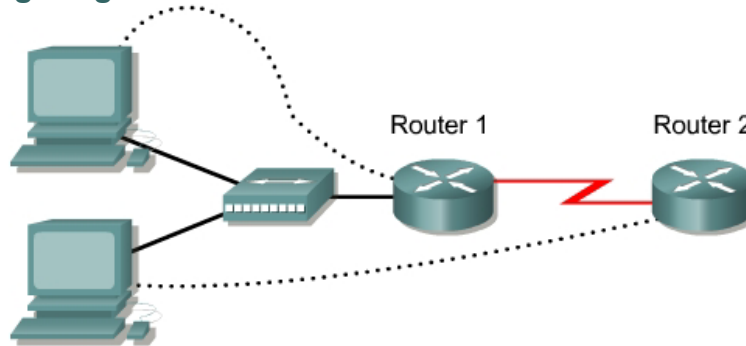


Lab 1.2.6 Configuring DHCP



Router Designation	Router Name	FastEthernet 0 Address/Subnet Mask	Interface Type	Serial 0 Address/Subnet Mask	Loopback 0 Address/Subnet Mask	Enable Secret Password	Enable/VTY/Console Passwords
Router 1	Campus	172.16.12.1/24	DCE	172.16.1.6/30	NA	class	cisco
Router 2	ISP	NA	DTE	172.16.1.5/30	172.16.13.1/32	class	cisco

Straight-through cable	—————
Serial cable	—————
Console (rollover)	
Crossover cable	- - - - -

Objective

- Configure a router for Dynamic Host Configuration Protocol (DHCP) to dynamically assign addresses to attached hosts.

Background/Preparation

Routing between the ISP and the campus router uses a static route between the ISP and the gateway, and a default route between the gateway and the ISP. The ISP connection to the Internet is identified by a loopback address on the ISP router.

Cable a network similar to the one in the diagram above. Any router that meets the interface requirements displayed on the above diagram may be used. This includes the following and any of their possible combinations:

- 800 series routers
- 1600 series routers
- 1700 series routers
- 2500 series routers
- 2600 series routers

Please refer to the chart at the end of the lab to correctly identify the interface identifiers to be used based on the equipment in the lab. The configuration output used in this lab is produced from 1721 series routers. Any other router used may produce slightly different output. Conduct the following steps on each router unless specifically instructed otherwise.

Start a HyperTerminal session.

Note: Refer to the erase and reload instructions at the end of this lab. Perform those steps on all routers in this lab assignment before continuing.

Step 1 Configure the routers

Configure all of the following according to the chart:

- The hostname
- The console
- The virtual terminal
- The enable passwords
- The interfaces

If problems occur during this configuration, refer to Lab 1.1.4a Configuring NAT.

Step 2 Save the configuration

At the privileged EXEC mode prompt, on both routers, type the command `copy running-config startup-config`.

Step 3 Create a static route

- Addresses 199.99.9.32/27 have been allocated for Internet access outside of the company. Use the `ip route` command to create the static route:

```
ISP(config)#ip route 172.16.12.0 255.255.255.0 172.16.1.6
```

- Is the static route in the routing table? _____

Step 4 Create a default route

- Use the `ip route` command to add a default route from the campus router to the ISP router. This will provide the mechanism to forward any unknown destination address traffic to the ISP:

```
campus(config)#ip route 0.0.0.0 0.0.0.0 172.16.1.5
```

- Is the static route in the routing table? _____

Step 5 Create the DHCP address pool

To configure the campus LAN pool, use the following commands:

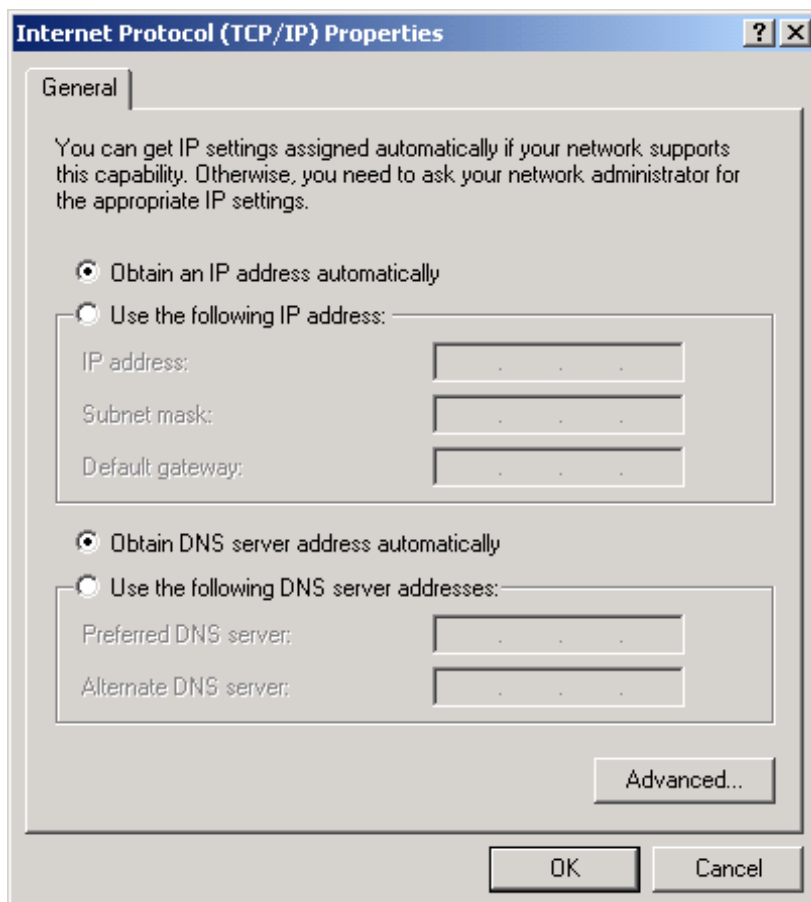
```
campus(config)#ip dhcp pool campus
campus(dhcp-config)#network 172.16.12.0 255.255.255.0
campus(dhcp-config)#default-router 172.16.12.1
campus(dhcp-config)#dns-server 172.16.1.2
campus(dhcp-config)#domain-name foo.com
campus(dhcp-config)#netbios-name-server 172.16.1.10
```

Step 6 Excluding addresses from pool

To exclude addresses from the pool, use the following commands:

```
campus (dhcp-config) #ip dhcp excluded-address 172.16.12.1 172.16.12.10
```

Step 7 Verifying DHCP Operation



- At each workstation on the directly connected subnet configure the TCP/IP properties so the workstation will obtain an IP address and Domain Name System (DNS) server address from the DHCP server. After changing and saving the configuration, reboot the workstation.
- To confirm the TCP/IP configuration information on each host use **Start > Run > winipcfg**. If running Windows 2000, check using **ipconfig** in a DOS window.
- What IP address was assigned to the workstation? _____
- What other information was automatically assigned?

- When was the lease obtained? _____
- When will the lease expire? _____

Step 8 View DHCP bindings

- a. From the campus router, the bindings for the hosts can be seen. To see the bindings, use the command `show ip dhcp binding` at the privileged EXEC mode prompt.
- b. What were the IP addresses assigned? _____
- c. What are the three other fields listed in the output?

Upon completion of the previous steps finish the lab by doing the following:

- Logoff by typing `exit`
- Turn the router off
- Remove and store the cables and adapter

Erasing and reloading the router

Enter into the privileged EXEC mode by typing **enable**.

If prompted for a password, enter **class** (if that does not work, ask the instructor).

```
Router>enable
```

At the privileged EXEC mode, enter the command **erase startup-config**.

```
Router#erase startup-config
```

The responding line prompt will be:

```
Erasing the nvram filesystem will remove all files! Continue? [confirm]
```

Press **Enter** to confirm.

The response should be:

```
Erase of nvram: complete
```

Now at the privileged EXEC mode, enter the command **reload**.

```
Router(config)#reload
```

The responding line prompt will be:

```
System configuration has been modified. Save? [yes/no]:
```

Type **n** and then press **Enter**.

The responding line prompt will be:

```
Proceed with reload? [confirm]
```

Press **Enter** to confirm.

In the first line of the response will be:

```
Reload requested by console.
```

After the router has reloaded the line prompt will be:

```
Would you like to enter the initial configuration dialog? [yes/no]:
```

Type **n** and then press **Enter**.

The responding line prompt will be:

```
Press RETURN to get started!
```

Press **Enter**.

Now the router is ready for the assigned lab to be performed.

Router Interface Summary				
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
800 (806)	Ethernet 0 (E0)	Ethernet 1 (E1)		
1600	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
1700	FastEthernet 0 (FA0)	FastEthernet 1 (FA1)	Serial 0 (S0)	Serial 1 (S1)
2500	Ethernet 0 (E0)	Ethernet 1 (E1)	Serial 0 (S0)	Serial 1 (S1)
2600	FastEthernet 0/0 (FA0/0)	FastEthernet 0/1 (FA0/1)	Serial 0/0 (S0/0)	Serial 0/1 (S0/1)
In order to find out exactly how the router is configured, look at the interfaces. This will identify what type and how many interfaces the router has. There is no way to effectively list all of the combinations of configurations for each router class. What is provided are the identifiers for the possible combinations of interfaces in the device. This interface chart does not include any other type of interface even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in an IOS command to represent the interface.				