

ASSESSMENT OF RIP-V1 AND OSPF-V2 PROTOCOL WITH CONSIDERATION OF CONVERGENCE CRITERIA AND SENDING PROTOCOLS TRAFFIC

Hamed Jelodar¹, Pouya Nikravesh²

¹ Department of Computer Science, Science and Research Branch, Islamic Azad University, Bushehr, IRAN, e-mail: JelodarH@gmail.com

² Department of Computer Science, Science and Research Branch, Islamic Azad University, Bushehr, IRAN, e-mail: P.Nikravesh@iaubsr.ac.ir

Received: 2014.01.20

Accepted: 2014.02.04

Published: 2014.03.05

ABSTRACT

Routing Protocols are underlying principles in networks like internet, transport and mobile. Routing Protocols include a series of rules and algorithms that consider routing metric and select the best way for sending healthy data packets from origin to destination. Dynamic routing protocol compatible to topology has a changeable state. RIP and OSPF are dynamic routing protocol that we consider criteria like convergence and sending protocols traffic assessment RIP first version and OSPF second version. By the test we have done on OPNET stimulation we understood that the OSPF protocol was more efficient than RIP protocol.

Keywords: Dynamic Routing Protocols, OSPF Protocol, RIP Protocol.

INTRODUCTION

Routing Protocol are underlying principle in networks like internet, transport and mobile. Routing Protocol provide this bed for data packets to find the best way of sending them from origin to destination. Routing protocols are series of the rules and algorithms. Dynamic routing protocols are compatible to topology. They do not have steady state but they change. RIP and OSPF are dynamic routing protocols. RIP protocols include IGP routing protocol and a sort of distance vector. This protocol is for selecting best way out of the number of hop. In other words, routing metric is the number of hop. Also routing tables are updated. Every thirty seconds other routing protocols can name OSPF dynamic routing protocols. This protocol is an IGP routing protocol and a sort of link-state.

According to our research this OSPF router protocol includes three versions which we evaluate. The second version of routing metric of this protocol is based on the cost, and for finding the shortest path we used Dijkstra's algorithm. OSPF

is an open standard that is used in large networks. In this paper we assessed two protocols considering convergence criteria and sending protocols traffic.

RELATED WORK

For sending the data package from source to destination the best route should be selected in order to deliver it safely. In general, we can say that the main purpose of a routing protocol to discover the shortest and most efficient route for data transmission in the network. Routing protocol by considering the routing metric select the best route.

Researchers considered different parameters assessment routing protocol. Fatigue and et al. in their paper examine and assess RIP, EIGRP, OSPF protocols; they put in their experiment routes temporarily in failure/recovery state and ultimately understood that OSPF protocol has better performance [1]. Considering convergence criteria Krishnan and et al assessed OSPF, EIGRP

protocols [2]. Considering convergence and creating temporary failure in routes in his thesis Mr. Hubert assessment and analysis RIP, OSPF protocols [3]. In the paper we assessed protocols with consideration to parameters, like convergence sending protocol traffic.

DYNAMIC ROUTING PROTOCOLS

Dynamic routing protocol is a set of rules and algorithms for determining how routers find the best path. For example RIP protocols use a number of hop metric and also OSPF routing metric and the cost for selecting path. Dynamic routing protocols are classified into two groups, including EGP, IGP. RIP, OSPF routing protocols are in IGP group. Figure 1 shows segmentation dynamic routing protocols.

OSPF Routing Protocol

This protocol is an IGP dynamic routing protocol group and a sort of Link-State. Routing met-

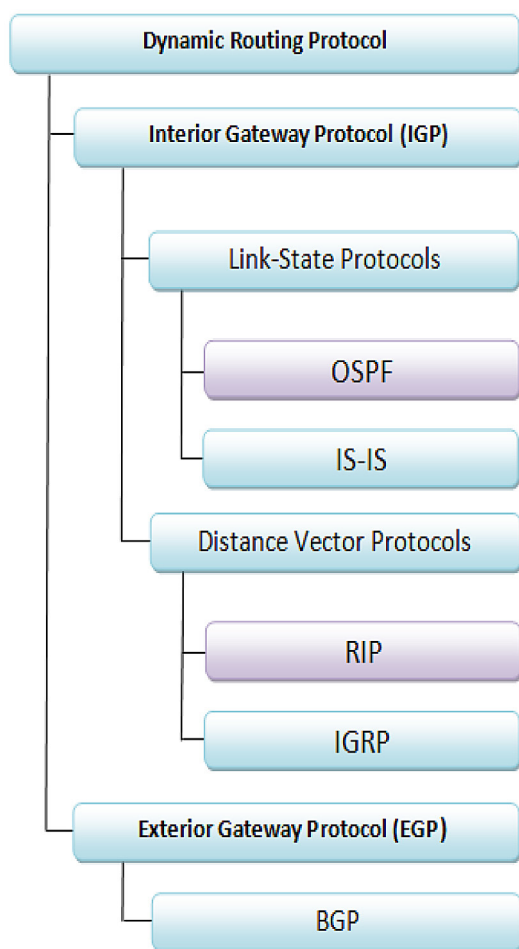


Fig. 1. Types of Dynamic Routing Protocol

ric of this protocol is based on cost and for finding shortest route using Dijkstra’s algorithm. OSPF routing protocol is an open standard and is used for large networks [4]. The disadvantage of these protocols can be noted in these cases: If a protocol finds a better route and at the same time switching happen excessive and too fast so that route will be costly and undesirable and another problem of that is having overhead [5]. SPF is compliant with any size of network, and even supports thousands of units [6]. According to our examination, routing protocol has three copies. In this paper we assessed the second Version.

RIP Routing Protocol

This protocol is from IGP dynamic routing protocols group and a sort of distance vector. The second version is an improvement of the first version of the protocol; it uses Bellman-Ford algorithm and for selecting the best rout and it uses a number of hop metric whose maximum number is fifteen. Routing tables is updated every 30 seconds. This protocol is good for small networks. In paper we assessed the first version of RIP protocol [7, 8].

EXPERIMENT AND CONCLUSION

We are going to assess RIV-v1, OSPF-v2 protocols with using OPNET software. The criteria of protocol assessment are “Convergence” and “send protocol traffic”. In order to perform this experiment we should fail some route in a short time temporarily and after elapsed of determine time we recover the route. Table 1 shows specified time for creating fail. For this experiment CISCO routers were used.

Table 1. Defined Time (For temporary failure)

Route	Fail	Recover
Router1 to Router5	of the second 100	of the second 200
Router5 to Router7	of the second 120	of the second 240

Activity of Both Protocols Convergence

In this part the amount of activity “convergence” of both protocols has analyzed. In the first part according to Figure 1 some route failed in a short time temporarily. The second sates are without fail for all of the routes. Below figure shows the activity of both protocols convergence.

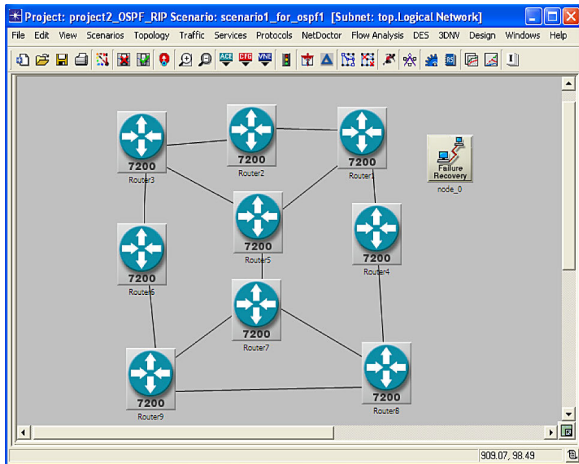


Fig. 2. Topology Network

Figure 3 shows the activity of both protocols without fail state; according to the result of OSPF the protocol has high convergence. Figure 4 also shows the activity of both protocols convergence with fail state in this figure, OSPF has high convergence.

Rate Protocols Traffic

In this section the rate of protocols sending traffic is analyzed in two states: with fail and without fail states. Figure 5 shows the rate of protocol traffic sending without fail and OSPF protocol has sent high traffic. Also Figure 6 shows sending traffic in fail state and OSPF is, at high level again.

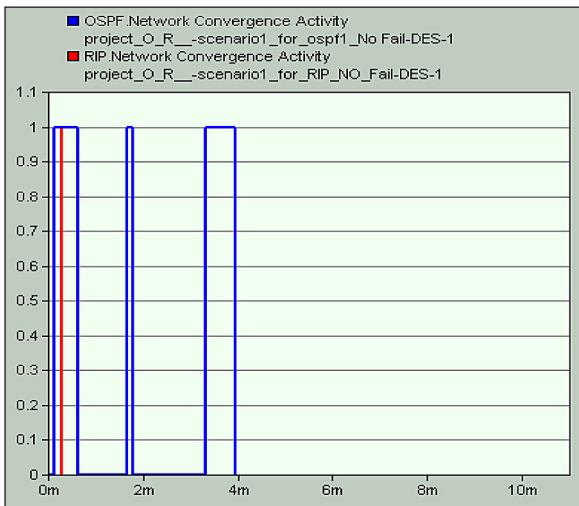


Fig. 3. The convergence of the two protocols (Without Fail)

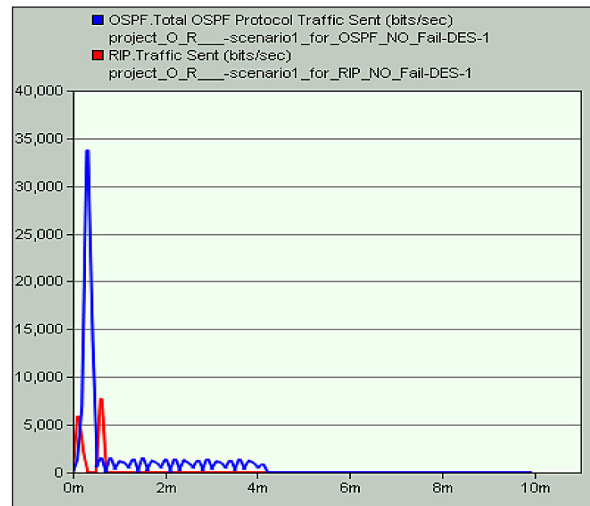


Fig. 5. Rate Protocols Traffic (Without Fail)

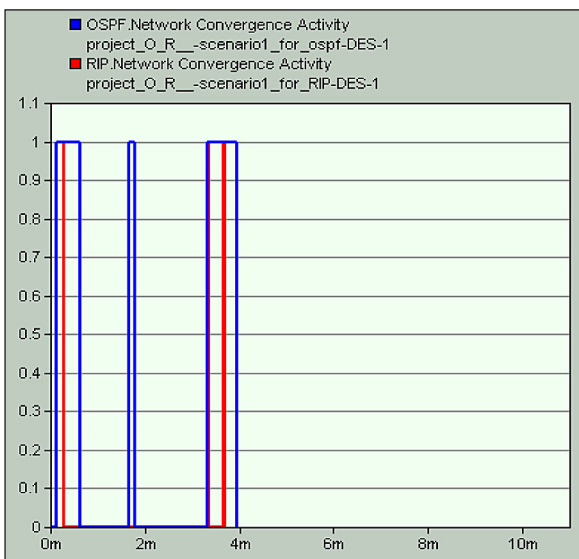


Fig. 4. The convergence of the two protocols (With Fail)

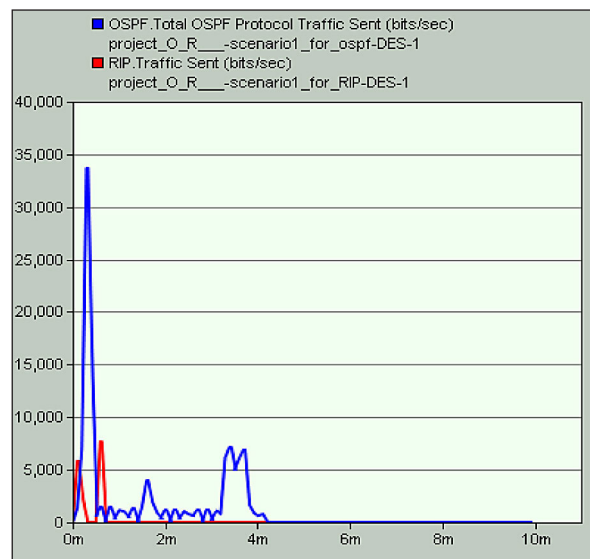


Fig. 6. Rate Protocols Traffic (With Fail)

CONCLUSION

This study is about the assessment of RIP-v1 and OSPF-v2 with consideration to convergence criteria and sending protocols traffic. We assessed protocols with using OPNET simulation and with considering criteria, such as convergence and sending protocol traffic. Based on the results we concluded that OSPF Protocol is more efficient than RIP Protocol.

REFERENCES

1. Fitigau I. and Todorean G.. Network performance evaluation for RIP, OSPF and EIGRP routing protocols. IEEE International Conference on Electronics, Computers and Artificial Intelligence (ECAI), 2013.
2. Krishnan Y.N., and Shobha G. Performance Analysis of OSPF and EIGRP Routing Protocols for Greener Internetworking. IEEE International Conference on Green High Performance Computing (ICGHPC), 2013.
3. Hubert P. Convergence Behavior of RIP and OSPF Network Protocols. PhD diss., Simon Fraser University, 2001.
4. Khan Md Nazmul I., (et al.) A Survey of EIGRP and OSPF Protocols on Voice Conferencing Applications. 2012.
5. Schneider G.M., Nemeth T. A simulation study of the OSPF-OMP routing algorithm. Computer Networks, 39, 2002: 457-468.
6. Bencheng Yu. OSPF-Based Network Engineering Design and Implementation. Xuzhou College of Industrial Technology, Xuzhou, China. Springer-Verlag, London 2013.
7. Xu Don, and Trajkovic L. Performance Analysis of RIP, EIGRP, and OSPF Using OPNET. 2011.
8. Pankaj R. and Sharma A. Performance Analysis of RIP, OSPF, IGRP and EIGRP Routing Protocols in a Network. International Journal of Computer Applications, 48(18), 2012: 6-11.