

Experiment 4:

Dynamic Host Configuration Protocol

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Aim: To configure DHCP within a LAN and outside LAN.

Topology:

The diagram illustrates a network topology for DHCP configuration. At the top, a router is shown with two interfaces: 10.0.0.10 on the left and 20.0.0.10 on the right. Below the router are two switches. The left switch is connected to four devices: PC0 (10.0.0.2), PC1 (10.0.0.3), PC2 (10.0.0.4), and a server (10.0.0.1). The right switch is connected to two devices: PC3 (20.0.0.1) and PC4 (20.0.0.2). A note with an arrow points to the connections between the router and the switches, stating 'Copper straight through wire'.

Procedure:

- Place 3 end devices and a server under one switch in a network
- Place 2 other end devices under another switch in a different network
- Connect the switches through a router.
- Configure ip address for the router for both the interfaces.
- Open the server and open the services tab and DHCP services.
- Add two server pools with respective gateways and starting ip address (10.0.0.10)
- Open the router CLI and open the interface to which the server is not connected and type the following command
 > ip helper-address 10.0.0.10

where 10.0.0.10 is the static ip address of the server.

- Open each devices and configure ip address through dhcp.

Output

ping 20.0.0.2

Request timed out

Reply from 20.0.0.2: bytes=32 time<1ms TTL=127

Reply from 20.0.0.2: bytes=32 time<27ms TTL=127

Reply from 20.0.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 20.0.0.2:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milliseconds:

Minimum = 0ms, Maximum = 27ms, Average = 9ms.

Observation

- Each end devices get an ip from the dhcp server
- Message is pinged from a device in one network to another.
- It can be seen that the end devices get the ip address from the configured static ip address.

Server DHCP config:

server pool	gateway	static ip
serverPool1	20.0.0.10	20.0.0.1
serverPool	10.0.0.10	10.0.0.2

Topology and output screenshots:

