

ATILIM UNIVERSITY

SCHOOL OF BUSINESS

DEPARTMENT OF ECONOMICS

ECON484 MACHINE LEARNING

SHOULD WE USE ROUTING POTOCOLS FOR ROUTING INTER-CITY BUSES? WHY OR WHY NOT?

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**I. ABSTRACT**

Most businesses today prefer to use Local Area Networks (LAN) over their internal infrastructure for security reasons. Computers communicate with each other via wired local area networks. Routing is very important in transmitting data from source to destination within the network. Routing technique is a critical part of every network system. A lot of research is being done on routing protocols and a lot of smart dynamic routing protocol studies have been carried out to meet important routing needs. With the development of network technologies, this need has increased even more. Most researchers have focused on wireless networks because some studies have shown that most large companies use this network for security reasons for wired networks. Research on the subject has been presented and examined in detail in my work.

***Key Words:*** LAN, Dynamic Routing Protocols.

**II. INTRODUCTION**

Dynamic routing protocols have been used in networks since the early 1980s. Although the first version of RIP was released in 1982, some of the basic algorithms within the protocol started on ARPANET in 1969 (Warsame, 2018, p.6). As networks have evolved and become more complex, new routing protocols have emerged.

It shows a timeline of IP routing protocols along with helping to classify the various protocols. One of the oldest routing protocols is RIP. A newer version of RIP has been released: RIPv2 (Warsame, 2018, p.20). However, the newer version of RIP still cannot scale to large network applications. To meet the requirements of large networks, two advanced routing protocols have been developed: OSPF and IS-IS. Later, Cisco developed Internal Gateway Routing Protocol (IGRP) and Enhanced-IGRP (EIGRP), EIGRP also scales well in large network applications.

In addition, there is a need to connect different internet networks and provide routing between them. BGP is used between internet service providers and large private clients to exchange routing information.

**III.** **FOR ROUTING INTER-CITY BUSES**

Routing protocols are used to facilitate the exchange of routing information between routers. Routing protocols allow routers to dynamically learn information about remote networks and automatically add this information to their routing tables. Routing protocols determine the best routes for each network and then add them to the routing table. One of the main benefits of using the dynamic routing protocol is that the routing information is updated whenever there is a topology change of routers. This exchange allows routers to automatically receive information about new networks and also to find alternative routes in case of connection failure to an existing network.

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In the light of all this information, we must say that routing protocols can provide positive benefits for intercity buses as well as individual vehicles in intercity transportation. Let's first consider the case of topology. The dynamic routing protocol automatically adapts to topology changes. Thus, in case of any change in the path taken, different alternatives can be created and easy solutions can be found.

A similar dynamic routing protocol can be found in the ATDM (Active Transportation Demand Management) system used in the USA. Based on the given example, it helps road users in traffic to improve their behavior to obey the rules (Tufan, 2014, p.18.). It can also help with practices that detect rule violations and prevent potential accidents. If the applications that inform the meteorological events that the vehicles traveling on the highway may be exposed to, and that inform the deterioration or maintenance operations on the road in advance, are used by the drivers, possible bad situations can be prevented. In addition, thanks to such applications, studies can be carried out to ensure the safety of not only road users in the vehicle, but also pedestrians.

**IV.** **CONCLUSION**

Routing technique is a critical part of every network system. First, Dynamic routing protocols have been used in networks since the early 1980s. Although the first version of RIP was released in 1982, some of the basic algorithms within the protocol started on ARPANET in 1969. As networks have evolved and become more complex, new routing protocols have emerged. Routing protocols are used to facilitate the exchange of routing information between routers. It also determines the best routes for each network and then adds them to the routing table.

If we consider this information on our subject, intercity bus transportation, we can get a positive response as a result. Technology, which we focus on in many areas in terms of terrain, traffic, traffic safety and passenger-pedestrian safety, can benefit us in many ways. We can achieve a similar ATDM (Active Transportation Demand Management) system, which is one of our most important examples, thanks to dynamic routing protocols.

**V.** **RESOURCES**

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