HPC Performance and Energy-Efficiency of the OpenStack Cloud Middleware

Mr.R.Viswanath
Information Technology, Agni college of technology
viswanath.it@act.edu.in

Mr.V.Srinivash
Information Technology, Agni college of technology
srinivashvivek@gmail.com

Mr.V.Vijayasarathi
Information Technology, Agni college of technology
sarathivel96@gmail.com

***Abstract*--The compiler is installed and it will test the code at server side and send result information to client within few seconds. In present scenario usage of technology This project main idea is to help students who want to learn java, C, C++ and php programming language without installing compiler in his system.This application works on Android application which works online. Students need to write java code and past in to online java compiler and press run button system will send information to server is widely increased mainly usage of internet had reached to every house. So this application will save time and installing entire java development kit will be a time taking process so students can use this online application.Android is mainly designed for physical smart phone, Android's two other features are useful to construct a server platform. In our project we proposed a system that without installing software in mobile device accessing that software through cloud server. There are two key tasks involved before remote execution: code partitioning and state migration. And we are using software as a service. SAAS is a software delivery method that provides access to software and its functions remotely as a web-based service.**

I. INTRODUCTION

A. OBJECTIVE OF THE PROJECT

The main objective of the project is to develop a Cloud Computing. Application Setup server and deploy the application on the cloud to test it across the range of learn mobile computing systems. We are implementing Software as a Service (SAAS) for Cloud Computing. Develop Android based application for students.

B. OVERVIEW OF THE PROJECT

The number of smart phones and mobile a applications are growing rapidly. Though smart phones are expected to have PC-like functionality hardware resources such as CPUs, memory and batteries are still limited. To solve this resources problem, many researchers have proposed architectures to use server resources in the cloud for mobile devices.

We propose a conceptual architecture of Android as a Server Platform, which enables multiple Android application on cloud server via network. Though Android is mainly designed for physical smart phone. In this paper we elaborate on the idea of computation offloading and present a practical system, called Cuckoo that can be used to easily write and efficiently run applications that can offload computation. Cuckoo is targeted at the Android platform, since Android provides an application model that fits well for computation offloading.

C. EXISTING SYSTEM

- Cloud Computing is the upcoming area in the real Networks, but to utilize this Cloud Computing Resource Computer like Hardware is required.
- Managing the Cloud Computing through Mobile is not an easy job till now.
- Cloud integrative Mobile Applications are not in Use.
- Smart phones are expected to have PC-like functionality, Hardware resources such as CPUs, Memory and Batteries are still limited.

a) DRAWBACKS OF EXISTING SYSTEM

Managing the Cloud Computing through Mobile is not a easy job till now. They cannot access their Remote Network through GPRS connectivity using Mobile. TheCloud integrative Mobile Application is not in Use. One of the drawbacks of Java, C, C++ compiler in system is while the small program that many novice programmers code take, larger application suites can take significant amount of time to compile.

D. PROPOSED SYSTEM

Cloud Computing Application can be initiated using Android Smart Phones. We are implementing Software as a Service (SAAS) for Cloud Computing. SAAS is the Cloud Computing Resource, used for the service of without installing that Software in the Device. Here, we are compiling the code using Android Smart phones without installing Software in Mobile Phone. Implementing cloud computing architecture for mobile devices. Android can utilize software as a service (SAAS) Process from the cloud server, without installing the software in the Android mobile.

This features allows students to do Java, C, C++and programming anywhere, anytime using just mobile interface.

a) ADVANTAGES OF PROPOSED SYSTEM:

We are implementing Software as a service (SAAS) for Cloud Computing. SAAS is the Cloud Computing Resource, used for the service of Software without installing that Software in the User Device. It allows compiling and executing Java, C, C++ programs directly through the Android mobile so that they can concentrate on the programming concepts rather than learning to operate new technologies (os). We will execute small Java, C, C ++ program through Android Mobile it reduce the time consistency. This allows students can to do Java, C, C++ programming anywhere, anytime using just mobile interface.

II. LITERATURE SURVEY

The rapid proliferation of mobile computing technology has massive potential for providing access to different services at any time and from anywhere. The mobile telephone is more than just making calls. It allows accessing several applications and services via the internet connection or by building stand-alone applications. The mobile telephone has a considerable effect in tourism by allowing the user to access the contents from Internet or from an install application over the mobile devices. The existing tourist guide applications use the latest technologies to enhance the application quality by satisfying the user's requirements.

These applications encounter great challenges because of limited mobile resources. Several development platforms for mobile applications are used to design tourist guide applications a caused to mobile devices incompatibility

We no need to pay while compiling the program in our Android Smart Phone. The system is designed to allow tourist to work in on-line from the web site or off-line mode from the installed application over the mobile device

The Execution Controller first starts the profilers to provide data for future invocations. It then decides whether this invocation of the method should be offloaded or not. If not, then the execution continues normally on the phone.The aim of this paper is to propose a computation offloading strategy, to be used in mobile cloud computing, in order to minimize the energy expenditure at the mobile handset necessary to run an application under a latency constraint. We exploit the concept of *call graph, which models a generic*

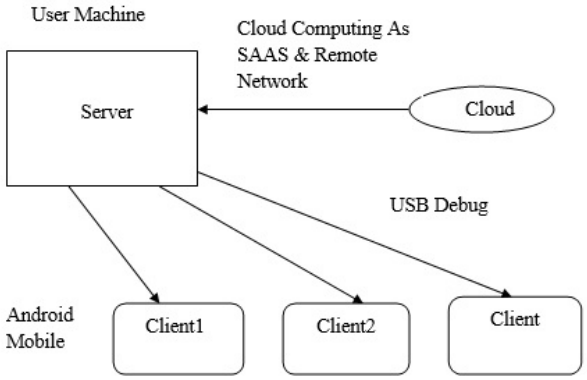
Computer program as a set of procedures related to each other through a weighted directed graph. Our goal is to derive the partition of the call graph establishing which procedures are to be executed locally or remotely. The main novelty of our work is that the optimal partition is obtained *jointly with* the selectionof the transmit power and constellation size, in order to minimize the energy consumption at the mobile handset.

The outline of this paper is as follows. We will discuss the Android operating system, which is the platform that we have selected for our research. Then discusses the design of the Cuckoo framework and Section 4 presents' important details about the implementation.To accesses the information from a simple interface or the information about any location is displayed without the user intervention according the GPS positioning system, where the matching is done between the GPS coordination and the GPS dimensions stored for each location over the deviceOffloading computation from Smartphone's to remote cloud resources has recently been rediscovered as a technique to enhance the performance of Smartphone applications, while reducing the energy usage. In this paper we present the first practical implementation of this idea for Android.The Cuckoo framework, which simplifies the development of Smartphone applications that benefit from computation offloading and provides a dynamic runtime system, that, can, at runtime, decide whether a part of an application will be executed locally or remotely. We evaluate the framework using two real life applications.Private clouds can build and managed by a company's own IT organization or by cloud provider. In this hosted private model, a company such as Sun can install, configure, and operate the infrastructure to support a private cloud within a

company's enterprise data center. It is most convenient device to compile the code and remove the errors. There is a very big complexity in constructing theprivate cloud. Private cloud make unique authentication within their own company, so others user cannot used their compiled code.

In this article, a new mobile Cloud service model is presented. It offers a dynamic and efficient remote access to information services and resources for mobile devices.

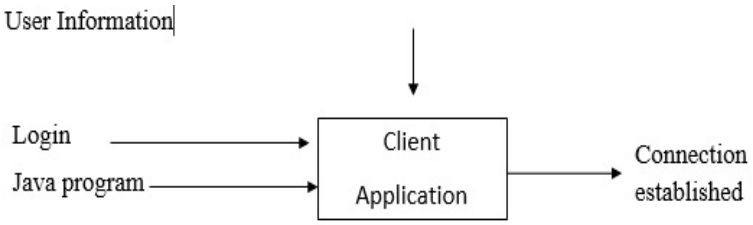
III. SYSTEM DESIGN ARCHITECTURE



IV. MODULE DESCRIPTION

a) MOBILE CLIENT

An Android mobile client is an application that access a service made available by a server. The server is often (but not always) on another computer, in which case the client accesses the service by way of a network. The term was first applied to devices that were not capable of running their own stand-alone programs, but could interact with remote computers via a network.



V. CONCLUSION

The goal of the present study has been to evaluate the leading open source Cloud IaaS environment OpenStack from an HPC and energy efficiency point of view. In this paper we have described in detail a novel benchmarking methodology that has allowed us to perform experiments by deploying OpenStack on multiple nodes of the Grid'5000 platform onthe two leading hardware architectures (AMD and Intel). In particular, we tested the performance impact given by the IaaS solution and its Xen/KVM virtualization backends when running the reference HPCC/HPL and Graph500 benchmarking suites over varying number of physical (up to 12) and virtualized (up to 72) nodes. Our objective was to quantify the overhead induced by the Cloud layer when compared with the baseline configuration that used to operate without any such virtualization interface.Our findings, summarized in the table IV, show that there is a substantial performance impact introduced by the Cloud middleware layer across the considered hypervisors, which confirms again, if needed, the non-suitability of Cloud environments for distributed large scale HPC workloads.

REFERENCES

[1] M. Guzek, S. Varrette, V. Plugaru, J. E. Sanchez, and P. Bouvry, "A Holistic Model of the Performance and the Energy-Efficiency of Hypervisors in an HPC Environment," in Proc. of the Intl. Conf. on Energy Efficiency in Large Scale Distributed Systems (EE-LSDS'13), ser. LNCS. Vienna, Austria: Springer Verlag, Apr 2013.

[2] S. Varrette, M. Guzek, V. Plugaru, X. Besseron, and P. Bouvry, "HPC Performance and Energy-Efficiency of Xen, KVM and VMware Hypervisors," in Proc. of the 25th Symposium on Computer Architecture and High Performance Computing (SBAC-PAD 2013). Porto de Galinhas, Brazil: IEEE Computer Society, Oct. 2013.

[3] "Openstack," http://www.openstack.org/.

[4] "Grid'5000," [online] http://grid5000.fr.

[5] M. Armbrust and al., "Above the clouds: A berkeley view of cloud computing," EECS Department, University of California, Berkeley, Tech. Rep., Feb 2009.

[6] L. M. Vaquero, L. Rodero-Merino, J. Caceres, and M. Lindner, "A break in the clouds: towards a cloud definition," SIGCOMM Comput. Commun. Rev., vol. 39, no. 1, pp. 50–55, Dec. 2008.

[7] P. Barham, B. Dragovic, K. Fraser, S. Hand, T. Harris, A. Ho, R. Neugebauer, I. Pratt, and A. Warfield, "Xen and the art of virtualization," in Proceedings of the nineteenth ACM symposium on Operating systems principles, ser. SOSP '03. New York, NY, USA: ACM, 2003, pp. 164–177.

[8] A. Kivity and al., "kvm: the Linux virtual machine monitor," in Ottawa Linux Symposium, Jul. 2007, pp. 225–230. [Online]. Available: http://www.kernel.org/doc/ols/2007/ols2007v1-pages-225-230.pdf