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**Welcome  
To  
Network for you  
DHCP**



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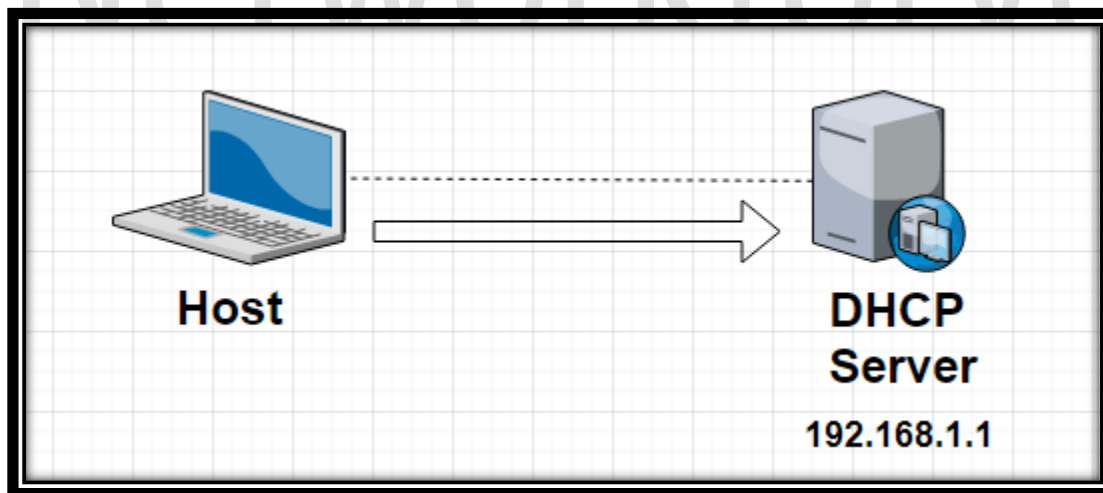
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## DHCP:

- DHCP Stand for Dynamic Host Configuration Protocol.
- In our daily life we are dealing with IP address like our smart phone connect to WIFI it will get automatically IP address etc.
- IP address can be configured statically or dynamically.
- Normally we configured static IP address on network device like Router, Switch, Firewalls and Servers.
- While we dynamically assign IP to our Computers, Tablets, Smartphone and Laptops etc.
- We use DHCP to assign IP address dynamically.
- We can Configure DHCP in server or in router.
- DHCP process follows DORA process, Discover, Offer, Request & Acknowledgement.
- DHCP is Client server protocol, which uses User Datagram Protocol services.
- DHCP port number for server is UDP port 67 and for the client is UDP port 68.
- DHCP assigned Internet Protocol (IP) address from a pool (range) of addresses.
- Dynamic Host Configuration Protocol (DHCP) is an application layer protocol.

Let take we have DHCP Server 192.168.1.1

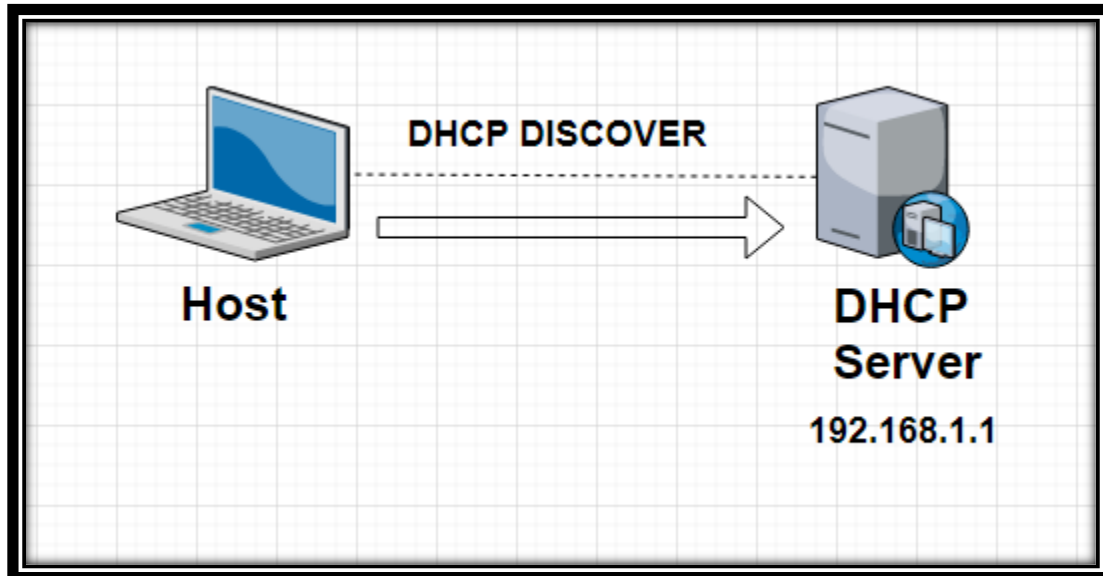


Left side we have host that is Laptop and Right side we DHCP Server 192.168.1.1

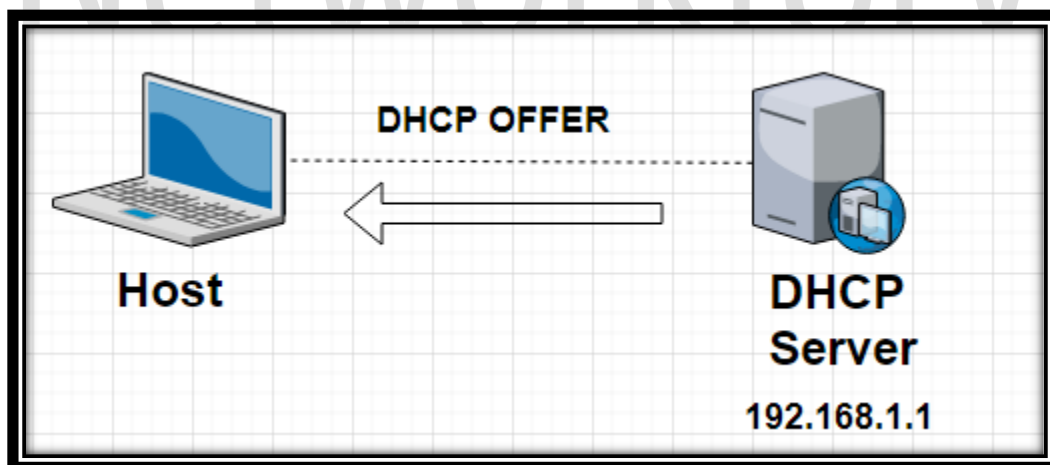
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Laptop will send DHCP Discover message. This will be broad cast because he does not have IP address and he don't know that we have DHCP Server.

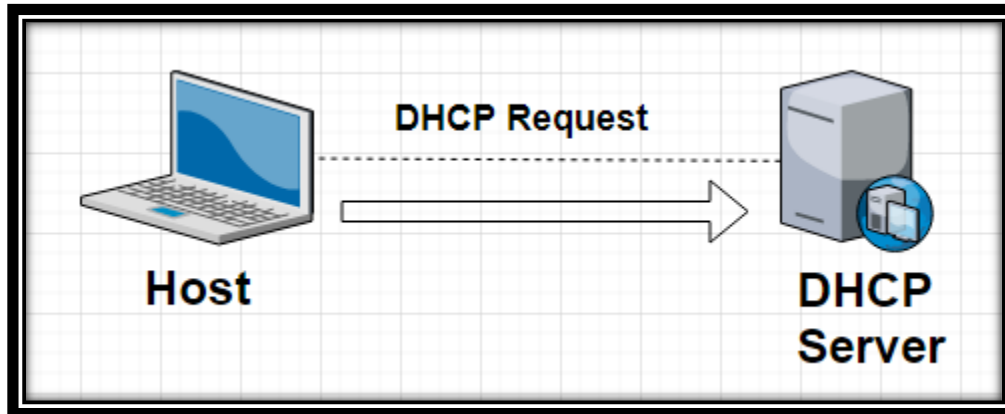


DHCP SERVER reply with DHCP offer message which contain IP address for that laptop(We need to define and configure in DHCP server from where to start giving IP address).

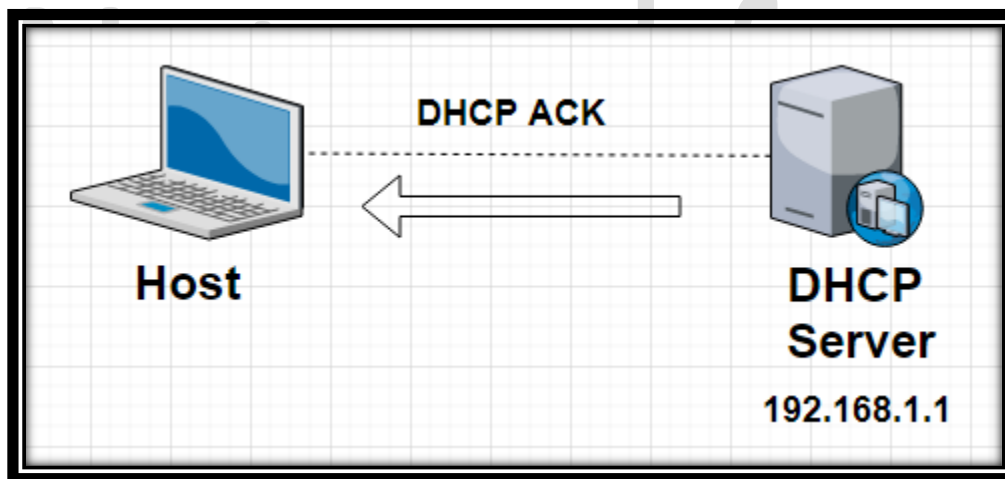
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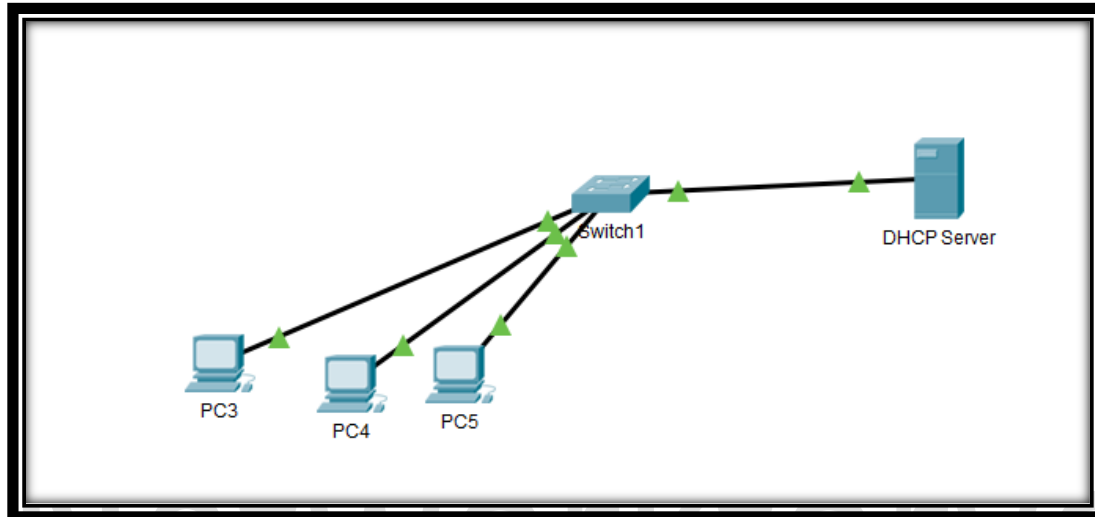
The Laptop will send DHCP request to the DHCP offer message asking it is ok to use this info



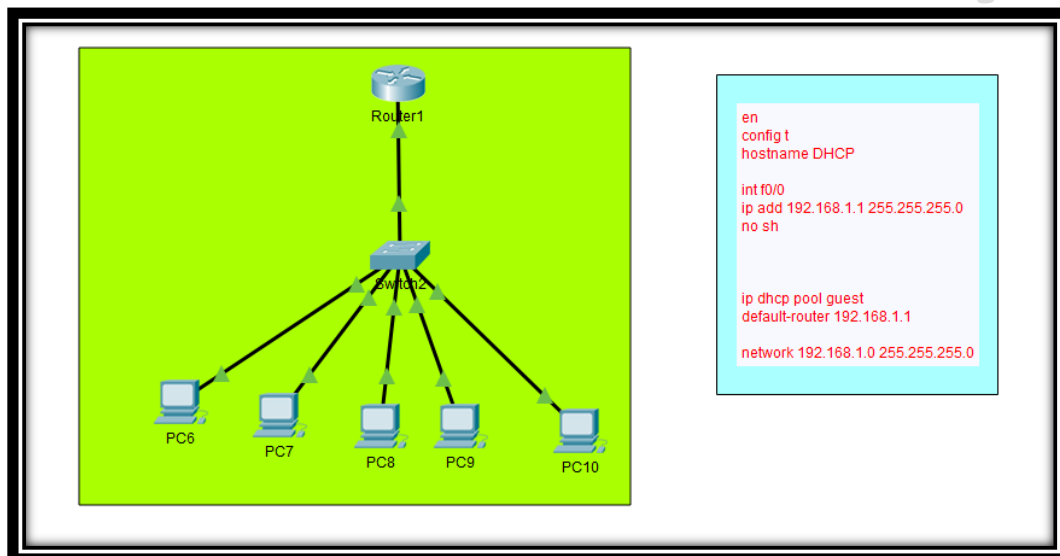
DHCP Server reply with DHCP ACK to laptop saying it is ok to use this information.



Let see DHCP Lab:



Now we will use DHCP server as router:



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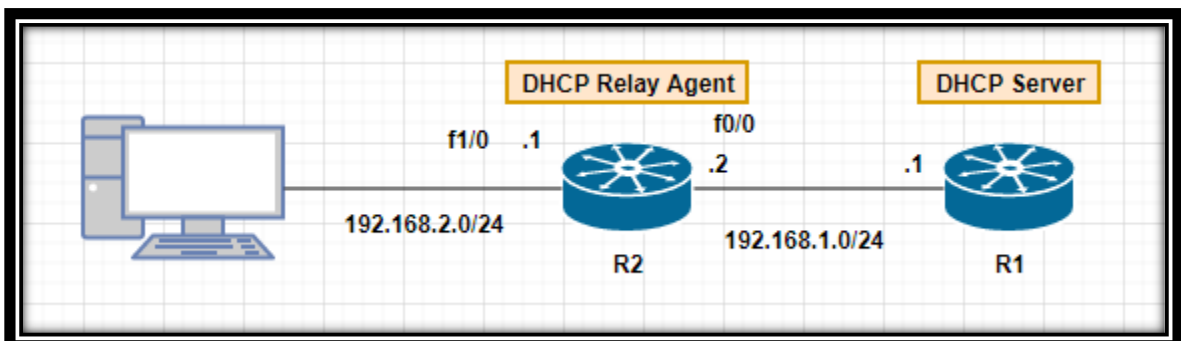
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Router Configuration for DHCP	DHCP Server Show Commands
<pre>en config t hostname DHCP  int f0 ip add 192.168.1.1 255.255.255.0 no sh  ip dhcp excluded-address 192.168.1.1  ip dhcp pool abc default-router 192.168.1.1 network 192.168.1.0 255.255.255.0 dns-server 8.8.8.8 domain-name abc.com lease 1 1 1</pre>	<pre>show ip dhcp binding show ip dhcp pool show ip dhcp database show ip dhcp conflict show ip dhcp server statistics</pre>

### DHCP Relay Agent:

- With the Help of DHCP Relay Agent feature the router will forward DHCP requests from the client toward the DHCP Server when the DHCP Server Reply it will forward back to client.
- DHCP relay agent is any host that forwards DHCP packets between clients and servers.
- DHCP relay allows clients to obtain DHCP info from a server on a different subnet.
- Relay agents are used to forward requests and replies between clients and servers.



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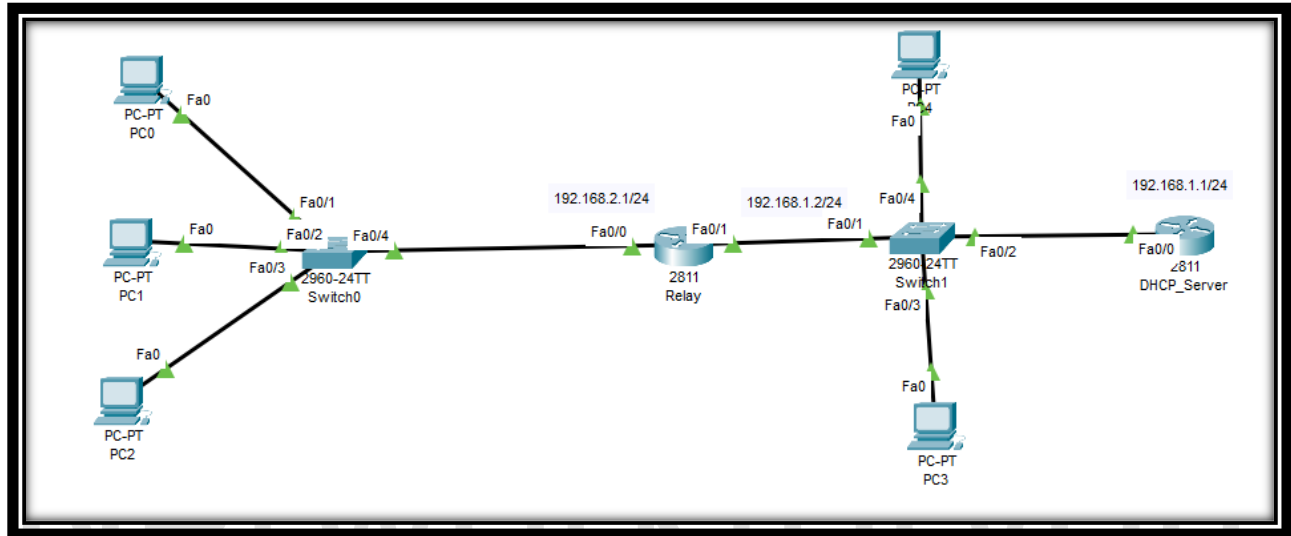
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## DHCP Relay Agent:

Int f1/0

Ip Helper-address 192.168.1.1



DHCP Server Configuration:	DHCP Relay Agent Configuration:
<pre>en config t hostname DHCP_Server  int f0/0 ip add 192.168.1.1 255.255.255.0 no sh  ip dhcp excluded-address 192.168.1.1 ip dhcp pool abc network 192.168.1.0 255.255.255.0 default-router 192.168.1.1 dns-server 8.8.8.8 domain-name abc.com  ip dhcp pool abc1 network 192.168.2.0 255.255.255.0 default-router 192.168.2.1</pre>	<pre>en config t hostname Relay int f0/1 ip add 192.168.1.2 255.255.255.0 no sh  int f0/0 ip add 192.168.2.1 255.255.255.0 no sh  int f0/0 ip helper-address 192.168.1.1  router ospf 1 int f0/0 ip ospf 1 area 0 int f0/1</pre>

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```
dns-server 8.8.8.8  
domain-name abc.com
```

```
router ospf 1  
int f0/0  
ip ospf 1 area 0
```

```
ip ospf 1 area 0
```

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