IMPLEMENTATION OF ROUTING PROTOCOL WITH RIP AND OSPF THEIR ANALYSIS IN IPV4 NETWORK

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ABSTRACT

An efficient dynamic routing protocol is necessary for the future broadband networks where a variety of Quality of Services are integrated. RIP and OSPF are the most frequently used dynamic routing protocols in the field of computer communication. This paper proposes an approach in which the outcome of deployment of RIP and OSPF on a network is explored on three aspects: Variation of packet loss in RIP and OSP, Variation of convergence time of RIP and OSPF. Variation of latency in RIP and OSPF.Variation of throughput in RIP and OSPF.

The various routing concepts are analyzed in the IPv4 network in terms of packet loss and convergence time. Results manifest that the proposed approach yields better performance improvement over the existing strategies.

1.INTRODUCTION

The goal of this paper is to analyze the behavior of routing convergence. It begins with an explanation of IP addressing. The paper discusses the two routing protocols: Routing Information Protocol (RIP) and Open Shortest Path First (OSPF) into great detail. The report then examines the structure of a routing table and the route selection process. In order to be practical in the investigation of the routing convergence, we perform an experiment that involved routers. It is assumed that an end customer requires redundancy for its Wide Area Network (WAN) connection. The customer purchases WAN connectivity from two different ISPs that are, running two different routing protocols hence routing information must be reallocated. We conduct the experiment such that network convergences under different failure state are examined. We will also change the timers of RIP and OSPF to inspect any improvement**.**

2.SIMULATION TOOL

GNS3 (Graphical Network Simulator)

GNS3 is a Graphical Network Simulator that allows emulation of complex networks. You may be familiar with VMWare or Virtual PC that are used to emulate various operating systems in a virtual environment. These programs allow you to run operating systems such as Windows XP Professional or Ubuntu Linux in a virtual environment on your computer

3. ARCHITECTURE

A router is a device that forwards data packets between computer networks, creating an overlay internetwork. A router is connected to more data routes from different networks. When a data packet arrives in a route the router senses the address in the packet and determines its true destination. The workload acquired by routing is sufficiently small that it can be handled by a central general purpose processor, which is called the route processor. The workload due to IP forwarding. on the other hand, is directly proportional to the amount of IP traffic at a router.

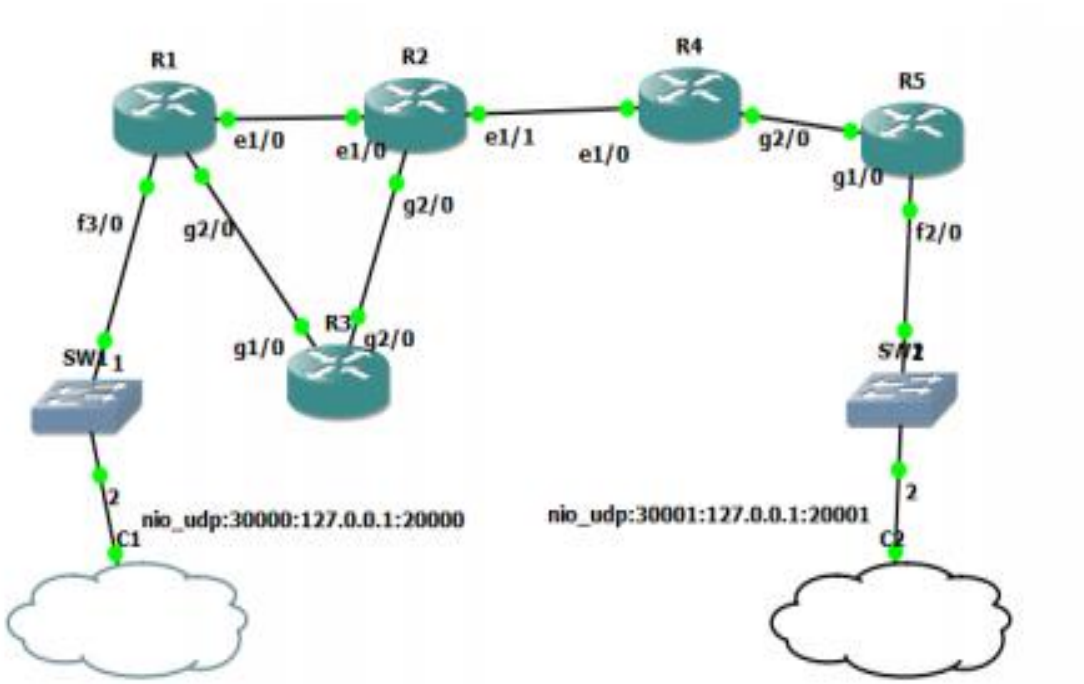


Fig 01: OSPF ARCHITECTURE

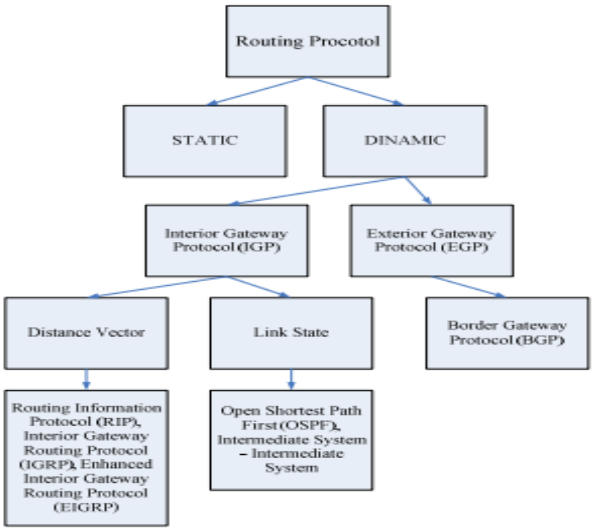


fig 02: DATA FLOW DIAGRAM

5. EXISTING SYSTEM

Existing System Network plays a vital role that helps to share information and resources and implement a centralized management system. To enable the network features, all organizations and ISPs have designed and implemented an IPv4 network to share their voice/data/video applications. IP is internet protocol and works on the third layer of the OSI model and forward packet from one node to another.IPv4 enables encapsulation and add more information that helps for efficient transmission of data. IPv4 address is32 bit address and have a maximum of 2^32 combination address. IPv4 address I s configured in devices either manually or automatically (DHCP). Subnetting, VLSM, and super netting concepts are used to increase the Network performance. The router has memory and stores routing more information due to the expansion of the network. NAT is used to better utilization of IPv4 address. IPv4 network supports mobility but generates O/H information.IPv4 network supports dynamic routing by enabling protocols such as OSPF and RIP

TECHNIQUE AND DISADVANTAGES

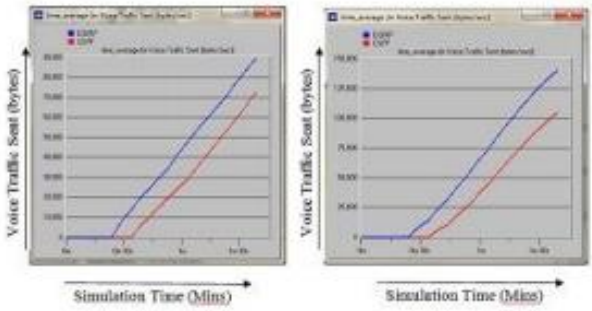
OSPF (Open Shortest Path First) and EIGRP (Enhanced Interior Gateway Protocol) are routing protocol which is a member of IGP (Interior Gateway Protocol). OSPF and EIGRP will distribute routing information between routers in the same autonomous system. This research will find how routing protocol works and compare those dynamic routing protocols in IPv4 and IPv6 network. This research will simulate some network topology and shows that EIGRP is much better than OSPF in many different topologies.

5. PROPOSED METHODOLOGY

Routing protocols are related based on some following character. Time to convergence states, how quickly routers in the network share routing information and reach a reliable knowledge. The faster the convergence is more preferred in a protocol. Loops can occur when unpredictable routing tables are not updated due to slow convergence in a changing network. Scalability defines how large a network can grow based on the routing protocol that is installed. The larger the network is, the more scalable the routing protocol needs to be. Classless routing protocols include the subnet mask in the updates. This article supports the use of VLSM (Variable Length Subnet Masking) and better route summarization. Classful routing protocols don't include the subnet mask and cannot support VLSM. Resource usage includes the necessities of a routing protocol such as memory CPU, space, and link bandwidth utilization.

ADVANTAGES

. Maintenance and Implementation describe the level of knowledge that is required for a network administrator to maintain implement the network based on the routing protocol deployed.



(a) Best Effort Method (b) QoS Method

6.RESULT

Best Effort Method The figure (a) & (b) depicts the traffic generated by EIGRP and OSPF routing protocols in the network using best effort method. It is seen that the EIGRP transfers the more packet in best effort method as compared with the OSPF routing protocol. After reaching the peak point (as peak point is seen in both graphs), it starts dropping and shows fluctuation in the traffic. It is due to no guarantee of delivery of data in best effort method.

7. CONCLUSION

From the simulation and analysis performed, some conclusions can be drawn:

A packet sent in an IPv4 environment is smaller than the packet sent in an IPv6 environment. This is because in the IPv6 network, addressing is much larger than in IPv4. IPv4 header size is 20 bytes, whereas in IPv6 is 40 bytes.

The number of packet loss is smaller when using EIGRP as compared with OSPF. Whether it's using IPv4 addressing or IPv6 address. This is because EIGRP uses a DUAL algorithm that includes a successor when a route is lost. By using EIGRP, the packet loss ranging from 1 to 3 Meanwhile, when using OSPF, packet loss ranging from 2 to 4.

EIGRP packets sent have a smaller size compared to the packets sent by OSPF. This is due to the data transmission process performed by the OSPF is more often.

The route chosen by the router is the route with the least metric. This can be seen from the results of a traceroute performed on several PCs.

8. REFERENCES

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