

Proposed Design for an E-government Web Portal Application using Cloud Computing

This paper mainly emphasizes on using the cloud computing to make the working of a government services which offers to its citizens, residents and various people (business) in an easy and effective way. Electronic governance or e-governance is the application of Information and Communication Technology for delivering government services, exchange of information communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as book office processes and interactions within the entire government framework.

E-governance can be marked as a first step in changing the traditional way in which services are offered to people. This paper gives an architecture prototype for building e-governance using cloud computing. Cloud computing can be used to implement the E-Governance for following reasons.

- Resources can be used effectively, supplied on-demand.
- Reduces the environmental footprint.
- Maintenance is easy, scalability is good.
- Improved Collaboration among different modules.
- Improved disaster recovery.

Given the above benefits and diversity of an e-governance in terms of the services it offers from various ministries to various people like citizens, residents, businesses – cloud platform can be used to deliver the e-governance system effectively. Using cloud computing we can have the following advantages.

- Migration to cloud helps in decreasing the cost, helps with easy distribution of services among different ministries, government can focus more on developing various services without thinking about its implementation details which is taken by cloud service provider.
- Helps in use of hardware and software in an efficient manner leaving small environmental foot print.
- Cost-saving for government, it also creates new private-public partnerships.

There are two perspectives for e-government and cloud computing within government organization, Technological Perspective and Business Perspective.

- **Technological Perspective:** As a government, will have various ministries in it. With each ministry having various organizations in it. In order to have an efficient computing organization structure we need technologies like virtualization, parallel computing, service oriented architecture, web applications frameworks and all these are underpins for the advent of cloud computing.
- **Business Perspective:** E-governance was adopted in many countries but failed. But if implemented in a righteous way, cloud computing helps reducing the cost of IT labor, improves capital utilization by 75%.

The following e-government architecture says about the integration and automation of multi-tier system. To implement the architecture one needs to create profiles for all citizens, who holds national identity. Residents, who has permit to work in this nation. Visitors, who wants to invest in this nation all have their separate login gateways respectively. We need all these various logins because government has to serve all people in a nation with respect to their needs. So everyone who is not an admin has to register first using his username and either of or two, mobile

number or land line number. After registration they will get a One Time Password (OTP) to confirm his account and can login into his profile to avail various functionalities. This ensures the second level of security for this system. There is database to keep track of all the users and their credentials. Each ministry has their own database and communication across ministries is also enabled to provide various services. This can be realized through infrastructure as service. All the databases reside on government cloud.

There are two types of sequences of e-government transactions that can be carried on cloud, either by members or an organization. Once a member registers he can avail the services provided by government. One has to fill the form with appropriate details, if this is associated with a particular ministry, that database is queried, he will be further redirected to payment gateway if the service are chargeable, and from there he will be asked to upload documents if required. User has a privilege to preview the request before submitting, can enable an option to follow-up or reminders for the request before submitting it.

When the member submits the request for a service, government work flow officer is responsible for the submitted request's progress. Processing will have several phases such as checking the application request, checking the documents with other Ministry if required, payment confirmation, send request to government producer, acknowledgement from the government producer. From application status/assessment to request completed, at every stage work flow officer gives comments and status of the request to members. Each ministry has its own private cloud. All these private clouds also forms the part of government cloud which hosts the e-government. Now data has to be shared among the clouds in a secured manner to entertain and fulfill the requests/services of all the members. For this security is needed to prevent the misuse of information which is implemented by providing various profiles and authenticating the people with OTP and login credentials.

Apart from this the resources in the government cloud can be shared across the ministries and again the same thing is controlled by the admin managers from the minister side. Ministry manager/administrator is responsible for the protection of data in a private cloud from external operations. Government cloud is responsible for entire portal, it adds, maintains, deletes the services from ministry requirements through a series of phases. Suppose if an organization within ministry wants to add a new service, its manager will send a request with a metadata about the service to the ministry manager. Once the ministry manager approves the request he will send the request with a full description and explanation to the government cloud manager who is responsible for the portal. He then will design and program the requested services based on the request. Once this step has been completed, the government cloud manager will ask for access permission to add services.

Conclusion:

The above theory depicts the prototype design for e-government web portal application based on cloud computing techniques. It solves a major issue in the existing system of sharing data and information across various business verticals. It increase volume output with fewer people and the data is globalized if we implement this kind of architecture.