SUPERIOR UNIVERSITY

Task no : 11

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Section = 5B

Course = Computer Network

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Question no : 1

What is “DHCP, VLAN & DNS”, explain with Example
(draw structure in cisco)

Answer :

1. DHCP (Dynamic Host Configuration Protocol)

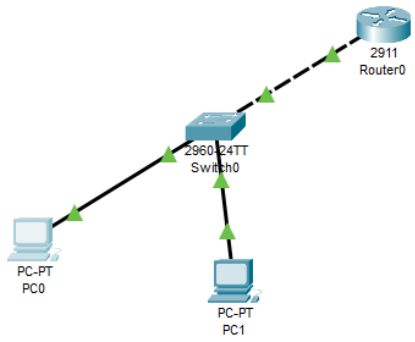
DHCP automatically assigns IP addresses and other network configuration details to devices on a network. This eliminates the need to manually configure IP addresses for devices.

How It Works:

When a device connects to the network, it sends a DHCP request. A DHCP server responds with an IP address, subnet mask, gateway, and DNS server details.

Example:

- You connect your laptop to Wi-Fi.
- The DHCP server assigns your laptop the IP `192.168.1.10`.



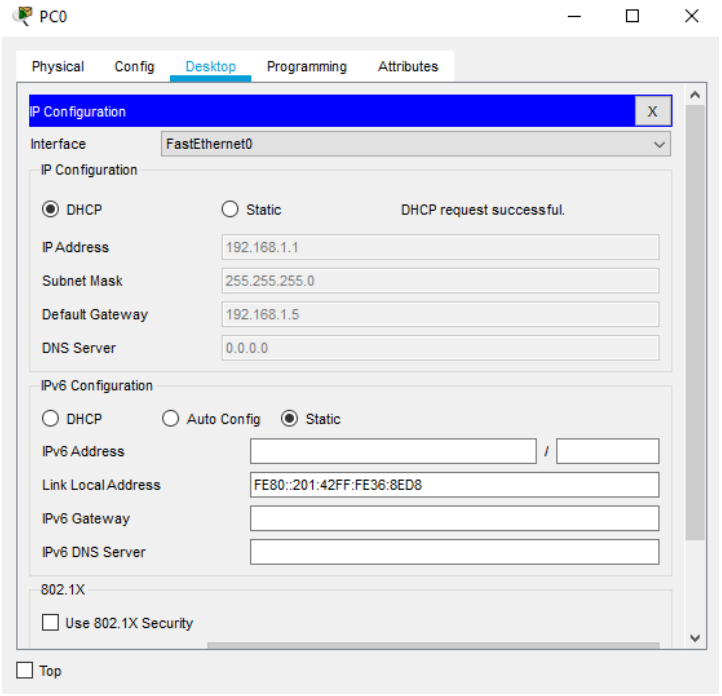
IOS Command Line Interface

```
Press RETURN to get started!


Router>en
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int gig0/0
Router(config-if)#ip address 192.168.1.10 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
changed state to up
exit
Router(config)#ip dhcp excluded-address 192.168.1.10 192.168.1.20
Router(config)#ip dhcp pool lan1
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.5
Router(dhcp-config)#exit
Router(config)#
```



2. VLAN (Virtual Local Area Network)

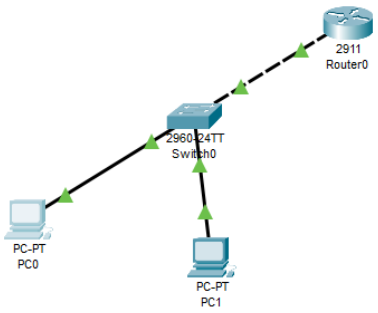
VLANs are used to segment a single physical network into multiple logical networks, improving security and reducing unnecessary traffic.

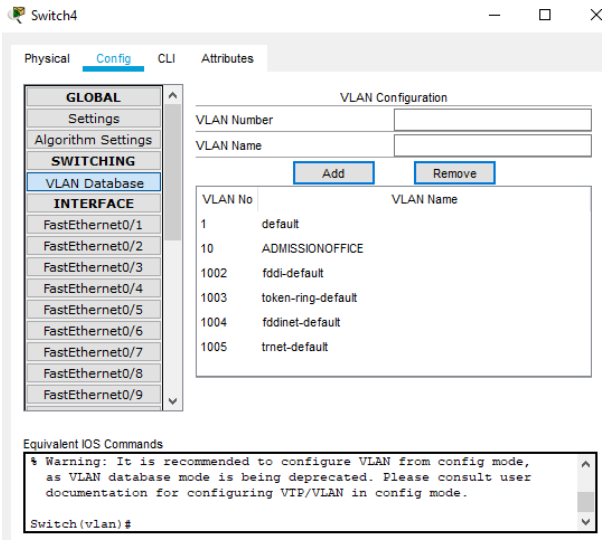
How It Works:

Devices in the same VLAN can communicate directly, but communication between VLANs requires a router or Layer 3 switch.

Example:

- VLAN 10: For office staff (IP range: `192.168.10.0/24`)
- VLAN 20: For guest users (IP range: `192.168.20.0/24`)
- This ensures guest users cannot access internal office resources.





3. *DNS (Domain Name System)*

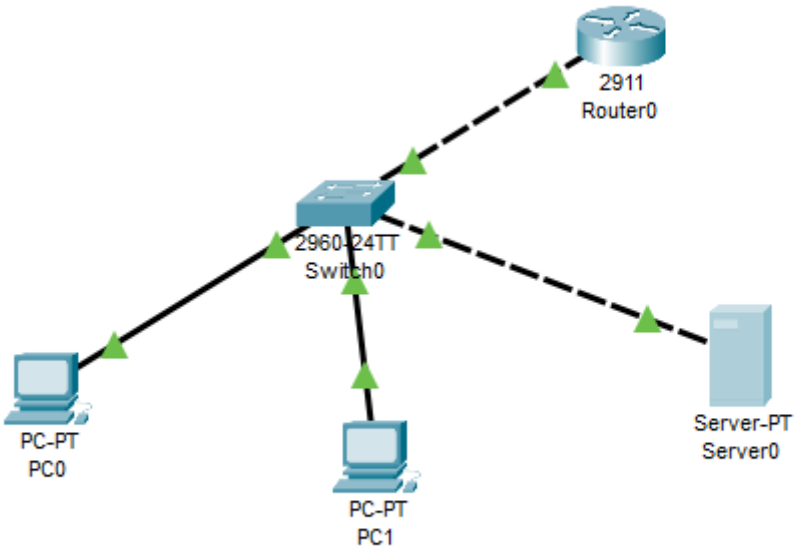
DNS translates human-readable domain names (like `www.google.com`) into IP addresses (like `142.250.64.78`) that computers use to communicate.

How It Works:

When you type a URL in your browser, your computer queries a DNS server to resolve the domain name into an IP address.

Example:

Typing `www.example.com` in your browser is resolved to `93.184.216.34` by a DNS server.


2911
Router0
2960-24TT
Switch0
PC-PT
PC0
PC-PT
PC1
Server-PT
Server0