

# Chapter 33

## Cloud Computing for Secure Services in E-Government Architecture

**Sajjad Hashemi**

*Islamic Azad University, Miandoab Branch, Iran*

**Khalil Monfaredi**

*Azarbaijan Shahid Madani University, Iran*

**Seyyed Yasser Hashemi**

*Islamic Azad University, Miandoab Branch, Iran*

### ABSTRACT

*E-government tries to take advantage of new technology to provide better service to citizens. Some of the main challenges in the face of E-government are query processing high volume applications, data center management, data security and E-government services. Cloud computing can be a good option for responding to these issues and fixing them, and guarantee the realization of E-government, with maximum efficiency and maximum safety. In this paper, the authors propose a novel architecture for E-government by using Cloud computing architecture which can largely increase the integrity and security service in E-government, and also increase users' confidence in the system and may lead to increased participation.*

### 1. INTRODUCTION

Information technology is growing day by day. Based on the proportion of this growth, people's expectations about the services and their quality and the way they presented are changing. Governments will be responsible for the expectations and requirements certainly. Today, people expect that all services and public services should be available at the least cost, maximum speed and the minimum time it takes, therefore, it is critically important that governments are able to provide the best service which people expected. So over the years, developed and developing countries, began to accelerate the move to online services and create a greater engagement with citizens, and the promotion of best practices they may

DOI: 10.4018/978-1-5225-7501-6.ch033

provide for daily activities, especially in government departments who interact directly with citizens. Today, the electronic governments are increasingly expanding and becoming more complex and every day the amount of computing data is increased. Therefore the benefiting from the latest technologies and the use of architectural model for implementing E-government processes to reduce the time needed to process and to improve interaction with citizens through efficient and effective service delivery is crucial. An E-government system should be able to select and provide efficient and effective way to present the services. Also need it to be a reliable, affordable and easy to maintain.

The latest and most complete model for implementing E-government is Cloud computing. A model for Cloud computing is important because, with significant potential for cost reduction, through optimization and performance, increase economic efficiency. The integration of technology is formed by the development of technologies such as grid computing, distributed computing, parallel computing and service-oriented architecture. Actually this style of computing technology that aims to provide computing resources, communications and fast storage space, secure environment by using virtualization technology is based on service which is provided via the internet. With regard to the services which also can provided by the government via the internet, so the Cloud computing can use in the implementation of E-government architecture and benefit its advantages in order to provide better service with less cost and economic. Another benefit of using Cloud computing in E-government architecture can provide other services such as cost reducing and telecommunication infrastructure, integration of data.

In the last 10 years, Internet and Web-based services has grown rapidly and has been used by many companies. However, the cost of data storage and power consumption has increased by hardware. Corporations to reduce costs and better utilization of the available resources are always looking for ways and to accomplish this extensive goal they conducted studies. In recent studies, one of the latest challenges and solutions in response to maximize the use and enjoyment of the resource is a Cloud computing. Yes, this new technology is something that can answer to be a huge number of needs. Today, the unique characteristics of Cloud computing become it, a valuable technology. So that in relevant research centers and universities in the field of information technology (IT), is considered the hottest topic. Many definitions for Cloud computing has been proposed by researchers. But there is no agreement on a specific definition. Many scientists of the National Institute of Standards and Technology that work on cloud computing in America define it as follows (Soleimanian & Hashemi, 2012; Takabi et al., 2010): "Cloud computing is a model for enabling convenient to access to networks and applications quickly, common set of configurable computing resources (e.g., networks, servers, storage and applications) that can work with little or interfere with the service provider to provide or be released immediately." The basic idea behind Cloud computing is making the pool of virtual computing resources with a focus on large-scale computing resources connected by networks that allow customers to dynamically be shared resources, hardware, software and data. And according to their actual usage they paid cost. Thus, as the product it can be sales easily as a product through the network with a lower price, just like water, gas and electricity (Soleimanian & Hashemi, 2012). Using Cloud computing technology, services and applications that are similar on the Internet, provides it as a useful self-service utility. The basic use of the concept of the cloud term comes from (Sosinsky, 2011):

- **Abstraction:** The Cloud computing separated completely the information of the system user and system information developer. This means that there is no need to hardware similarity in this regard. Applications run on systems that are not clear from the user's perspective, the data are

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/cloud-computing-for-secure-services-in-e-government-architecture/217852](http://www.igi-global.com/chapter/cloud-computing-for-secure-services-in-e-government-architecture/217852)

## Related Content

---

### **Analytics in Public Policy Related to Service Sector**

Maryam Ebrahimi (2019). *Web Services: Concepts, Methodologies, Tools, and Applications* (pp. 185-203).  
[www.irma-international.org/chapter/analytics-in-public-policy-related-to-service-sector/217831](http://www.irma-international.org/chapter/analytics-in-public-policy-related-to-service-sector/217831)

### **Request-Driven Cross-Media Content Adaptation Technique**

Mohd Farhan Md Fudzee and Jemal Abawajy (2010). *Developing Advanced Web Services through P2P Computing and Autonomous Agents: Trends and Innovations* (pp. 91-113).  
[www.irma-international.org/chapter/request-driven-cross-media-content/43649](http://www.irma-international.org/chapter/request-driven-cross-media-content/43649)

### **Selecting Mobile Services in Cloud and Edge Environment by Moth-Flame Optimization Algorithm**

Ming Zhu, Xiukun Yan, Jing Li, Cong Liu and Yawen Cao (2022). *International Journal of Web Services Research* (pp. 1-23).  
[www.irma-international.org/article/selecting-mobile-services-cloud-edge/302888](http://www.irma-international.org/article/selecting-mobile-services-cloud-edge/302888)

### **An E-negotiation Agent for an E-tourism Platform**

Fayçal M'hamed Bouyakoub, Abdelkader Belkhir, Amina Belkacemnacer and Sara Harfouche (2019). *International Journal of Web Services Research* (pp. 65-87).  
[www.irma-international.org/article/an-e-negotiation-agent-for-an-e-tourism-platform/226290](http://www.irma-international.org/article/an-e-negotiation-agent-for-an-e-tourism-platform/226290)

### **A Quasi-Newton Matrix Factorization-Based Model for Recommendation**

Shiyun Shao, Yunni Xia, Kaifeng Bai and Xiaoxin Zhou (2023). *International Journal of Web Services Research* (pp. 1-15).  
[www.irma-international.org/article/a-quasi-newton-matrix-factorization-based-model-for-recommendation/334703](http://www.irma-international.org/article/a-quasi-newton-matrix-factorization-based-model-for-recommendation/334703)