Setting Up Some of the Simulators of Cloud Computing &Cloud Testing

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Abstract— As the cloud technology is a growing field and we have reached the world that everything cloud be made easy with cloud storage. So for more advanced features the cloud need to be developed so came the concept of multi cloud. Security is always a major area of concern in single cloud .the load balancing the resource sharing and VM migrations were also a issues in single cloud. [1] Testing cloud-based software systems needs techniques and tools to deal with infrastructure-based quality concerns of clouds. These tools can be built on the cloud platform to take advantage of virtualized platforms and services
as well as substantial resources and parallelized execution.[2]

Keywords:
Cloud Computing, Performance Analysis, IaaS, SaaS, PaaS, Cloud Simulators

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1 INTRODUCTION

Introduction

A large-scale distributed computing paradigm, which provides Data Storage Service, Computing Power and Data Transferring Service, with capabilities of elasticity Software (SaaS), Infrastructure (IaaS), Platform (PaaS), Network (NaaS), Business (BaaS) and Organization as a Service.[3].The effectiveness of cloud computing depends on the performance as the business needs require low cost and efficient resources for usage.
Scalability and dynamic configuration are the major issues in cloud performance analysis
For instance, finding out which service component might be the mainsource of the issue when the system performance does not satisfy the expectation, or specifying the critical paths among execution paths could be challenging [4]

SIMULATION OF CLOUD ENVIRONMENT
        Simulation is an important aspect in the area of research.as the scholars may need to check if the algorithms are working,they need a toolto implement

it.also the analysis can be concentrated on specific component to determine the performance.

Advantages of Simulation

1) *Low risk:* users can testand verify the results and identify the riskinvolved in.
2) *No expertise:* to use simulation tools no need of special experts.only programming skill required.
3) *No capital cost involved:* we can download the tool and use.
4) *Good result :As we can run the code many number of times the result is always good.*

Thus use of simulators is a better option .A number of tools are available for simulation.

A. CloudSim
Under different user and system requirementit is difficult to measure the performance.CloudSim tackles this problem. It is able to model large scale Cloud environments on single node. It also supports the network topologies simulations and federatedCloud environments. It can create and manage multiple independent virtual services on one datacenter with the capability

of working as space or time shared
allocations[5]CloudSim [6] is a famous simulator for
cloud parameters developed in the CLOUDS Labora-
tory, at the Computer Science and Software Engineer-
ing Department
of the University of Melbourne. CloudSim architec-
ture   is   shown

The programming language is Java, It lacked GUI in-
terface. So other simulators have been built based on
it.

*Install CloudSim with eclipse (In Windows Ma-
chine) [8]*

Step-1
Download eclipse. For that following link
http://www.eclipse.org/downloads/

Step-2
Extract eclipse to particular directory. Here let's say
C:\eclipse

Step-3
Download CloudSim. For that follow following link
http://code.google.com/p/cloudsim/downloads/list

Step-4
Extract CloudSim to particular directory. Here let's
say C:\cloudsim-3.0.2

Step-5
Download Michael Thomas Flanagan's Java Scientific
and Numerical Library. For that follow following link
http://www.ee.ucl.ac.uk/~mflanaga/java/

Step-6
Copy this flanagan.jar file into C:\cloudsim-3.0.2\jars\

Step-7
Open the eclipse IDE. For that go to C:\eclipse and
open the eclipse application

Step-8
Select the workspace

Step-9
In eclipse IDE go to New □ Java Project e, where
eclipse stores your projects.

Step-10

Specify Project name as CloudSim, untick the use de-
fault location option and select extracted CloudSim
folder. Click finish. It might take some time to finish.

How To Organize Coading[7]
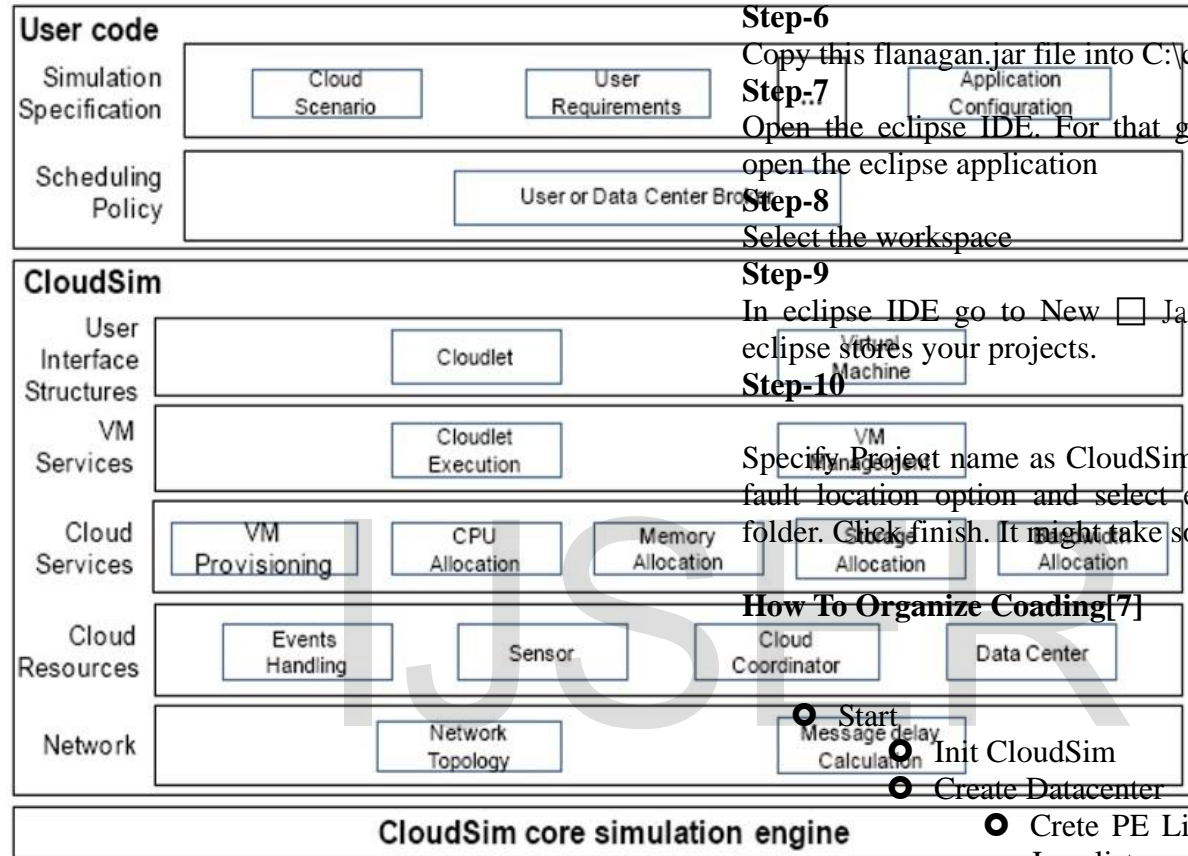
- Start
- Init CloudSim
- Create Datacenter
  - Crete PE List and Host Add to Java list.
  - Add PE list to Host List.
  - Create Java List of Storage .
    - Add All PE list, Host List   and Storage to DatacenterCharacteristics.
    - Create datacenter with VM allocation pollicy.
- Create DatacenterBroker
- Create VM
  - Add to VM List
    - Add to Broker
- Create CloudLet
  - Add to list
    - Add to Broker
- Start Simulation
- Stop Simulation
- Print Out put

○ Stop

B.CloudAnalyst.

Cloud Analyst is a tool developed at the University of Melbourne whose goal is to support evaluation of social networks tools according to geographic distribution of users and data centres. [9]

Features:[10]

1. Ease of use

2. Ability to define a simulation with a high degree of configurability and flexibility

3 Graphical outputs

4 Repeatability

5 Ease of extension
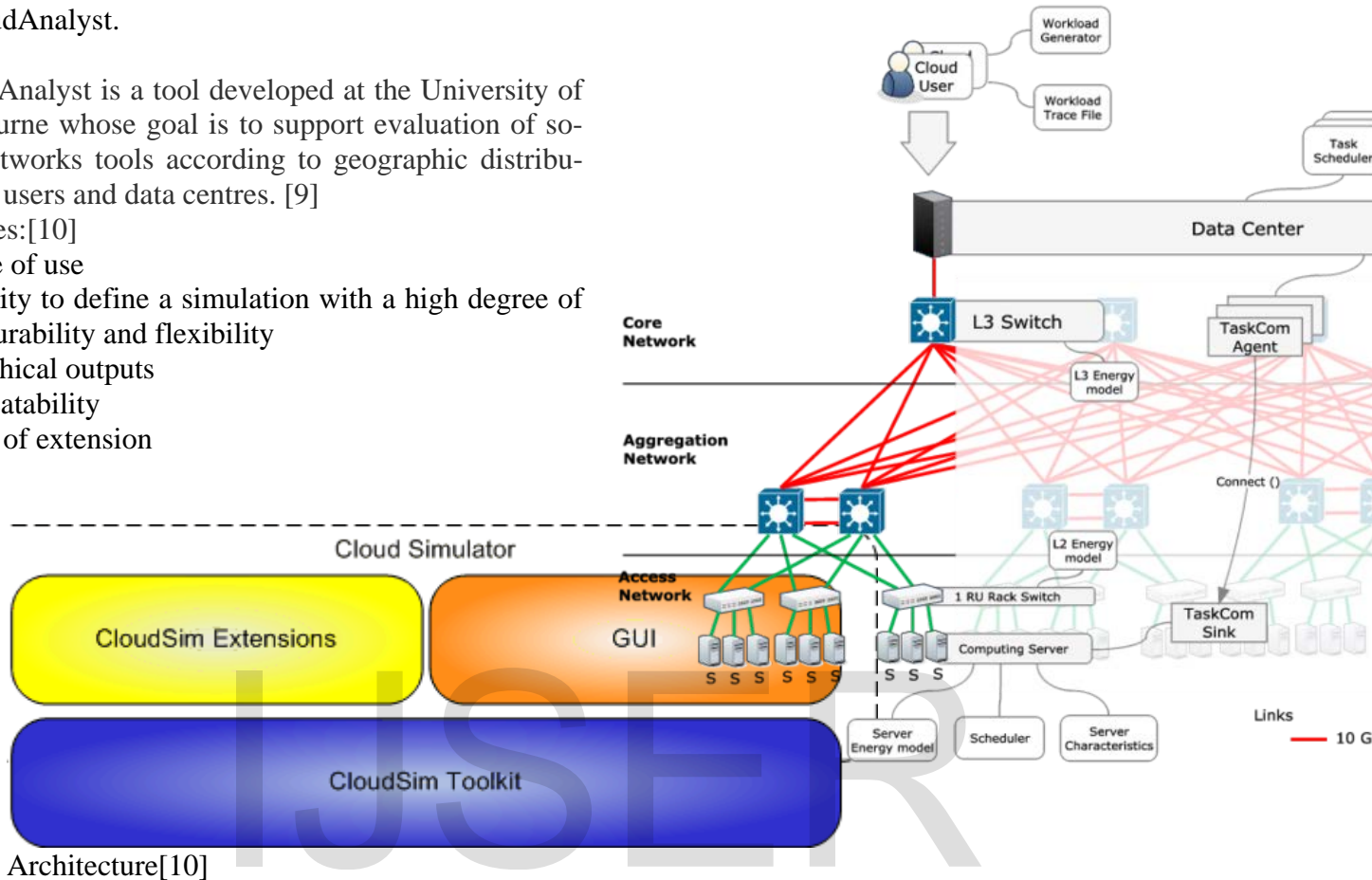
Architecture[10]

Architecture:[12]

C. GreenCloud

GreenCloud is energy-aware Cloud datacenters. It implements TCP/IP model. Used in small scale.The GreenCloud is coded in C++ and it acts as packet

Key features of GreenCloud are:

- Energy awareness

- Suport of virtualization and VM migration

- TCP/IP implementation

- User friendly GUI

- Open Source

SetUp[11]

If you are building GreenCloud on a non--- VM machine, here are the basic instructions:

1. Download GreenCloud

2. Unpack the downloaded software. It comes already integrated into NS--- 2 source code.

3. Navigate to the extracted directory.

4. Run ./install.sh to do a full installation (it should work on any Debian--- based system with a 3.2+ kernel,i.e. Ubuntu 12.x and higher).

5. Execute the simulation script by running ./run .

6. View the dashboard by opening show-dashboard.html.

D.MDCSim

The MDCSim developed athe the Pennsylvania state university in 2009 with hardware specification for different servers and flexible and scalable simu lation platform for analyzing mu lti-tier datacenters. [10].It suppots TCP/IP and other protocols. CSIM plat-
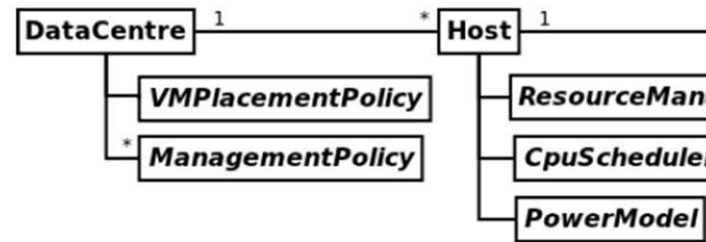
form.programming language is java/c++

E. EMUSim- EMUSIM was developed by Rodrigo N. Calherios at the Cloud Computing and Distributed Systems (CLOUDS) Laboratory, Department of Computing and Information Systems, University of Melbourne, Australiacombines emulation and simulation to extract information automatically fromthe application behavior (via emulation) and uses this information to generate the corresponding simulation model[].Gives more accurate values.

F) GroudSim

GroundSim, proposed is an event-based simulator . It is mainly for Iaas but can be extended for other models also.Built in java and do not have a GUI. It has one unique feature called as

GroundEntity which has its own error definitions which

the user can change at the time of error occurrence.[6]

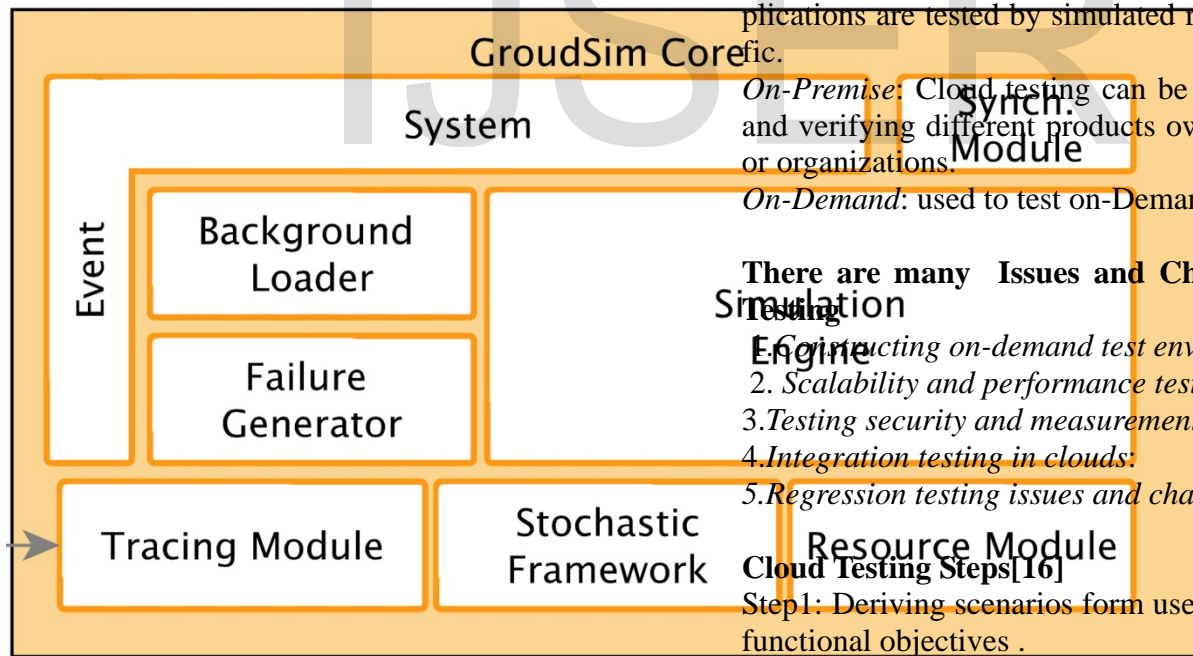Architecture ground sim[13]

G) DCSim

DataCenter Simulator, for dynamic resourse provisioning.open source built in java.[6]

The features of DCSim are listed below:

- Contains a multi-tier application model that allows the simulation of dependencies between VMs.

- Facilitates rapid development, evaluation and feedback on data centre management policies and algorithms.

DCSim Archit

[13]

What Is Cloud Testing?[2]
Cloud testing is testing in which cloud-based web applications are tested by simulated real-world web traffic.
On-Premise: Cloud testing can be used for validating and verifying different products owned by individuals or organizations.
On-Demand: used to test on-Demand software.

There are many Issues and Challenges in Cloud Testing
1.*Constructing on-demand test environments*:
 2. *Scalability and performance testing*:
3.*Testing security and measurement in clouds*:
4.*Integration testing in clouds*:
5.*Regression testing issues and challenges*

Cloud Testing Steps[16]
Step1: Deriving scenarios form users that usually have functional objectives .

Step 2: Developing test cases

Step 3: Choosing a suitable cloud service vendors:

Step 4: Establishing the needed infrastructure and Setting up cloud server:

Step 5:Testing conducted which include functional,

integration and system testing

Step 6:Test is reviewed

Step 7:Outcomes are delivered to user or organization

Conclusion

This paper has focused on some of the available simulation tools in cloud. Each tool has its own importance and can be used for various applications.This paper has focused on how to set up various tools ,the comparison and focused on some of the cloud testing methods

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