LAB 12:

Configuring OSPF routing protocol between two routers

Introduction:

Open Shortest Path First (OSPF) is a routing protocol developed for Internet Protocol (IP) networks by the Interior Gateway Protocol (IGP) working group of the Internet Engineering Task Force (IETF). The working group was formed in 1988 to design an IGP based on the Shortest Path First (SPF) algorithm for use in the Internet. Similar to the Interior Gateway Routing Protocol (IGRP), OSPF was created because in the mid-1980s, the Routing Information Protocol (RIP) was increasingly incapable of serving large, heterogeneous internetworks. This chapter examines the OSPF routing environment, underlying routing algorithm, and general protocol components.

OSPF has two primary characteristics. The first is that the protocol is open, which means that its specification is in the public domain. The OSPF specification is published as Request for Comments (RFC) 1247. The second principal characteristic is that OSPF is based on the SPF algorithm, which sometimes is referred to as the Dijkstra algorithm, named for the person credited with its creation.

OSPF is a link-state routing protocol that calls for the sending of link-state advertisements (LS As) to all other routers within the same hierarchical area. Information on attached interfaces, metrics used, and other variables is included in OSPF LSAs. As OSPF routers accumulate link-state information, they use the SPF algorithm to calculate the shortest path to each node.

As a link-state routing protocol, OSPF contrasts with RIP and IGRP, which are distance- vector routing protocols. Routers running the distance-vector algorithm send all or a portion of their routing tables in routing-update messages to their neighbors.

Objectives:

To enable communication between two hosts that are connected not to a single router but with the different routers in such a way that the reflection of the network change is sudden and not instantaneous.

Procedure:

Step1: Assign IP address on all ports of R1, R2, R3 and R4

        Assign IP addresses to all port of Router shown in figure above.

Step2: Configure OSPF protocol on all router

```
ExampleName#config
Example Name(config)#router OSPF process 1
Example Name(config-router)#network 192.168.1.0      0.0.0.7  area 0
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Example Name(config-router)#network 192.168.1.8   0.0.0.7 area 1
Example Name(config-router)#

Step3: Assign IP address to all computer

Assign IP address to computer with same network that assign to their respective port

Step4: confirm connection

Use ping command to confirm connection of each PC.

Step5: check routing protocol

ExampleName(config)# show ip route