Network Optimization of Computational Resource Allocation Using Mobile offloading

S.J.Amina Humaira,
Final year CSE,
Francis Xavier Engineering College

K.Ayisha Mahira,
Final Year CSE,
Francis Xavier Engineering College

Dr.C.Gopalakrishnan,
Assistant Professor (CSE),
Francis Xavier Engineering college

Abstract

In mobile networks, the base stations (BSs) explanation for more than 50% of the energy utilization of the networks dropping the power utilization of BSs is critical to greening mobile network. Suggest a novel energy (ISPs') wireless access points by leveraging cognitive radio techniques .The ISP's wireless access points are usually closer to the mobile users, the energy and spectral efficiency of mobile networks are enhanced Propose a heuristic algorithm to approximate the best solution with low calculation complexity minimizing the processing costs induced by the TRE algorithm.

Keywords EST, ISP, BS, TRE

1.INTRODUCTION

These centralized optimization schemes do not consider each user's supplies for limited resources. The computation offloading service brings several benefits. First, a mobile device can reduce its energy consumption for local processing of computation tasks. Second, the processing delay of computation tasks can be reduced by using remote processing resource which is more powerful than local CPU in a mobile device. One of the greatest success stories for stochastic models in engineering is in the field of telecommunications. Discrete and fluid queue models have played a major role in the development of computer and communication networks. There are several branches of telecommunications that use stochastic models however, in this paper the main focus is in networking systems and other stochastic systems that aide high-performance networking. A few other applications be briefly stated later in this introduction.

There are several interesting scenarios in the Internet and the emerging next generation networks (such as Internet2, NGI etc) where stochastic modeling is applicable. The future networks will carry a wide variety of traffic (Data, Voice, Video, etc) and the users will demand very high-quality from the networks. Therefore it is very important to consider Certain performance issues known as Quality-of-Service (QoS). There are four well-known end-to-end QoS measures, viz., loss probability, delay, delay-jitter and bandwidth. They are briefly described as follows: When messages flow from a source to a destination (end-to-end) through a network, parts of a message or the whole message may be dropped due to unavailable resources (buffer capacity) to store the messages.

The probability of delivering a message with some data loss is termed as loss probability. The time between the source sending a message and the destination receiving it is called latency or delay. Typically real-time or multimedia traffic (such as live video conference) can tolerate some loss but have very stern delay requirements. However data traffic such as emails, fax, file transfers, etc can tolerate some delay but almost zero loss. The other QoS measures are delay-jitter (which is a measure of the variation in the delay) and bandwidth (which is the rate at which messages are processed).

The message flow (will be called traffic henceforth) and the network conditions are extremely stochastic in nature. Given the growth in the Internet as well as users demanding QoS for their applications, it is important to be able to predict the QoS measures as they will have to be guaranteed to the users. Also the QoS measures can be used for optimal design and admission control of the networks. Some of the main design aspects include buffer sizes, link capacities, network parameters, traffic shaping parameters, etc. While exercising admission control, the network either rejects an incoming request for connection or accepts it (and provides the required QoS).

As mentioned earlier, the main concentration of this paper will be on high-speed telecommunication networks. Other applications of stochastic processes in communications include coding theory, signal processing, image processing, pattern recognition, speech recognition, etc.

Stochastic models using hidden Markov processes (for a thorough exposition of hidden Markov models), hidden semi-Markov models, Markov decision processes, etc are used in signal processing, image processing, pattern recognition and speech recognition. Broadly there are three types of telecommunication networks – telephony (telephone networks for voice calls, fax, and also dial-up connections), cable-TV networks (cable, WebTV, etc), and high-speed networks such as the Internet. This paper focuses on high-speed networks with the inspiration that in the very near future, internet telephony, video-on demand, networked homes, multimedia applications, etc will possibly replace telephone and cable-TV networks due to low cost. However, unless the performance of high-speed networks improves greatly this will not be possible!

2.Existing System

Many Researchers Worked on Attribute-Based Encryption for Fine-Grained Access Control of Encrypted Data.

[1].This technique is used to implement the fine grained access control .In that techniques the data is stored on the server. To overcome this

[2].Data Security and Privacy in Wireless Body Area Networks. This technique is to quickly build the cost-effective health care Systems .Self-Protecting Electronic Medical Records Using Attribute-Based Encryption.

[3].It provides both role-based access control and content based access control. It is designed to maintain EMR availability even when providers is in offline .Next,Defending against Co-resident Attacks in Cloud Computing.

[4].In our research, however, we take a closer look at the co-location step of the attack, because it has been shown that attackers can obtain a relatively high success rate of collocation in existing commercial cloud platforms Attacks in the Resource-as-a-Service (RAAS) Cloud Context .

[5].More and more companies are moving to cloud computing solutions, which in turn requires attackers to find new and inventive ways to attack cloud computing systems.

Previous results apply a regression model over the strongest beam power. In this section, we predict the power based on the beam pair index as defined. The advantage of this method is that it gives extra information to the order of the beam pair power, and helps to select the beam pair for data transmission.

This case, however, requires the knowledge of the power of all beam pairs, which introduces larger overheads to establish the dataset. Here, we focus on evaluating how the power prediction can be helpful in assisting the beam selection, without considering the overhead issues.

3.PROPOSED SYSTEM

Mobile traffic offloading is a promising technique to improve the energy and spectral efficiency of mobile networks. Propose a novel mobile traffic offloading scheme by leveraging cognitive radio techniques referred to as energy spectrum trading (EST). One of the advantages of the mobile networks is that the networks are operating on licensed spectrum, which are not accessed by unlicensed users and provide their subscribers a variety of services with different QoS levels.

ISPs' Hotspots

One of the merits of ISPs' hotspots is that they are densely deployed, and are able to provide high speed data rates to their subscribers.

We model the beam selection at mm Wave base stations as a contextual multi-armed bandit problem. Our model is generic, and it can be easily adapted to different contexts for new 5G use-cases. We provide the first contextual online learning algorithm for beam selection in mm Wave base stations.

The algorithm enables the base stations to autonomously learn the data rate of every beam, without requiring a training phase. We give an analytical upper bound on the regret, i.e., the loss of learning, which proves convergence of OFDMA to the optimal beam selection. We go beyond theory by illustrating how OFDMA can be practically implemented in a 5G cellular system.

In particular, we elaborate on design aspects of the OFDMA and its corresponding signaling requirements from an architectural point of view. We demonstrate by means of extensive simulation that – with live and typical traffic patterns obtained from Google Maps at our premises – OFDMA substantially outperforms the benchmark algorithms.

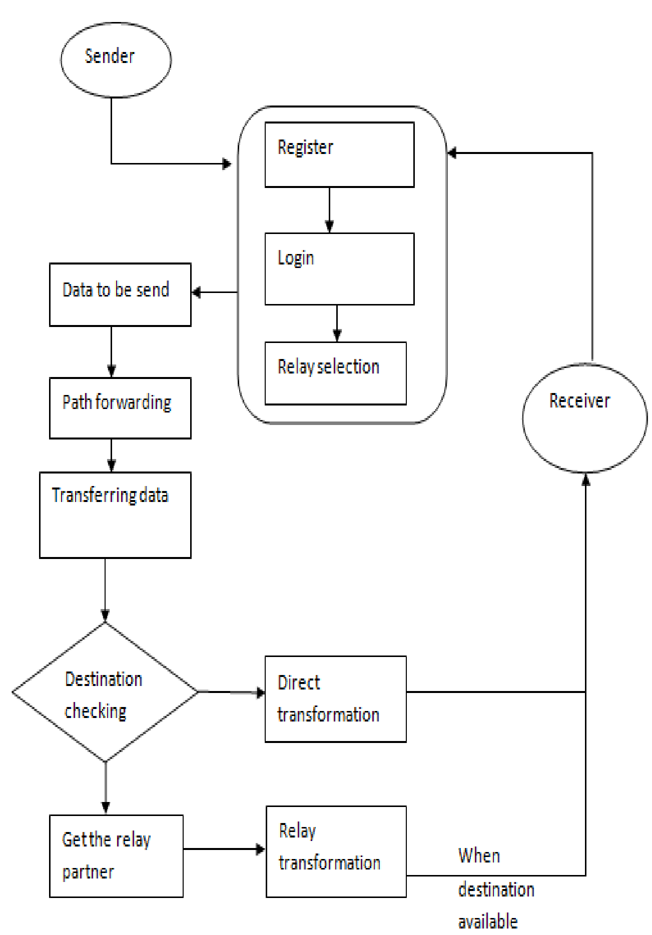

Fig1, System Architecture

4. Modules

4.1 Impact of processing capacity of a VM.

4.2 Impact of task generation probability.

4.3 Trade-off between energy-utility efficiency and delay**.**

4.4 Impact of user parameters.

4.1 Impact of processing capacity of a VM

The normalized power consumption of a mobile device and application throughput when the mobile user utilizes different VM types in fF1, F2, F3, F4g. We note that the processing capacity of a VM increases as the VM model number increases.

4.2 Impact of task generation probability

The average throughput of each application type for our algorithm under the different task generation probability within [0:001; 0:1] every second.

4.3 Trade-off between energy-utility efficiency and delay

Energy-utility efficiency and average delay under different value of the trade-off parameter. We note that average delay can be transformed as average queue length divided by arrival rate for each queue and reduced these by an average of 67% for the scaling tests.

4.4 Impact of user parameters

To analyze the offloading behavior of the proposed algorithm with respect to different user parameters, we consider the scenario where a single mobile application is running on the device.

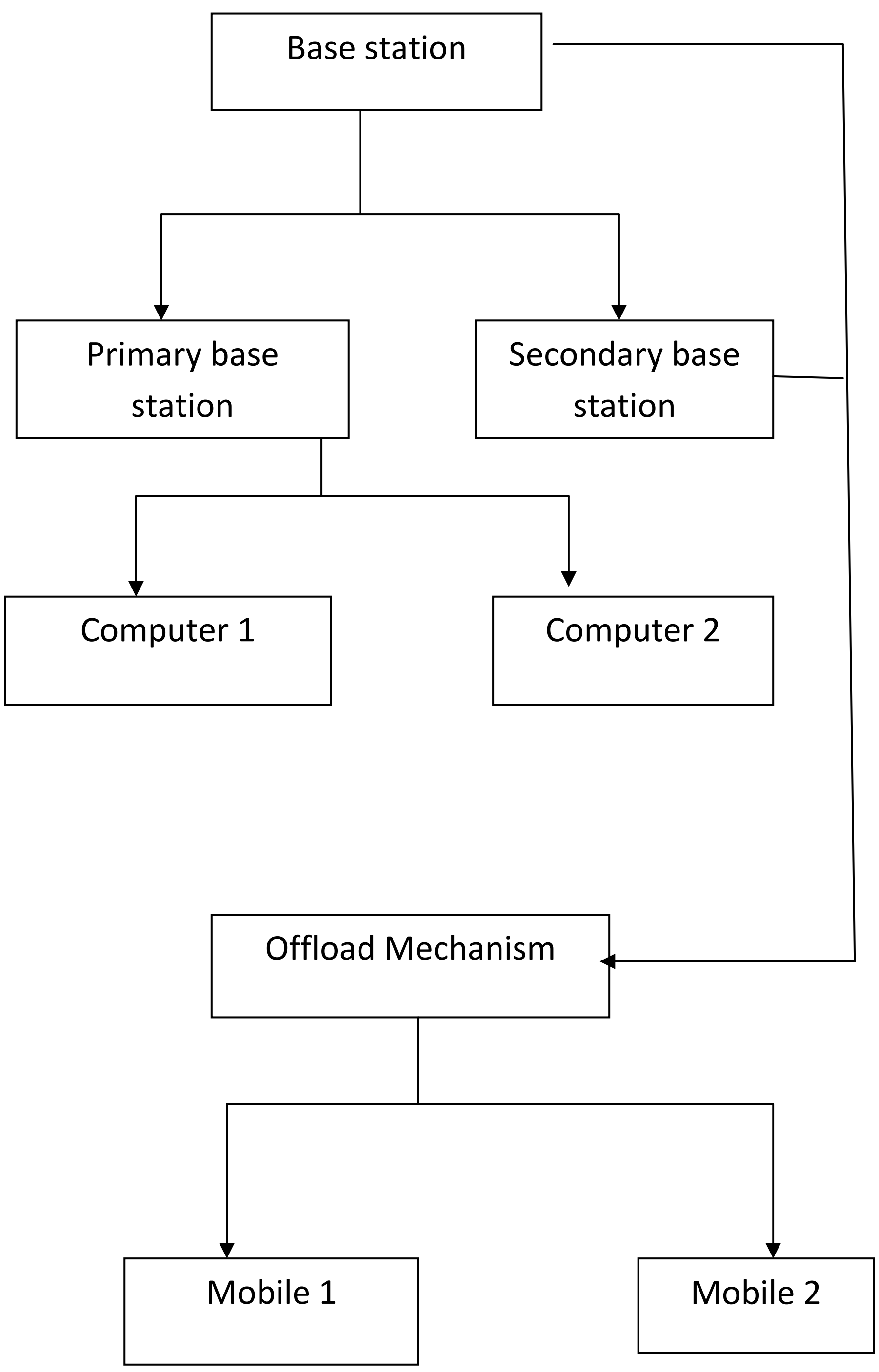

Fig 2.System design

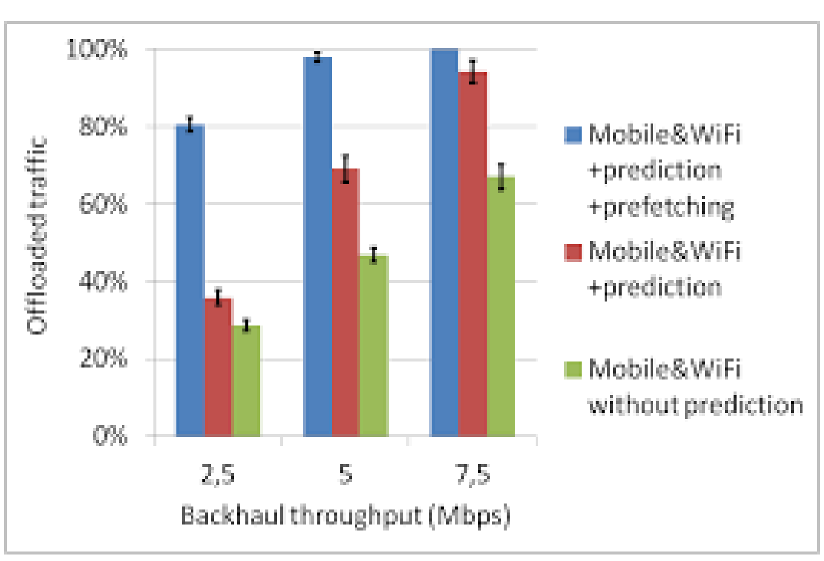

Fig 3 Existing graph

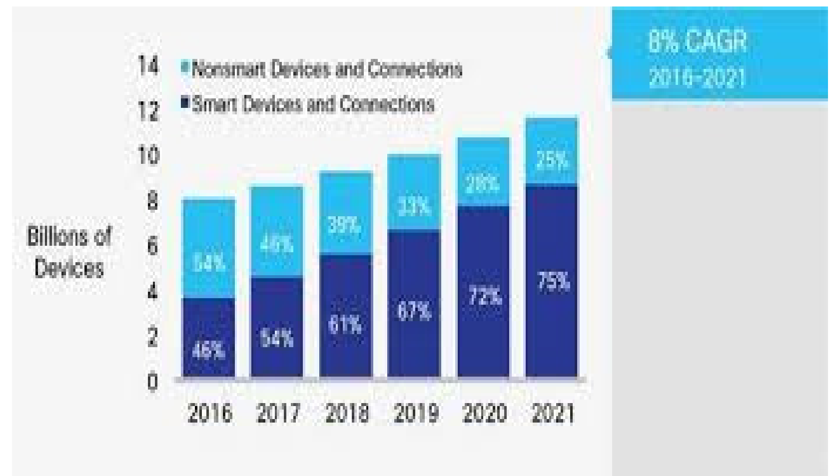

Fig 4 Proposed Graph

5.Conclusion

In this paper, we have presented a comprehensive survey of current green techniques for mobile networks with their merits and demerits. Also we summarized recent essential research projects for green mobile networks and showed a taxonomy of green metrics. However, there are still many challenges that need to be addressed, especially on emerging green communication techniques and green service techniques, as well as standardization and pricing issues .

Conclusively, we further illustrate the based on [10] to summarize the multiple dimensions of various critical factors for designing the green mobile networks, in terms of space, time, and scope. Space and time dimensions indicate where and when to apply the techniques, while the scope dimension shows the applied level or layer. Moreover, we draw the performance dimension identifying the QoS and fairness requirements, whilst general methodologies are listed in method dimension. Effective green techniques for mobile networks must rely on the consideration and balance among those factors. Making the mobile networks green could not only have a tangible positive impact on saving the energy, but also help to achieve a long-term profitability of mobile service operators and sustainability of the environment.

The revolution of green mobile networks will need not only the wide spreaded acceptance but also great efforts and collaboration from the cellular service providers, device vendors, governments and the mass.

Moreover, non-technical factors, such as, pricing and marketing strategy, law establishment, service affordability and user friendliness, would also play important roles in the success of the green mobile networking technology.

6.References

[1] V. Goyal, O. Pandey, A. Sahai, and B. Waters, Proc. 13th ACM Conf. Computer and Comm. Security (CCS '06), pp. 89-98, 2006.

[2] M. Li, W. Lou, and K. Ren, IEEE Wireless Comm. Magazine, vol. 17, no. 1, pp. 51-58, Feb. 2010.

[3] J.A. Akinyele, C.U. Lehmann, M.D. Green, M.W. Pagano, Z.N.J. Peterson, and A.D. Rubin, Cryptology ePrint Archive, Report2010/565, 2010.

[4]Yi Han, Defending against Co-resident Attacks in Cloud Computing ,2015.

[5] Danielle Movsowitz, Orna Agmon Ben-Yehuda, and Assaf Schuste , Attacks in the Resource-as-a-Service (RaaS) Cloud Context ,2006.