- Title : To create a DHCP-web server and DNS server connections using cisco-packet tracer.

- Objective : Create an integrated DHCP-web server system where an admin hosts a website, assigns dynamic IP address to network systems and enables access to the website via both IP addresses and domain name.

- Mode used : Cisco Packet Tracer software.

- Theory :

DHCP : It stands for Dynamic Host Configuration protocol. It is critical feature on which the user of an enterprise network communicate.

- DHCP Helps enterprises to smoothly manage the allocation of IP addresses to the end user clients' devices such as desktops, laptops, cellphones etc. is an application that is used to provide:
  1. Subnet Mask
  2. Router Address
  3. DNS Address
  4. Vendor class identifier.
- DHCP is based on a client-server model and based on discovery, offer, request and ACK.

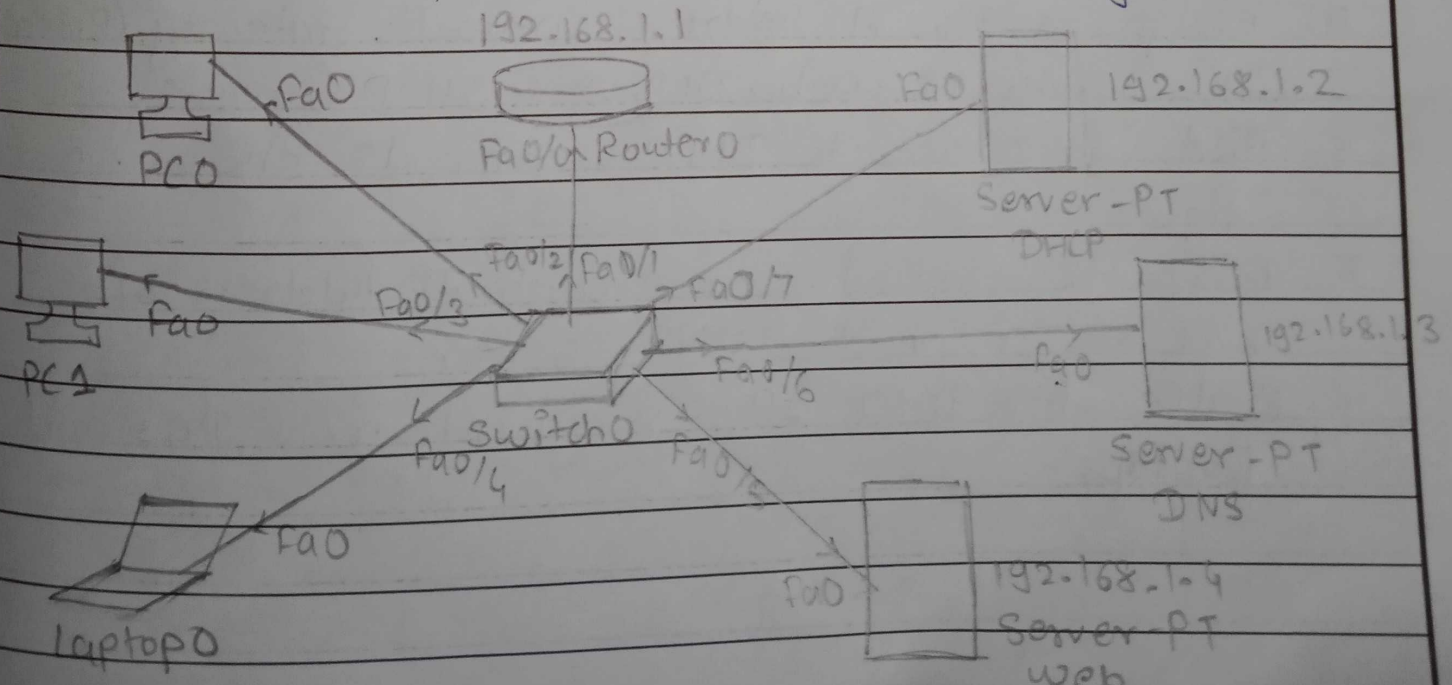
* Components of DHCP
- DHCP Server :- DHCP server is basically a server that holds IP Addresses and other information related to configuration.
- DHCP Client :- It is basically a device that receives configuration information from the server. It can be a mobile, laptop, computer, or any other devise.
- DHCP Relay :- DHCP relay basically coork as a communication channel between DHCP Client and Server
- DNS Servers :- DHCP servers can also provide DNS server information to DHCP clients, allowing them to resolve domain names to IP addresses
- Lease :- It is simply the time that how long the information received from the server is valid.
- Subnets :- Subnets are smaller portions of the IP network partitioned to keep network under control
- Default Gateway :- DHCP servers can also provide information about the default gateway, which is the device that packets are sent to when the destination is outside the local network

* Advantages of DHCP
- Centralized mangement of IP addresses.
- Centralized and automated TCP/IP configuration
- Ease of adding new clients to a network.
- Reuse of IP addresses reduces the total number of IP addresses that are required.

- The efficient handling of IP address changes for clients that must be updated frequently, such as those of portable devices that move to different locations on wireless network.

* Disadvantages of DHCP
- IP conflicts can occur.
- The problem with DHCP is that clients accept any server. Accordingly, when another server is in vicinity the client may connect with this server may possibly send invalid data to the client
- The client is not able to access the network in absence of a DHCP server.
- The name of the machine will not be changed in a case when new IP Address is assigned.

- Procedure :
  - Set up :
  1. Connect the Devices as shown in figure.



2. Click on Router and enter following commands in command prompt.
   - en
   - config t
   - interface FastEthernet 0/0 (connected to Switch)
   - no shutdown
   - ip address 192.168.1.1 255.255.255.0
   - exit
   - ip dhcp pool DHCP_POOL
   - network 192.168.1.1 255.255.255.0
   - default router 192.168.1.1
   - exit
   - exit
   - show ip dhcp pool.
3. Switch 0 :
   - enable
   - config t
   - interface FastEthernet 0/1 (connected to Router)
   - no shutdown
   - switch port mode trunk.
4. Assign static IP Address, Default Gateway (Router's IP) Server to Web, DNS & n DHCP servers.
5. Add Interface to DHCP server as shown in figure.
6. Map the website name with IP Address of WEB server in the DNS server.
7. Enable the DHCP IP configuration of PCs and Laptops.

- Observation :- Monitor the sucessful dynamic IP allocations, ensuring systems can access the hosted website using both IP addresses and domain names. Evaluate the server's stability and performance under concurrent requests.
- Conclusion :- The experiment showcases the feasibility and practicality of DHCP-web server system, streamlining IP management making the hosted website accessible through both IP addresses and domain names, enhancing network efficiency.