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Design Adaptive Algorithm in Cloud framework for m-Governance

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ABSTRACT: In This paper we describes the new cloud computing framework system for everyone in e-Governance using java application, it is used for different purpose relating for computer science, electrical, electronics, mechanical, environmental science and many more fields etc. In this cloud computing framework we design a new computing system using java application for communication and transferring data as a social working of other relevant areas who has communicated to citizen to citizen, business to business and in this application we can providing the information to everyone through messages and conferencing alert system. In this technology we can used the alert system for citizens and that is sending an alert message for every related tip to every citizen, and we can communicate to every lower class peoples like citizen to citizen and people to people. In this paper we used a java application for alert system in cloud computing framework. It is also known also becoming increasingly important in a world with limited energy to technology. Information and Communication Technology (ICT) also used in e-Governance as alert facility and give the suggestion that it time to protect your health, improve technology, new technology, GPS system related tips for you and your children's. In this framework we protected by many ailing and give the knowledge of every technology, news. This paper also describes cloud computing framework system for alert new technology with java mobile applications technology in advanced e-governance.

Keywords: Java application, Mobile Applications, e-Governance applications, Information and Communication Technology (ICT), Cloud Computing.

I. INTRODUCTION

We see Cloud Computing as a computing model, not a technology. In this model "customers" plug into the "cloud" to access IT resources which are priced and provided "on-demand". Essentially, IT resources are rented and shared among multiple tenants much as office space, apartments, or storage spaces are used by tenants. Delivered over an Internet connection, the "cloud" replaces the company data center or server providing the same service. Thus, Cloud Computing is simply IT services sold and delivered over the Internet [1].

Although a .Net developer with an eagerness to try out new technologies, I was never excited enough by Windows Azure Cloud PaaS to give it a try. But after the latest update on June 7th 2012, my perception of it has changed. To say the least, just a week after the latest update – it is definitely a reinvention of Azure with neat UI, UX and many added features. [2]

Interestingly there were two big cloud announcements in the first week of June. The first one was from Oracle and second was from Microsoft. As far as I noticed, once again, Oracle Cloud failed to impress most of the analysts, users and IT community. In contrast, going by what people say on Blogs and Twitter, it seems Microsoft's Windows Azure has caught the attention of the IT community and is already getting a good review.

India based Cloud Specialist Janakiram MSV has rightly pointed out the following:

It has reached a point where Windows Azure has become the polyglot PaaS and semi IaaS offering … … … I am expecting many startups to consider running their LAMP stack on Windows Azure. This is all set to offer a credible alternative to Amazon Web Services to run LAMP based applications.

II. TYPES OF CLOUD COMPUTING

A. Software as a Service (SaaS)

Is the most widely known and widely used form of cloud computing? It provides all the functions of a sophisticated traditional application to many customers and often thousands of users, but through a Web browser, not a "locally-installed" application. Little or no code is running on the Users local computer and the applications are usually tailored to fulfill specific functions. SaaS eliminates customer worries about application servers, storage, application development and related, common concerns of IT [1].

The consumer uses an application, but does not control the operating system, hardware or network infrastructure on which it's running. Cloud offers

applications as a service. Imagine a case of new state like Uttarakhand deciding to move to E-Governance to offer some services on districts level . They need solution for some application for their citizens. The state need not to purchase applications, hardware and software. They can make a request for a particular service from the cloud provider. Applications instances can then be created for their use. Numerous applications can be provided as standard services, where departments can request and manage online without wait for development. [3] Some of the applications can be:

- Birth , death , cast certificates management System
- Job portal to provide employment support to users
- E-Procurement management system
- E-police, E-court
- Municipal management system
- Water Boards, Electric , Telephone Billing and Payment Systems
- District Management Solutions

Highest-profile examples are Salesforce.com, Google's Gmail and Apps, instant messaging from AOL, Yahoo and Google, and VoIP from Vonage and Skype.

B. Platform as a Service (PaaS)

Delivers virtualized servers on which customers can run existing applications or develop new ones without having to worry about maintaining the operating systems, server hardware, load balancing or computing capacity. These vendors provide APIs or development platforms to create and run applications in the cloud – e.g. using the Internet. Managed Service providers with application services provided to IT departments to monitor systems and downstream applications such as virus scanning for e-mail are frequently included in this category.

Well known providers would include Microsoft's Azure, Salesforce's Force.com, Google Maps, ADP Payroll processing, and US Postal Service offerings.[1]

The consumer uses a hosting environment for their applications. The consumer controls the applications that run in the environment (and possibly has some control over the hosting environment), but does not control the operating system, hardware or network infrastructure on which they are running. The platform is typically an application framework. In traditional model of e-Governance the departments have to wait till they purchase, deploy and start working with. Now in PaaS model if some Government departments requiring resources for new Operating system of for new Database software they can request and get resources instantly .[3] Some online application that requiring middleware services to run the process can be provided instantly. Some of the working platforms that PaaS provide are:

- Dynamic Operating System
- Dynamic Query Service
- Dynamic Database Software services
- On demand Middleware Services
- On demand Workflow Services

C. Infrastructure as a Service (IaaS)

Delivers utility computing capability, typically as raw virtual servers, on demand that customers configure and manage. Here Cloud Computing provides grids or clusters or virtualized servers, networks, storage and systems software, usually (but not always) in a multitenant architecture. IaaS is designed to augment or replace the functions of an entire data center. This saves cost (time and expense) of capital equipment deployment but does not reduce cost of configuration, integration or management and these tasks must be performed remotely.[1]

The consumer uses "fundamental computing resources" such as processing power, storage, networking components or middleware. The consumer can control the operating system, storage, deployed applications and possibly networking components such as firewalls and load balancers, but not the cloud infrastructure beneath them. E-Governance applications like Indian railway or Indian bank ATM services requires a model which can offer 24 hours and all 365 days online services to end users , for that a great infrastructure availability is required . There is a need of unlimited supply of power, CPU services, applications and server services. When operating from cloud using IaaS model e-Governance applications can use unlimited supply of CPU, storage and bandwidth when operating from cloud. Thus, applications perform better on cloud compared to traditional architecture. [3]

III. BRIEF ARCHITECTURE IN CLOUD COMPUTING

Cloud computing architecture, just like any other system, is categorized into two main sections: Front End and Back End. Front End can be end user or client or any application (i.e. web browser etc.) which is using cloud services. Back End is the network of servers with any computer program and data storage system. It is usually assumed that cloud contains infinite storage capacity for any software available in market. Cloud has different applications that are hosted on their own dedicated server farms. [4]

In Figure 1 it is shown how the basic cloud computing service IaaS is composed of a set of virtualized resources, namely CPU, memory, storage and network transport. In the previous section, we have already explained how Network can offer an enhanced solution

for network transport and storage. But let's take one step back and look at the two main reasons to virtualized resources: one is security - to restrict access to resources in order to offer a 'virtual private' environment, the other is resource separation in order to avoid resource conflicts. [5]

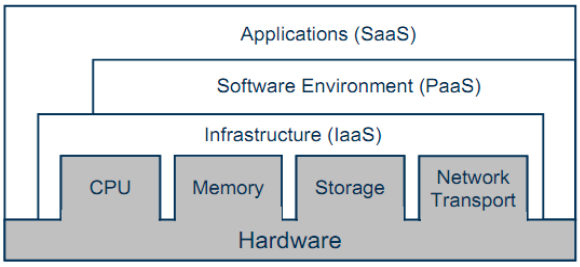

Fig. 1. Cloud Computing Architecture.

A. Benefits of Cloud Architecture

In a traditional architecture, the services offered are bound to a physical machine. One has to maintain the redundancy in terms of the physical services. This model increases the cost of deployment and becomes expensive to maintain as number of services increase.

Cloud computing offers:

• On-demand self sufficient service

• Ubiquitous network access • Location independent resource

• Rapid elasticity

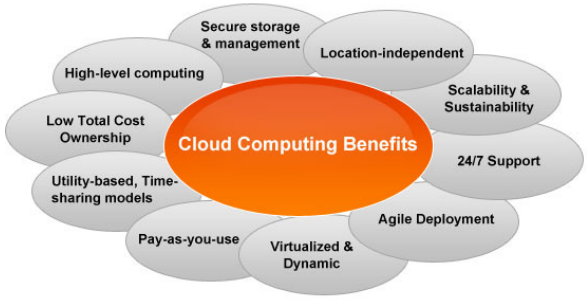

Fig. 2. Cloud Computing Benefits.

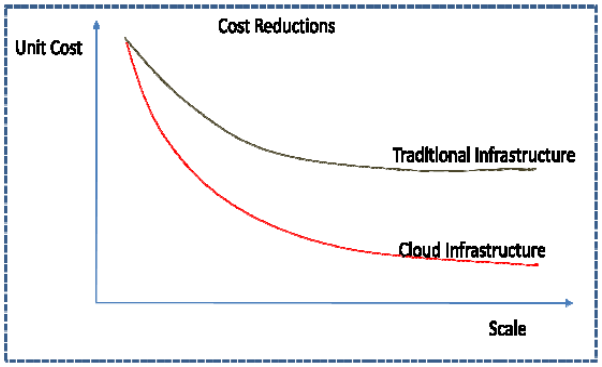

Fig. 3. Cloud Cost Reducing Chart.

IV. CHALLENGES WITH TRADITIONAL INFRASTRUCTURE[6]

- **Application Life Cycle Management:** cost-effective management of structured data throughout and testing to archiving and retirement replication facility needs to be provided and its cumbersome. It may cause duplication of resource and departments. As the complexity and sophistication of the software development task has grown it needs to use increasing numbers of tools.
- **Software licensing and Support:** application the licensing is required application is sufficient enough.
- **Scalability:** Traditional infrastructure to frequently upgrade to meet these challenges, software redundant.
- **Accountability:** The applications in traditional infrastructure don't have accountability.
- **Modifiability:** Traditional infrastructure example as they are not inherently scalable the provisioning cost and time for moving from 100 users to 10000 users could eat up lots of resources.
- **Physical security:** It involves the provision of a activities with a focus on preventing unauthorized physical access to computing equipment. includes:
  (1) Threats and facility requirements, (2) personnel physical access control, and (3) microcomputer physical security

V. SECURING JAVA APPLICATION IN CLOUD COMPUTING

For anybody building and deploying Java Web applications, whether internal business applications or public facing applications for general usage, hosting the application is a primary consideration. Google App Engine (GAE) provides a hosting environment that is potentially suitable for both types of applications. Before choosing GAE as the deployment environment a number of decisions, both technical and commercial must be made. [7]

GAE runtime environment uses Java 6 so supports developing applications using Java 5 or 6. The runtime environment has some restrictions which enable it to provide scaling and reliability. A GAE application must not :

- Write to the filesystem- Google provides a datastore as an alternative
- Open a socket – Google provides a URLFetch service as an alternative

- Spawn a new thread

A Private Key corresponds to a single string[7]

```
@Test
public void testEncrypt() throws Exception {
        SecretKey key =
KeyGenerator.getInstance("AES").generateKey();
KeyStore ks = KeyStore.getInstance("JCEKS");
ks.load(null, null);
KeyStore.SecretKeyEntry skEntry = new
KeyStore.SecretKeyEntry(key);
ks.setEntry("mykey", skEntry,
new
KeyStore.PasswordProtection("mykeypassword".toCha
rArray()));
FileOutputStream fos = new
FileOutputStream("agb50.keystore");
ks.store(fos, "somepassword".toCharArray());
fos.close();
Cryptographical crypto =
AESCryptoImpl.initialize(new AESCryptoKey(key));
 String enc = crypto.encrypt("Andy");
 Assert.assertEquals("Andy", crypto.decrypt(enc));
 //alternatively, read the keystore file itself to obtain the
key
        Cryptographical anotherInst =
AESCryptoImpl.initialize(new AESCryptoKey(key));
String anotherEncrypt = anotherInst.encrypt("Andy");
Assert.assertEquals("Andy",
anotherInst.decrypt(anotherEncrypt));
Assert.assertTrue(anotherEncrypt.equals(enc));
        }
```

VI. CONCLUSION

In this paper we will discuss the strategy, architecture, and solution details cloud computing brings to the industry and governments with the help of java application. For the purposes of this paper, we will focus on the data center aspects of cloud computing. IT professionals who are evaluating cloud computing strategy and cloud data center solutions. Using java application we can focus for the communication and transferring data to one person to another person like skype, google, etc... Cloud computing is changing the way that IT resources are utilized and consumed. Public sector and federal government entities want the ability to access infrastructure how and when they choose. We can use the cloud data to this purpose with mobile application using java programming application.

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