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Dynamic Resource Allocation Scheme Enabled with Switching Mechanism to Enhance the lifetime of Heterogeneous Network

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Abstract: ***Wireless communication is an important technology in information transmission between the source and destination. Heterogeneous networks include the devices which are functioning based on different protocols and parameters. Heterogeneous network majorly operates on the environment where data transaction participates in between the devices which are consisting different capabilities such as kernel programs, operational parts, operating rules and regulations. In heterogeneous network, substantial count of base stations is involved to maintain the successful communication ratio. Regrettably, huge number of base station which is considered for successful communication earns huge energy dissipation and channel conflict in the network. Working towards this issue, this proposal presents self organizing and resource aware channel selection and data transmission methodology which are performed in distributed manner. In this methodology base station allocates the channel to each device based on the co-channel interference and base station follows the clustering hierarchy to transfer the data from device to base station which results in low energy dissipation for data transaction. Through this approach energy dissipation in the network will be reduced in substantial ratio and drop of the data packets also reduced by avoiding channel interference.***
Keywords: Beacon signal, Data mediation, On-Off mechanism, Resource allocation, Heterogeneous network.

I. INTRODUCTION

The enhancement of correspondence between the frameworks organization contraptions using remote transmission advancement looks for after great development trade the framework. Traffic requirement will develop more than thirteen fold in every year. Hence, wireless network service providers meets excessive challenge to develop their network capacity and service, for the sake of cope with huge traffic demand. Considering developments in spectral efficiency at link level functionalities, currently available technologies are limited approach. So the next generation of the technology is about enhancing spectral efficiency in the network. Hence providers of the network and vendors of the network equipments looking for an advanced network topology to enhance the network capacity. For this purpose, heterogeneous network (HetNet) format is considered as an effective solution to the traffic demand issue if wireless communication networks. A HetNet incorporates the likelihood where diverse size of cells with various access advances. A small cell of the HetNets reduces the distance between transmitting node and receiving node which results in lower path loss. By using this low power utilization for receiving signal, lesser noise ratio in the signal and better spectral efficiency are achieved. These results of better efficiency in spectral handling, improves the area efficiency (AE) which considered as SE per unit area Development of the network usage of the recent and advanced wireless communication devices increases the capacity demand as well as huge energy consumption of mobile terminal. In a similar time, vitality proficiency in the system likewise an imperative viewpoint of the activities which are prepared in system. Therefore, other than coverage, capacity and quality of the service, energy efficiency also developed as an important performance parameter for the network operations. In mobile communication networks, huge part of energy consumption is achieved by wireless access part. Therefore, enhancement in energy efficiency of wireless access part will.

II. LITERATURE SURVEY

Shrawan kumar [1] in heterogeneous network nodes with different energy unless homogeneous network all nodes with same energy are more practical. In order to enhance the efficiency of heterogeneous network hop to hop transmission is preferred over direct transmission of data and control signal. The heterogeneous network in combination with hop to hop communication will increase efficiency of the network.

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Vincent poor [2] Increasing efficiency of the network includes several approaches like resource allocation, planning in network and its deployment, harvesting energy in the network and some hardware solutions. In case of resource allocation radio resources are allocated such that focus to maximize the energy efficiency rather than throughput of the network. The proposed system shows very good energy efficiency at moderate rate of throughput. In second approach of network deployment nodes are distributed such that minimum energy consumption along with maximum covered area rather than focusing just on covered area which leads to efficient energy consumption in the network.

Along with Base station on and off algorithms antenna muting techniques are discovered which adopt themselves along traffic in the network helps to reduce energy consumption in the network. In energy harvesting and transfer approach energy is harvested from the environment which utilizes renewable and nonrenewable energy resources helps to increase efficiency of the network. In hardware based solution hardware of the nodes are designed such that they should adopt with architectural changes such as cloud based implementation of the radio based network.

H .Tabassum [3] sleep mode and cell breathing mode is proposed this proposed model uses maximum and mean channel access for active and passive nodes or cells with help of how much traffic at base station received signal power this technique adopts itself but this work does not consider each base station load since it uses simulated annealing search algorithm for energy efficiency of sleeping cell. Author also explained small cell driven, core driven, user equipment driven algorithm for sleep mode. Later centralized sleep mode algorithm is proposed this scheme required cooperation of cells and global information.

E.hussain[4] in random base station on off switching is introduced. In this scheme user devices can delay downlink transmission till nearby stationary base station is available which significantly improved energy efficiency of the network. This efficiency can further be increased by selecting optimum cell size the section of cell size depends on technology used at base station and load of data or traffic at base station. Authors then focused on separating control plane from data plane for this parabolistic approach for inactive cell at base station is proposed and opportunistic sleep mode scheme for heterogeneous network is also proposed for downlink transmission.

III. PROBLEM FORMULATION

Information transmission between the sources is achieved by using different type of network. Based on the area of communication type of the network will vary. Huge develop of the communication technologies, traffic overhead in the network becomes an important issue. Due to traffic demand data packets may be dropped in the network. Data drop in the network will results revenue loss for network service providers. so to solve the traffic overhead network service providers has to improve their capacity of traffic handling resources.

For traffic overhead issue HetNet architecture provides a solution by establishing the communication between the different type of communication sources in terms of operating system, rules and regulation and application software's without spending much cost for developing network infrastructure.

Service providers can rent the infrastructure from the other service providers which are operating totally different than source provider. HetNet architecture consists of different cell structure which will be selected based on the area of communication. Even though HetNet architecture provides flexible environment for data communication huge energy dissipation reduces the life time factor of the network and unstable spectrum allocation results in performance degrade in the network.

IV. METHEDOLOGY

Dynamic source steering convention is a reactive routing protocol. Reactive routing protocol searches the route when source wants to communicate with the destination. This protocol does not uses predefined routing table to find the path from source to destination. Predefined routing table contains information of all possible paths for each node to all other nodes in the network.

When source wants to transmit data to particular node in a network Source node sends Route Request Packet RREQ to its neighbor's entire .The RREQ packet contains information about unique ID, list of node, source name, and destination name. Source broadcasts RREQ messages initially. After receiving RREQ by neighbor's nodes they insert their unique id in to RREQ packet if that is not the destination node they just broadcast it in the network. The node which has already broadcasted the same packet discards them after receiving duplicates. Finally when destination node receives RREQ message with help of destination address it confirms packet belongs to it and with of source address in the packet it identifies the source from which it has to receive data. The unique id field indicates the path through which RREQ packet has traversed to reach destination.

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V. FRAMEWORK IMPEMENTATION

Generate 'n' number of user equipment nodes (US) with the responsibility of transmitting the collected data to base station. Each user equipment nodes are deployed in random location of the network. Deploy small base station nodes (SBS) with responsibility to collect data in easier way as first level communication in the network. Macro base station (MBS) nodes are created to collect the data from SBS nodes which is considered as second level communication. MBS nodes are responsible for data collection from SBS nodes only. 'm' number of channels are generated as resources to fulfill data transactions in the network. Each channel configured with different type of capability in terms of bandwidth and frequency. Each user equipment nodes develop bond with nearby SBS node to transit its data. In this process minimum sized beacon message is generated at UE node with hello message and it will be transferred to nearby SBS station before every sequence transaction. SBS nodes are collecting the beacon message from its coverage range and start evaluating the strength of the communication signal, traffic status around sending node. After evaluation process, SBS categorize the nodes as higher resource demand nodes (HRD) and sufficient demand nodes (SD). UE nodes which are having higher distance and higher traffic zone placement will be considered as higher demanding nodes which deserve higher utilization of resource to avoid data loss. Data loss at these are categorized node will result huge energy dissipation which will affect lifetime of the entire network. So for these kind of nodes resources with high configuration in terms of bandwidth and frequency will be assigned. Low distanced node and low traffic nodes are delay tolerant nodes which will not consume much energy and resource to transmit data. So these category nodes are identified as sufficient demand nodes. Based on the traffic status around the node available resource will be assigned for these nodes. Using above said allocation process, every SBS node gathers data from every UE nodes at the end of first level communication. After this process SBS initialize data handover process to base station. In this process SBS nodes are establish connection with nearby MBS nodes with help of highly resource based private channel and forwarding the collected data to MBS. At the end , MBS nodes are finding an energy efficient route which will consume lower energy and lower time and forwarding the collected data to main base station. By following this resource allocation and level by level approach of data transmission lower energy consumption and lower time delay for data transaction is achieved.

VI. OUTCOMES

1) *Packet Delivery Ratio:* In the usage made numerous hubs and to quantify PDR we check various hubs being made and furthermore consider of data be sent and information been gotten toward the goal. In light of this the PDR is measured as Number of data got partitioned by various data sent. Figure 6.10 shows the packet delivery ratio between ROT and DSR. y-axis represents values of packet delivery ratio, x-axis represents time. Here we can observe that packet delivery ration is nearing to unity and DSR is less compared to proposed system.
2) *Packet Drop Ratio:* It indicates the difference between how many packets are sent and packets that dropped. The less the PDR more the efficiency of the network
3) *Average Energy Consumption:* This graph shows the average energy consumed by the praosed model.

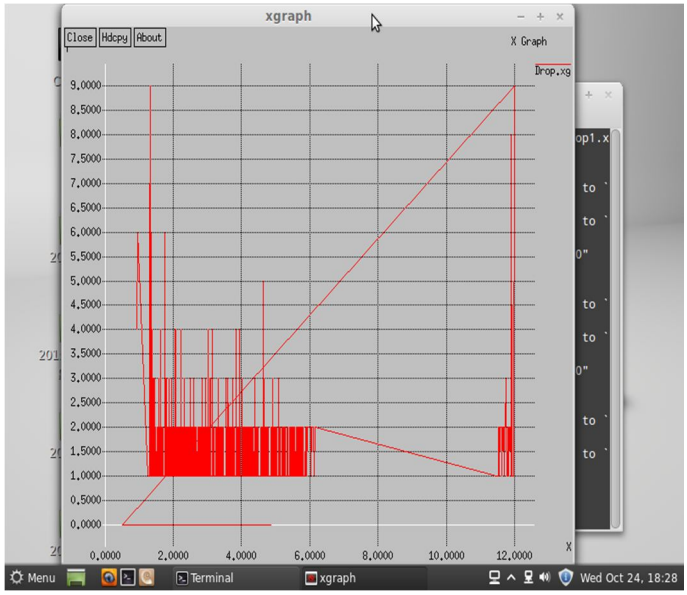

Figure.1 Packet delivery ratio

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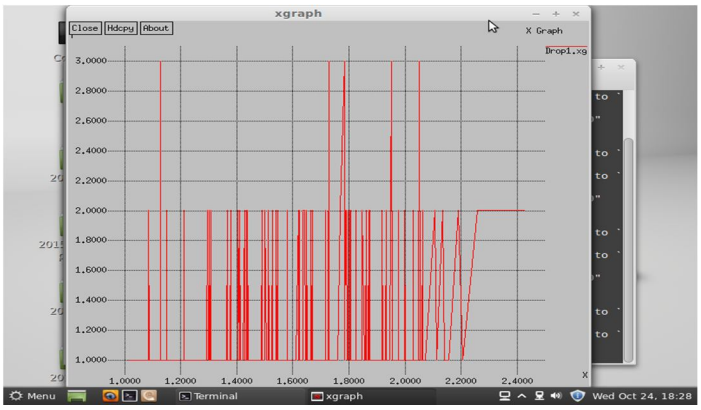

Figure.2 Packet Drop Ratio

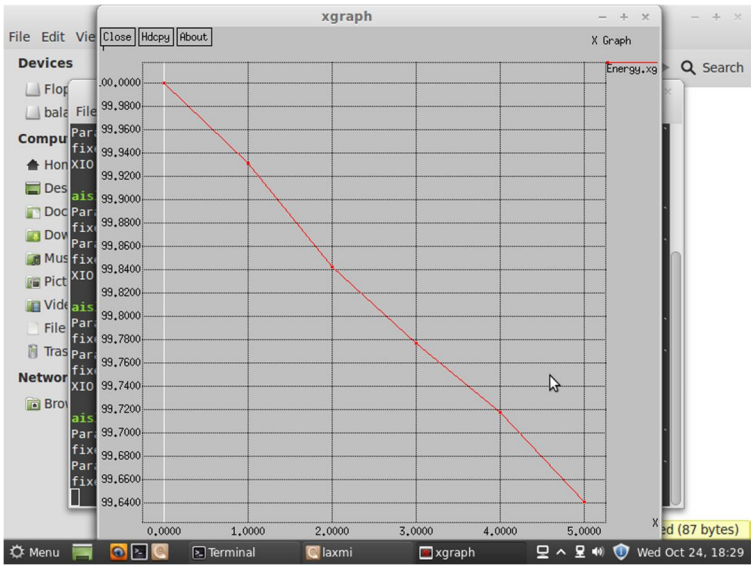

Figure.3 Average Energy Consumption

VII. CONCLUSION

Improvement in the correspondence innovation results in the quicker correspondence between the sources yet which is slacked in enhancing the existence time of the system. Base stations in the system expend colossal measure of vitlity which may drives them to stop its administrations with lower working time. Maintaining energy efficiency is an important factor of the network to utilize the available services for long time. To achieve long life time utilization of the resources, this proposal provides a next step in resource allocation and energy efficient routing which will improve the performance of the network in terms of energy. In thin BS's are responsible for allocating less interference channel to user devices to avoid the collusion of the network. At the same time energy aware transmission of the data is followed between SBS's to main BS's. By using this channel allocation and energy aware routing life time of the network will increase.

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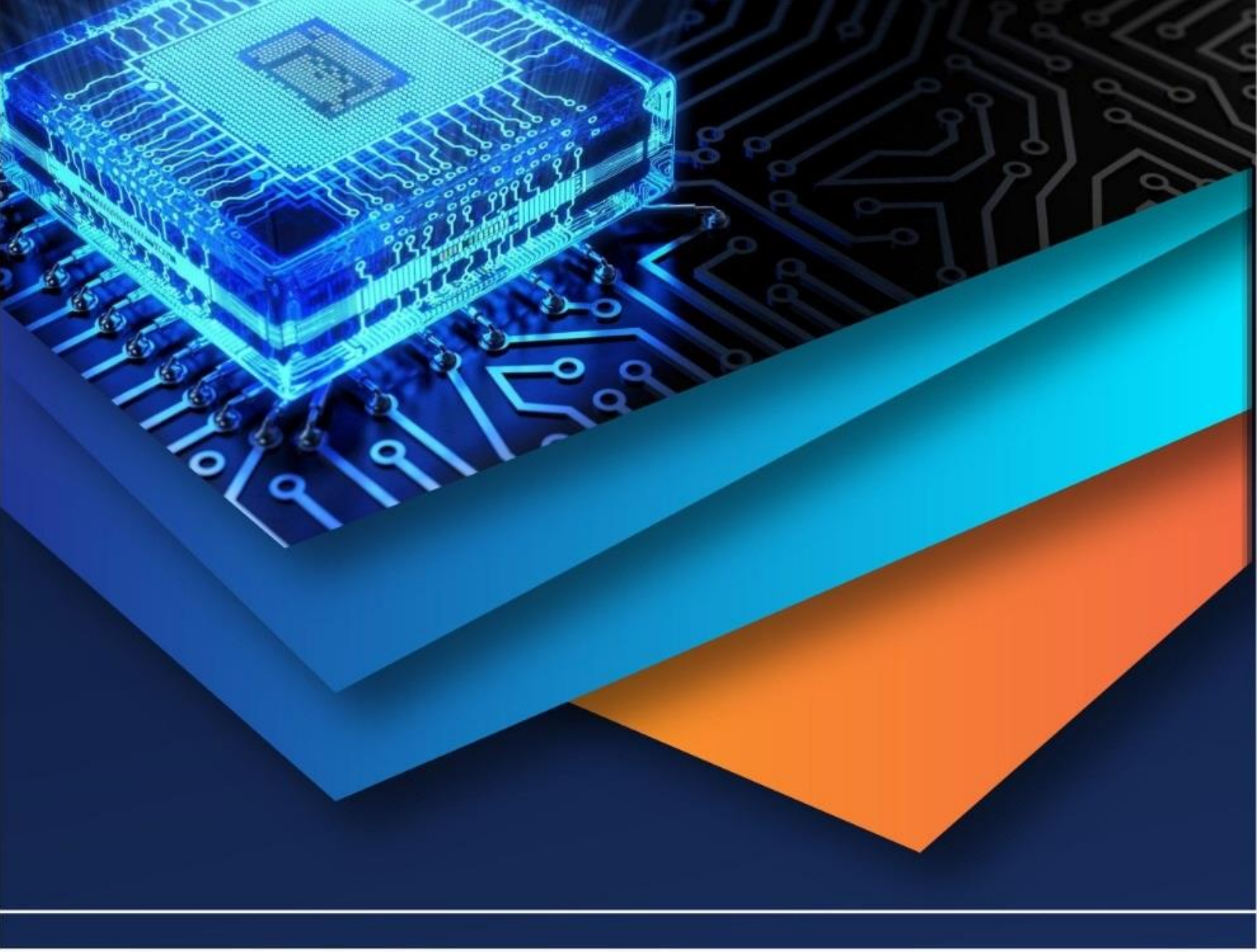

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