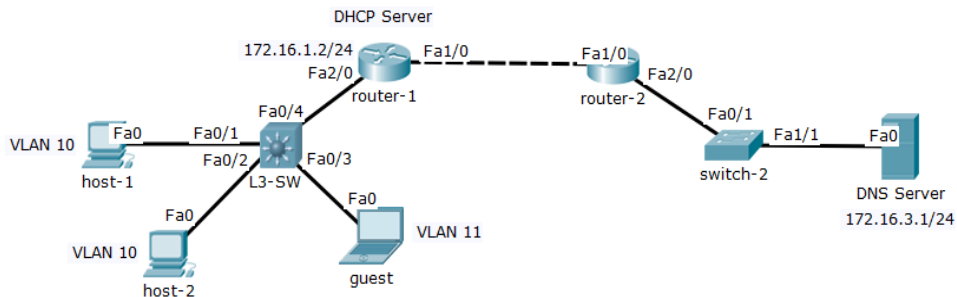


IOS DHCP Server

Lab Summary

Configure DHCP server on router-1 and enable DHCP relay on Layer 3 switch to router-1.

Figure 1 Lab Topology



Lab Configuration

Start Packet Tracer File: **IOS DHCP Server**

Confirm host-1, host-2 and guest do not have any TCP/IP settings (IP address, default gateway and DNS server). There is 169.254.0.0/16 (APIPA) addressing initially assigned to each when DHCP is selected. It is a local address only and not routable outside the local subnet.

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

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

```
guest: c:/> ipconfig /all
```

Click on *router-1* and select *CLI* folder. Hit <enter> for user prompt.

Step 1: Enter global configuration mode

```
router-1> enable
```

```
Password: cisco
```

```
router-1# configure terminal
```

Step 2: Enable DHCP services on router-1.

```
router-1(config)# service dhcp
```

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

```
router-1(config)# ip dhcp pool vlan10  
router-1(dhcp-config)# network 172.16.10.0 255.255.255.0  
router-1(dhcp-config)# default-router 172.16.10.254  
router-1(dhcp-config)# dns-server 172.16.3.1  
router-1(dhcp-config)# ip dhcp excluded-address 172.16.10.254
```

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

```
router-1(config)# ip dhcp pool guests  
router-1(dhcp-config)# network 172.16.11.0 255.255.255.0  
router-1(dhcp-config)# default-router 172.16.11.254  
router-1(dhcp-config)# dns-server 172.16.3.1  
router-1(dhcp-config)# ip dhcp excluded-address 172.16.11.254  
router-1(dhcp-config)# exit
```

Click on *L3-SW* and select *CLI* folder. Hit the <enter> for user prompt.

Step 5: Enter global configuration mode

```
L3-Switch > enable  
Password: cisconet  
L3-Switch # configure terminal
```

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

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

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

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

Verify Lab:

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

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

Layer 3 switch forwards all DHCP requests from hosts to router-1 (172.16.1.2) address. Confirm host-1, host-2 and guest endpoints now have correct TCP/IP settings (IP address, default gateway and DNS server).

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, router-1 is the DHCP server and VLAN interfaces on Layer 3 switch are default gateways.