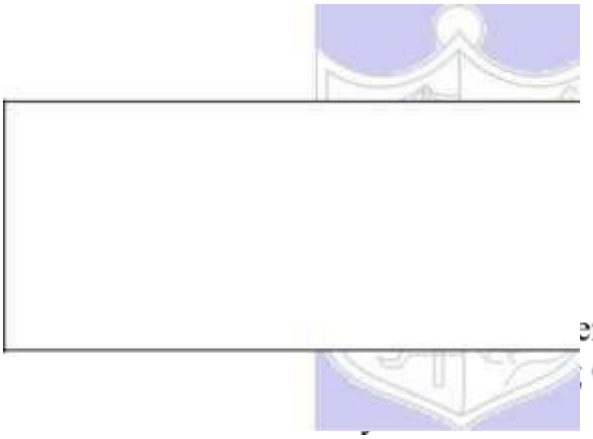


erformance of
Cloud

**Batch: A2** **Roll No.: 16010421073** **Experiment No.: 07**

**Title:** Monitor performance of existing algorithms using Cloud Analyst

**Resources needed: Cloudsim toolkit**

**Theory:**

There are several extremely good toolkits that can be used to model a simulated environment to study the behavior of a large scaled application on the Internet. But it became apparent that having an easy to use tool with a level of visualization capability is even better than just a toolkit. Such a tool separates the simulation experiment set up exercise from a programming exercise and enables a modeler to concentrate on the simulation parameters rather than the technicalities of programming. It also enables the modeler to execute simulations repeatedly with modifications to the parameters quickly and easily. A graphical output of the simulation results enables the results to be analyzed more easily and more efficiently and it may also help in quickly highlighting any problems with the performance and accuracy of the simulation logic.

**Technologies used to develop cloud analyst tool**

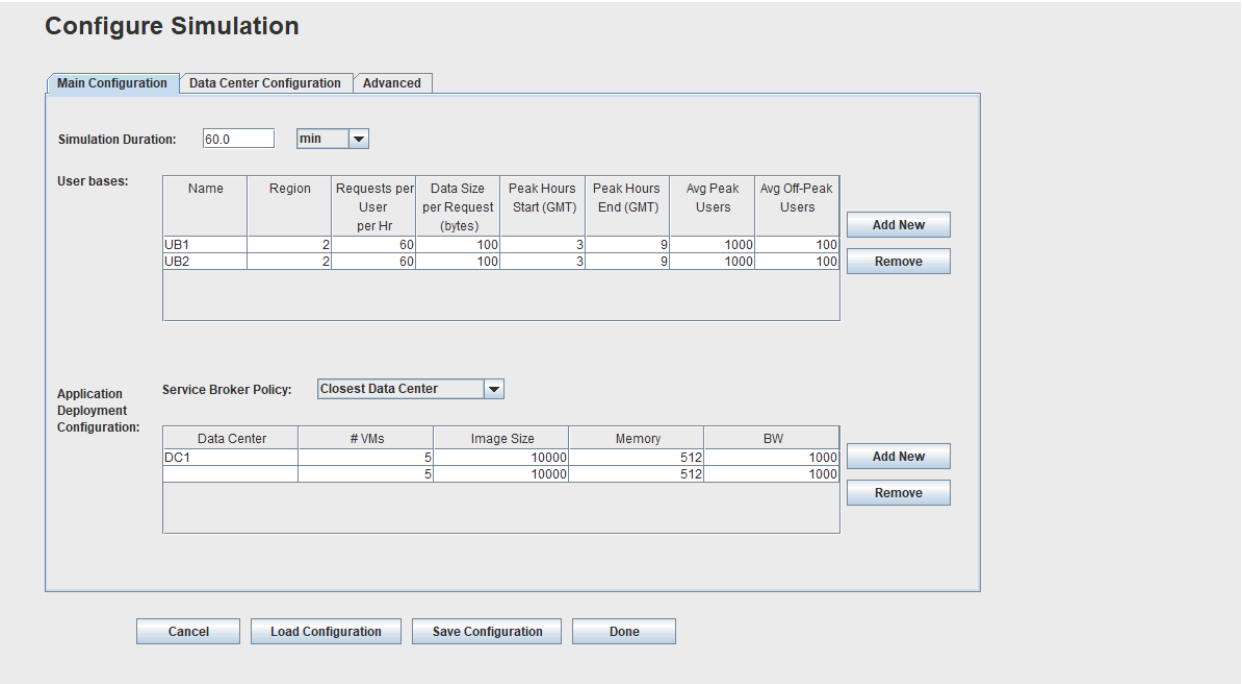
- Java – The simulator is developed 100% on Java platform, using Java SE 1.6.
- Java Swing – The GUI component is built using Swing components.
- CloudSim – CloudSim features for modelling data centers is used in CloudAnalyst.
- SimJava – Sim Java is the underlying simulation framework of CloudSim and some features of SimJava are used directly in CloudAnalyst.

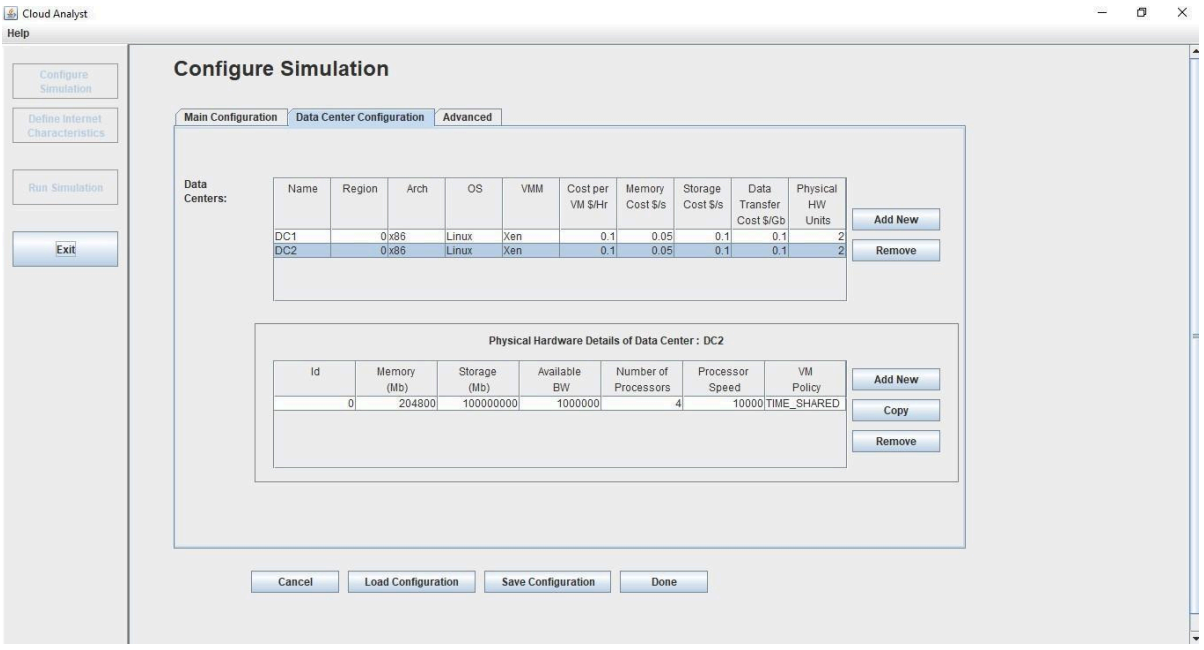
**Simulation Output / What is being Measured**

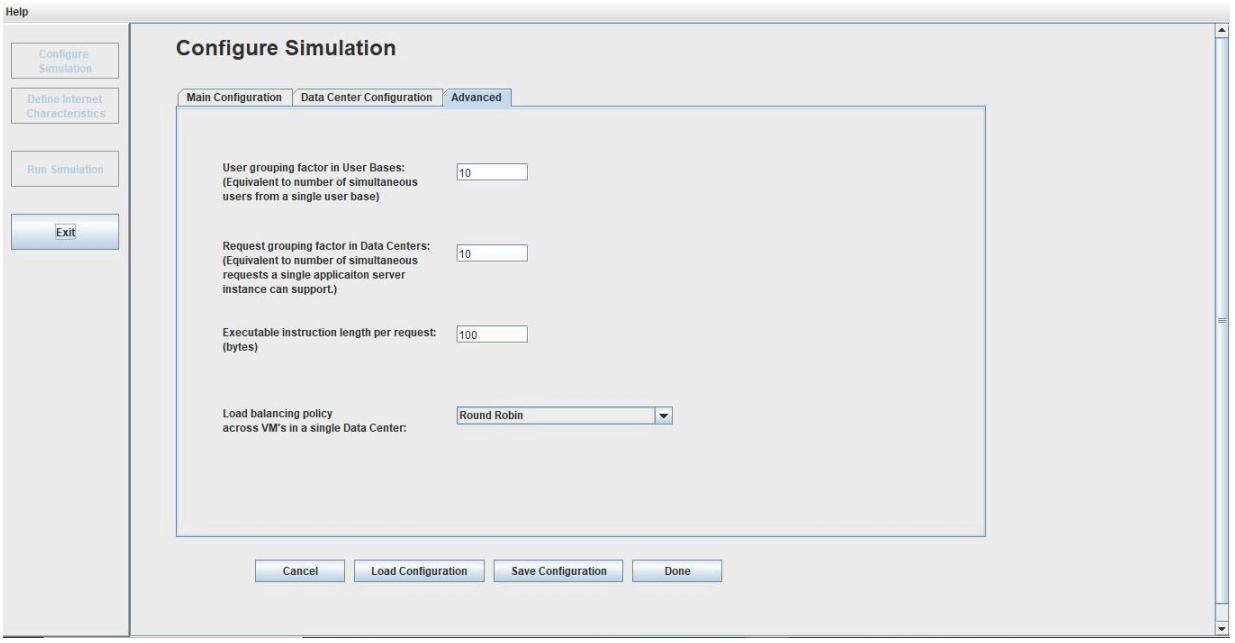
Following are the statistical measures produced as output of the simulation in the initial version of the simulator.

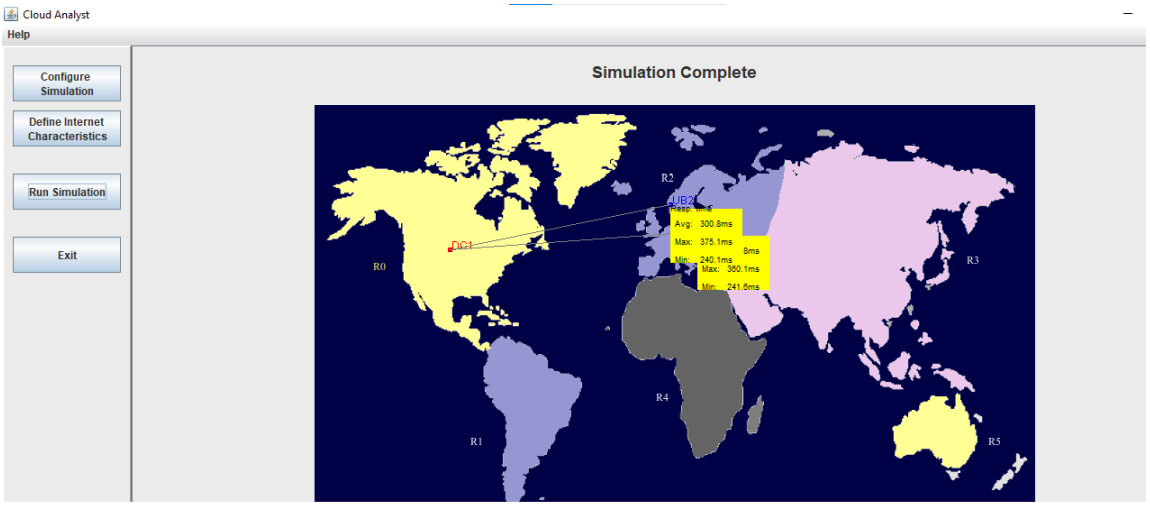
- Response time of the simulated application
- Overall average, minimum and maximum response time of all user requests simulated o The response time broken down by user groups, located within geographical regions
- The response time further broken down by the time showing the pattern of change over the duration of a day
- The usage patterns of the application o How many users use the application at what time from different regions of the world, and the overall effect of that usage on the data centers hosting the application
- The time taken by data centers to service a user request o The overall request processing time for the entire simulation o The average, minimum and maximum request processing time by each data center o The response time variation pattern during the day as the load changes
- The cost of operation

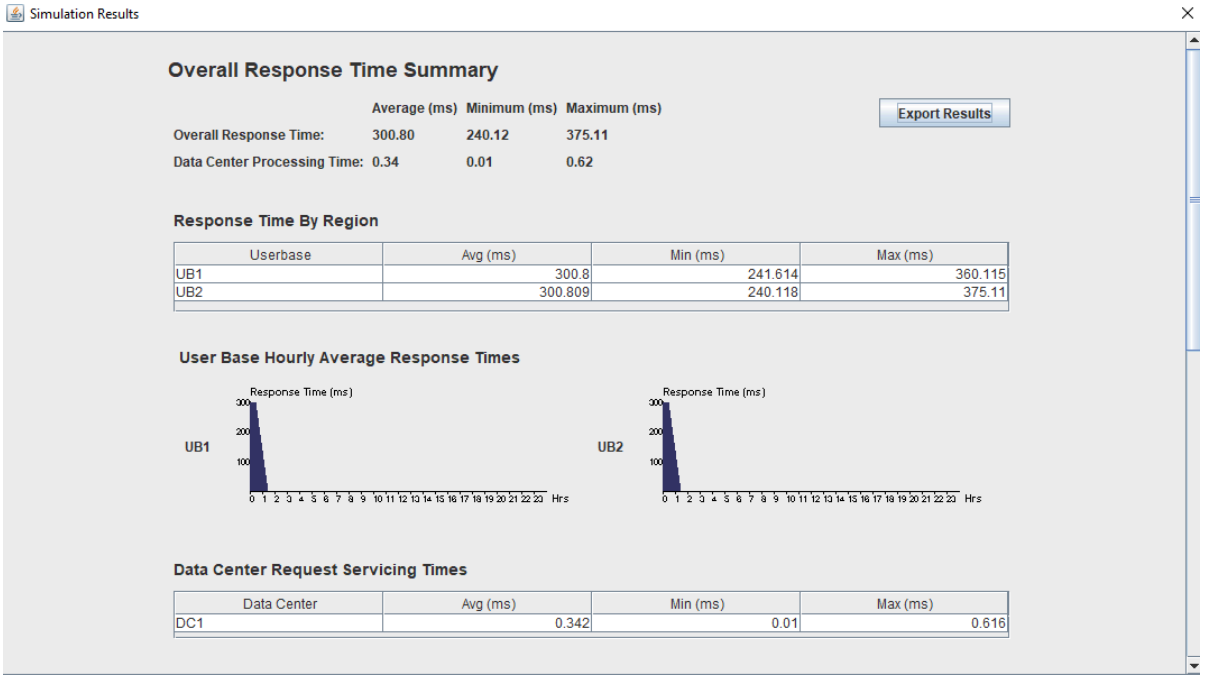
## Results: Attach the snapshots of execution



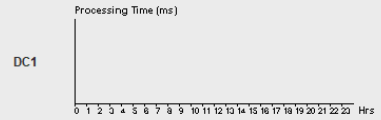




Help
Configure Simulation
Define Internet Characteristics
Run Simulation
Exit
Configure Simulation
Main Configuration
Data Center Configuration
Advanced
User grouping factor in User Bases: (Equivalent to number of simultaneous users from a single user base)
10
Request grouping factor in Data Centers: (Equivalent to number of simultaneous requests a single applicaiton server instance can support.)
10
Executable instruction length per request: (bytes)
100
Load balancing policy across VM's in a single Data Center:
Round Robin
Cancel
Load Configuration
Save Configuration
Done

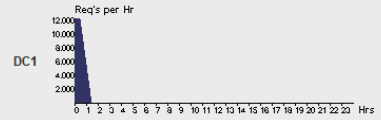

Cloud Analyst
Help
Configure Simulation
Define Internet Characteristics
Run Simulation
Exit
Simulation Complete
R0
R1
R2
R3
R4
R5
DC1
UB2
Avg: 300.8ms
Max: 375.1ms
Min: 240.1ms
Max: 360.1ms
Min: 241.6ms


Simulation Results
Overall Response Time Summary
Average (ms)
Minimum (ms)
Maximum (ms)
Export Results
Overall Response Time: 300.80 240.12 375.11
Data Center Processing Time: 0.34 0.01 0.62
Response Time By Region
Userbase | Avg (ms) | Min (ms) | Max (ms)
UB1 | 300.8 | 241.614 | 360.115
UB2 | 300.809 | 240.118 | 375.11
User Base Hourly Average Response Times
UB1
UB2
Response Time (ms)
Hrs
Data Center Request Servicing Times
Data Center | Avg (ms) | Min (ms) | Max (ms)
DC1 | 0.342 | 0.01 | 0.616

**Data Center Hourly Average Processing Times**




**Data Center Loading**




**Cost**

**Total Virtual Machine Cost :** $0.51

**Total Data Transfer Cost :** $0.13

**Grand Total :** $0.64

| Data Center | VM Cost | Data Transfer Cost | Total |
|---|---|---|---|
| DC1 | 0.507 | 0.129 | 0.636 |

```
Simulation time =3600000.0ms
Starting Simulation...
Initialising...
Creating new broker DC1-Broker
0.0 Creating new user base UB1
0.0 Creating new user base UB2
Starting GridSim version 4.2
Entities started.
Starting user base 9 UB2
Starting user base 7 UB1
Starting broker 6 name=DC1-Broker
Starting internet 11
5.0: DC1-Broker: Cloud Resource List received with 1 resource(s)
5.0: DC1-Broker: Trying to Create VM #0
5.0: DC1-Broker: Trying to Create VM #1
5.0: DC1-Broker: Trying to Create VM #2
5.0: DC1-Broker: Trying to Create VM #3
5.0: DC1-Broker: Trying to Create VM #4
Gathering simulation data.
UB2 finalizing. Messages sent:649, Received:649
UB2 requests sent=6187 , received=6187
UB1 finalizing. Messages sent:631, Received:631
UB1 requests sent=6058 , received=6058
Got response for 700623 but it seems to be completed.
DC1-Broker finalizing, submitted cloudlets=1280 processing cloudlets=0 ,allRequestsProcessed=12245
Simulation completed.
************ Vm allocations in DC1
0->514
1->513
2->513
```

[tbeans/](#)

Extract cloud analyst in lib folder in C drive

…

…

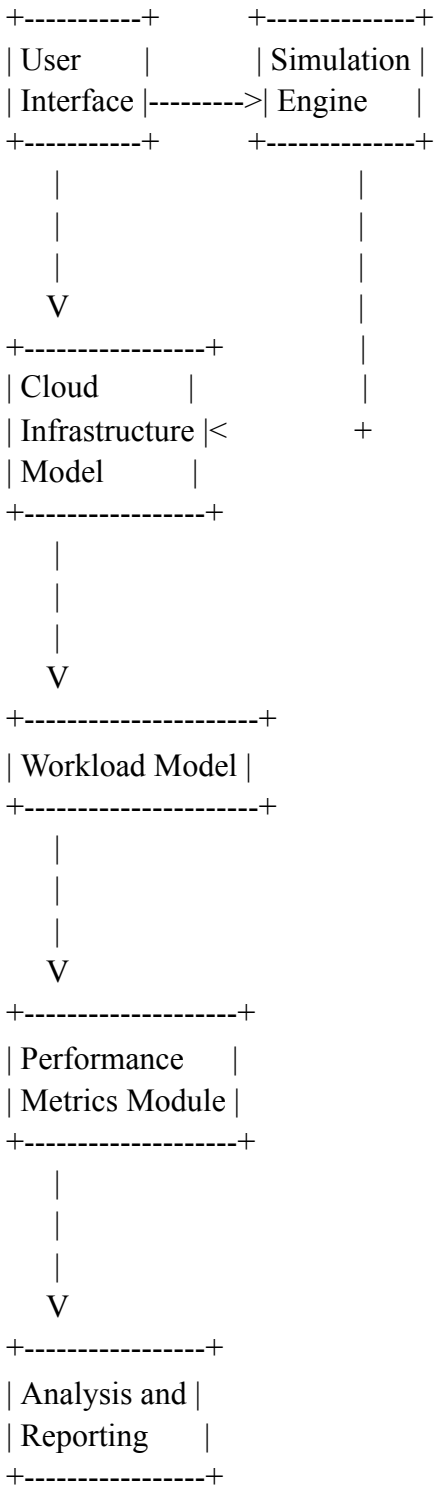
Complete it by putting snapshots of execution and executing RR algorithm

Configure Cloud analyst

Show simulator output for any one algorithm.

**Post Lab Questions:**

Explain Cloud Analyst Design with neat diagram




This diagram illustrates the components of the Cloud Analyst system:

**User Interface:** The interface through which users interact with the Cloud Analyst tool, providing input parameters and viewing simulation results.

**Simulation Engine:** The core component responsible for running simulations based on the user's input

parameters.

**Cloud Infrastructure Model:** Represents the virtualized cloud infrastructure being simulated, including virtual machines, physical servers, storage resources, and networking components.

**Workload Model:** Defines the characteristics of the workload being placed on the cloud infrastructure, such as arrival rates, resource demands, and job sizes.

**Performance Metrics Module:** Collects performance metrics during the simulation, tracking key indicators like response time, throughput, and resource utilization.

**Analysis and Reporting:** Processes the collected data and generates reports, charts, and graphs to visualize simulation results and performance metrics.

**Configuration & Parameterization:** Allows users to configure simulation parameters such as cloud resource capacities, workload characteristics, and simulation duration

**Outcomes:**

CO4: Examine various security issues in cloud.

**Conclusion:** We have successfully Monitor performance of Round Robin algorithm using Cloud Analyst.

**Grade: AA / AB / BB / BC / CC / CD /DD**

**Signature of faculty in-charge with date**

**References:**

**Books/ Journals/ Websites:**