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DESIGN AND ANALYSIS THE PERFORMANCE OF REAL TIME CONTENT DELIVERY NETWORK USING BEAM SCANNING

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ABSTRACT: Nowadays, the heavy network traffic can affect the network performance and throughput. The traffic overheads can be caused by using repetitive request for accessing video contents. The content popularity and network node can capture the requests leads overheads. In this paper, we propose novel method for accessing contents and popularity caching in wireless networks. This method has faster communication and provides uninterrupted data delivery. We propose Content delivery network and high beam scanning method for seamless communication. The mobility manages is also taken into account for comparing network performance and 4G environments. The network diversity, throughput, delay and efficiency is calculated and compare the performance with other existing methods. The performance can be tested by using success ratio of the transmission.

KEYWORDS: Data transmission, Content delivery network, Beam scanning, network performance, Communication

I. INTRODUCTION

The rapid growth of technology and internet is used variety of network applications such as content delivery services, decision making services and digital marketing. The more focus is location specific information and mobility. The consumers require very fast accessing data services and adopt to change future comings [1]. The internet is the tool to access information from one mobile device to other easily. The usage of mobile contents is increased enormously. The challenge is design of network medium and accessing seamless service in wireless network. The content delivery network and beam scanning method is very useful to solve above address issues [2].

The various research studies, the social media usage is increased drastically in very few years. The video streaming sites are very popular and it can be utilized more traffic [3]. The majority of the traffic is created based on video contents only and multiple times user can share the contents. The content delivery is faster content access and cost effective [4]. The data can be accessed for multiple sources and multiple platforms are used to access the data. The security is another constraint and faster accessing is needed. The input request from the user can be converted to packet and transmitted to server for accessing contents.

The conventional content delivery network has content store, pending packet table, forwarding information based and next or nearest node value. Each data packet sent to interested packet table and access the content [5]. This method has in efficient because each we need to store and forward polices is available. The mobility and content recognition can be affect the throughput and increase the network delays. We proposed content delivery network model with beam scanning for improving performance. This paper has following sections, section 2 describes various content delivery and access networks, section 3 explains content delivery model, section 4 gives implementation and discussion, section 5 describes conclusion and results.

II. RELATED WORK

Faster data delivery and managing mobility in wireless network is an important factor in wireless network. Rahman et al, Mobile IP is providing mobility support in network later and internet service providers deals each session. The seamless content delivery is done application layer. The performance is measured and delays due to IP later and cross layer functions. The host to host communication is another factor to decrease the network performance. Mobile network and management is considered for providing good quality content delivery services [6].

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The mobility issues and seamless content delivery can be monitored by using TCP/IP model and routing schemes. Dona et al, the DNS and TCP/IP model has resolution handlers has path discovery and routing [7]. Then name based routing scheme introduced by Alhaddi et al, the amount of delay and network overhead are the major concerns. The device to device communications is one the promising techniques and reduce the communication distance. Here, the transmitter and receiver are the important roles. The each user is getting shared information and enables to share the information [8].

Juno et al, the convergence layer model provides information centric functions. This layer performs functionalities of Netcad and Dona models. The routing policies can be determined in each content routing. The content, policies, sharing and accuracy is disseminated and find the network traffic [9]. The data delivery and mobility issues are addressed by using Cho et al model using distributed hash table method. This method has late locator finder which is used to find routing, name resolution and service provider availability. The above literatures are considered into account and we are responsible for registration, updates, accumulation and measuring performance [10].

III. PROPOSED CONTENT DELIVERY NETWORK

The proposed content delivery device to device communication model is shown in figure 1. In this model, the link is created and r is the average number of active links. Each content is caching by user and maintain the time. Total number of user represented as K and i is the number of iterations. The probability fi is calculated

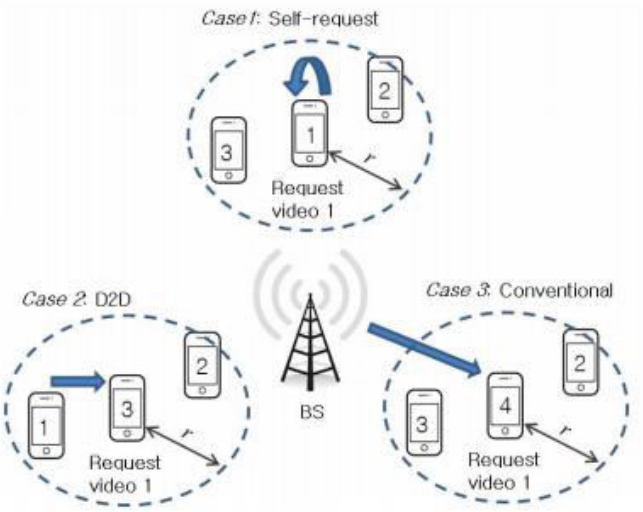

Figure 1 Device to Device network model

In this model, we propose three cases,

Case 1: If user sent request to access the content means it has to cached and stored in storage space.

Case 2: The self request is generated for each stored values and contents are shared

Case 3: Device to Device communication range is set for all the contents and finds the nearby user

Case 4: If there is no cache or device to device communication range is delay means each base station restart service for seamless communication

For the probability distribution

$f_i = \frac{1-r\ pow\ i}{\sum_{i=1}^{k} ri}$, $1 \le i \le m$

The total m input content and rank is i. Thr r is grows means probability determine the device to device communication factor. The maximum number of device to device link increases/decrease the network performance due to availability. The caching is another strategy to handling overlapping issues. In this case location information can be stored and find reliable base station value. The below figure 2 shows that content packet values, user profile and wireless delivery

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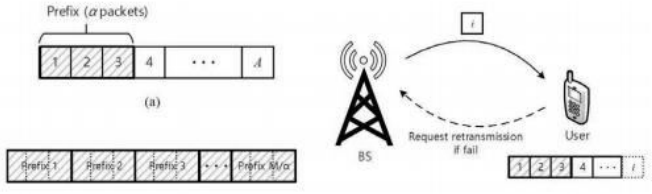

Figure 2: Content Packet and Wireless streaming

The caching method and network spectrum is used to reuse the previous results for measuring performance. We used quality experience is major concern based on content playing and delivery as important factor. The faster delivery and high transmission is verified in each stage. The following figure 3 shows that content delivery procedure in wireless network using beam scanning

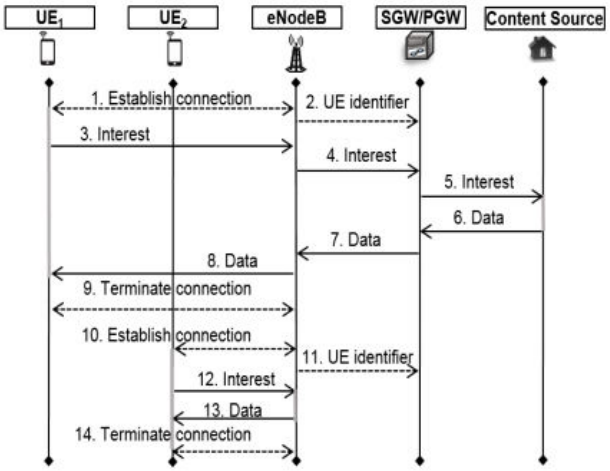

Figure 3 Device to Content store data transmission and reception process

This is beam scanning method to scan connection and terminate the connection. In this phase the connection established and selects the identifier values. Node has maintained incoming and outgoing process. Packet forward table is stored the input coordinates values and store the contents. This is request and response model so each stage response is required. The memory and battery capacity is monitored for finding transmission ratio.

The user equipment model is selected fast content delivery and retrieval process. Let x is the single input criteria and xmin ≤ xm ≤ xmax where xm is the midpoint of the variation range. So beam scanning value can be measure by using as follows,

$$Bs(x) = \begin{cases} 1 & xmin, xmax=0 \\ e^{1-rx} & xmin \le xm \le xmax \\ 0 & xmin=xmax \end{cases}$$

$$rx = (xmax-xmin) / k$$

So the node value is $A_R = \sum Bs(x) * k$

This work is tested by using NodeB simulation using TunerMode. The current network connection is stored and generated traffic ranges. NodeB is used to stored user requirements and seamless data transmission factor. The demand based data retrieval is set as highest priority.

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IV. PERFORMANCE EVALUATION

This phase the simulation results are tested by using 4G wireless network model shown in figure 4. In this model we analysis the contents in TunerMode and test by using Fedora 13 environment. Direct code is used for marking codes and simulating networks.

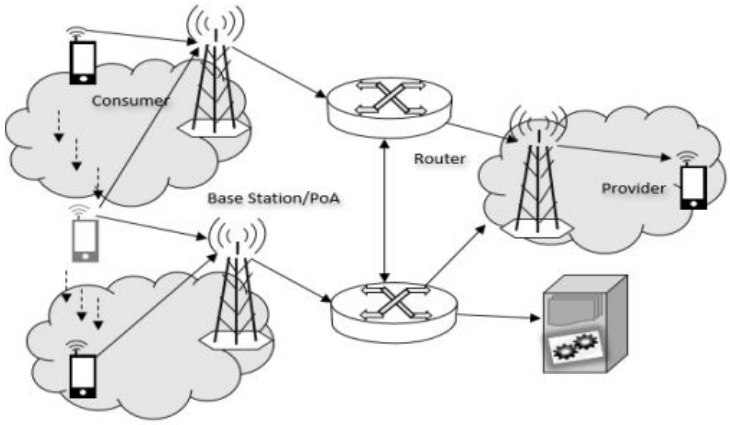

Figure 4: Proposed 4G simulation model using TunerMode

We used 4G simulation model and 8 Mbytes of data transmitted from one android mobile device to another device. NodeB is creating user end point profiles and set the ranges as 1 to 10. The number user profile is observed and stored in content store. Our proposed method has low load and better efficiency. The mobility speed is set as 5 m/s to 15 m/s. The efficiency is calculated and average data delivery is obtained. Data transmission ratio is calculated by using number of packet received and total number of packet sent.

The performance graph is shown in below figure 5. The reachability and continuity is calculated by using data transmission rate. The beam scanning provides mobility value processing and random changes in network are observed. Our proposed model has good transmission data rate and changes are also recorded.

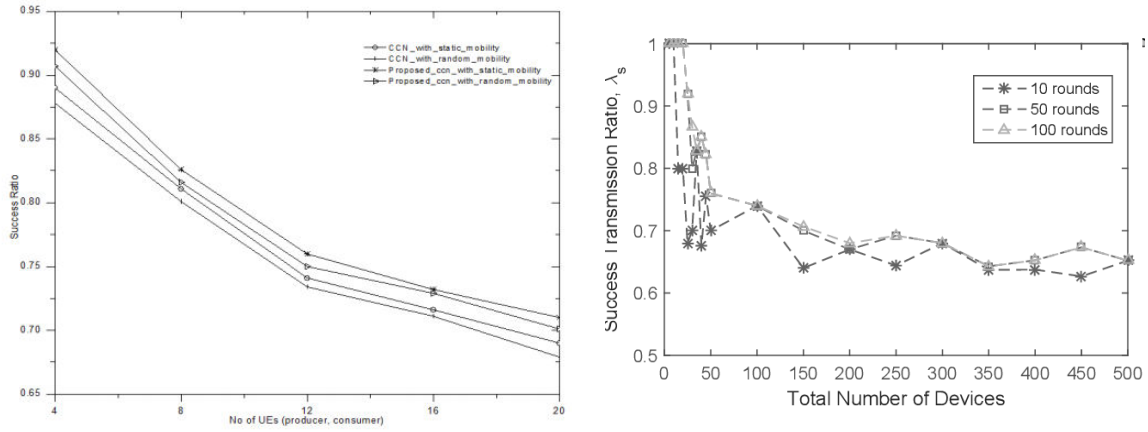

Figure 5: Data transmission simulation results from TunerMode

Based on above figure 5, the followings are taken for consideration, a. The each content is partitioned into equal size and specifies sequence number from k, b. Each user request is capable for the account caching of input packets is verified with content store which means request and stored values are equivalent, c. The packet transmission ration is measured and specifies the index range so the base station can transmit i+1 packets.

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V. CONCLUSION

In this work, we explained content delivery network model seamless packet transmission and mobility management. Beam scanning method is applied for monitoring data transmission and throughput. Here, we demonstrated 4G network model with our methodology and efficiency is calculated. TunerMode simulator is used to simulate our network model and diversity leveraging is increased with existing network topologies. The caching is done each stage and performance is monitored. In wireless transmission, content delivery network model is important for handling huge volume of contents. In future same network model can be tested in different topology and generations.

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