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Multi Criteria offloading Decision for the Mobile Cloud Computing in Heterogeneous Network

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ABSTRACT

Ad-hoc wireless network include limited resources like battery life, storage capacity, network bandwidth and processor. These limitations possibly decreases via offloading data from mobile device to cloud, but due to continuous transferring offloading data, hammering problem occur. For removing this problem, we used on demand data broadcast & queue management system. In this article, Design and developed the wireless heterogeneous network with capability to communicate with each other & making utilization of cloud by offloading user can access data through cloud, Identify the impact of wireless network traffic load & according to that we demonstrate Offloading Decision algorithms. Calculating the execution time of the network while accessing the Multi network in mobile computing. Future research on Het-Net for Mobile Cloud Computing will be conducted based multi criteria offloading decision for the Mobile Cloud Computing in Het-Net.

1.1. INTRODUCTION

Nowadays many users use smart phones as a computing platform instead of a computer Users need "Longer battery life "as an important constraint while operating a smart phone[1].Consider smart mobile devices with handheld size and limited computing power, which are efficiently connected to the Internet by Het Net[2]The full potential of mobile cloud computing applications can be explored only when computation and storage are offloaded into the Cloud with acceptable latency and overhead, and doesn't disturb user interactivity with the mobile applications. As the wireless environments may change, the application has to shift its computation workload between MD and cloud without operation interruptions, considering the time-varying wireless connections in Het-Net. Major aim of the system is to reduce the power utilization by limiting the transmission power and reduce in execution time during offloading.In Existing System we used direct connection between node as shown in fig3.2.

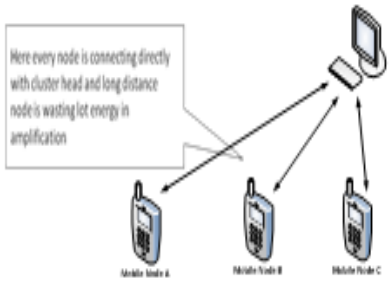


Fig.1. Direct connection Scenario

Above Fig 1 Show Every node is connecting directly with cluster head and long distance node is wasting lot energy. With direct connection there is wasting of time as well as Energy also, But we connect node with each other due to we can consume our energy. To avoid the direct communication between nodes & server system can save more energy, which shown in below fig 2

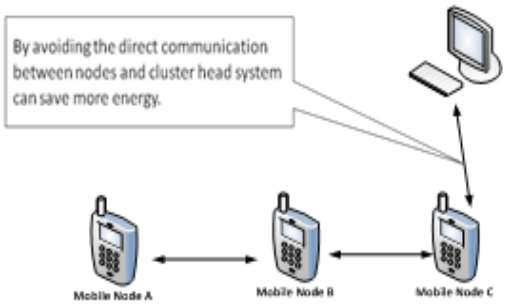


Fig2. Indirect connection Scenario

Our proposed work will be worked out in following phases as follows:

Phase 1: Design and developing the wireless heterogeneous network with capability to communicate with each other & making utilization of cloud by offloading user can access data through cloud computing.

Phase 2: Identifying the impact of wireless network traffic load & accordingly demonstrate power consumption algorithms.

Phase 3: Demonstrating the execution time of the network while accessing the heterogeneous network in mobile cloud computing.

Use case diagrams is most known diagram type which gives a graphic overview of the actor involved in a system, different functions needed by those actor and how these different functions are interacted.

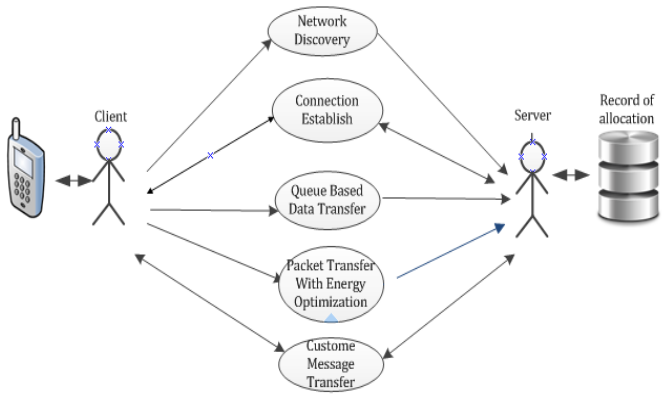


Fig. 3. Use case diagram for system

1.2. IMPLEMENTATION OF PROPOSED METHODOLOGY

Major aim of the system is to reduce the power utilization by limiting the transmission power and reduce in execution time during offloading.

1.2.1. TRAFFIC LOAD

In Mobile computing, the key idea is to offloading demand tasks from mobile device to the cloud, process them, and then transmit the results back to a mobile device Wireless network have limited resource like battery life, storage space. We can remove this limitation via offloading data into cloud but continuous transfer of data to cloud hammering problem occur. For overcoming this problem we used queue management system and on demand data broadcast [3]. Due to this we consume less energy in the mobile device. The cloud could be accessed using the WLAN hotspot or cellular network. The latter option is only intermittently

available, but can offer significant advantages in terms of cost and energy [4] how we can offload this data into cloud. In this fig we have consider different mobile with different Network offloading data with proxy Node or directly with access point. Here we design different simulation which are follows:

i. Network Discovery connection
ii. Queue Based Data Transfer
iii. Packet Transfer With Energy Optimization
iv. Costume Message Transfer

i) Network Discovery

In this Phase, first user send the offloading request to server for establishing the connection after receiving the acknowledgement from server firstly we can check its Network Discovery i.e. which type of network is. if network is found then we can processed our next step i.e. offloading decision function and if network is not found in given network then all candidate network is Examine and it is increment by one. The major aim of Network Discovery phase is for connection Establish between different nodes.

ii) Queue Based Data Transfer

Offloading Decision function is a second phase. It is Most Important phase in this algorithm because whole algorithm is based on offloading decision, if decision is right then whole process will correct and if decision on is wrong then whole process will incorrect. Following fig shows the Offloading Decision Algorithm.

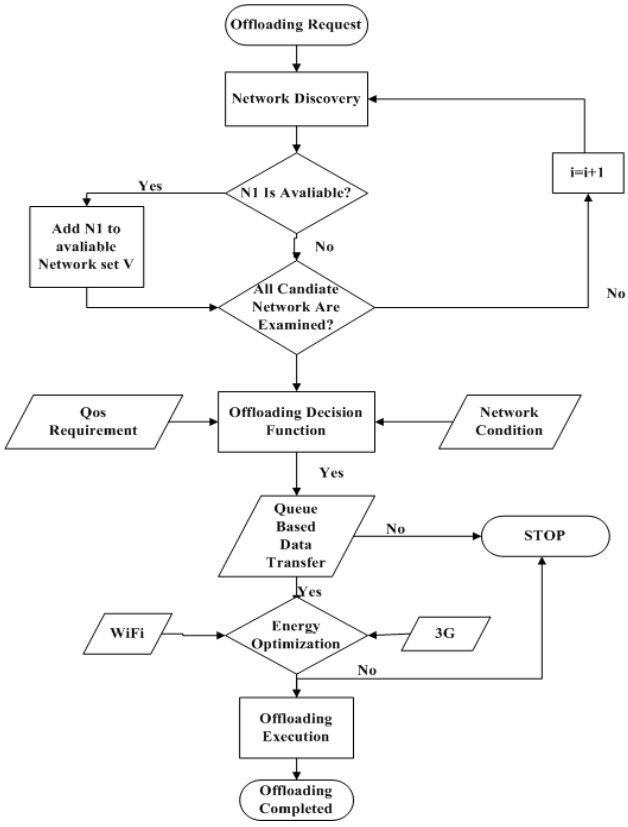


Fig.4. Offloading Decision Algorithm

In Offloading Decision Function phase has three inputs: Network Discovery phase, QoS Requirement & Network Condition. In Qos input we check quality of service for given network. In Network condition it checks condition of network whether network like noise, traffic, delay etc. During this phase we check network SINR, Bandwidth Utilization, Transmission delay .After calculating this parameter we can take decision whether the network is Accepted or Not. if Not Accepted then Stop and If Accepted then we can transfer data to server from client. During continuous offloading data in to cloud there is congestion occur for removing this problem we Queue Management System. In this system we can transfer data in FIFO (first in first out) manner in this way can remove traffic load in cloud as well as maintain connectivity between client and server. During offloading its check SINR, Bandwidth Utilization, Transmission Delay.

C. ENERGY SAVING

Energy saving is a primary control for mobile device. A study of 6,000 users crosswise 15 country show that 75% of respondents held improved battery life is the main feature.SMD has no longer used just for voice communication. As a replacement for they are intended for acquire also watching videos, gaming, web surfing, and a lot of other purpose. As a result, these systems will likely consume more power and shorten the battery life. Even though battery technology has been steadily improving, it has not been able to keep up with the rapid growth of power consumption of these mobile systems. Offloading might expand battery life through migrate the energy-demanding parts of the calculation to servers.

The amount of energy saved is=

$$P_c * \frac{C}{M} - P_t * \frac{C}{S} - P_{tr} * \frac{D}{B}$$

Where,

M=Speeds in instructions per second of MD,

S=speeds in instructions per second of the cloud server,

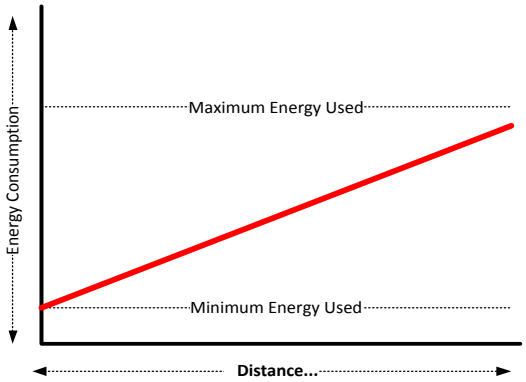
D=Bytes which the cloud server and MD exchanged,

B=transmission rate of the MD via wireless network,

Pc=Energy consumed by MD for computing,

Pi=Energy consumed by MD while being idle

Ptr=Energy consumed by MD for sendin and receiving data.



1.3. RESULT ANALYSIS

The simulation model was run with different Mobile from different directions both for fixed and Mobility system

1) Steps of Simulation:

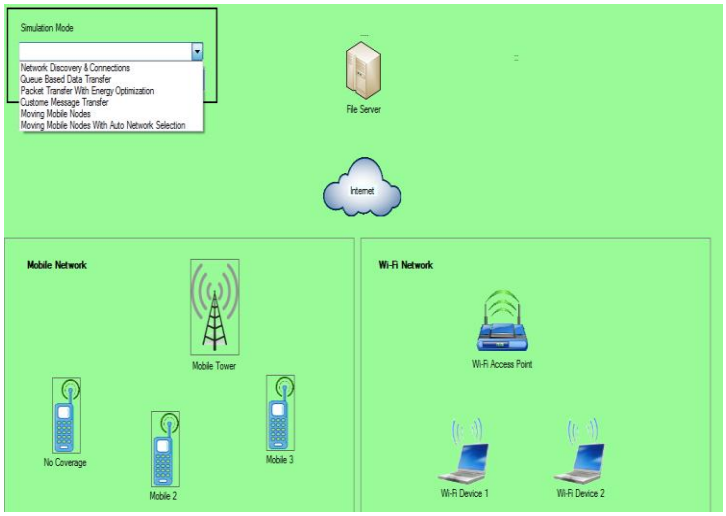


Figure 5. Different Simulation Modes

Figure 5 shows a customized user defined simulation mode which consists of multiple modes of demonstrations were the user can start different simulation by selecting the options from list. The list holds five basic Modules that need to be simulated accordingly. If we want access this, then we select this data from database and we download this from cloud to node.

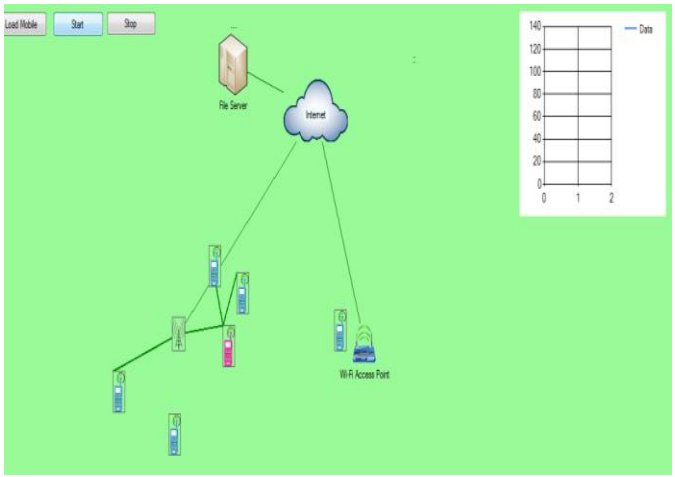


Fig.6 Dynamic Connection between Different Nodes

In this Mode, We select one Proxy Node, at time of offloading data we find shortest path over wireless Network, if proxy Node is near then node can offload data through proxy Node and if proxy node is out of coverage at that time Node will connect directly to network access point.tn this mode all node are in mobility if node is in cellular network but it is in other Network i.e. .Wi-Fi then node will offloaded data thought Wi-Fi without breaking the connectivity of cloud and Node**.**

1.4. CONCLUSION AND FUTURE SCOPE

We implement challenges of offloading decision for mobile cloud computing in heterogeneous network. To reduce the power utilization by limiting the transmission power and reduce in execution time during offloading. Here We Used Offloading Decision Algorithm. In that algorithm we used Queue Management System & Energy saving System for reducing traffic load & energy consumption. Future research on Het-Net for MCC will be conducted based multi criteria offloading decision like load balancing and security issues for the MCC in Het-Net.

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