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A New Software as a Service Framework for Cloud Multi-tenancy

By

Mohamed Osman Mohamed Imam

A Thesis

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Dr.Adil Yousif

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Abstract

Cloud computing emerged as a new computing paradigm which aims to provide reliable, customized and QoS guaranteed dynamic computing environments for end-users. The goal of cloud computing is to allow users to tack benefits from all these technologies, without the need for deep knowledge about or expertise with each one of them. The cloud aims to cut cost, and help the users focus on their core business instead of being impeded by IT obstacles. Software as a Service (SaaS) is a software delivery model in which software resources are accessed remotely by users. Enterprises find SaaS attractive because of its low cost. SaaS requires sharing of application servers among multiple tenants for low operational costs. Besides the sharing of application servers, SaaS framework is software use to developing cloud SaaS application, but the most of this frameworks it is very difficult and complicated. The complexity in the current frameworks be it difficult to developing SaaS application. The objective of this research is to build a new simple and easy SaaS framework to create SaaS applications and avoid the difficulties and complexities in the current cloud SaaS frameworks. To evaluate the proposed framework this study contacted. An empirical study and comparative study. The proposed framework use popular web programming language HTML and PHP. The result reveled that the proposed framework outperforms Athena framework in terms of complexity, understandability and learnability.

المستخلص

الحوسبة السحابية تظهر نموذج حاسوبي جديد يهدف الى توفير معلومات موثوقة، وضمان جودة الخدمة مخصصة لبيئات الحوسبة الديناميكية للمستخدمين النهائيين. البرنامج كخدمة (SaaS) هو نموذج تسليم البرامج وموارد البرامج التى يتم الوصول اليها عن بعد من قبل المستخدمين. تعتبر (SaaS)جذابة بسبب قلة تكلفتها . (SaaS) يتطلب تقاسم خوادم التطبيقات بين عدة مستاجرين وانخفاض تكاليف التشغيل. اطارات عمل او بيئات تطوير SaaS هي برامج تستخدم لانشاء تطبيق يعتبر برمجية مخدمة.معظم اطارات العمل هذه صعبة جدا ومعقدة جدا.التعقيد في اطارات العمل الحالية يجعل انشاء تطبيقات (SaaS) صعب جدا .وفى هذا البحث سنحاول تفادى صعوبة وتعقد الاطارات العمل هذه ،و سيتم بناء اطار عمل بسيط وسهل لانشاء تطبيقات (SaaS), المنهجية المتبعة فى هذا البحث دراسة تجريبية، دراسة مقارنة، اطار العمل المقترح استخدم لغات برمجة الويب المستخدمة و المعروفة لكل المبرمجين (PHP,HTML).النتائج توضح ان اطار العمل المقترح افضل من اطار العمل Athena في فهم وتعلم الاطار و اطار العمل المقترح اقل تعقيد من Athena.

.1 Introduction

This chapter introduce the research work, state the research problem and describe the objectives of the research.

1.2 Problem Background:

Cloud computing is a technology that uses the internet and central remote servers to maintain data and applications. It is a marketing term for technologies that provide computation, software, data access, and storage services that do not require end-user knowledge of the physical location and configuration of the system that delivers the services. Cloud enhances collaboration, agility, scaling, and availability, and provides the potential for cost reduction through optimized and efficient computing. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. All the users or consumers need is to get the benefits of using the software or hardware of the computer like sending emails etc. Just to get this benefit why should a consumer buy a software /hardware? Cloud computing is broken down into three segments: "application" "storage" and "connectivity." Each segment serves a different purpose and offers different products for businesses and individuals around the world [1].

Software as a service (SaaS) is a software model provided by the vendor through an online service. It provides network-based access to commercially available software. User interface powered by "thin client" applications; cloud components; communication via (Application Program Interfaces (APIs); stateless; loosely coupled; modular; semantic interoperability. SaaS is a software deployment method where the application is available for consumption from the cloud. One of the main selling points for SaaS applications is that they are charged based on usage. Unlike traditional on premise solutions where a consumer purchased a typically expensive software license for applications such as CRM or ERP, consumers can subscribe to a SaaS application and are only charged based on their usage of the application. This greatly reduces the cost of the application to consumer as they no longer have to be concerned with hosting the application on premise or dealing with software upgrades. SaaS solutions also have the added benefit that they are available out of the box. Should a company choose to deploy an on premise CRM solution, then, even with the software available, it will take some time to install and

configure locally. This is not an issue for SaaS solutions as one a consumer has their subscription in place, the application is ready to use [2].

Software as a service frameworks are a software by which to establishment of cloud computing software, which is software used most programming languages little known for web applications.

1.3 Problem Statement

Several frameworks are available for building cloud SaaS applications. However, these frameworks are very complex, difficult to use and produce errors and exceptions.

1.4 Research objective

i. To build a new usable framework for developing cloud SaaS applications.
ii. To evaluate the proposed framework with the currently used SaaS frameworks.

1.5 Thesis Structure

This thesis contains six chapters. Chapter two review the literature of cloud computing and software as a service. Chapter three describes the research methodology, empirical study and the operational framework. Chapter four describes the proposed framework. Chapter five illustrates result of the Empirical Study and evaluation for framework. Chapter six states the conclusions and recommendations for future works.