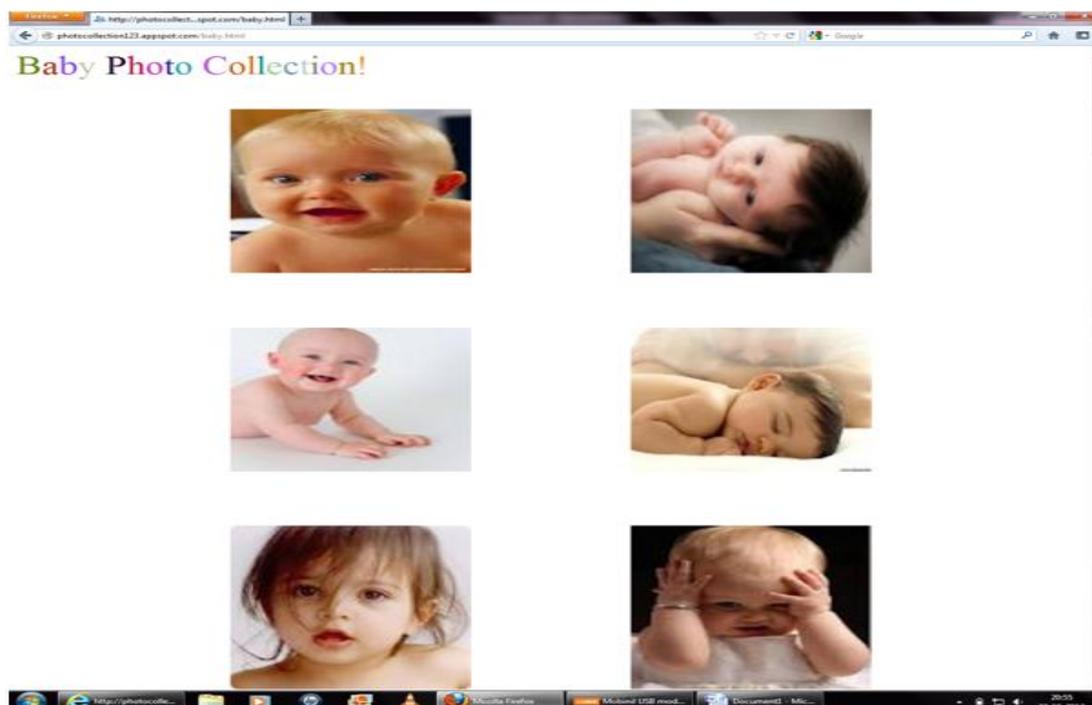


Fig.6(c)

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