



A Comparative Study on Congestion Control of Data Transfer Availability in Mobile Cloud Computing

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Abstract— *Mobile Cloud Computing has drawn significant research attention as the popularity and capability of mobile devices. In the recent years, in the field of research It has been improved. In this paper it has been take an issue of network related issues such as Availability lacking occurred in transfer time, execution time during running state. It aims to prove seamless traffic congestion and improve the performance of transferring Data.so we approach two algorithms in seamless transferring Connectivity they are RED Algorithm(random early detection) And context Aware Decision Algorithms so we apply final To make a seamless traffic congestion on the mobile network*

Keywords— *Availability, transfer time, execution time, traffic congestion, seamless traffic connectivity*

I. INTRODUCTION

In current days mobile devices (e.g,smart phone, tablets,pc's. etc) are increasing becoming an essential part of human life. The most effective and convenient communication tool is not bound by time and place .In high speed networks the capabilities and availabilities of mobile devices are strongly Increasing as it is service provides data are on the rise, ranging from network services

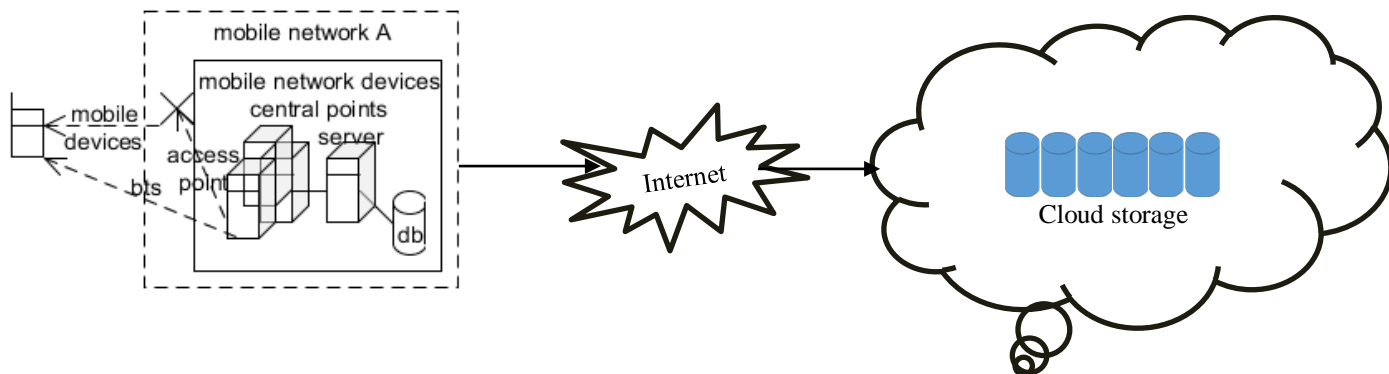
Networking system plays a crucial role in mobile cloud computing and have a significant impact on the performance of the services that can be offered by cloud environment. Recent study on this performance has indicated in many cases

Data communication in cloud infrastructure has many bottlenecks with limits cloud from supporting high performance applications. This networking becomes even more challenging issue in Mobile Cloud Computing. where as large amount of data collected by sensor need to be transmitted across to server for Processing. In order to support various applications the limited data transmission in cloud must be carefully controlled to avoid network congestion.

This paper is focused on survey which provides different application performance parameters to investigate the effect of highly dynamic network conditions on the application, and its running states migration process. Those parameters are transfer time, packet delivery ratio and end to end per packet delay. The simulation based performance evaluation provides complete control on the experimental setup to evaluate the performance by considering network conditions.

1.1 ARCHITECTURE OF MOBILE CLOUD COMPUTING:

In current days mobile cloud architecture, has cloud services in two ways such as: mobile network, Access points.



In the Mobile network the mobile devices (e.g,smart phone, tablets, etc) are connected to a mobile network via a Base Station or wireless network . If the users have mobile network connectivity they can access cloud based services.

In the access point case, the mobile users connect the access points through WI-FI. This further connected to the internet service provider to provide internet connectivity to the users. The mobile cloud users can access cloud based services

II. RELATED WORK

In current days no of surveys are published in the domain of mobile cloud computing similarly a number of network related concepts also processing in current days such as mobility techniques are proposed to collaborate in wireless data networks in order to provide seamless traffic connectivity there are lot of efforts focus to evaluate the issues such as data loss , service continuity during data transfer time and execution time.

The research efforts on availability have been made to avoid traffic congestion

Context aware decision algorithm it provides cloud resources using multi criteria decision making methodology and provide seamless mobile cloud services.

The existing methods do not consider a dynamic network-centric parameters

The techniques and size of data have also significant effect on the transfer time so the size of the application components and its running states should be reduced to improve the execution time in mobile cloud computing

III. ISSUES IN MOBILE CLOUD COMPUTING

The issues are commonly circulated in mobile environment. There are several issues which are occurred in Mobile Cloud Computing, so we take into consideration and deals with a network related issues.

3.1. Network Related Issues:

Mobile Cloud Computing is totally preferred on the network so there are some issues which occurs: Bandwidth, Latency, Availability and heterogeneity out of these issues this paper deals with Availability

3.2. Availability:

Availability becomes more important issue in Mobile Cloud Computing rather than cloud computing with the wired networks. Mobile users may not be able to connect the cloud to obtain service due to the traffic congestion, network failures, and out of the signals. Out of the broad area of availability, it is going to narrow down towards Traffic Congestion.

3.3 Traffic Congestion:

Lack of Availability is the main problem of Traffic Congestion, so the seamless connectivity helps to reduce the Traffic congestion problem between the interface, Transfer time, total execution time. In this paper the seamless traffic connectivity plays a major role.

3.3.1 (i) Transfer time:

The Transfer time represents the time taken by a file, containing the application and its running States, to travel data's from the mobile device to the cloud server. The transfer time is measured in seconds and this shows this shows the effect of transfer time

3.3.2 (ii) Total execution time:

The execution time consists of the application migration decision time, application and its running states which transfer time and application execution time on the cloud server. The application migration decision time and application execution time are exponentially distributed. The total execution time is measured also in seconds.

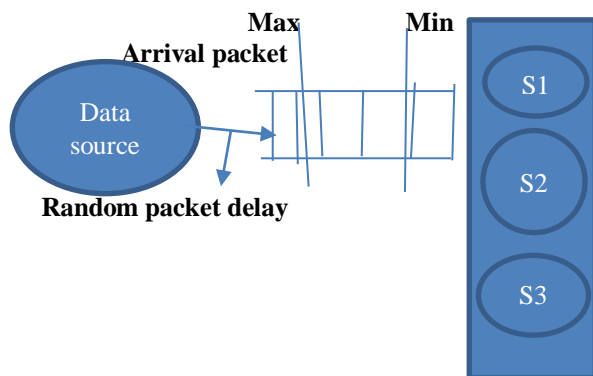
The data is classified into two categories, application runtime states and input data. generally in Mobile Cloud Computing , the states of migrating mobile application and input data size are large, so data's are occurred in significant delay (or) traffic congestion during data transfer time and execution time from the cloud. Therefore the size of transferred data is reduced by only applying lightweight compression techniques, So the algorithms are fetched and applied to find out the seamless traffic congestion.

IV. ALGORITHMS

It has been identify to take and apply two algorithms then finally to get seamless transferring connectivity

4.1 RED (Random Early Detection) Algorithms:

The proposed RED algorithm is executed for each arrival packet. First the queue length is calculated and compared with the minimum and the maximum data of the queue .if the current queue length is less than maximum ,this packet will be added else it is greater than maximum it means the arrival packets will be dropped.

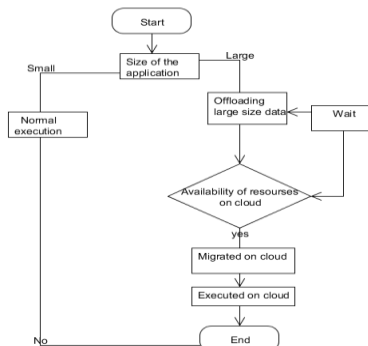


4.1.1 Performance Evolution in RED algorithms:

Random Early Detection concept is related to queuing theory. The performance of the RED algorithm is executed based on the arrival data. In first step the queue length is calculated on arrival data's (this process is continued for each arrival data) simultaneously queue length is also calculated and equated with the minimum starting point and maximum starting point. If the present queue length is less than the maximum starting point, this data is added to the queue so automatically queue length will be increased otherwise if the current queue length is between the maximum starting point or maximum starting point, then the system will drop the data this shows network has not executed successfully.

4.2 CONEXT AWARE DECISION ALGORITHMS:

The Context aware decision algorithms consider a set of context parameters, multiple wireless medium and different Offload cloud resources.



4.2.1 Performance Evaluation in context aware decision algorithms:

The performance of context aware decision algorithm is evaluated by some real experiments on multiple mobile device networks. So we implement the decision algorithm. In these experiments can be added to network related application for development ,this method can considered to offload ,our decision algorithm will automatically provide an offloading policy for this application

The application represent and accept two different variety of tasks, one is small file size with high computation and another one is big file size with high computation for this particular type it can the implement a formulation, application that performs math operations and concentrate to the input data

We put the priority of importance for the six criteria of input data under availability: resource availability, power Consumption, bandwidth, channel conjunction level, signal strength, monetary cost. It’s all based on this assumption and calculate the weights based on the network speed (seamless connectivity)

Criteria	weight (values)
resource availability	xxxxxxx
power Consumption	xxxxxxx
bandwidth	xxxxxxx
channel conjunction level	xxxxxxx
signal strength	xxxxxxx
monetary cost	xxxxxxx

If the data is small .when the performance of the network data transaction is easily produced (normal execution).otherwise the data is automatically comes with following policies. Finally to execute the data’s in proper algorithmic ways.

The above experiments is to satisfy the availability lacking and the data is transferred to seamless connecting.

V. COMPARATIVE TABLE

CONTEXT AWARE DECISION ALGORITHM:

Small File size	Result	Big file Size	Result
Value<data Size	execute	Value>data Size	Following policies

RED ALGORITHM:

Minimum	Result	Maximum	Result
Value <data	execute	Value > data	Dropped

VI. CONCLUSION

In this Paper the survey of seamless Traffic Congestion is possible which clear the Availability lacking on the network. By using the techniques called data transfer and executing of process the decision and red algorithms are worked. So, it helps to get the seamless data connection.

REFERENCES

- [1] Dhammapal Tayade, research student mobile cloud computing: issues, security, advantages, trends” Dhammapal Tayade (IJCSIT) international journal of Computer Science and Information technologies, Vol.5(5), 2014, 6635-6639
- [2] Ejaz Ahmed*, Adnan Akhuzada, Md Whaiduzzaman, Abdullah Gani, Siti Hafizah Ab Hamid, Rajkumar Buyya” Network-centric performance analysis of runtime application migration in Mobile Cloud Computing” Simulation Modelling Practice and Theory xxx(2014)xxx-xxx
- [3] Bowen Zhou*, Amir Vahid Dastjerdi*, Rodrigo N. Calheiros*, Satish Narayana Srirama, and Rajkumar Buyya*” A Context Sensitive Offloading Scheme for Mobile Cloud Computing” 2015 IEEE 8th International Conference On Cloud Computing
- [4] Roopali, Rajkumari, Dept of IT, UIET, PU Chandigarh, India “Overview of Offloading in Smart Mobile Devices for Mobile Cloud Computing” Roopali et al, (IJCSIT) International journal of Computer Science and Information Technologies, Vol 5(6), 201, 7855-7860
- [5] Atta ur Rehman Khan, Mazliza Othman, Sajjad Ahmad Madani, IEEE Member, and Samee Ullah Khan, IEEE Senior Member” A Survey of Mobile Cloud Computing Application Models” IEEE Communications Surveys & Tutorials. Vol.16.No.1. First Quarter 2014
- [6] Jun Huang, Donggi Du, Qiang Duan, Yanguang Zhang, Yanxiao Zhao, Hongshan Luo, Zhuoqi Mai, and Qun Liu “Modeling and Analysis on Congestion Control For Data Transmission In Sensor Clouds” Hindawi Publishing Corporation International journal of Distributed Sensor Networks Vol 2014, Article ID 453983, 9 pages
- [7] S. Rathnapriya, S. Smithra” Techniques to Minimize State Transfer Cost For Dynamic Execution Offloading in MCC” S. Rathnapriya Int. Journal Of Engineering Research and Applications ISSN:2248-9622, Vol.5, Issue 5, (part-5) May 2015, pp.32-35
- [8] Dr. Neeraj Bhargava, Dr. Ritu Bhargava, Manish Mathuria, Shilpi Gupta, Kamal Kumar Jyotiyana “Analysis Of Different Congestion Avoidance Algorithms” IRACST-International Journal Of Computer Networks and Wireless Communication (IJCNWC), ISSN:2250-3501 Vol.3.No1, Feb 2013
- [9] Tansir and Implementation Of a Context-Aware Decision Algorithm For” Heterogeneous Networks”
- [10] Ejaz Ahmad, Member, IEEE, Suleman Khan, Ibrar Yaqoob, Abdullah Gani, Senior Member” Multi-Objective Optimization Model for Seamless Application Execution in MCC” IEEE, December, 2013, Karachi, Pakistan.
- [11] Abdullah Gani, Golam Mokattar Nayeem, Muhammad Shiraz, Mehdi Sookhak, Md Whaiduzzaman, Suleman Khan “A Review on Inter Networking And Mobility Techniques for seamless Connectivity in MCC” Received 20 June 2013 Received in revised form 4 February 2014
- [12] Preeti Garg, Vineet Sharma, PhD” A Survey on MCC” Issue and Challenges in Networking International Computing Technologies-ICNICT 2012, November 2012
- [13] Santosh Singh, Umesh Kale, Ketan Kardile, Sagar Taware” Survey on MCC” Vol5, Issue 10, Oct-2015 International Journal of Advanced Research In Computer Science And Software Engineering
- [14] P. CHOZHA RAJAN1, K. JAYASHREE2 “A Survey of Mobile Cloud Computing for Smart Phones” International Journal of Science, Engineering and Technology Research (IJSETR), Volume 4, Issue 6, June 2015
- [15] Daniel G. Costa 1,*, Ivanovitch Silva 2, Luiz Affonso Guedes 3, Francisco Vasques 4 and Paulo Portugal “Availability Issues in Wireless Visual Sensor Networks” Sensors 2014, 14, 2795-2821; doi:10.3390/s140202795