# DHCP Server Configuration

- **Equipment Used**: 6 PCs, 1 printer, 2 Cisco switches, 1 DHCP server,
- **Connections**:
    - PCs connected to switches via copper straight-through cables
    - 1 switch connected to the printer using a copper straight-through cable
    - Switches connected to the DHCP server using Gigabit Ethernet ports (g0/0 and g0/1)
- **Pre-Configuration Setup**:
    - I entered privileged mode, then global configuration using the same steps seen in this project. While still in the CLI, I then labeled the router as a DHCP server. To do this, I typed **hostname DHCP-Server** and pressed Enter. I then configured Gigabit ports g0/0 & g0/1 with IP addresses **192.168.1.1/24** and **192.168.2.1/24**, respectively.
- **DHCP Configuration:**
    - In order to ensure that the DHCP server doesn't assign our default gateway addresses to other devices on the network, we need to exclude them from the address pool. To do this, I typed **ip dhcp excluded-address 192.168.1.1** and **ip dhcp excluded-address 192.168.2.1**. I went ahead and reserved an address for our printer by typing **ip dhcp excluded-address 192.168.1.11**. Later on, I will demonstrate how I utilized this IP address.
    - I then labeled the first address pool by typing **ip dhcp pool 192.168.1.1** and pressing Enter(Note that the last argument is simply the pool name, so we could have chosen anything). Next, I set up the address pool by typing the IP address of the network with the subnet mask. This was accomplished by typing **network 192.168.1.0 255.255.255.0,** then pressing enter.
    - Selected the default gateway, which is the one of the IP addresses we excluded earlier. To do this, I typed **default-router 192.168.1.1**, and pressed Enter. I then assigned our DNS server the Google IP address of 8.8.8.8 by typing **dns-server 8.8.8.8**, and pressing Enter.
    - Typed **exit** and repeated the previous 2 steps for the 192.168.2.1 network.

- **PC & Printer Address Assignment**:
    - In my previous project, I assigned the PCs their IP addresses by using a static, manual assignment. For this project, the IP addresses will be assigned by the configured DHCP server. The only exception for this will be the printer, which I will assign manually using the reserved IP address at the beginning of the configuration.
    - For the printer, I assigned our reserved address from earlier by opening the **Config** tab, going to the port settings, and selecting **Static** configuration. I then typed in the IP address of **192.168.1.11,** with the standard **255.255.255.0 s**ubnet mask.
    - Tested proper DHCP configuration by opening up a PC, going to the desktop, and opening **IP Configuration**. From there, I selected **DHCP** and verified that the IPv4 address was in the proper address range, and the proper default gateway was selected.

- **Outcome**: Successfully set up a DHCP server, minimizing the time setting up end devices such as PCs. Prevented future IP address conflicts by excluding gateway addresses from the address pool. Ensured networked devices, such as the printer, will remain easily discover able by assigning it a static IP address.
- **Note**: This was a an intermediate setup, but still did not include any firewall rules.
    - **Side note:** I also learned a hard lesson, write your configurations to memory! I saved the Packet Tracer project and came back to it, only to be completely stumped why the DHCP setup on the PC wasn't working. Turns out all of my DHCP configuration wasn't saved to the physical device itself, because I didn't write it to memory. I will put a snapshot of me going back and doing just that below the configuration visualization.

**DHCP server configuration visualized:**

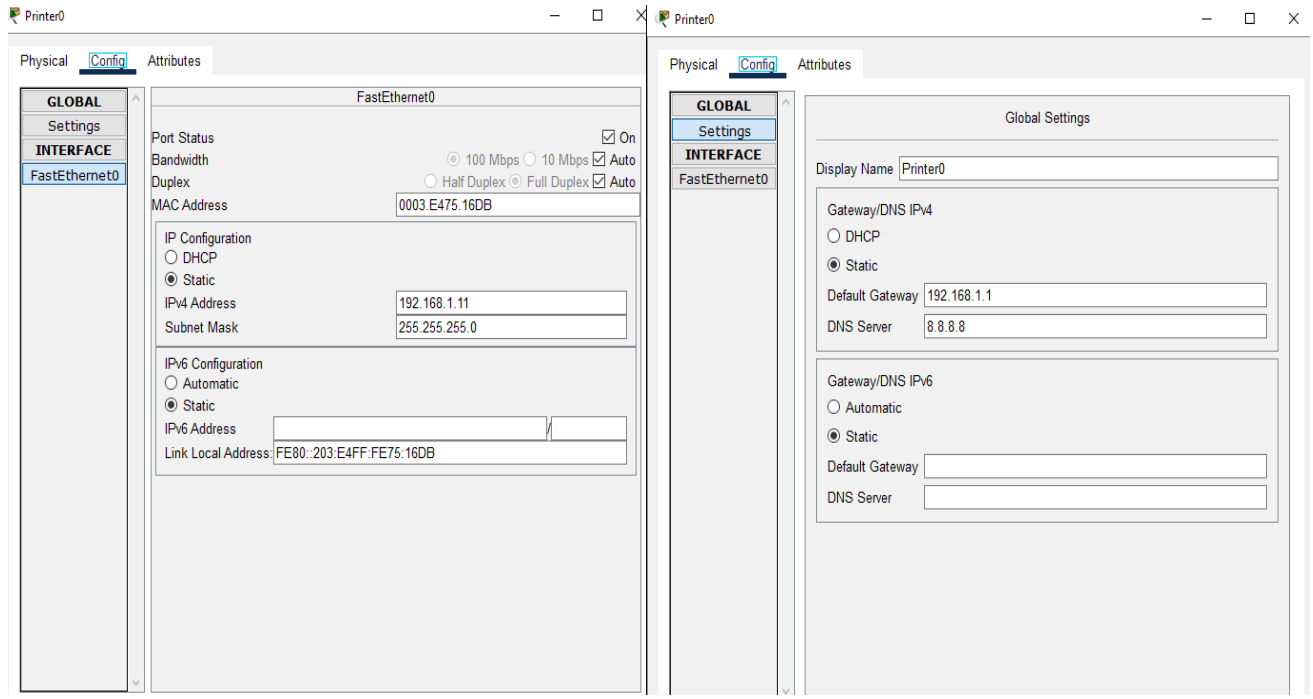
Physical Config CLI Attributes

IOS Command Line Interface

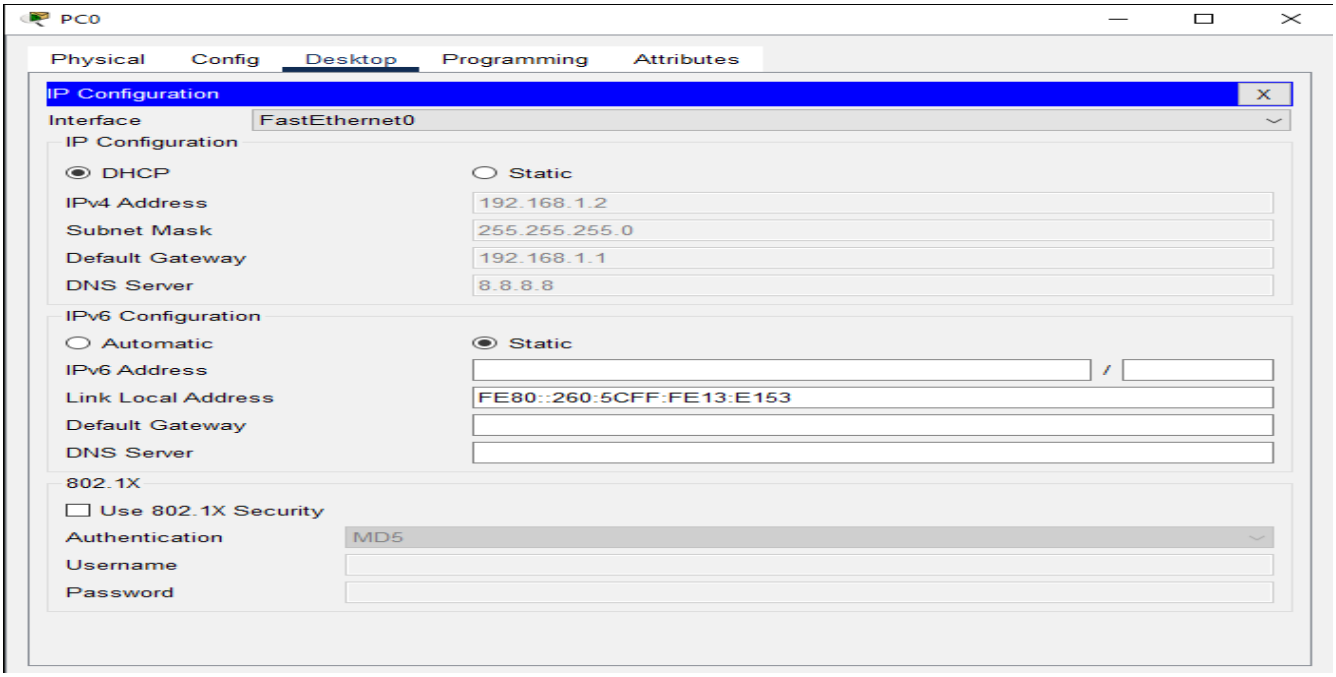
```
If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco CISCO1941/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
2 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!


%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up


Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname DHCP-Server
DHCP-Server(config)#ip dhcp excluded-address 192.168.1.1
DHCP-Server(config)#ip dhcp excluded-address 192.168.2.1
DHCP-Server(config)#ip dhcp excluded-address 192.168.1.11
DHCP-Server(config)#ip dhcp pool 192.168.1.1
DHCP-Server(dhcp-config)#network 192.168.1.0 255.255.255.0
DHCP-Server(dhcp-config)#default-router 192.168.1.1
DHCP-Server(dhcp-config)#dns-server 8.8.8.8
DHCP-Server(dhcp-config)#exit
DHCP-Server(config)#ip dhcp pool 192.168.2.1
DHCP-Server(dhcp-config)#network 192.168.2.0 255.255.255.0
DHCP-Server(dhcp-config)#default-router 192.168.2.1
DHCP-Server(dhcp-config)#dns-server 8.8.8.8
DHCP-Server(dhcp-config)#exit
DHCP-Server(config)#
write memory
Building configuration...
[OK]
Router#
```

Copy Paste

## Printer settings:




## Successful DHCP configuration on local PC:




## Successful pings across different broadcast domains:

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num |
|---|---|---|---|---|---|---|---|---|
| | Successful | PC4 | Router2 | ICMP | | 0.000 | N | 0 |
| | Successful | PC5 | PC2 | ICMP | | 0.000 | N | 1 |
| | Successful | PC3 | Printer0 | ICMP | | 0.000 | N | 2 |
| | Successful | PC0 | PC4 | ICMP | | 0.000 | N | 3 |