

AUTO SUMMARIZATION BASED EIGRP (AS-EIGRP) AND IT'S COMPARISON WITH EIGRP

Ravjot Singh Syal¹, Kamaljit Kaur²

¹M.Tech Student, CSE Department, Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab, India

²Assistant Professor, CSE Department, Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab, India

Abstract

Wireless Network spreads everywhere now from one place to another. Using a wireless network also requires optimization of network in a better way it in such a way that its throughput is improved to an extent that the packet always follows the shortest path and routers always have the information of each and every node in the network. This paper discusses comparison study of AS- EIGRP (EIGRP is combined with Route Summarization) and EIGRP (Enhanced Interior Gateway Protocol). Results show how the AS-EIGRP performed better than EIGRP in different network metrics.

Keywords: EIGRP, AS-EIGRP, Route-Summarization, Wireless Network.

1. INTRODUCTION

Wireless Network consists of small nodes with sensing, computation, and wireless communications capabilities over short distances. Each sensor collects data from the monitored area and then it acknowledges data back to the source for the successful delivery of it. AS- EIGRP is compared with EIGRP on the basis of network metrics such as delay, retransmission etc.

2. EXISTING WORK

Wireless Routing aims at reliable transmission of packets from source to destination, communication between routers along with providing various features like security, better time management and optimal path selection.

Raj Kumar Singh, A.K.Jain [1]: In this paper discussion of the two operating modes of the IEEE 802.11 is provided along with the an overview of a comprehensive list of research issues and challenges of the wireless network like signal fading problem, mobility problem, power and energy, data rate enhancement, security and the quality of service issues problems of the wireless network.

Ravjot Singh Syal, Navpreet Kaur Walia [2]: In this paper the role of routing protocols for active transmission of data is shown. Various routing protocols were implemented (Viz. OSPF, EIGRP, RIP) in the network and their performance was measured out of which the performance of EIGRP was higher than other routing protocols.

Kuwar Pratap Singh, P.K.Gupta, G.Singh [3]: In this paper, authors have considered the Enhanced Interior Gateway Routing Protocol (EIGRP) for IPv6 as a routing protocol, that uses classless routing schemes based on diffusion update algorithm (DUAL) for calculating a shortest path from source to destination IPv6 is used along with EIGRP protocol which removes the limitations

imposed by IPv4 and provides the large number of address space.

Prachi Thakur, Yogesh Bansal [4]: In this paper, different types of routing protocols available such as static and dynamic routing protocols are surveyed. Three routing protocols, RIP (Distance vector protocol), OSPF (Link state Protocol) and EIGRP (Hybrid Protocol) are analyzed and a depth comparison of the respective protocols is done on the basis of complexity, bandwidth etc.

Archana C [5]: In this paper, comparative study of RIP, OSPF & EIGRP is done, it is shown how using a routing protocol routers communicate with each other, disseminating information that enables them to select routes between any two nodes on a computer network.

Komal Gehlot, N.C. Barwar [6]: This paper is a study based on simulation for comparative performance evaluation between EIGRP and OSPF routing protocols for real time applications by using Best-Effort and Quality of service method in OPNET simulator. The evaluation is done based on different aspects such as traffic sent and received, packet delay variation, packet end-to-end delay as well as voice and video traffic sent/received using simulator.

Y.Navaneeth Krishnan, Shobha G [7]: In this paper study of two eminent protocols, Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF) protocols is evaluated. Evaluation of these routing protocols is performed based on the quantitative metrics such as Convergence Time, Jitter, End-to-End delay. The evaluation results show that EIGRP routing protocol provides a better performance than OSPF routing protocol for real time applications

Haresh N. Patel, Rashmi Pandey [8]: This paper focuses on route redistribution and route summarization of different intra-domain routing protocols such as EIGRP and OSPF.

multiple routing protocols and Autonomous systems are made to communicate in the Hybrid networks (OSPF vs. EIGRP protocols with Different AS) then route redistribution is necessary to advertise route from source network to destination.

Vishal Sharma, Rajneesh Narula, Sumeer Khullar [9]: This paper compares the performance of intra-domain routing protocols such as Enhanced Interior Gateway Protocol (EIGRP) and Interior Gateway Protocol (IGRP) of IEEE 802.3 LAN by evaluating various parameters including Network convergence time, Delay Variation, Throughput, Utilization, Queuing Delay and IP Processing Delay.

Ankit Sharma, Sheilly Padda [10]: In this paper a network model of Cisco routers has been employed in a network simulation software 'packet tracer'. Eventually an EIGRP routing protocol has been configured and run on a network model. The successful communication is established between different hosts present in the network

Ttiphon Krinpayorm, Suwat Pattaramalai [11]: This research is a performance comparison of router protocol between OSPF and EIGRP when an internet link fails. Since OSPF and EIGRP protocols are mostly used nowadays, the retransmission time and rerouting time is calculated from both protocols when there is a failure link in a data transmission path.

Pritesh Kumar Jain, Manoj Sindhwani, Shippu Sachdeva [12]: This Paper a comparison of routing methodology based on logical addressing using subnetting is done, which is a concept of Dynamic Host Configuration Protocol (DHCP).

Archana Kudtarkar, Reena Sonkusare, Dayanand Ambawade [13]: In this paper, Comparison is studied among Interior Gateway Protocols (IGP) protocols with weighted-fair queuing (WFQ) technique on different scenarios using OPNET (Optimized Network Engineering Tool).

3. COMBINING EIGRP AND AUTO SUMMARIZATION

1. Deploying a Wireless Network.
2. Configuring various zones in the network.
3. Checking for loops in the network avoid if present.
4. Update information of neighbor routers in the routing table.
5. Update information of the various paths in the network.
6. If a network node dies then selecting the next shortest path.
7. Performing Route Summarization.

4. EXPERIMENTAL SETUP

CISCO Packet Tracer is used as simulation tool. Cisco packet tracer is Cisco's easy option and is mainly used for CCNA training purposes Packet tracer works perfectly

within its own environment allowing access to all its devices IOS's so there is no need to have to get any more software or plugins to use all its functions

Table 4.1: Parameters Used

Simulation Parameter	Value
Simulator	Cisco Packet Tracer
Frequency Bandwidth	20Mhz
Packet Size	1500 bytes
Channel Frequency	1-2.412GHz
Bandwidth	100Mbps
Routing protocol	EIGRP
Duplex Mode	Half for Access Point/ full For Switches/ Routers
Encryption type	WEP (Wired Equivalent Privacy)
Retransmission Timeout in milliseconds	1000 ms
Number of Routers	5
Number of Switches	5
Number of Access Points	4

5. COMPARATIVE ANALYSIS

5.1 Comparative Analysis of EIGRP and AS-EIGRP on the basis of Data Dropped

Data Dropped: The amount of data is dropped in the network due to any failure or loss in the network and it does not get delivered to the destination. It is expressed in bits or packets

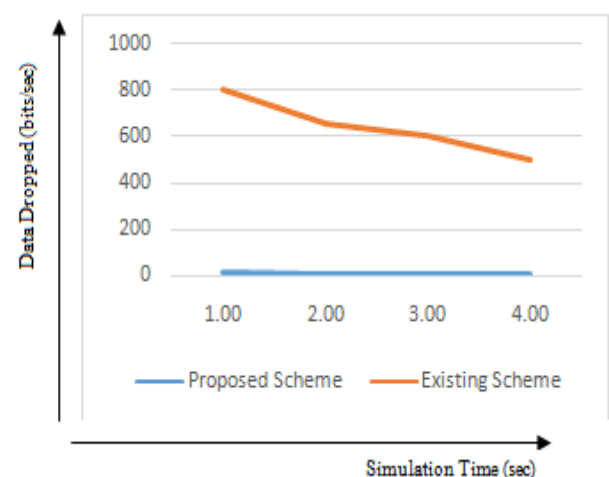


Fig 5.1 Comparison of EIGRP and AS-EIGRP on the basis of Data Dropped

The graph shows the data dropped of the two techniques present and previous. Here x-axis represents simulation time in seconds and y-axis represents data dropped in case of existing scheme is approx. 800 bits/sec while in case of proposed scheme it is 11 bits/sec and data drop in AS-EIGRP is very less than EIGRP.

5.2 Comparative Analysis of EIGRP and AS-EIGRP on the basis of Load

Load: The amount of data is that is carried by a network. It is expressed as bits/sec or packets/sec.

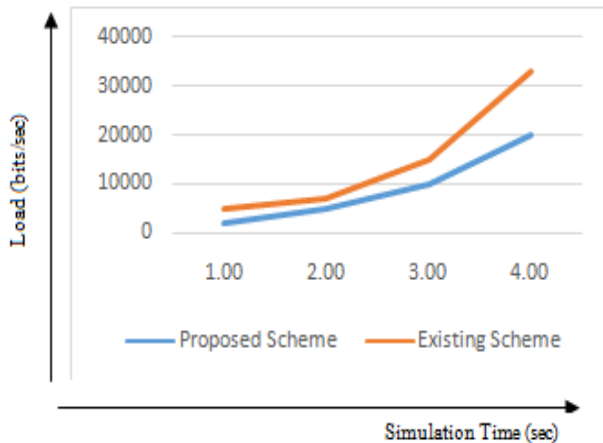


Fig 5.2 Comparison of EIGRP and AS-EIGRP on the basis of Load

The graph shows the comparison of existing technique that is EIGRP and proposed that is AS-EIGRP. Here x-axis represents simulation time in seconds and y-axis represents load and representation of load in EIGRP and AS-EIGRP. In case of existing scheme is approx. 35000 bits/sec while in case of proposed scheme it is 20000 bits/sec and load in EIGRP is more than AS-EIGRP.

5.3 Comparative Analysis of EIGRP and AS-EIGRP on the basis of Delay

Delay: The amount of data is that is carried by a network. It is expressed as bits/sec or packets/sec. The delay of a network specifies how long it takes for a bit of data to travel across the network from one node or endpoint to another.

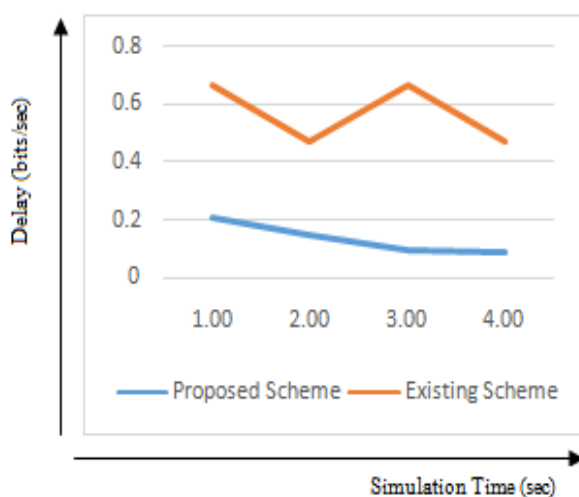


Fig 5.3 Comparison of EIGRP and AS-EIGRP on the basis of Delay

The graph shows the comparison of existing technique that is EIGRP and proposed that is AS-EIGRP. Here x-axis represents simulation time in seconds and y-axis represents delay. In case of existing scheme delay is 0.5 sec while in case of proposed scheme it is 0.01 sec i.e. delay in EIGRP is more than AS-EIGRP.

5.4 Comparative Analysis of EIGRP and AS-EIGRP on the basis of Retransmission

Delay: It is the number of attempts that is taken by source to deliver a message to the destination. It is represented in bits/sec. Simulation time is the total time taken for each simulation to run and simulate the entire environment of the network.

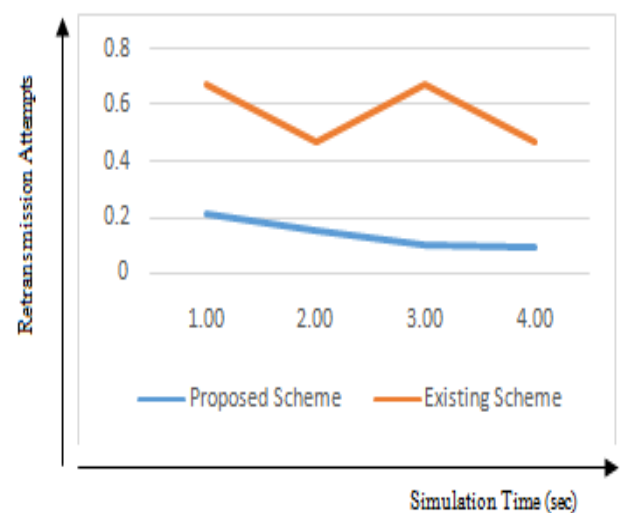


Fig 5.4 Comparison of EIGRP and AS-EIGRP on the basis of Retransmission

The graph shows the comparison of existing technique that is EIGRP and proposed that is AS-EIGRP. Here x-axis represents simulation time in seconds and y-axis represents Retransmission Attempts. In case of existing scheme it is 0.57 bits/sec while in case of proposed scheme it is 0.26 bits/sec i.e. Retransmission Attempts in EIGRP is more than AS-EIGRP.

6. CONCLUSION

In this paper AS-EIGRP is compared with EIGRP. In AS-EIGRP combination of Auto Summarization with EIGRP is made. The network is made more efficient and more secure than EIGRP. AS-EIGRP showed better time management in the network. Using AS-EIGRP the data dropped and other quality parameters are also improved like delay, load and throughput.

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