

HR Application Using IBM's Bluemix

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Abstract: HR always runs multiple activities simultaneously. Sometimes it gets hard to keep track of all the activities and all the reports along with it. Most of the time these activities involve communication. This communication should be sorted and so should be its end results. Hence we are proposing a system to develop a Cloud system for HR which will manage all HR activities such as recruitments, invite user, post ad for Jobs and conduct tests. This will also keep tracks of user (i.e. job seeker) profiles. In this system, All the HR activities will be done with cloud application. That is cloud will be providing platform as service, through IBM Bluemix. HR forum will be set for question and answers. Job offers will be posted and people will be invited for it. Their information will be saved in user profiles. Also different tests will be conducted for hiring process.

Keywords: Cloud Computing, Bluemix, PaaS (Platform as a services), Web application.

1. INTRODUCTION

Cloud computing is online computing in which huge amount of distant servers are networked to allow the centralized data storage, and access to computer services or resources anywhere anytime. Cloud can be deployed as public, private, hybrid and community and can be classified on the basis of services provided [2].

A. Deployment model

Public Cloud: The cloud is available for open use by the general public. It may be owned and managed by a private or government organization. They are less secure compared to other cloud models. The answer for this can be that security checks should be executed through approval on both sides, by cloud vendor and client [1].

Private Cloud: The cloud is available for exclusive use by a single organization. It might be possessed, managed, and worked by single organization or combination of them. Usage on the private cloud can be significantly more secure than that of the public cloud due to less exposure to outside community.

Hybrid Cloud: This cloud is a combination of two or more different cloud infrastructures that remain distinctive entities, but are brought together by standardized or proprietary technology that provides data and application portability. [5]

Community Cloud: This cloud is accessible for selective use by a particular group of customers from organization that has imparted concerns on. It might be possessed, overseen, and worked by one or a more organizations in the community, an outsider or some mix of them.

B. Services

PaaS: Cloud sellers give a platform, usually together with working framework, programming dialect execution environment, database, and web server. Application engineers can make and execute their own product on a cloud platform without the cost and multifaceted design of acquiring and controlling the hidden equipment and programming layers.

SaaS: Cloud providers install and manage application software in the cloud and client use the software. Cloud users don't have to manage the cloud infrastructure and platform where the application runs.

This eliminates the need to install and run the application on the cloud user's own computers, which further simplifies maintenance and support. Cloud helps in reducing overall budget, increase storage capacity, flexibility, easily manageable, provide uninterrupted services, support green computing, help in disaster management and is highly secure in inter operable [6].

IaaS: The services provided to the purchaser are computing, network, storage and other principal processing resources where the customer has the capacity to deploy and run random software.

The customer does not manage or control the hidden cloud foundation however has control over platform and conveyed applications and limited control of systems administration parts.

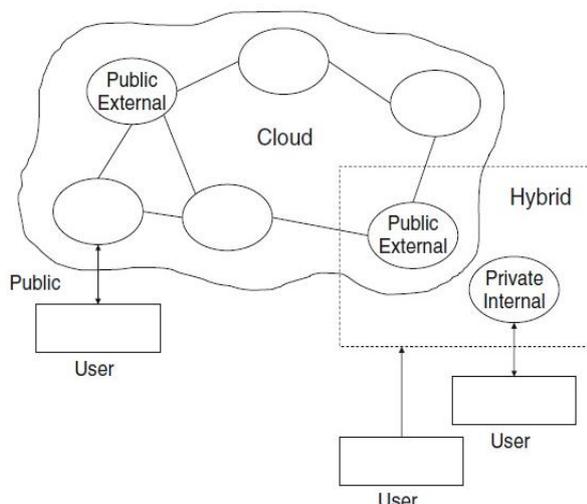


Figure 1: Cloud Deployment Model.

A. Different Cloud Platforms

Amazon Elastic Compute Cloud (EC2) is vital part of Amazon. Com's cloud computing platform; Amazon internet services (AWS). EC2 uses Xen virtualization. [15] Each and every virtual laptop, called an "instance", services as a digital private server. Working method supplied are Microsoft windows, Linux, FreeBSD [3].

Google App Engine (most often referred to as GAE or readily App Engine) is a platform as a carrier (PaaS) cloud computing platform for developing and website hosting net applications in Google-managed information centers. Purposes are sandboxed and run throughout a couple of servers. It helps programming in Python, Java, Go, php. In comparison with other scalable website hosting offerings such as Amazon EC2, App Engine presents more infrastructures to make it effortless to write down scalable functions; however can handiest run a restrained range of functions designed for that infrastructure [7].

2. RELATED WORK

IBM BLUEMIX

IBM developed a cloud called Bluemix to provide Platform as a service which supports several programming Languages and services such as integrated DevOps to develop, execute, install and maintain applications online.

Bluemix provides more control to application developers because of its Platform as a Service (PaaS) offering, and also provides pre-built Mobile Backend as a Service (MBaaS) capabilities. Services are provided with the aim to simplify delivery of an application that is ready to use as soon as possible and capabilities are hosted to enable internal scale development [7]. Bluemix runs on Soft Layer infrastructure and is based on Cloud Foundry open technology. IBM Bluemix is a cloud platform as a service (PaaS) developed by IBM. It supports several programming languages and services as well as integrated DevOps to build, run, deploy and manage applications on the cloud. Bluemix is based on Cloud Foundry open technology and runs on SoftLayer infrastructure. Bluemix supports several programming languages including Java.

A. Features

- Processing power provided is customized according to app delivery.
- Optimized and flexible workloads.
- Variety of services which helps building and extending web and mobile applications quickly.
- Suitable programming models and services.
- Manageable services and applications.
- Availability all the time.

B. Architecture

The below figure shows the high-level Bluemix architecture. [10]

- Cloud Foundry command line interface, called cf, can be used to deploy web applications.
- Virtual containers that host each application are deployed by Bluemix by using Soft Layer.
- Developers can interact with Bluemix infrastructure by using a browser-based user interface.

- Application assembly easy is made easy with the use of pre built services.

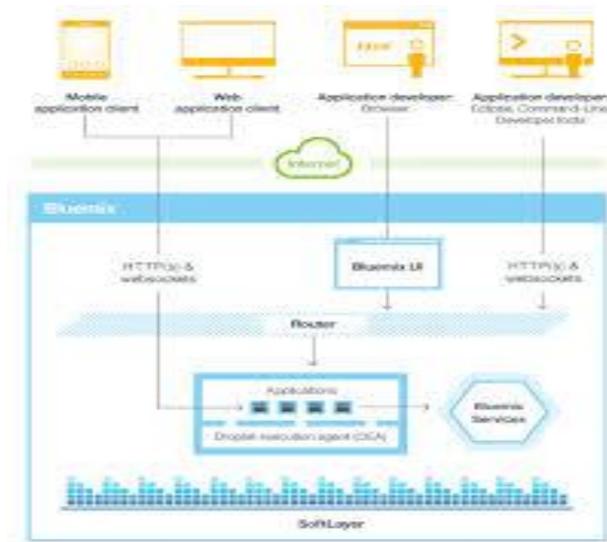


Figure 1: Architecture of IBM Bluemix cloud Platform

3. PROPOSED DESIGN

3.1 SYSTEM OVERVIEW

The following figure 2 shows the architectural view of the proposed system. The description of the system is as follows:

A. SYSTEM ARCHITECTURE

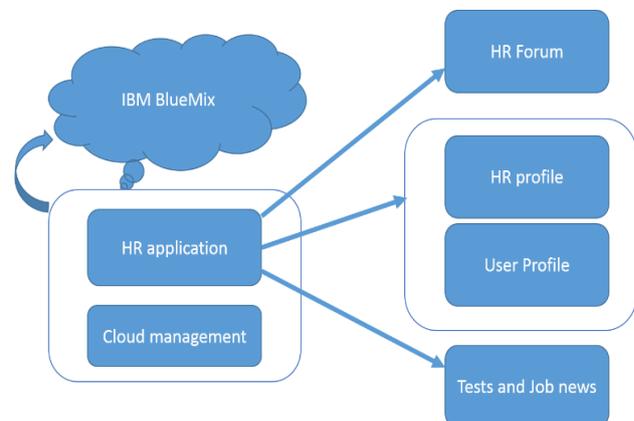


Figure 2: Architecture of HR Application Using IBM Bluemix.

IBM Bluemix provides service known as PaaS (Platform as a service). Bluemix can be accessed from remote location so it is a big advantage to divide big tasks to different people. People located at different location can work on same project. This is a benefit of cloud.

HR will have all management and accessing permissions. HR can put Job offers, can invite users and can search for any specific user. HR will manage forum, and will conduct tests of users. HR have all admin rights of system. User can apply for job, fill their profile and give tests. Whole System is online, so it needs continuous internet connection.

4. MATHEMATICAL MODEL

Set Theory Analysis:

a. Let ‘S’ be the | HR Application as the final set
S = {.....}

b. Identify the inputs as D , Q, I, P
S = {D, Q, I, P,}
D = {D1, D2, D3, D4, | ‘D’ given database updates with user profile}
Q= {Q1, Q2, Q3,...| ‘Q’ gives the tests set by HR for users}
I = {I1, I2, |‘I’ gives user ID for login}
P= {P1, P2, |‘P’ gives the respective password for login ID}

c. Identify the outputs as O
S = {D, Q, I, P, N, R}
N = {N1, N2, N3, N4, | ‘N’ given Notifications for Job offer}
R= {R1, R2 ...| ‘R’ is the invitation to user}
Q= {Q1, Q2, Q3,... | ‘Q’ gives the tests set by HR for users}

d. Identify the outputs as O
S = {D, Q, I, P, N, R}
N = {N1, N2, N3, N4, | ‘N’ given Notifications for Job offer}
R= {R1, R2 ...| ‘R’ is the invitation to user}
Q= {Q1, Q2, Q3, ...| ‘Q’ gives the tests set by HR for users}

e. Identify the functions as ‘F’
S = { D, Q, I, P, N, R, F...
F = { F1(), F2(), F3(), F4(), F5() }
F1(D) :: Update Database with user profile
F2 (D) :: give job offer notification
F3 (Q, I) :: give tests to user
F4 (Q, I) :: Invite user
F5 (I,P) :: login

Hence the functionality can be shown as,

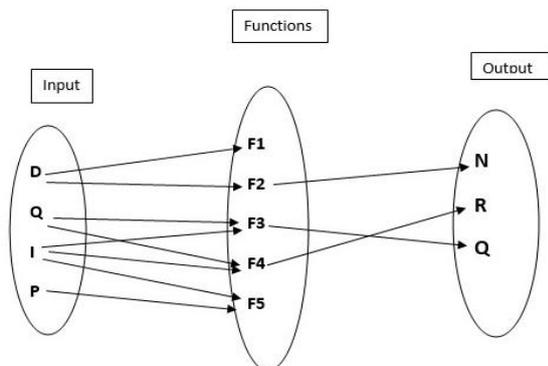


Figure 3: Functionality Diagram.

5. CONCLUSION

At a time of developing the HR Application system we used the IBM’s Bluemix and studied the Bluemix for developing different domain applications like android, iOS, web, etc. Bluemix is cloud based service developed

by IBM. It is platform as service.me can deploy and develop applications easily and very conveniently using Bluemix. We have used this Paas service for developing web application based on cloud based service i.e.HR application. This will help HR as well as job seekers to get easy way to the destination work.

6. FUTURE SCOPE

We need to work on large data set to improve application efficiency and stability.

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