ROLE OF VARIOUS ROUTING PROTOCOLS IN DATA TRANSMISSION

[a]Ravjot Singh Syal, [b]Navpreet Kaur Walia
[a]Research Scholar (M.Tech), SGGSWU, Fatehgarh Sahib
[b]Assistant Professor (CSE Department) SGGSWU, Fatehgarh Sahib.

ABSTRACT- In this paper, we elaborated the role of routing protocols for active transmission of data. Various routing protocols were implemented (Viz. OSPF, EIGRP, RIP) in the network where we used 2 scenarios first which is a simple network with no routing protocol implemented & in second scenario we implemented routing protocols & the output of the network having implemented routing protocols was very efficient, reliable than the other one.

1. INTRODUCTION:

Huai-An Lin et al. described a mechanism for controlling congestion in the transmission system by comparing, at each switching node of the system, the traffic load at that node and the traffic loads at all immediately neighboring switching nodes. Such traffic loads can be measured by node buffer utilization, either discretely or continuously [1].L Zhang et al. developed a scheme to control the transmission rate of statistical data flows. This paper describes a new algorithm, Virtual Clock, for data traffic control in high-speed networks. Virtual Clock maintains the statistical multiplexing flexibility of pocket switching while ensuring each data flow its reserved average throughput rate at the same time. The algorithm has been tested through simulation [2].Tobagi, Fouad A et al. studied the behavior of a population of data terminals which use packet-switching to communicate with a central station over a multiple-access radio channel. In order to reduce the interference among conflicting packets, we introduce Carrier Sense Multiple Access (CSMA) as a method for multiplexing the terminal traffic in the packet radio environment [3].James Aweya Delfin Y. Montuno, Michel Quellette et al. Described a method and apparatus for adjusting the volume of data communicated between a transmitter and a receiver on a network, in a time interval. The method involves producing a desired volume value in response to a volume value specified by the receiver [4].Chee Kheong Siew et al. underlined the main threat to accurate data transmission, a mathematical model of the dynamics of Rayleigh fading was used to explore the optimum duration of data packets. The performance criterion is the rate of information transfer through the mobile radio channel [5].Abramson Norma et al. highlighted the Packet broadcasting is a form of data communications architecture which can combine the features of packet switching with those of broadcast channels for data communication networks. Much of the basic theory of packet broadcasting has been presented as a byproduct in a sequence of papers with a distinctly practical emphasis[6] Jizhong (Jim)Wu) et al. investigated Useless Packet Transmission (UPT) problem in best-effort networks supporting multimedia, and propose an algorithm called Useless Packet Transmission Avoidance (UPTA) to address the UPT problem that how UPTA can effectively eliminate transmission of useless multimedia packets, and allocate the recovered bandwidth to competing TCP flows [7]. JOHN Samson Mwela et al. showed the impact of packet losses on the quality of received videos sent across a network that exhibit normal network perturbations such as jitters, delays, packet drops etc. that were examined. Dynamic behavior of a normal network has been simulated using Linux and the Network Emulator (NetEm) [8]. WESLEY M. EDDY) et al. elaborated The Transmission Control Protocol (TCP) is designed to reliably transmit data over a wide range of network conditions while responding fairly to other traffic when given an indication of congestion. TCP's

inability to distinguish between packet losses due to congestion and those due to corruption, however, makes it perform inefficiently on links with a high rate of packet errors [9]. Saket Sinha et al. introduced the concept of maximizing the Throughput of the system while maintaining optimum signal-to-interference ratios (SIR) by means of optimizing the powers between the terminals inside the cellular system. Power control is essential to the operation of wireless networks, because each user's power output contributes to the interference experienced by others [10].

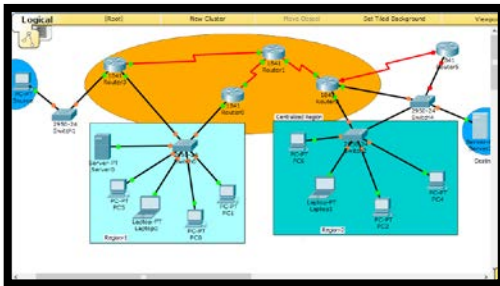## 2. Design strategies of different networks

Figure1: First Scenario without routing protocol

Here in the above main Window user can use command prompt of any viz (systems, switches, routers). Here the Communication will be established between the all of the routers except one which is in dead state.
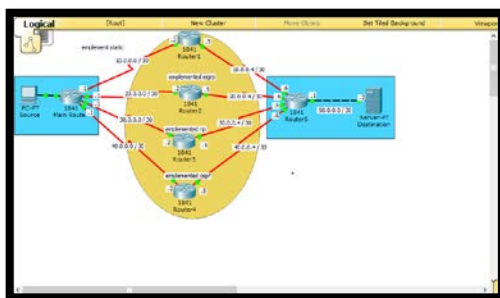

Figure 2: Second Scenario with routing protocol

Now here we have a other Network where we have implemented routing protocols (viz: ospf,rip,eigrp). Here in this network there would be an efficient management of data traffic on all nodes. Now each & every data packet reaches its destination without any loss in traffic which was earlier impossible.
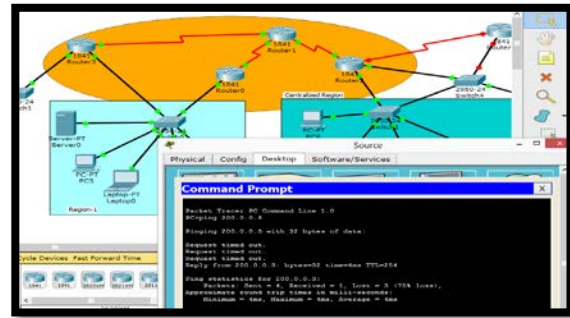
3. RESULTS & DISCUSSIONS

Figure: 3 Request timed out because of no routing protocol in scenario 1

Here in the above window unsuccessful communication is being shown from source to the main router, some of the data packets are lost due to the excessive traffic present on the nodes.
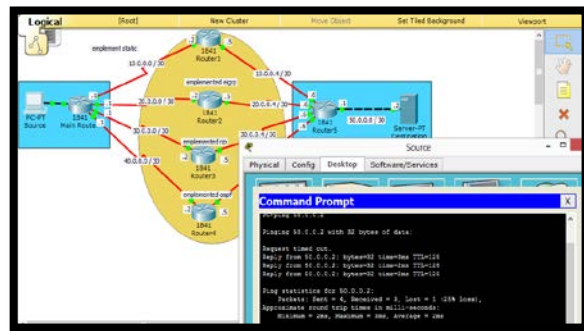

Figure:4 Use of routing protocols in Scenario 2 request reply is coming

In the Above Window the remote user tries to access the web servers or systems of organizations & its successful, now it can access either web server or any of the routers present in the network without any loss of a data packet.

4. CONCLUSIONS-
We have concluded that routing protocols are very essential in every network design because of their various importance like security, data traffic management, path determination, message delivery etc. With the use of routing protocols the design of network improves & becomes more reliable than the other network where no routing protocol is applied also routing protocols defines a architecture of the entire network.

5. REFERENCES

1. Huai-An Lin,"Link-by-link congestion control for packet transmission systems". Patent no.53196318 Patent Dated Jun 7, 1994.

2. L.Zhang "Virtual clock: a new traffic control algorithm for packet switching networks".
ACM Transactions on Computer Systems, Vol 9, No. 2. May 1991, Pages 101-124.

3. Tobagi,Fouad A "Random Access Techniques for Data Transmission over Packet Switched Radio Networks" National Computer Conference, 1975,Pages 187-201.

4. James Aweya, Delfin Y. Montuno, Michel Quellette "Method and apparatus for adjusting packet transmission volume from a source".Patent no.US6990070 B1 ,24 Jan,2006

5. Chee Kheong Siew "Packet data transmission over mobile radio channels". IEEE Transactions on Vehicular Technology Publication Vol 38 , Issue: 2 ,May 1989, Pages: 95 – 101.

6. Abramson, Norman "The Throughput of Packet Broadcasting Channels" IEEE Transactions on Communications, Vol. Com-25, No. 1, January 1977.

7. Jizhong (Jim)Wu "Techniques to Avoid Useless Packet Transmission in Multimedia over Best-Effort Networks". University of New South Wales , Australia, 2003.

8. JOHN Samson Mwela & OYEKANLU Emmanuel Adebomi "Impact of Packet Loss on the Quality of Video Stream Transmission" Master Thesis Electrical Engineering School of Computing Blekinge Institute of Technology Thesis no: MSC-2010-6182 May 2010.

9. WESLEY M. EDDY "Improving Transmission Control Protocol Performance With Path Error Rate Information". College of Engineering and Technology of Ohio University, March 2004.

10. Saket Sinha "Throughput Optimization for Wireless Data Transmission". Master of Science (Telecommunications Networks) ,Polytechnic University, June 2001