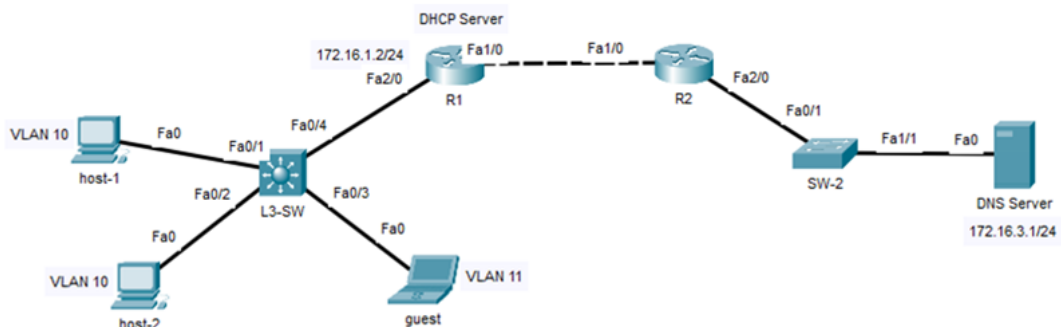


# IOS DHCP Server

## Lab Summary

Configure DHCP server on R1 for hosts in VLAN 10 and guest in VLAN 11. Enable DHCP relay on Layer 3 switch that will forward host requests to DHCP server.

**Figure 1** Lab Topology



## Lab Configuration

Start Packet Tracer File: **ios dhcp server.pkt**

Confirm host-1, host-2 and guest do not have any IP address settings (IP address, default gateway, and DNS server). Verify 169.254.0.0/16 (APIPA) addressing is initially assigned when DHCP is enabled on hosts and guest.

host-1: c:/> **ipconfig /all**

host-2: c:/> **ipconfig /all**

guest: c:/> **ipconfig /all**

Click on *R1* and select *CLI* folder.

Step 1: Enter global configuration mode

R1> **enable**

R1# **configure terminal**

Step 2: Enable DHCP services on R1.

R1(config)# **service dhcp**

Step 3: Configure DHCP pool for hosts on VLAN 10.

R1(config)# **ip dhcp pool vlan10**

R1(dhcp-config)# **network 172.16.10.0 255.255.255.0**

R1(dhcp-config)# **default-router 172.16.10.254**

```
R1(dhcp-config)# dns-server 172.16.3.1  
R1(dhcp-config)# ip dhcp excluded-address 172.16.10.254  
R1(dhcp-config)# exit
```

Step 4: Configure DHCP pool for guests on VLAN 11.

```
R1(config)# ip dhcp pool guests  
R1(dhcp-config)# network 172.16.11.0 255.255.255.0  
R1(dhcp-config)# default-router 172.16.11.254  
R1(dhcp-config)# dns-server 172.16.3.1  
R1(dhcp-config)# ip dhcp excluded-address 172.16.11.254  
R1(dhcp-config)# end  
R1# copy running-config startup-config
```

Click on *L3-SW* and select *CLI* folder.

Step 5: Enter global configuration mode

```
L3-SW > enable  
L3-SW # configure terminal
```

Step 6: Configure DHCP relay address on L3-SW for hosts on VLAN 10.

```
L3-SW(config)# interface Vlan 10  
L3-SW(config-if)# ip helper-address 172.16.1.2
```

Step 7: Configure DHCP relay address on L3-SW for guests on VLAN 11.

```
L3-SW(config-if)# interface Vlan 11  
L3-SW(config-if)# ip helper-address 172.16.1.2  
L3-SW(config-if)# end  
L3-SW# copy running-config startup-config
```

Step 8: Verify Lab

Click Fast Forward Time several times for faster network convergence. Confirm Layer 3 connectivity and routing is working correctly with ping from host-1, host-2, and guest to DNS server.

```
host-1: c:/> ping 172.16.3.1  
host-1: c:/> ping 172.16.3.1  
host-1: c:/> ping 172.16.3.1
```

L3-SW forwards all DHCP requests from hosts to R1 (172.16.1.2). Confirm host-1, host-2, and guests now have correct TCP/IP settings.

host-1: c:/> **ipconfig /all**

host-2: c:/> **ipconfig /all**

guest: c:/> **ipconfig /all**

### Lab Notes

All hosts within the same subnet or VLAN are assigned to a default gateway. That is required for communication outside of the local subnet. The DHCP relay command **ip helper-address** points to the DHCP server. It is configured on a router physical interface assigned as default gateway for connected hosts. DHCP relay command is also configured on VLAN interfaces assigned as default gateway for hosts on a Layer 3 switch. In this lab, R1 is the DHCP server and VLAN interfaces on Layer 3 switch are default gateways.