Lab Report

Computer Networks Laboratory

CSE-402

Experiment no : 07

Name of the Experiment :

Implementation of OSPF algorithm

Submitted by :

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Roll :40

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Introduction:

Open Shortest Path First (**OSPF**) is a link-state routing protocol which is used to find the best path between the source and the destination router using its own Shortest Path First). OSPF is developed by Internet Engineering Task Force (IETF) as one of the Interior Gateway Protocol (IGP.OSPF uses multicast address 224.0.0.5 for normal communication and 224.0.0.6 for update to designated router(DR)/Backup Designated Router (BDR).

In network computing**, DCE (Distributed Computing Environment)** is an industry-standard software technology for setting up and managing computing and data exchange in a system of distributed computers. DCE is typically used in a larger network of computing systems that include different size servers scattered geographically.

Data Terminal Equipment is equipment which acts as source or destinations in digital communication and which is capable of converting information to signals and also reconverting received signals.Pieces of data terminal equipment usually do not communicate between each other, which is usually done by data communications equipment

Connection:

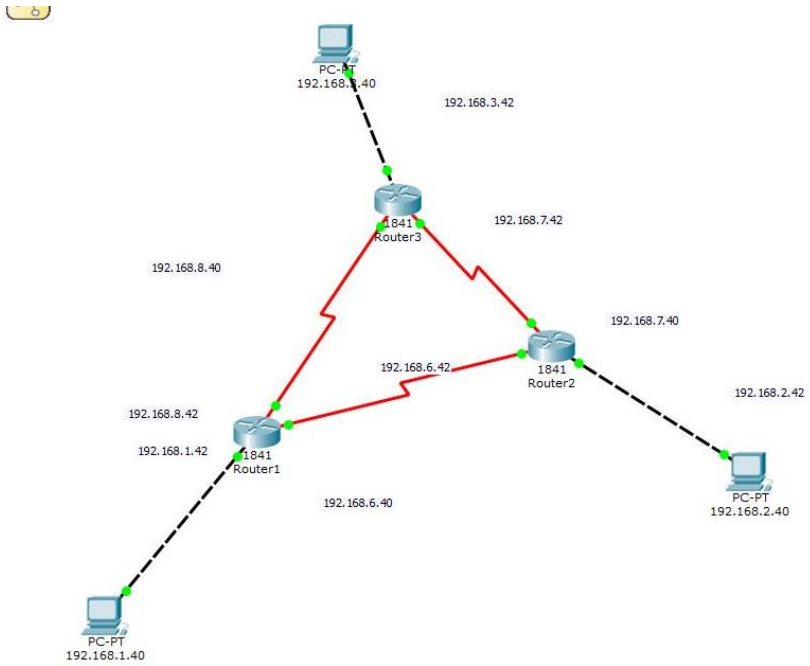

Fig 1.1:Connection of routers and PCs for OSPF algo

Configuring Router 1:

```
Router(config-if)#ip add 192.168.1.42 255.255.255.0
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int se0/1/0
Router(config-if)#ip add 192.168.6.40 255.255.255.0
Router(config-if)#
00:11:02: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.7.1 on Serial0/1/0 from FULL to
DOWN, Neighbor Down: Interface down or detached

00:11:14: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.7.1 on Serial0/1/0 from LOADING
to FULL, Loading Done

Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int se0/1/1
Router(config-if)#ip add 192.168.8.2 255.255.255.0
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 192.168.6.0 0.0.0.255 area 0
Router(config-router)#network 192.168.8.0 0.0.0.255 area 0
```

Fig : Configuring Router 1

Confiuguring Router 2:

```
00:17:00: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.1 on Serial0/1/0 from LOADING
to FULL, Loading Done

Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int se0/1/1
Router(config-if)#ip add 192.168.6.42 255.255.255.0
Router(config-if)#
00:17:39: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.2 on Serial0/1/1 from FULL to
DOWN, Neighbor Down: Interface down or detached

00:17:40: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.2 on Serial0/1/1 from LOADING
to FULL, Loading Done

Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.2.0 0.0.0.255 area 0
Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
Router(config-router)#network 192.168.6.0 0.0.0.255 area 0
```

Fig : Configuring Router 2

Configuring Router 3:

```
00:20:30: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.7.1 on Serial0/1/0 from LOADING
to FULL, Loading Don
% Incomplete command.
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#int se0/1/1
Router(config-if)#ip add 192.168.8.40 255.255.255.0
Router(config-if)#
00:21:18: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.2 on Serial0/1/1 from FULL to
DOWN, Neighbor Down: Interface down or detached

Router(config-if)#
00:21:20: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.8.2 on Serial0/1/1 from LOADING
to FULL, Loading Done

Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.3.0 0.0.0.255 area 0
Router(config-router)#network 192.168.8.0 0.0.0.255 area 0
Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
Router(config-router)#
```

Fig : Configuring Router 3

Simulation:

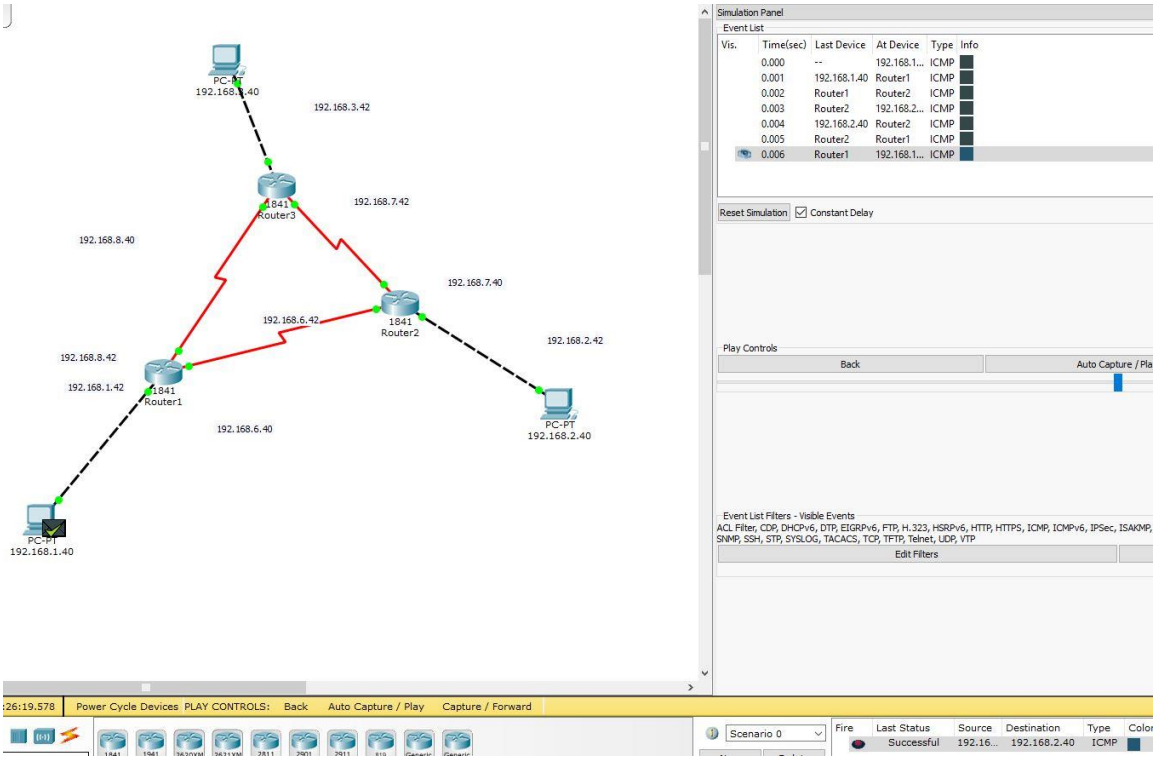

Fig : Real Time Simulation

Awareness:

- IP addresses & gateways should be carefully handled.
- Connectors should be chosen carefully.

Conclusion:

- Packets of router from one to another transmitted successfully through the network.