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Configuring And Analysing of EIGRP Protocol using Cisco Packet Tracer

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ABSTRACT: In this paper, the Routing protocol EIGRP has been studied and implemented using 'Cisco Packet tracer'. The results are verified using ping command. Here, the virtual network is created to test the EIGRP protocol. The paper also explains about the assigning of ip address and configuring them in router as well as in pc's.

KEYWORDS**:** EIGRP, Cisco Packet Tracer,Protocol,Ip address.

I. INTRODUCTION

Routing is the method of create the path for the data to flow between the routers,pc's etc. They are different types of routing. In that ,we considered EIGRP(Enhanced Interior Gateway Routing Protocol).It is considered under dynamic routing. Dynamic routing refers to a type of routing in which the routing are performed by the routing protocols. Routing protocols are used based on the topology that the system is built. The distance vector routing protocol uses algorithms for calculating distance between routers on that hop count.

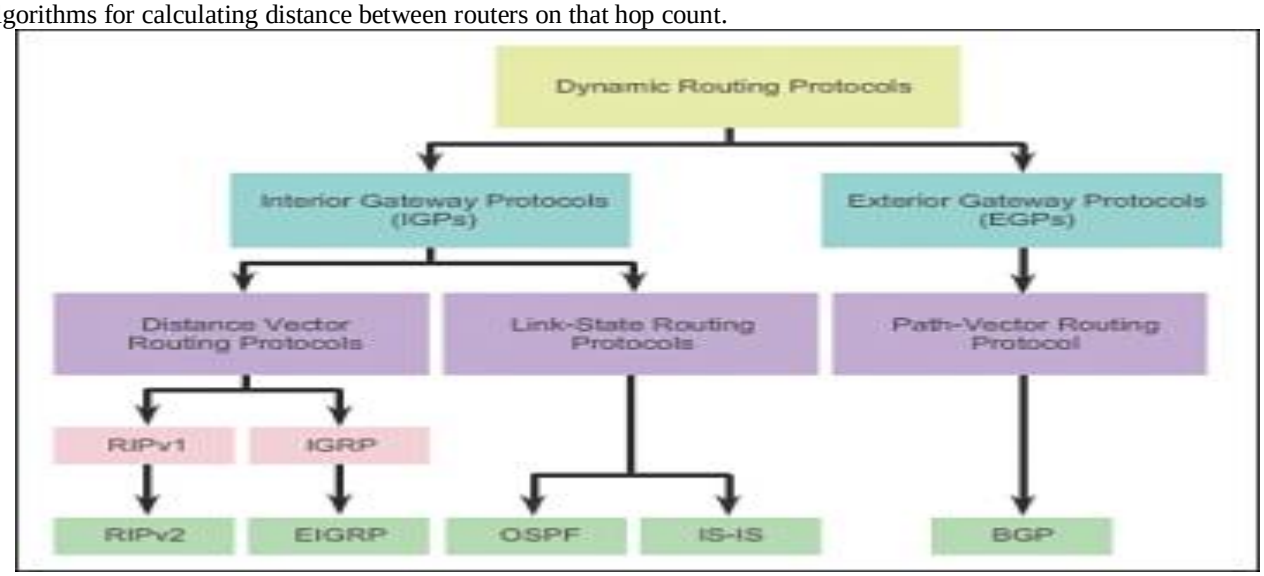

FIGURE1: different types of routing techniques

II. RELATED WORK

EIGRP stands for (Enhanced Interior Gateway Routing Protocol) .The main use of EIGRP is that it provide communication between the routers such that they know which the best path to exchange the data to the given destination.It is said to be hybrid routing protocol means that it can has the features of both distance vector and link stating protocol.It provides hundred percent loop free topology states that it can communicate the every router connected to it,because of this feature it is fast convergence .Bandwidth and Delay are the default metrics for the EIGRP protocol.It has the unique feature of load balancing across equal and unequal paths.It has the unique quality that, has the backup of main router it explains if the main router sets the destination fails the EIGRP protocol send the

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messages through the backup router we don't have to do any calculations.The administrative distance is 90 .This two feature makes us to prefer EIGRP protocol compared to other protocol techniques.

III. TOPOLOGY FOR CONFIGURING EIGRP PROTOCOL

Here, we taken the topology of three routers, three switches (2950-24) cisco, three pc's as end devices. Two connect the two devices in from pc's to switch we use copper straight through cable. while for router to router DCE cable . The DCE router cable has the clock rate because it is a ISP (Internet Service Provider) where DTE is at the subscriber side that has no clock rate. If we want to connect two pc's we use copper-cross over cable.

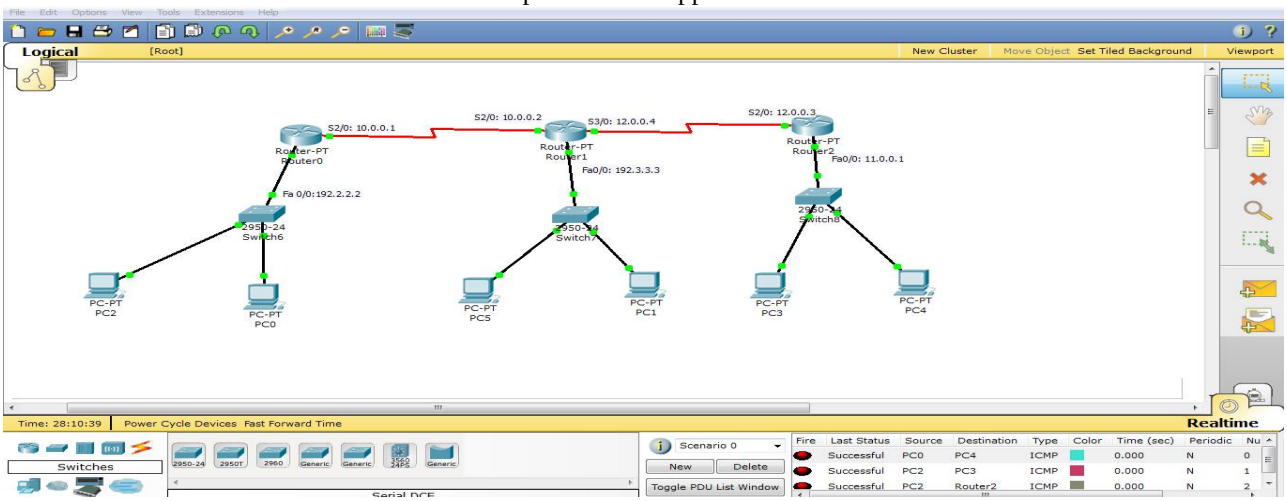

FIGURE2: topology used to explain the eigrp protocol.

IV. CONFIGURATION OF THE EIGRP PROTOCOL FOR THE CONSIDERED TOPOLOGY

Firstly, we have to construct the network as shown in the figure and then made the connections as explained above. We must assign the ip address for the pc's (end devices) and the procedure is shown below:

FIGURE3: assigning the ip address for pc1

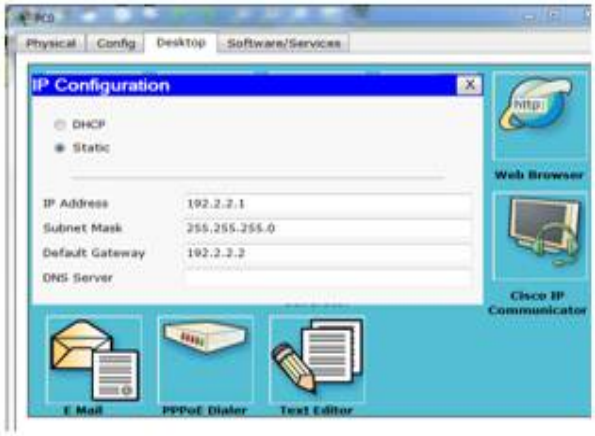

FIGURE4: assigning the ip address for pc0

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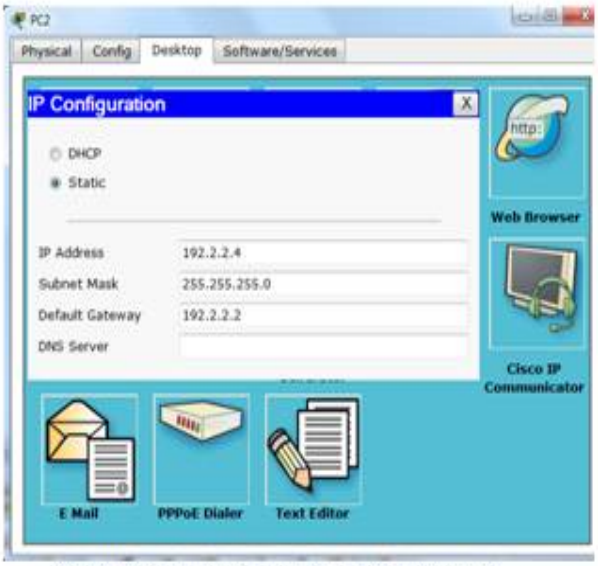

FIGURE5: assigning the ip address for pc2

FIGURE6: assigning the ip address for pc3

FIGURE7: assigning the ip address for pc4

FIGURE8: assigning the ip address for pc5

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Configuration of Router0 using Cisco packet Tracer:

```
        --- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]:

Press RETURN to get started!



Router>
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip address 192.2.2.2 255.255.255.0
Router(config-if)#int s2/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#exit
Router(config)#router eigrp 7
Router(config-router)#network 10.0.0.0
Router(config-router)#network 192.2.2.0
Router(config-router)#network 12.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 192.3.3.0
Router(config-router)#exit
Router(config)#exit

%SYS-5-CONFIG_I: Configured from console by console
Router#
```

```
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int s2/0
Router(config-if)#clock rate 64000
Router(config-if)#exit
```

Configuration of Router1 using Cisco packet Tracer:

```
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int f0/0
Router(config-if)#ip address 192.3.3.3 255.255.255.0
Router(config-if)#exit
Router(config)#int s2/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
```

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```
Router(config-if)#exit
Router(config)#router eigrp 7
Router(config-router)#network 192.2.2.0
Router(config-router)#network 192.3.3.3
Router(config-router)#network 10.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 7: Neighbor 10.0.0.1 (Serial2/0) is up: new adjac
y
Router(config-router)#network 12.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#exit
Router(config)#int s3/0
Router(config-if)#ip address 12.0.0.4 255.0.0.0
Router(config-if)#exit
Router(config)#int s3/0
Router(config-if)#clock rate 64000
```

Configuration of Router2 using Cisco packet Tracer:

```
Router>en
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip add 11.0.0.1 255.0.0.0
Router(config-if)#exit
Router(config)#int s2/0
Router(config-if)#ip add 12.0.0.3 255.0.0.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#exit
Router(config)#router eigrp 7
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#network 12.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 7: Neighbor 12.0.0.4 (Serial2/0) is up: new adjacenc
y

Router(config-router)#network 192.3.3.0
Router(config-router)#network 192.2.2.0
Router(config-router)#exit
Router(config)#
```

Actually the command router eigrp 7 means that we configuring the router using eigrp protocol.And 7 refers to Autonomous system number and its range is (1-65535).The number must be same throughout the configurations such that the bond has makes between the routers and the adding of the network is done here because to establish the routing we must add the different network to each router through which the packet can flow from source to destination.

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V. EXAMINING THE TOPOLOGY

The topology is examining using the ping command .We configure this by opening the command prompt in pc2 to pc3 .The result is shown below figure:

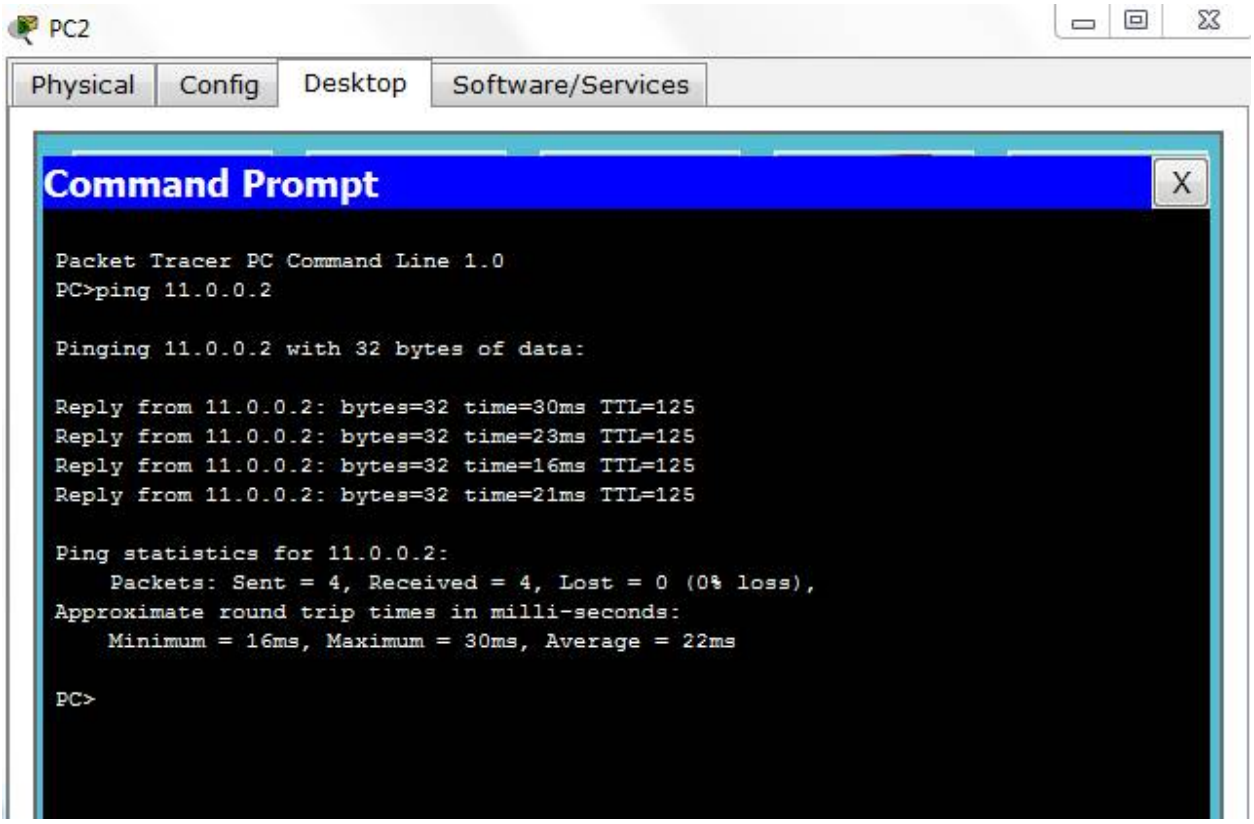

FIGURE9: pinging the pc3 ip address from pc2 and getting the reply from pc's such that the EIGRP protocol is configured properly.

VI. CONCLUSION

The Routing is nothing but, showing the path for the packets to flow from source to destination .There are different types of routing techniques are used depends on the requirement of usage. In this paper, the EIGRP protocol has explained and configured successfully using the cisco packet tracer and the results are explained.

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BIOGRAPHY

Gujarathi Thrivikram has pursuing his bachelor's of Electronics and Communication Engineering in GITAM University, Vizag. His interests on networking, wireless communication .