

DHCP: DHCP (Dynamic Host Configuration Protocol) is a network management protocol used to automatically assign IP addresses and other network configuration parameters (like subnet mask, default gateway, and DNS) to devices connected to a network. This eliminates the need to manually configure IP addresses for each device.

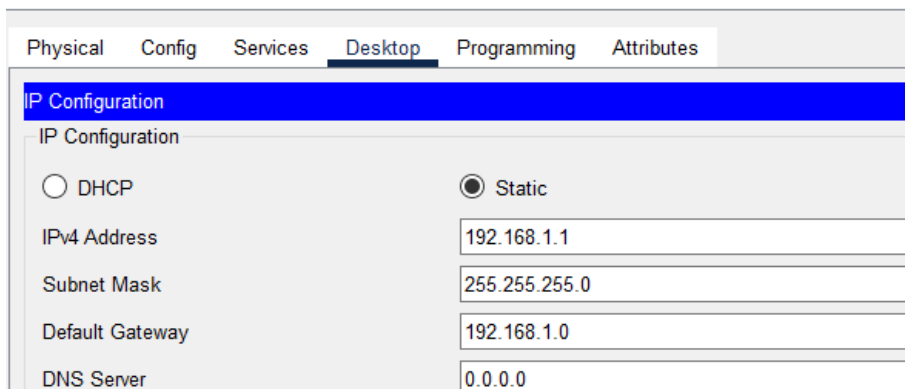
Working of DHCP:

When a device (client) connects to the network, it follows a four-step DHCP process:

1. DHCP Discover – The client broadcasts a request to find available DHCP servers.
2. DHCP Offer – The DHCP server replies with an IP address offer from its available pool.
3. DHCP Request – The client sends a request to accept the offered IP address.
4. DHCP Acknowledgment (ACK) – The server confirms and assigns the IP to the client.

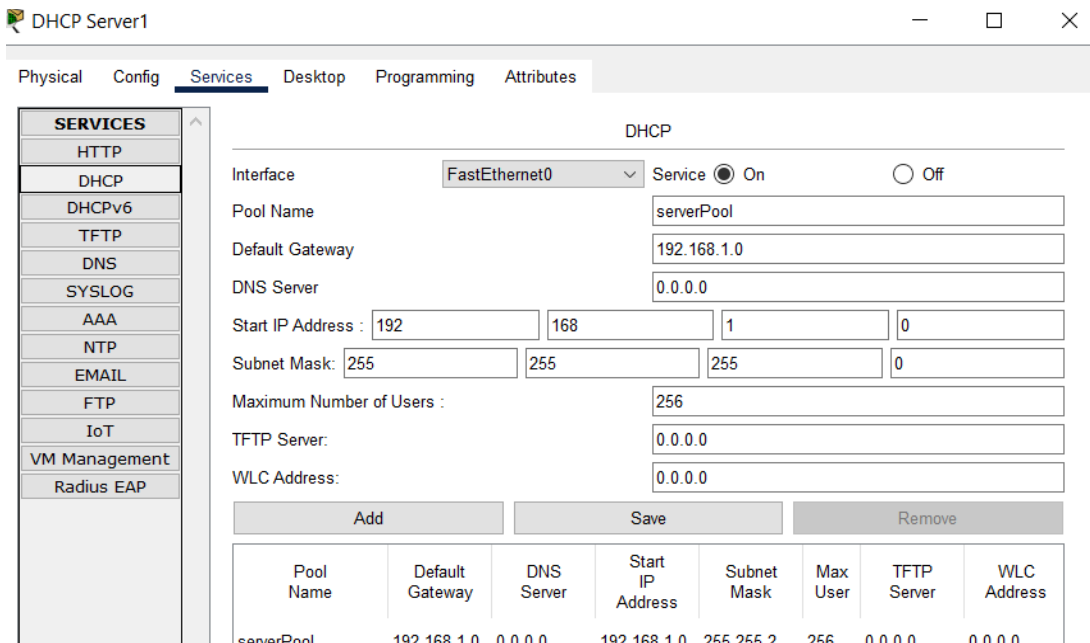
This process ensures that every connected device receives a unique IP address automatically.

DHCP Server1



The screenshot shows the 'Desktop' tab of the DHCP Server1 configuration window. The 'IP Configuration' section is active, showing the 'Static' radio button selected. The fields are filled with the following values:

Field	Value
IPv4 Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.0
DNS Server	0.0.0.0



The screenshot shows the 'Services' tab of the DHCP Server1 configuration window. The 'DHCP' service is selected in the left sidebar. The 'FastEthernet0' interface is configured with the 'Service' set to 'On'. The configuration details are as follows:

Field	Value
Interface	FastEthernet0
Service	On
Pool Name	serverPool
Default Gateway	192.168.1.0
DNS Server	0.0.0.0
Start IP Address	192.168.1.0
Subnet Mask	255.255.255.0
Maximum Number of Users	256
TFTP Server	0.0.0.0
WLC Address	0.0.0.0

Below the configuration fields, there are buttons for 'Add', 'Save', and 'Remove'. At the bottom, a table lists the configured pools:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.1.0	0.0.0.0	192.168.1.0	255.255.255.0	256	0.0.0.0	0.0.0.0

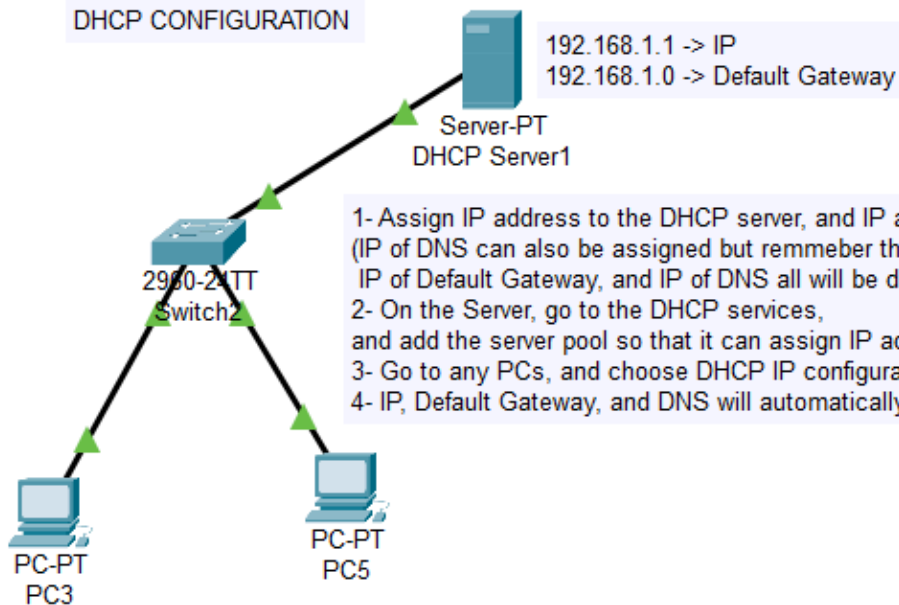
PC3

Physical	Config	Desktop	Programming	Attributes
IP Configuration				
Interface: FastEthernet0				
IP Configuration				
<input checked="" type="radio"/> DHCP <input type="radio"/> Static				
IPv4 Address: 192.168.1.2				
Subnet Mask: 255.255.255.0				
Default Gateway: 192.168.1.0				
DNS Server: 0.0.0.0				

PC5

Physical	Config	Desktop	Programming	Attributes
IP Configuration				
Interface: FastEthernet0				
IP Configuration				
<input checked="" type="radio"/> DHCP <input type="radio"/> Static				
IPv4 Address: 192.168.1.3				
Subnet Mask: 255.255.255.0				
Default Gateway: 192.168.1.0				
DNS Server: 0.0.0.0				

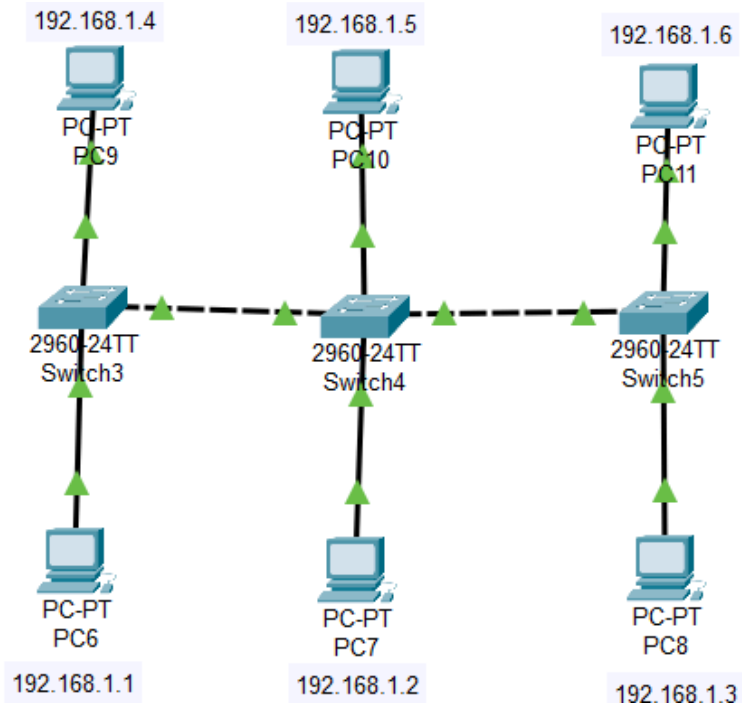
DHCP CONFIGURATION



- 1- Assign IP address to the DHCP server, and IP address of Default Gateway. (IP of DNS can also be assigned but remember the IP of server itself, IP of Default Gateway, and IP of DNS all will be different).
- 2- On the Server, go to the DHCP services, and add the server pool so that it can assign IP addresses from that server pool to the PCs.
- 3- Go to any PCs, and choose DHCP IP configuration.
- 4- IP, Default Gateway, and DNS will automatically be assigned to the PCs.

TOPOLOGIES

BUS TOPOLOGY:

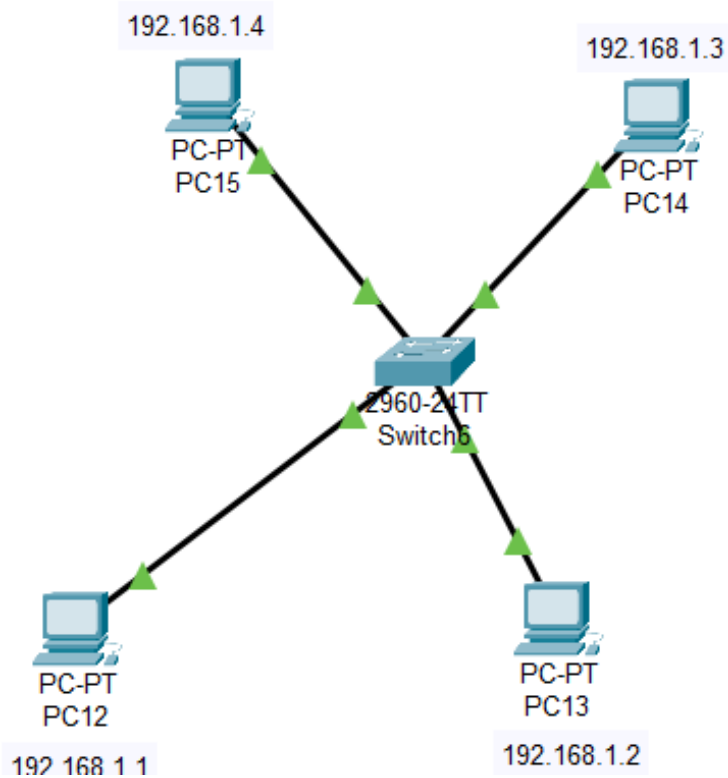


Straight-Through Cable
Different devices
(PC-Switch,
Router-Switch)









Crossover Cable
Similar devices
(PC-PC,
Switch-Switch)
Direct data exchange

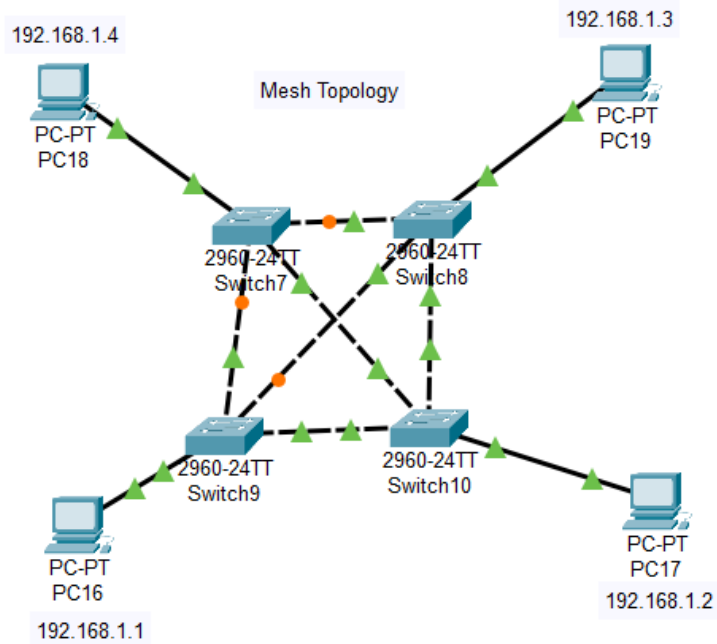
STAR TOPOLOGY:

Star Topology











PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC15	PC14	ICMP		0.000	N	0	(edit)	
	Successful	PC15	PC13	ICMP		0.000	N	1	(edit)	
	Successful	PC14	PC12	ICMP		0.000	N	2	(edit)	
	Successful	PC13	PC12	ICMP		0.000	N	3	(edit)	

MESH TOPOLOGY:

PDU List Window

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC18	PC17	ICMP		0.000	N	0	(edit)	
	Successful	PC16	PC19	ICMP		0.000	N	1	(edit)	
	Successful	PC18	PC16	ICMP		0.000	N	2	(edit)	
	Successful	PC17	PC16	ICMP		0.000	N	3	(edit)	