

10/20/2024

PROJECT 2

DHCP CLIENT SERVER COFIG.

YOUR NAME

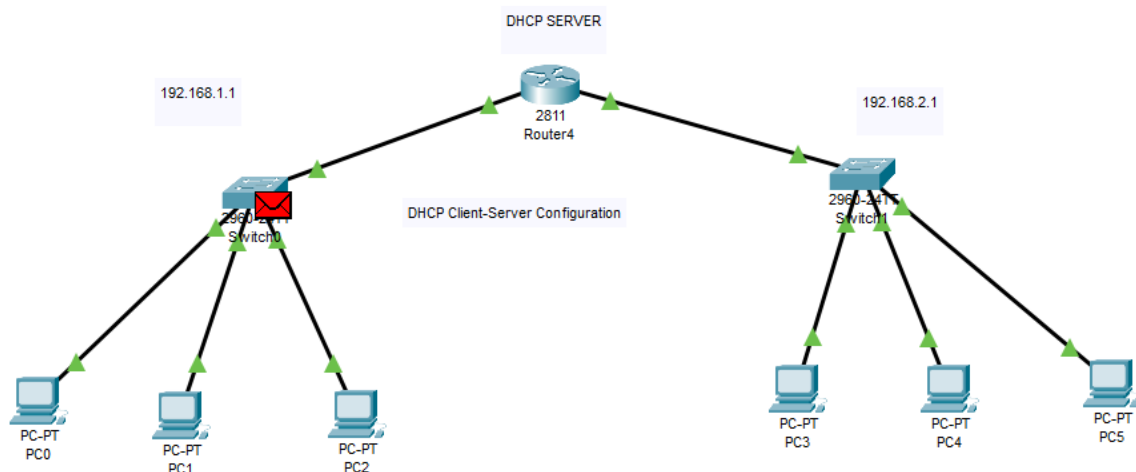
DHCP Client-Server Configuration Project Report

1. Introduction (10 Points)

- **Aim:** The aim of this project is to set up and configure a Dynamic Host Configuration Protocol (DHCP) in a client-server network topology. DHCP is used to automate IP address assignment, simplifying network management and ensuring devices obtain correct network configurations.
- **Summary:** This project will demonstrate how DHCP operates within a client-server network, focusing on configuring DHCP on a server and observing IP allocation to clients. Key issues like DHCP port usage, IPv6 support, client limits, server failures, and IP conflicts will be addressed.

2. Relevant Screenshots

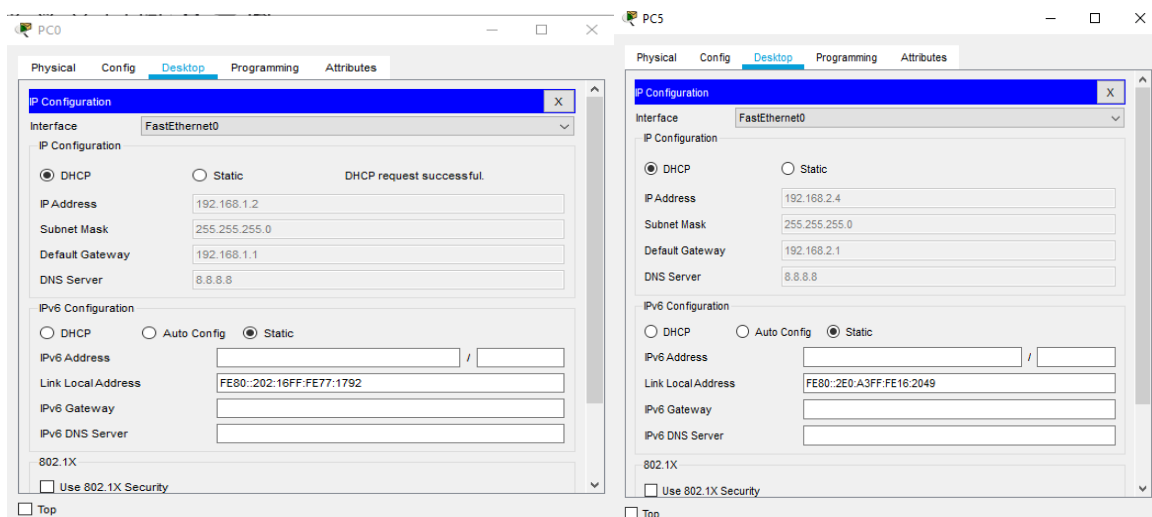
- **Screenshot of the Topology (10 Points)**

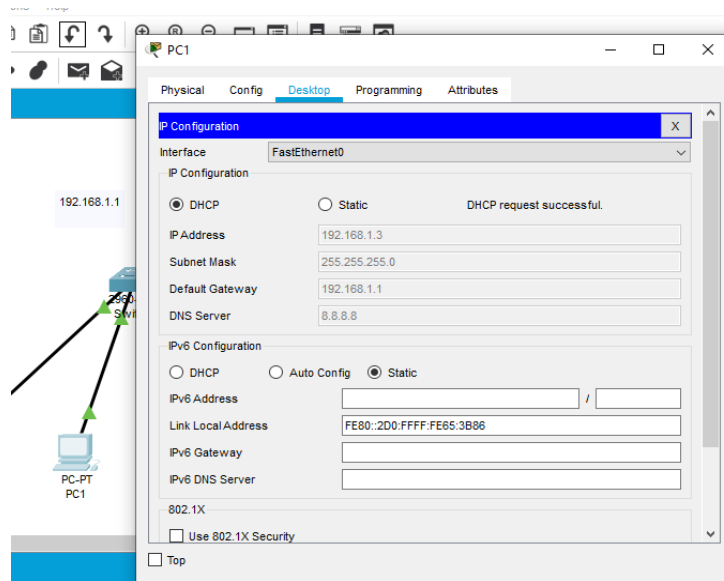


DHCP Client-Server Network Topology

The topology demonstrates a client-server connection, with a DHCP server configured to automatically allocate IP addresses to connected clients.

- **Screenshot of the Topology Result (20 Points)**





IP Address Allocation by DHCP Server"

These screenshot shows successful IP address assignment by the DHCP server to the connected client devices, indicating proper configuration.

3. Quiz (60 Points)

1. Which ports are used by DHCP? (5 Points)

- **Answer:** DHCP uses ports 67 (for the server) and 68 (for the client).

2. Can DHCP support IPv6 addressing? (5 Points)

- **Answer:** Yes, DHCP can support IPv6 addressing through DHCPv6, which is the protocol specifically designed for IPv6 networks.

3. Maximum clients that a DHCP server can support? (5 Points)

- **Answer:** A DHCP server can theoretically support a large number of clients, limited only by the address pool size defined by the subnet mask. For instance, in a typical Class C network, up to 254 clients can be supported.

4. What happens when the DHCP server fails? (5 Points)

- **Answer:** When a DHCP server fails, clients may be unable to obtain or renew their IP addresses, leading to network disruptions. Devices may revert to using a link-local address, making communication within the local network possible but limiting broader connectivity.

5. What will happen if the DHCP server assigns the same IP address to 2 clients? (20 Points)

- **Answer:** If the DHCP server assigns the same IP address to two clients, it causes an IP address conflict, leading to network issues such as connectivity loss for

one or both devices. This can also result in unpredictable network behavior, packet loss, or connection errors.

4. Summary of DHCP Client-Server Configuration (20 Points)

- The DHCP client-server configuration was performed using a simulation tool (e.g., Cisco Packet Tracer or GNS3). First, a server and multiple client devices were added to the topology. The DHCP service was enabled on the server, and IP pools were configured with specified IP ranges, subnet masks, and default gateways. The clients were set to obtain IPs automatically. Upon starting the simulation, the server successfully assigned IP addresses from the pool to each client device.

Index

CLI Commdands

enable

configure terminal

hostname dhcp-server

int f0/0

ip address 192.168.1.1 255.255.255.0

no shutdown

exit

int f0/1

ip address 192.168.2.1 255.255.255.0

no shutdown

exit

ip dhcp excluded-address 192.168.1.1

ip dhcp excluded-address 192.168.2.1

ip dhcp pool NETWORK1

network 192.168.1.0 255.255.255.0

default-router 192.168.1.1

dns-server 8.8.8.8

exit

```
ip dhcp pool NETWORK2

network 192.168.2.0 255.255.255.0

default-router 192.168.2.1

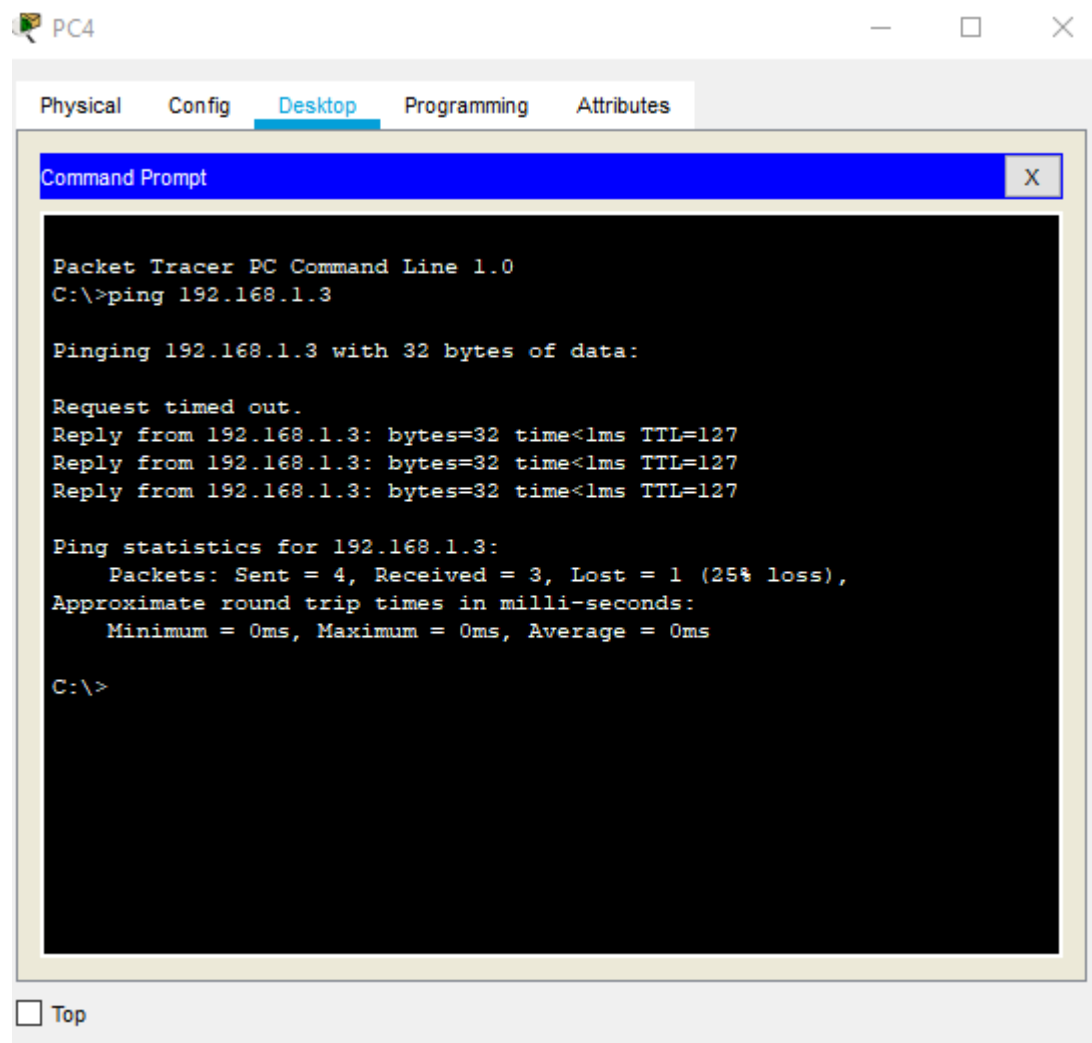
dns-server 8.8.8.8

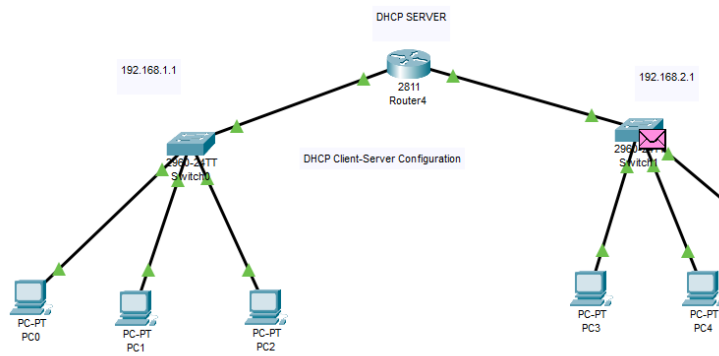
exit

end

write memory
```

Results:





Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.004	Switch1	PC3	ICMP
	0.005	PC3	Switch1	ICMP
	0.006	Switch1	Router4	ICMP
	0.007	Router4	Switch0	ICMP
	0.008	Switch0	PC0	ICMP
	0.613	--	Switch1	STP

Reset Simulation ☒ Constant Delay Captured to: 0.613 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDR, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPv2, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Event List

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	0.004	Switch1	PC3	ICMP
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	0.006	Switch1	Router4	ICMP
	0.007	Router4	Switch0	ICMP
	0.008	Switch0	PC0	ICMP
	0.613	--	Switch1	STP
	0.614	Switch1	Router4	STP

Reset Simulation ☒ Constant Delay Captured to: 2.613 s