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ISSN: 2278-6848 | Volume: 10 Issue: 03 | July - September 2019
Paper is available at www.jrps.in | Email : info@jrps.in

Analysis For Energy Efficient Network Model Considering Multiple Criteria

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Abstract**—** *Proposed work has been proposed to minimize the queuing delay probability of congestion of packet size. The overall performance of energy efficient model gets boosted in case of proposed work at sender & receiver end. The gets reduced in case of proposed work. Attenuation is a measure of the loss of signal strength or light power that occurs as light pulses propagate through a run of multimode or single-mode fiber. Specially, the Measurements has been defined as the decibels or may be dB/km. Attenuation in fiber optics has been measured for wavelength 1310 nm and 1550 nm. It has been simulated with respect to distance, joints, and connector. Proposed work would boost the network lifetime and grow packet delivery ratio.*

Keywords— *Mobile cloud computing, Fiber Optics, Attenuation, IP filter, AES ENCRYPTION, GNS3, Cisco router c3725*

I. INTRODUCTION

The smart phone has become main computing platform for more clients [2]. The most wished feature of this type of systems is longer battery lifetime. Many studies have identified that *offload* is a manner to improve application performance& enhance reliability of servers and security. *Some Few offload* growths efficiency of few by alleviating which are required for applications of web server to the client resources. Mobile network users might offers facility to mobile operator. These services are security and privacy. It also considers accounting depends upon home agent as well as subscriber data collected. It is establishing and controlling connections as well functional interfaces. Mobile users are usually requesting and transferring information to central processors. These processors are jointed to servers offered entities mobile network facilities.

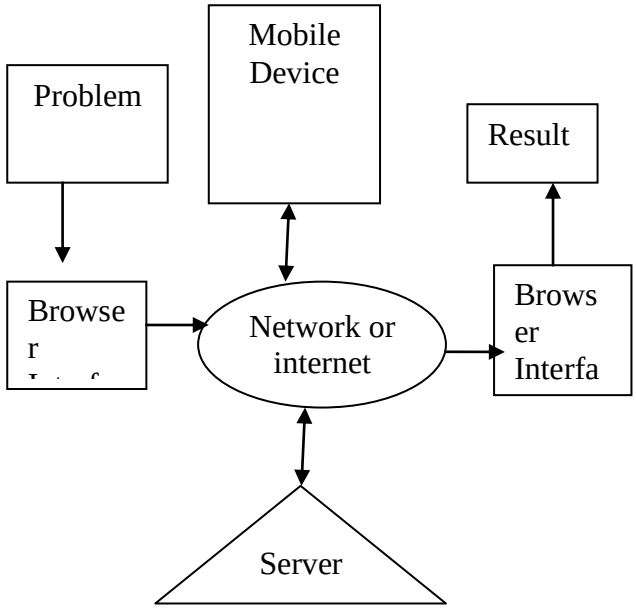

Fig 1 Mobile Cloud Computing

II. COMPONENTS OF MOBILE ARCHITECTURE

General structure of mobile cloud computing have been shows below following diagram. The mobile equipment has been jointed to mobile networks via base stations. It is establishing and controlling connections as well functional interfaces. Mobile users are usually requesting and transferring information to central processors. These processors are jointed to servers offered entities mobile network facilities.

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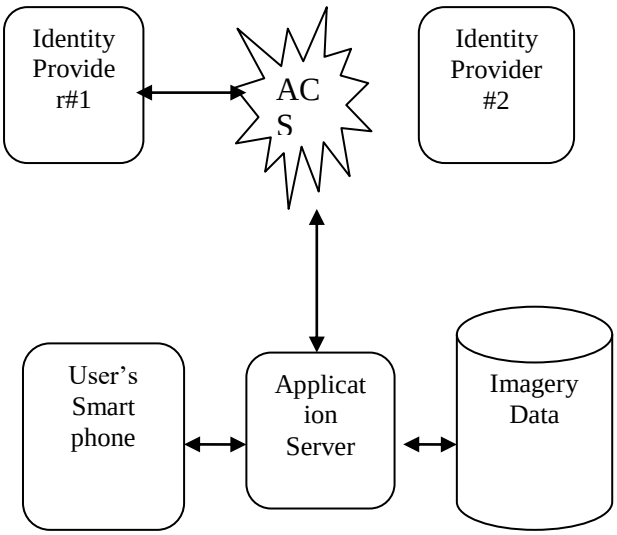

Fig 2 Mobile Cloud Architecture

III.OBJECTIVE OF RESEARCH

The research is based on performance influencing factors of fiber optics. This factor is attenuation. This research considers the attenuation due to increase in distance, number of joints and number of connectors. The objectives of research are as follow:

- To study the need, scope and working of fiber optics
- To investigate the performance influencing factors of fiber optical devices.
- To study the existing researches related to fiber optics.
- To analyze the influencing factors in case of attenuation.
- To simulate the attenuation with respect to distance, number of joints, number of connections.
- To perform comparative analysis of impact on attenuation considering above mentioned factors.

IV. PROPOSED ALGORITHM

1. Here IP filter has been used to reject unauthenticated transmission of packets from server to client. If packet is valid then enhanced AES ENCRYPTION module works.
2. Here network security has been enhance by customizing existing encryption techniques.

A. TAKE PLAIN TEXT (256 bits)

B. APPLY ROUND KEY and set counter=1

C. if counter is less then N-1 (Here N would be number of iteration)

- Process sub byte.
- Perform Shift row
- Mix columns
- counter=counter+1;

D. other wise

- process sub bytes
- shift the rows
- Apply round key
- Cipher text would be generated (256 bits)

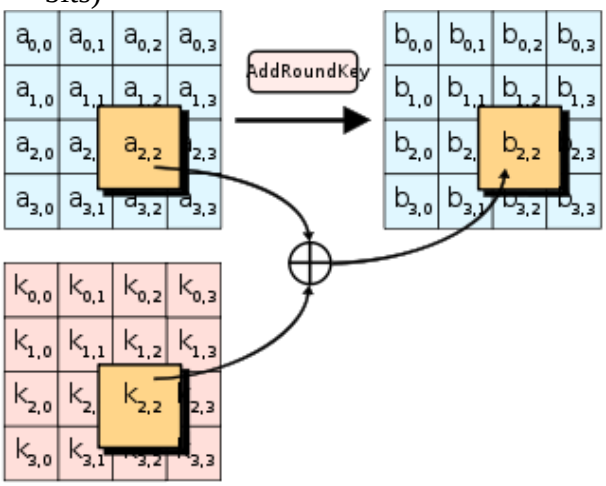

Fig 3 Proposed Algorithms

V. RESULT AND DISCUSSION

In research the topological connectivity has been represented in GNS3.

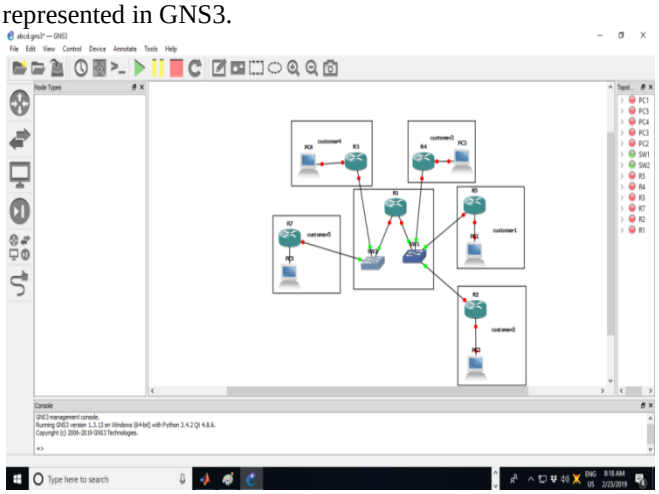

Fig 4 Topology design in GNS3

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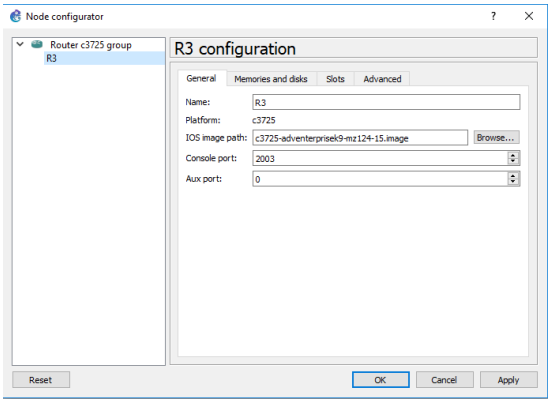
Cisco router c3725 and switch has been used and



configured to design the topology.

Fig 5 Configuration of Cisco router c3725

Simulation of Attenuation Measurement

Attenuation can be defined as a measure. It has been used to calculate the loss of signal strength. This signal strength is the light power. There can be the loss of light when the light pulses broadcast from a run of multimode. Here the single-mode fiber has been considered. Specially, the Measurements has been defined as the decibels or may be dB/km. Several size fibers have multiple optical loss dB/km values. Fiber loss varies basically as per the operating wavelength. Lowest loss of Practical fibers is at 1550 nm. Highest loss is at 780 nm with sizes of physical fiber.

Table 1 – For Wavelength 1310nm

	Attenuation/ Km (dB/Km)	**Attenuation/optical connector (dB)**	**Attenuation/joint (dB)**	
Min	0.3	0.4	0.02	Best Conditions
Average	0.38	0.6	0.1	Normal
Max	0.5	1	0.2	Worst situation

Table2 – For Wavelength 1550nm

	Attenuation / Km (dB/Km)	**Attenuation/optical connector (dB)**	**Attenuation/joint (dB)**	
Min	0.17	0.2	0.01	Best Conditions
Average	0.22	0.35	0.05	Normal
Max	0.4	0.7	0.1	Worst situation

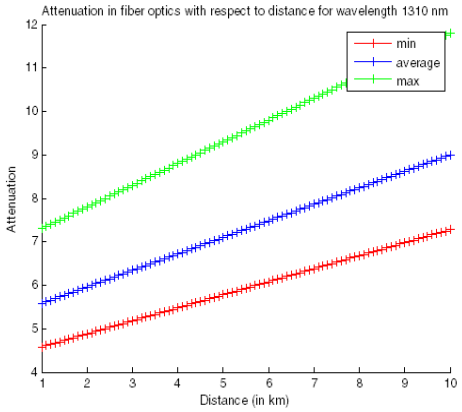


Fig 6 Attenuation in fiber optics with respect to distance for wavelength 1310 nm

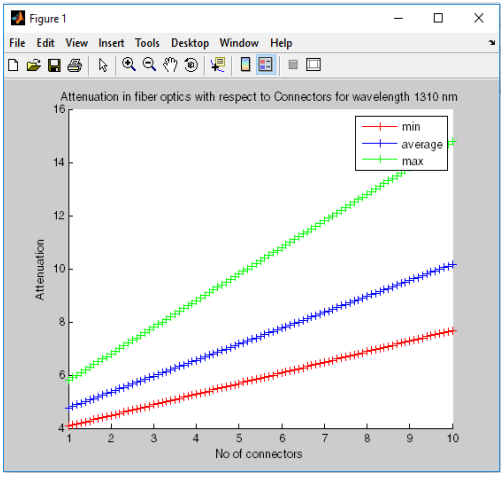


Fig 7Attenuation in fiber optics with respect to Connectors for wavelength 1310 nm

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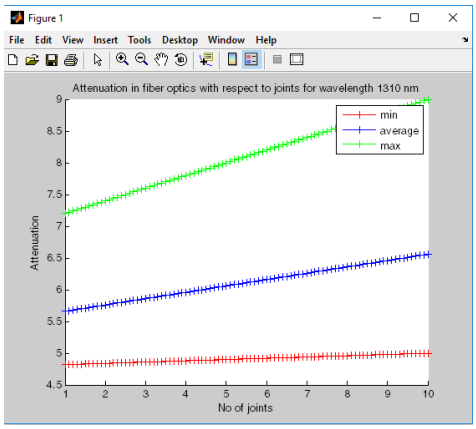

Fig 8 Attenuation in fiber optics with respect to joints for wavelength 1310 nm

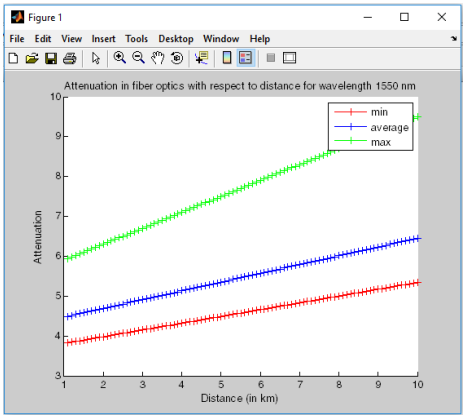

Fig 9Attenuation in fiber optics with respect to distance for wavelength 1550 nm

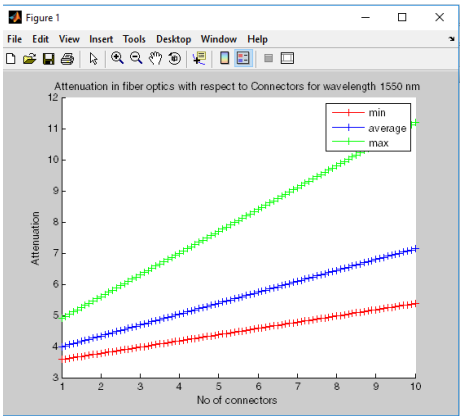

Fig 10 Attenuation in fiber optics with respect to Connectors for wavelength 1550 nm

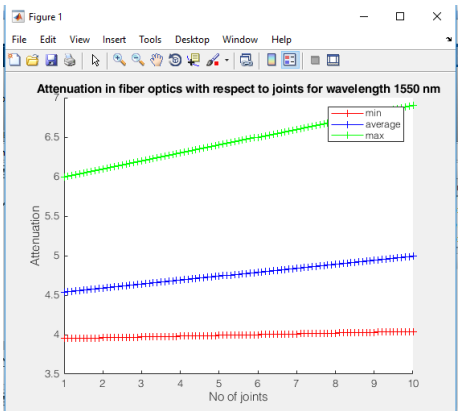

Fig 11 Attenuation in fiber optics with respect to joints for wavelength 1550 nm

VI. CONCLUSION

The proposed work is provides more security than the traditional techniques. The probability of congestion is less as compared to traditional. The overall performance gets boosted in case of proposed work at sender & receiver end. Pre-processing time has been determined before the data grouping if pre-processing time is more than there is no need to swap packet information. At all, as a conclusion, it can be said that there are no chances that one can create the obstruction during packet transmission. The proposed work is able to reduce the delay and increase the security in data transmission due to the reduction in packet size.. Proposed work has minimized of packet size to minimize probability of congestion. Proposed work focus on increment in network lifetime or enhancement in ratio of packet delivery.

VII. FUTURE SCOPE

This implementation would reduce the energy consumption. As there is the reduction in the packet loss, the life of packet will be more. According to the decrement in the packet loss, the packet delivery ratio would be better as compare to traditional work. There would be decrement in the load on network as per the reduction in size of Packet. Transmission of packet increases due to reduced size. More over the size of packet reduced would reduce the probability of network congestion. The packets are encrypted too. This ensures the security of packets. Again the encrypted and spitted information is of no use to hacker or crackers. The system would be beneficial for data transmission in military organization. Such research would be beneficial in cloud environment where the huge size packets are transferred over network.

ACKNOWLEDGMENT

I hereby express my deep sense of gratitude to my supervisor Dr. Mukesh Kumar, Associate Professor, TIT&S, Bhiwani for allowing me to work in this

area. Without his inquisitive and helpful participation I could not possibly have developed and sustained an abiding interest in this work. I am thankful to the director Prof. (Dr) G.K. Tyagi, TIT&S, Bhiwani for providing this opportunity to carry out the present paper.

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