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LEARNING OF ENERGY EFFICIENT AND NETWORK TRAFFIC DELAY IN WIRELESS NETWORKS USING CHANNEL AWARE ROUTING

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ABSTRACT

This paper studies different analysis metrics of wireless networks using channel aware routing protocol. During communication the following characteristics are important performance metrics like network traffic delays and energy efficient. Energy Efficient is a important solution with limited buffer capacity and life time of battery in wireless environment. The status of each node can be identified by using co-channel forwarding mechanism. The traffic delays can be measured by using Q-Learning random early method and routing can be optimized by channel aware routing. The transmission changes in one node to another can be monitored by router database and energy level can be verified by additional changes in wireless network nodes. In this paper, we formulate to achieve analysis the energy performance and reduced traffic delay using co-channels stochastic optimization procedure. The co-channel method used to check various analytical bounds and check all the nodes are uniformly shares the energy level. The mathematical analysis report provides uniform distribution energy values and traffic delays. The simulation shows efficient energy utilization and network traffic delays in wireless networks.

Keywords: *Wireless Networks, Energy Efficient, Network Traffic Delays, Channel Aware Routing, Routing Protocol.*

1. INTRODUCTION

Wireless Networks are used to provide full duplex communication over air medium. The transmission of each request can be send by each node and due to any changes in network like traffic, attack or coverage constraints, it affect the performance of network. The various surveys are analyzed the self-configuration process are involved to automatically changes the network and it affect the energy and life time.

The rapidly growth of high speed internet facility and usage of contents from anywhere and any place are played vital role in customer satisfactory. Energy Efficient and Delay are the critical factor in affecting network performance. The reliability of the network can be measured by above factors. The optimal resource allocation and End-to-End delay are changes the queued transmission.

The probability density function is applied for calculating number transmission and re-transmission in each network. The harvesting energy and round robin based mechanism are used to share the channel resources and coverage constraints issues. The initial energy is marked and

subsequent changes are notified. The previous results are shown the amount of data can be transmitted and amount of energy utilized are the critical factor in wireless networks. Each node can move independently and there is no separate monitor or energy handler in the environment.

According to Chen et al suggested cellular networks are important in day to day life for handling multi media messages. We model a stochastic mathematical model for measuring and analysis energy efficient and network delays. The ready queue based database is maintained for incoming and outgoing packets. In case any changes means we collect information from database.

The performance can be modelled by finite queue length and virtual movement of each node in user area. The several virtual queues are set of covering energy levels and verifying the communications. In case any delays the virtual queues are acted subordinate level service. In this paper, various sections are described, section 2 described related works, section 3 shows the system model, section 4 gives the implementation of analysis report energy and traffic delays using channel aware routing, section 5 describes conclusion and future enhancement in wireless network delays.

2. RELATED WORK

Communication is the process of exchanging information and handles multiple numbers of input requests. Qiong et al, the queue based networks are implemented to perform queue representation in wireless networks. The suggested existing network routing protocols are used to check active and passive nodes in energy efficient and delays in service provider. The report of Wireless Communication Spectrum, the Internet service providers are used more number content based services for covering customer at the same time the delays and handling effective energy is difficult task. The virtual based temporary queue batch system is implemented for user level service. The traditional and mobile communications are used to measure optimization, network delays and energy constraints. But the system models are shows there is no other separate monitor or performance measure algorithm for handle energy and delays.

Taha et al, the lack of infrastructure facilities and hop-by-hop process are introduced self routing policies.

Richard Yu et al, provides the survey of NASA and IETE report the packet delivery ratio, bandwidth of the network, lifetime of battery, throughput, coverage and traffic are stated to report and monitor tedious process. The routing strategies are shows that the packet incoming and outgoing bounds and changes in each node in wirelesses environment are affecting the life of network and use huge amount of energy. The various power aware routing protocol are used to measure and increase the life time of the battery and less amount usage of memory.

Shin Chan et al, report says the network life time can be varies number of request and acknowledge transmission. Since the internet era started the life time and message passing mechanism are the factors to affect the entire communication. Multipath and Route aware tables are used to measure the packet delivery factor and traffic delays. Congestion control and malicious dropped packet loss are the important issues in telecommunication. Phishing and sniffing attacks are played role in network delays. The consumption energy and life time of the packets are related to vice-versa for increasing real time network analysis factors. The large number of nodes is used in transmission and reception of each packet can differs number of iteration and system models.

Wong et al described controlling the wireless networks and life time of individual network delays are recorded values. Detection of malicious packet and dropping of data are encountered serious issues. This paper is analysis vertically for life time of network, packet deliver factor and message transmission.

Balasubramanian et al, provides the survey of analysing the changes of environmental climates, protection of environment, accuracy, and challenges faced by the society of environment. Hence, the climate of the environment is analysed in an accurate manner with the help of the Discrete Tchebichef Transform (DTT) technique and an Improved Principal Component Analysis (IPCA) algorithm to protect the environment from different environmental issues in an efficient way.

The compression of hyperspectral images (HSIs) has focused strong attention in latest years, which has resulted in volumetric datasets being created every day. The compression of HSIs enhances the effectiveness of archiving and transferring images. It is especially beneficial to the bottlenecks in the downlinks of planes and satellites, where these images are regularly dragged. It focuses on the lossy compression of HSIs using an integrated approach that combines the Discrete Tchebichef Transform (DTT) technique and an

Improved Principal Component Analysis (IPCA) algorithm to compress HSIs.

The enhanced PCA could be achieved by embedding a vector quantization process to the conventional principal component analysis. Generally, PCA is used to compress the pixel vector with associated features by exploiting the spectral specifics. IPCA was used to monitor the correlations between spectral bands, and DTT is used for spatial coding of Principal Components (PCs) of the HSIs. The integrated compression method using DTT and Improved PCA (IDIP), first spectrally decorrelates the input picture by using IPCA, and then applies DTT for exploiting spatial correlations of the images. It improves the quality of the ecological environment. The experiments are carried out on publicly existing image datasets and the results generated by the proposed method are related to four renowned HSI compression methods which is based on the performance metrics including compression ratio (CR), mean square error (MSE), and signal to noise ratio (S/N ratio).

Balasubramanian et al, provides, Communication-based applications specially focuses on security and anonymity. In the recent technical world, keeping the data in safe is extremely troublesome; various interrupts may be happened on the local system or network attack. Without the implementation of the security measures, our private data may be revealed to the attacks. Nowadays variousl attacks are used. One general strategy for attacking includes sending large measure of requests to the server or sites and the servers will be not able to handle with the requests and the sites will be disconnected for some days or a few years relies on the attack. A unique secure cracking deals with an efficient path detection routing technique. This algorithm reduces the attacking effects on anonymity networks. This framework protects the communication against adversaries. If the attacker is found then the server can be saved.

Laneman et al, The distributed nature and dynamic topology of Wireless Sensor Networks (WSNs) describes very special needs in routing protocols that should be met. The routing protocol is the energy consumption and the extension of the network's lifetime. In this paper, energy efficient routing protocols are divisible into Network Structure, Communication Model, Topology Based and Reliable Routing. The first category is further classified as flat or hierarchical. The second category is further classified as Query-based or Coherent and non-coherent-based or Negotiation-based. The third category is further classified as Location-based or Mobile Agent-based. The fourth category is further classified as QoS-based or Multipath-based.

Communication on the anonymous and wireless networks is to interact with unknown persons with privacy and secure communication through the network. As the existing framework based on tunnel port forwarding method which gives their user identity data such as ip address from which an attacker can easily theft user privacy data and also it uses a single server for the establishment of WebRTC connection. The proposed system uses peer-to-peer communication in the wireless network as a distributed way to prevent network traffic and single point failure, for the secure communication by using various directory servers instead of only one server. Using varioud directory servers, the attacker activities can be controlled and prevented.

3. SYSTEM MODEL AND CHANNEL AWARE ROUTING

Consider the following figure n is the nodes in wireless networks. All the nodes access by channel or cluster nodes using time factor measurement T. During transmission packet can be measured by p and Q is the initial energy level. K is number of users and M resource allocation. A is allocation vector for each incoming and outgoing request from queue q. The time interval T can be set by t-1,t,t+1. Data can be arrived by queue and current queue length can be recorded.

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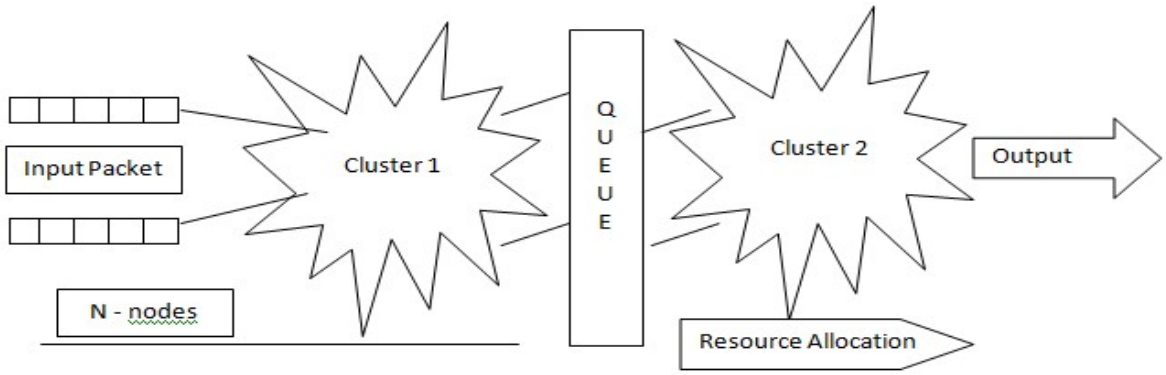

Figure 1: Q – Learning input/output resource allocation process

The following table shows that set of input values and parameters

Table 1 Input Parameters and Value

Characteristics	Value
N – Number nodes	256
Input Packets	128,256,512
Resources	1,2,3
Throughput	1
Bandwidth	1,2,3
Iteration	10,20,30
Dropping factor	2,4,6,8

From the figure 1, Allocation of resources are A = {M1, M2, M3,...Mn} and Queues are q1,q2,q3,... the transmission of achievable rate based on input power and user inputs.

$P_n(t)=\sum_{i=0}^{n-1}(A(t)+Q(t)+R(t))$ ---------- (1)
Where $R(t) = \sum_{i-0}^{n-1} Ti$
i. The consumption of power metrics are calculated by average time can be used in each processing request. The mean value is calculate
$X(r,t) = \lim_{i\to\infty} \sum_{i-0}^{n-1} Pn(t) + constant$ ----- (2)

The constant value depends the intervals in each time factor and r,t expressed resource and time factor.
So quality factor Q (t) = max (X , P) in the network configuration.
ii. The Packet delivery factor based on network traffic delays and numbers of incoming packets by

the queue values are calculated by

Probability Density function P_d = Pr {X(r,t) + Q(t)} where t = t,t+1,t+2,...

By applying routing strategies
$P_d^t = \prod_{t=0}^{t+n} \Pr(x,Q) + Pn(t)$ ----------(3)

iii. By applying the numbers of users are increased based on number on iteration and distance calculation factor D and the QoS measurement are calculated by queue length and resource allocation values.
$D_n(t) = (Q(t) / R(t))$ ---------- (4)

By compare equ.4 & 5 following stochastic inputs are applied
S1: R >= Q(t) and Pr(t)
S2: Q(t) is the initial condition 0
S3: P_d^t>= 0 and packet delivery factor always depends $P_n(t)$
S4: $P_n(t) = <\sum_{m=1}^{n} Pmax(Q,R)$ ---------- (5)

The stochastic measurement of average time factor and number of incoming packer delivery factor are the optimum solution of channel aware routing procedure

$CHA_{routing}$ (Q,R) = $(\sum_{m=1}^{n} Pn(t) + Dn(t) / (\sum_{i=0}^{n} Ri(t) + \sum_{t=0}^{N} \Pr(t))$ ---------- (6)

So the stochastic conditions always check constraint

$$Q(t+1) = \begin{cases} \text{Max (Pmax (Q,R)} & \text{if } CHA_{routing} >= 0 \\ \text{Min (Pmax (Q,R)} & \text{if } CHA_{routing} <= 0 \\ 1 & \text{if } CHA_{routing} = 0 \end{cases}$$

So the bound factor can be calculated by Effective Energy and Delay aware services request

F(t) = {S1,S2,S3 and S} condition and Channel routing factors

The following algorithm are used to describe resource allocation and channel aware procedure

Dynamically changes the resource and channel aware procedures
Input: Number request and incoming queues
Output: Packet delivery factor and route conditions
1. Initialise: Q = 0, N = 256, t=1
2. Update the current status of queue and calculate packet delivery factor based on time
3. Update power allocation based on Q and N with respect to R and t
4. t=t+1
5. Update the queue length Q+1 and check the max and min of Q,R
6. Update the F(t)valued and repeat CHArouting table
7. Repeat

In this case the monitoring process is covered based on global and origin factor on upper and lower bound functions. The real scenario is the channel routing in performance and derivation theoretical bounds. Our main purpose is used to analyze the performance wireless network using channel aware routing table and measure energy consumption and delays.

4. PERFORMANCE EVALUATION

Consider the effective energy and parameters of incoming and outgoing queue messages are applied in network simulator 2. The length of queue and arrival of packets can be varies 10,000 time slots. So the performance factor graph shown in below.

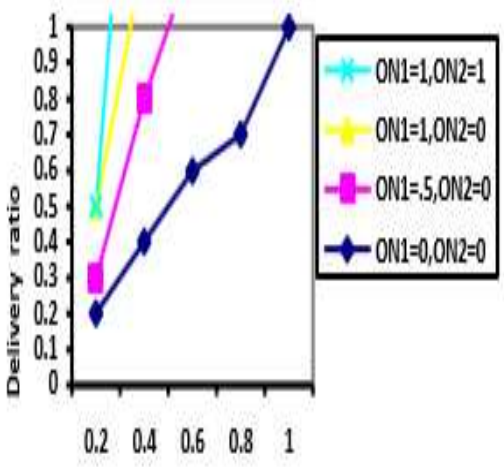

Figure 2 Packet delivery factor

The delivery of message affects the energy characteristics it can be obtained by following graph

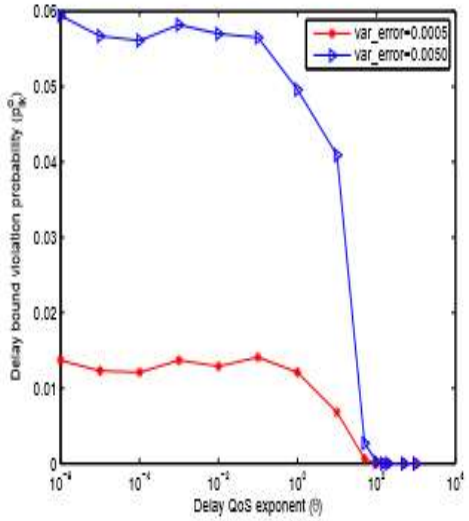

Figure 3 Delay QoS exponent

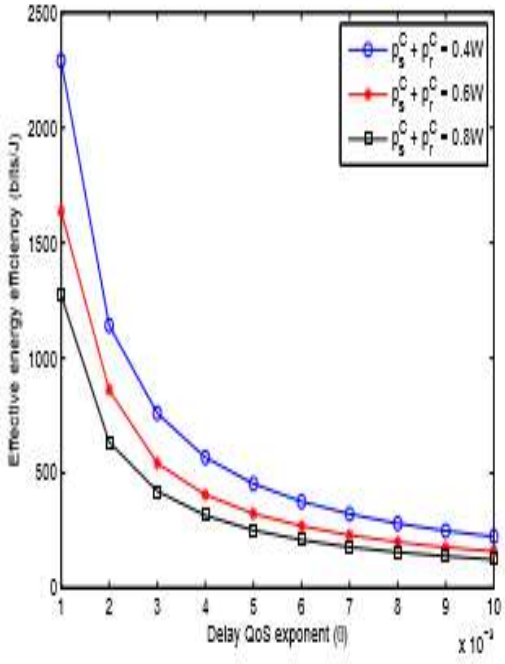

Figure 4 QoS Factor vs Efficient Energy

The probability decreased based on number of inputs characteristics and delay values. So we must aware of network configuration factors and additional inputs.

5. CONCLUSION

In this paper, we summarise the analyze report of effective energy consumption and network delay performance using channel aware routing

protocol. The stochastic mathematical optimized techniques are calculated network delays, traffic, content drafting, packet loss, life time of the network and coverage constraints. We solved various input coordinates queues by using Q-Learning methods and derived effective energy and delays.

We demonstrated the performance factors can be achieved by number of iterations. More number of nodes are increased and queue length are dynamically varies the number of input request and message transmission rates. The effect of this dynamic changes use of energy and number transmission is used optimum results. Simultaneously the nodes can use the energy and less number of traffic delays.

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