## Instructions

Use the following instructions to build and configure a network in Cisco Packet Tracer. Be sure to reference the network diagram at the end of the document for specific network details. Note: all commands have been used in previous labs, with the exception of RIP commands. I will provide unused commands for this final. Important, pay attention to what interface you are configuring. The logical flow of packets should help you determine what each interface is doing.

## Things to Consider

1. Is routing enabled via the command line?
2. Is RIP version 2 enabled, and have you added all networks?
3. Are all directly connected interfaces within the same subnet?
4. Have you set the IP helper-address?
5. Are your DHCP pools appropriately configured?
6. Did you add FastEthernet ports to Router\_A?
7. Did you remember to set the correct default gateway for all devices?

## Step 1 – Initial network setup

1. Add two Cisco 2911 routers, three Cisco 2960 switches, three PCs, and one server.
2. Configure the switches and the routers using the Cisco CLI with the following configurations:
   1. Set device hostnames found on the network diagram
   2. Create a secret enable password on all devices with the password: **cisco123**
   3. On the switches only:
      1. Set the uplink port (port connected to the router) to **trunk** mode
      2. Set all ports connected to a device to **access** mode
      3. Administratively disable all unused ports
   4. On the routersonly:
      1. Set the IP address for the respective port, reference the diagram
      2. Set the IP helper-address on the port/network not connected to the DHCP server. In other words, tell the other port/network the IP address of the server
      3. Make sure all connected ports are administratively up

## Step 2 – Add a DHCP server

1. Statically assign the server’s IP address, subnet, default gateway, and DNS server address.
2. In small networks, DHCP and DNS are typically combined on the same server. Enable DNS on the DHCP server.
3. Add three DHCP pools, one for each network
   1. Pool A: 172.16.0.0/24
   2. Pool B: 10.0.0.0/24
   3. Pool C: 192.168.0.0/24
   4. Set the starting IP address for all three pools to *x.x.x.*100.
   5. Make sure you are aware of what IP addresses are already in use, so they are not included in your DHCP pool
4. After configuring DHCP pools, zero out the default pool, so it does not conflict with your pools.

## Step 3 – Configure Routers

1. Configure IP address and the IP helper-address on all router ports by referencing the network diagram.
2. Configure virtual interface, Vlan1, for **172.32.0.1 255.255.255.0**
   1. Note: this is the network our DHCP server will live on.
3. Enable IP routing for the global configuration mode
4. Set the routing protocol to RIP version 2 using the command, **router rip**
   1. Then, set the version with the command (config-router)#**version 2**
5. Add the networks to RIP so that networks will advertise to other routers with the command:
   1. (config-router)#**network *x.x.x.x***
      1. Hint: replace *x.x.x.x* with the correct network, such as **192.168.0.0**

## Step 4 – Final Checks

1. Make sure all devices are correctly labeled per the diagram.
2. Ensure all PCs are configured to use DHCP and are pulling an IP address for their respective network (172.16.0.0, 10.0.0.0, 192.168.0.0).
3. Check network connectivity by pinging between PCs.

## Step 4 – Write, Save and Upload

1. On all of your Cisco devices, use the **write** command to save your configurations before you save and close Packet Tracer at the privileged EXEC mode.
2. No lab summary is needed for this practical, just a fully functioning network.
3. Save your Packet Tracer file as **FirstnameLastname\_Final.pka**, and upload to Canvas for grading.



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| --- | --- | --- |
| **Device Name** | **Port** | **IP Address** |
| PH-RTR-01 | Fa0/0/0 | --- |
|  | G0/0 | 10.10.10.1/30 |
|  | G0/1 | 172.16.0.1/24 |
|  | G0/2 | 10.0.0.1/24 |
|  | Vlan1 | 172.32.0.1/24 |
| PH-RTR-02 | G0/0 | 10.10.10.2/30 |
|  | G0/1 | 192.168.0.1/24 |
| PH-DC-01 | Fa0 | 172.32.0.10/24 |