Cloud Devops Future of E-Business

Desmond Bala Bisandu

Department of Computer Science, University of Jos, Nigeria

Abstract: **This paper is written on the bases of a conceptual framework on Continues Delivery (CD), Continuous Integration (CI), Electronic Businesses (EB), and revealing the secret behind the cloud as a good platform for DevOps deployment to bust cloud business efficiency in order to maximize profit while maintaining quality service delivery. The research paper is based on some intensive literature review on current trend of IT-cloud to successfully portray the power of the cloud and DevOps as inseparable tools meant for each other to achieve the goal of all Electronic Businesses (EB). The success of this work is that it has clearly indicated the power of Cloud and DevOps been limited in the Electronic-Businesses point of view over the years. Finally this work presented a model of Cloud-DevOps architecture as the future that holds secret of all kinds of businesses that will take place in the internet regardless of their nature or sizes.**

Keywords: **Cloud, DevOps, Continues Integration, Continues Delivery, E-Business.**

I. INTRODUCTION

The integration that is continues in nature "Continues Integration (CI)" has been implemented by several organizations with the pure indication of high efficiency improvement in developing software over the years [1]. Consistency in delivery and deployment has wide the scope of continues integration with an automatic delivery and deployment which are often connected with method that has immediate collection of data that belong to users and fast reactions to all feedback[1]. DevOps consist of Continues Integration (CI) and Continues Delivery (CD) but also added cultural aspects and organizational by total removal of the wall between personnel on operation and the developers [1]. So many tools for Continues Integrations consisting building automatically and testing the most well known of such is the Jenkins, also for automatic deployment and operation management are Rundeck and Puppet, however the deployment and development are separate which are the assumptions of these tools and this keeps the walls DevOps is trying to do away with.[1]. Technology of cloud have provide opportunities which are new apply to operation and development, deploying applications and the services it provide constitute of several factors which need to be put under consideration. Resources must be allocated enough before hosting the application to ensure that the minimum service level balancing of load. Trust and legal related issues also have some effect on the physical and virtual location of the service, and finally the cost must be minimized. So many technologist for management and allocation of resources in the cloud have been developed based on Service Level

Agreement (SLA) which enables a place for marketing the resource in the cloud through federation and Brookings, in other word both cloud providers and consumers are put under considerations by the EASI-CLOUD [1]. The economy that is based on application has motivate changes critically in IT and business by the leaders, the most important is the adoption of DevOps [2]. All enterprises that hopes to move the strategy in technology across their business by providing customers high-quality services, faster enough to compete with the current rate at which business are, DevOps has its aim at providing mutual collaboration across domains in IT from the point of developing to the delivery has been the answer over a long period of time [2].

E-Business is a form of business where both the supplier and consumer are involve in monetary transactions through the internet while quality of service, proper allocation of all necessary goods are still maintained [3]. This business form is used by region or sectors such as automotive and retail, heavy and defense manufacturing, electronic data interchange (EDI), and information integration across parts that are large in value of a business particularly[3, 8]. Many factors have been the reasons for a successful implementation of e-business some of which are: low cost, Time, Fast interactivity, and Universal reach[3]. The model used for any e-business is subject base on some common characteristics which are: Degree of the customer service, the customer is provided with a value, also the customers is been given a personal services, the generated revenue, and the business partners network involve [3]. There has been a proper indication from literatures that applying cloud DevOps to e-business has been limited or have not really been much explored, but has a promising future [3]. In this paper we have design a model that shows some of the major advantages of using the cloud DevOps in e-businesses in order to secure the future of any cloud business.

The other rest part of the paper has been structure as follows section 2 literature reviews of some relevant papers and gives an explanation of the necessity of DevOps approach is in the cloud for a higher and quality output. In section 3 the conceptual framework for proper implementation of cloud DevOps in e-business is presented. Finally in section 4 future work and conclusion are made.

II. REVIEW OF CLOUD DEVOPS AND E-BUSINESS

Becoming very competitive, business organizations development and building are more heavily on products that are integrated, which at time are exceeding even the

organizations border [4]. A good example is the Android, this run on the mobile which is from different manufacturing companies, also running on the smart watches, tablets in various devices including cars. System thinking approach is applied to achieve this integration. The culture of operation and developments works together in new systems development in collaborating traditionally. The two are each other's partner in the sense of supplier and customer. The system management is done by the operation department which the development department depends on for a very large scale system development, which involves tracking bug managing the project, and software version management. The same way operation department needs operating system application and developing tools from the development department, including implementation features for improving the aspects of stability, security, and performance. The most important point about DevOps is that the end of development and operation is not indicated[4]. There is clear division among development and operation is signified by making every work being done by all parties involve not exclusively and still delivering the services. The major important of agility in developing software and service delivery is "individual interactions over processes and tools"[6]. Looking at DevOps from the perspective of agility, this has a higher regards[6, 9]. Still most of arguments in DevOps are focusing on processes and tools. Transformation of cultural can be very daunting. The Cloud DevOps transformation can be aided by the following practices[6].

- Put both perspective under consideration the participants and the driver
- Teams decides should decides which tools they use based on their expertise and skills
- Transparency should be encourage among development and operations personnel
- If situations that are exceptional arise, the go of DevOps values one must be flexible temporarily, a process to integrate changes once the crisis passes.

The communication process among development and operations is not managed optimally. This affects Production, quality of software, and quality of services. The process of software methodologies should be properly managed for cooperation. There should be more research on this area to improve the quality of services. The characteristics of the open communication, responsibility alignment and incentive, trust and respect defines the culture of DevOps as stated by [4].

From the perspective of Cloud and DevOps, Software-as-Service implication which is important in the way separation among function and operation are dissolve. The users only view them as a seamless unified whole aspect. The same time even as high functionality level and quality of operation, service providers are expected deliver continuously change with a platform that has high quality by the users [7]. The

high expectance by the customer of the services necessitate the need for and approach for delivering service that is different fundamentally. The quality of service, operation, and development can be separated in order to achieve the goal of every any cloud based business [7, 10]. Operations + function has been said to maps naturally more to Operations + development, cloud DevOps is perfectly that [7, 13]. Cloud DevOps is an effort that is represented to achieve a relationship that is mutually trusting for agility of Software-as-Service and products that are delivered the software application. Development has been taught by agile on how same speed movement and business flexibility; Cloud DevOps has try to also educate operations to progress with consistent speed, flexibility of development and service delivery. The success of all the 21st century e-business need goals alignment that is radical, language, viewpoint, and cadence possible from been marketed all through operations [7]. Cloud base business needs infrastructures that are pliable from the stage of development to the production. Centralized, sharing the development and environment testing that produces much waste via test data that are polluted and resource which are contention[2].

III. CONCEPTUALIZED FRAMEWORK

The past has it that most software was developed mainly for academic purposes and with specific target by small teams or individuals consisting of developers[7]. Currently based on the policies funding it has been a thin of encouragement for coalitions among multi-partner and high quality software which is intend to have a reuse and distributive nature in forms of knowledge exchange increasing to reduce waste and effort repetition, the requirements that are new constitute so much challenges to be met by the project and business coordinators that want making of sure all services rendered by organizations that are independent is coordinated to a degree appropriate for much quality of service delivery been assured [7, 12]. This paper describe a conceptual framework on how applying cloud DevOps to e-business will address the issue of drawbacks in profit making and quality of services during system upgrade in the conventional system development and management by a method that is founded on the management of configuration of version- control, software automation deployment, and continues integration. There exist distinctions in the objectives, rewards, and how the success is calculated among academic, and commercial researches and projects. There has been a several research project with different objectives such as making easy ways in which cloud service providers and their customers on how to take advantages of resource that are heterogeneous. The major reason why heterogeneity is combined is so that we can be able to offer a framework that is richer both in price performance tradeoffs, and to provide completely freedoms in new degrees to the cloud services and delivery together with optimization problems [7].

The major challenge of the e-business quality of service delivery, is that it requires specialists from different areas of specialization to come together[4, 13]. The individual parts that are dealing with different classes of resources that are heterogeneous together can be independently developed, but the need for effort coordination so that service delivery are consistent and adhere to proper interpretation, so that the parts deploy for different functions in the service delivery is in such a way that it provide a distributed but coherent cloud based business infrastructure. The responsibility of all the individual component quality can be shared among developers and is managed by the leader of the package for the components, the need to testing, and evaluating the fully integrated deployment also. In summary the in this research paper, benchmark experiment, and deployments can be made reproducible as much as possible in order to facilitate the growth of a cloud

base business and its quality in the type of services provide[7]. To solve the major problem noted above this paper conceptualizes the development and operation (DevOps) workflow in the cloud which allows the following: The developer's team working on specific aspect of the application use for the business autonomously, automated testing of the application individually also as the system integration development; automated heterogeneous deployment reproducible on scale that is huge.

3.1 Cloud Devops Architecture (Still Well & Coutinho, 2015)

The Figure 1 below shows HARNESS architecture of cloud DevOps which consist of loosely coupled suites service distributed, the connection between all the various component for optimum service delivery.
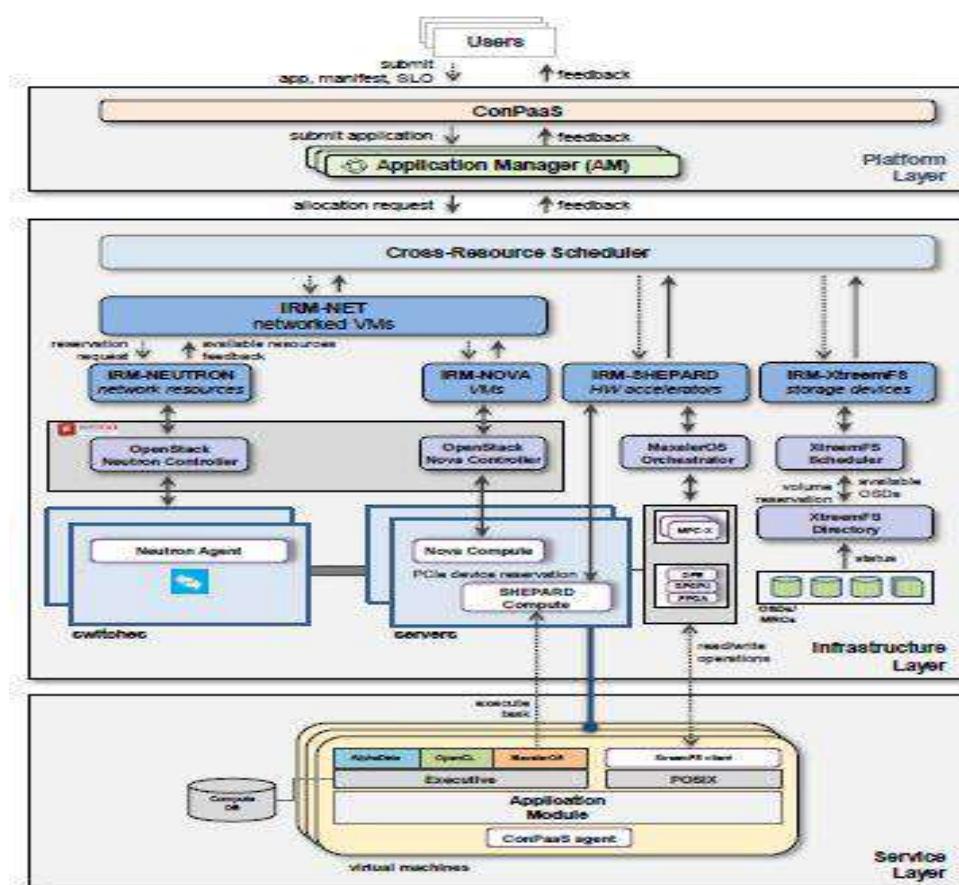

Figure 1: An architecture of Cloud DevOps.

3.2 Workflow of Harness Cloud Devops (Still Well & Coutinho, 2015)

The key goal of the figure 2 below is to show how different developers and how change in business requirement does not

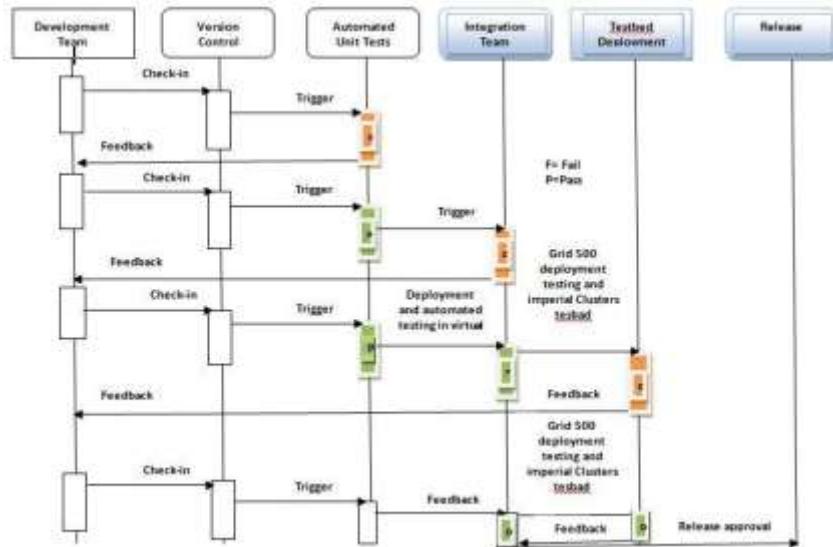affect the flow of services provided by the system using the DevOps concepts.

Figure 2: Workflow of HARNESS Cloud DevOps

3.3 Propose Model (Don Thomas, 2013)

The below proposed model has been proposed to solve the problem of cloud based business in during upgrades, which reduce the level of delay in response to customers and has been apply secretly by the Google, Whatsapp, Facebook, and Amazon. Clearly as the customers are having change in their requirement the business owners will be inform, because of the developers being informed by the business owners, every problem will be solve while delivering the service without altering the quality of the of the services which helps in maintaining constant conveniences of the customer.
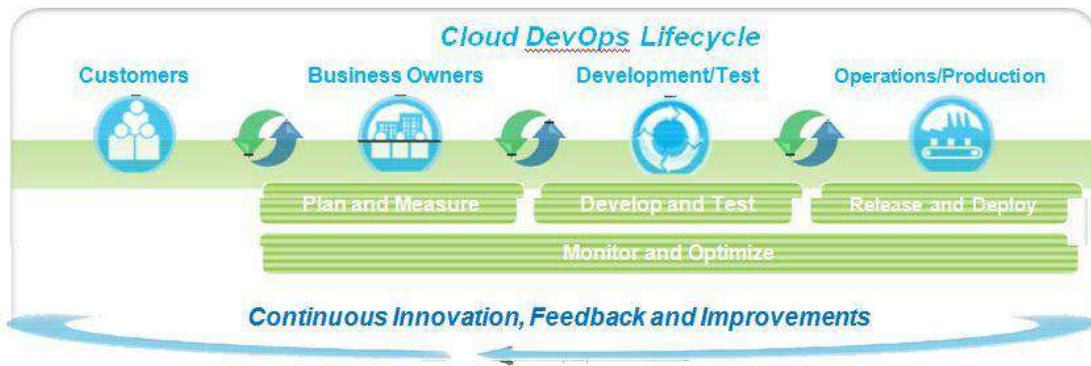

Figure 3: Propose Model for E-Business.

IV. LIMITATION/FUTURE WORK

This paper only discusses and deal only with the general importance of applying cloud DevOps concept on any type of electronic businesses without going into specific kind of businesses or services that are running on the cloud. Personalizing the concept based on specific kind of business in the future will be of great impact in order to address all the specific challenges of that are associated with such businesses in detail.

REFERENCES

[1]. F. Ahmadighohandizi and K. Systä, "ICDO: Integrated cloud-based development tool for DevOps.," in *SPLST*, 2015, pp. 76–90.
[2]. C. Technologies, "devops-winning-in-application-economy," 2014.

[3]. I. K. Jalozie, H. J. Wen, and H. L. Huang, "A framework for selecting e-commerce business Models," *Retrieved Febr.*, vol. 10, p. 2012, 2006.

[4]. D. Poshyvanyk, Y.-G. Gueheneuc, A. Marcus, G. Antoniol, and V. Rajlich, "Feature location using probabilistic ranking of methods based on execution scenarios and information retrieval," *IEEE Trans. Softw. Eng.*, vol. 33, no. 6, 2007.

[5]. T. Lehtonen, S. Suonsyrja, T. Kilamo, and T. Mikkonen, "Defning Metrics for Continuous Delivery and Deployment Pipeline," 2015.

[6]. M. Stillwell and J. G. Coutinho, "A DevOps approach to integration of software components in an EU research project," in *Proceedings of the 1st International Workshop on Quality-Aware DevOps*, 2015, pp. 1–6.

[7]. J. Sussna, "Cloud and DevOps: A Marriage Made in Heaven," 2013. [Online]. Available: https://www.infoq.com/articles/cloud-and-devops. [Accessed: 22-Mar-2017].

[8]. W. Ambler and M. Lines, "Scaling Agile Software Development," 2014.

[9]. atos,"atos-devops-building-service-oriented-organization-white-paper," 2016. [Online]. Available: https://atos.net/wp-content/uploads/2016/11/atos-devops-building-service- oriented-organization-white-paper.pdf. [Accessed: 17-Mar-2017].

[10]. N. J. L. Brown, A. D. Sokal, and H. L. Friedman, "The complex dynamics of wishful thinking: The critical positivity ratio.," *American Psychologist*, vol. 68, no. 9, pp. 801–813, 2013.

[11]. Y. Ghanam, J. Ferreira, and F. Maurer, "Emerging Issues &amp; Challenges in Cloud Computing—A Hybrid Approach," *Journal of Software Engineering and Applications*, vol. 05, no. 11, pp. 923–937, 2012.

[12]. J. Lumsden, Ed., *Handbook of research on user interface design and evaluation for mobile technology*. Hershey, Pa.: Information Science Reference, 2008.

[13]. P. Mell and T. Grance, "The NIST definition of cloud computing," *National Institute of Standards and Technology*, vol. 53, no. 6, p. 50, 2009.