
Static Routing design with hybrid topology

Lab Report 02

Submitted By : Kazi Nayeem
Hossain

ID : 191120005

Submitted To : Fernaz Narin Nur
Lecturer, NDUB

Objective:

Connect routers by static routing in a hybrid topology with subnetting the networks.

Theory:

Static Routing: Static routing is a form of routing that occurs when a router uses a manually-configured routing entry, rather than information from dynamic routing traffic. In many cases, static routes are manually configured by a network administrator by adding in entries into a routing table, though this may not always be the case. Unlike dynamic routing, static routes are fixed and do not change if the network is changed or reconfigured. Static routing and dynamic routing are not mutually exclusive. Both dynamic routing and static routing are usually used on a router to maximize routing efficiency and to provide backups in the event that dynamic routing information fails to be exchanged. Static routing can also be used in stub networks, or to provide a gateway of last resort.

Subnetting: A subnetwork or subnet is a logical subdivision of an IP network. The practice of dividing a network into two or more networks is called subnetting. Computers that belong to the same subnet are addressed with an identical most-significant bit-group in their IP addresses.

Subnetting Networks :

Network Address – 192.168.10.0/27

Subnet Mask – 255.255.255.224

Binary of SM – 11111111.11111111.11111111.11100000

Subnets - $2^3 = 8$

Hosts per subnet - $2^5 - 2 = 30$

Valid subnets = $256 - 224 = 32$

Subnet Network	0	32	64	96	128	160	192	224
First Host	1	33	65	97	129	161	193	225
Last Host	30	62	94	126	158	190	222	254
Broadcast Address	31	63	95	127	159	191	223	255

Tools:

- Cisco Packet Tracer(For simulating)
- 7 End Point computers
- 2 Switches
- 3 Routers
- Cable(for connections)

Implementation Details:**❖ Network Designing**

- Open Cisco Packet Tracer Application
- Take 3 PC and 1 Switch and connect those in a star topology
- Repeat the same process on another side & create another star topology
- Connect 2 switches to 2 routers
- Take another router and connect 3 routers in a bus topology format
- Take a PC and connect it to the middle router

❖ Addressing Devices

- Divide every topology in different sections
- For the first switch, give the Fa0/0 a valid and unique ip address. In this project, the ip address is 192.168.10.0/27
- Give the se2/0 the 192.168.10.33/27 ip address
- Set the clock rate of se2/0 on 64000
- Set the network state to up by the command "no shutdown"
- For the second switch, give the Fa0/0 a valid and unique ip address. In this project, the ip address is 192.168.10.65/27
- Give the se2/0 the 192.168.10.34/27 ip address
- Give the command "no shutdown"
- Give the se3/0 the 192.168.10.97/27 ip address
- Set the clock rate as 64000
- Give the command "no shutdown"
- For the third switch, give the Fa0/0 a valid and unique ip address. In this project, the ip address is 192.168.10.129/27
- Give the command "no shutdown"
- Give the se2/0 the 192.168.10.98/27 ip address
- Give the command "no shutdown"

- Set ip addresses for all the PC(s) by it's corresponding Router

Conclusion:

By this method, we can connect multiple routers and create a big network for a place. Doing this by hybrid topology states that now we can complete this process in even a complex network system.