Computing

Lesson 4: Configuring Networks

KS4 Networks

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Task 1 - Types of networks

An organisation has the following departments:
- Finance.
- Human resources.
- Marketing.
- Management.
- Manufacturing.

Answer the questions on the following slides.

Task 1 - Types of networks

Would a **peer-to-peer** network be suitable for the organisation?

Justify your answer to the above question.

Task 1 - Types of networks

Would a **client-server** network be suitable for the organisation?

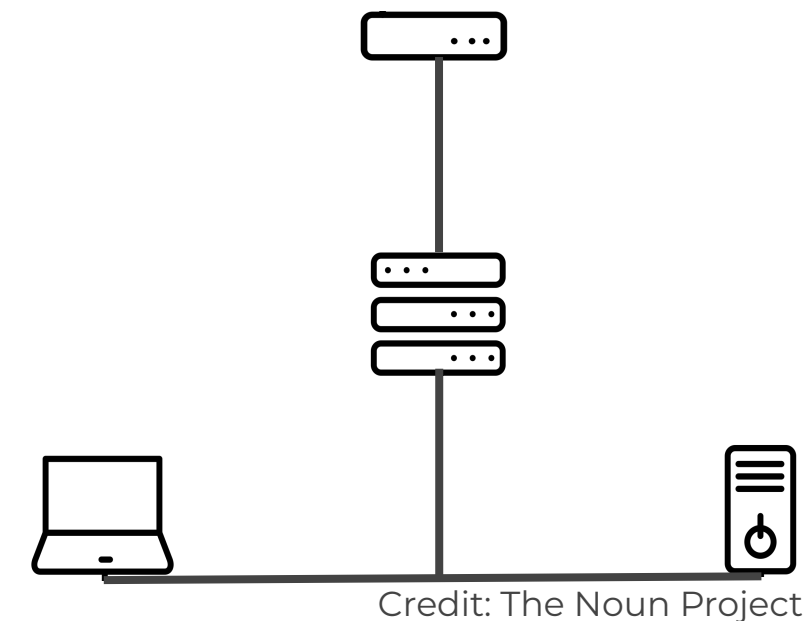Justify your answer to the above question.

Task 2 - Create a network

Follow the instructions on this worksheet to:

- Build a network.
- Configure the router using the command line interface.
- Assign static IP addresses to the end devices.
- Test communication between devices.

Feel free to use the video to help you with these steps.

Credit: The Noun Project

Task 2 - Create a network - Part 1 - setting up the hardware

- Open Packet Tracer.

- Add a 2621XM Router.

- Add a 2960 Switch.

- Add 2 PCs.

- Connect them together using a straight through connection (black cable) (fast ethernet).
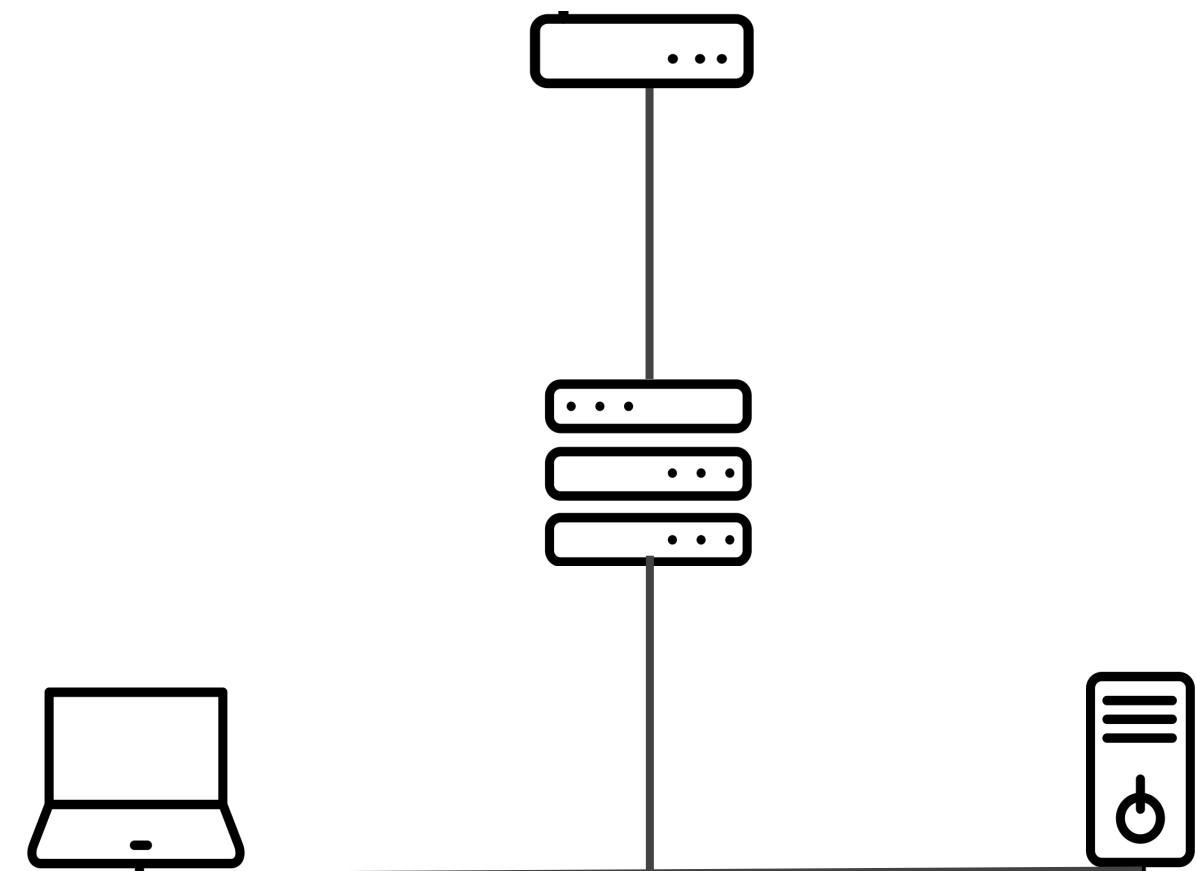
Credit: The Noun Project

Task 2 - Create a network - Part 2 - Configure the router

The following commands were explained in the video, click on the router and open the command line interface (CLI), **after each command press enter**.

1. Type **no** at the first prompt and press enter, then press enter again.
2. **enable**.

3. **conf t**
4. **host R1**
5. **int fa0/0**
6. **ip address 192.168.10.1 255.255.255.0**
7. **no shut**
8. **exit**
9. **exit**
10. **copy run start**

Task 2 - Create a network - Part 3 - Configure the PCs

You will now configure each PC with its own static IP address.

1. Click on one of the PCs.
2. Select **Desktop**
3. Select **ip configuration**.
4. In the IP Address field, enter
   `192.168.10.10`
5. In the Subnet Mask field, enter
   `255.255.255.0`

6. In the Default Gateway field, enter `192.168.10.1`
7. Close the window.
8. Repeat steps 1-7 for the other PC but in step 4, enter the IP address `192.168.10.20`

Task 2 - Create a network - Part 4 - Test communication

You will now test the network by using one PC to ping another.

1. Click on one of the PCs
2. Select **Desktop**
3. Select **Command Prompt**
4. Enter the command **ping** followed by the IP address of the computer you want to communicate with.

Upon pressing enter, if all has been configured correctly you should see a reply from the other computer.

You can re-enter this command and before pressing enter choose **Simulation** mode to see the communication taking place.
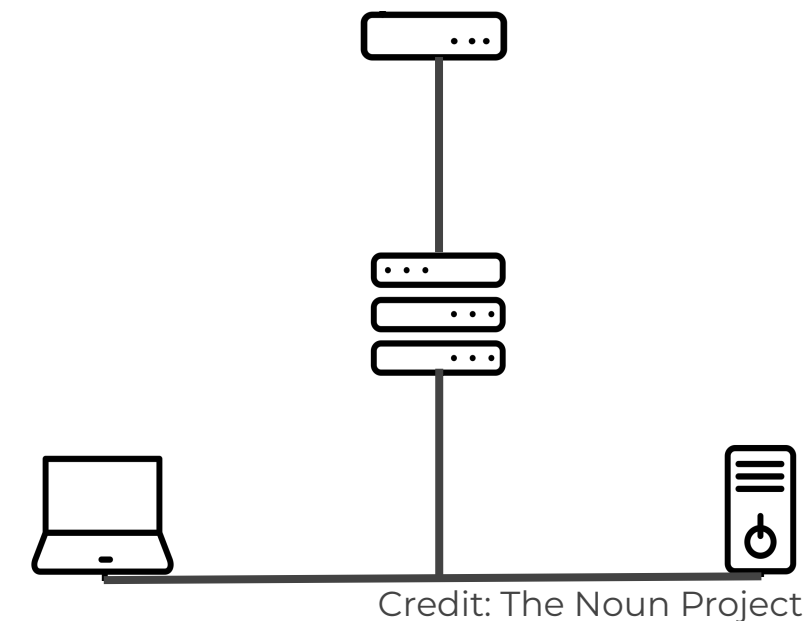
Task 3 - Create a DHCP network

Follow the instructions on this worksheet to:

- Build a DHCP network
- Configure the router using the command line interface
- Configure PCs to obtain an IP address from the router
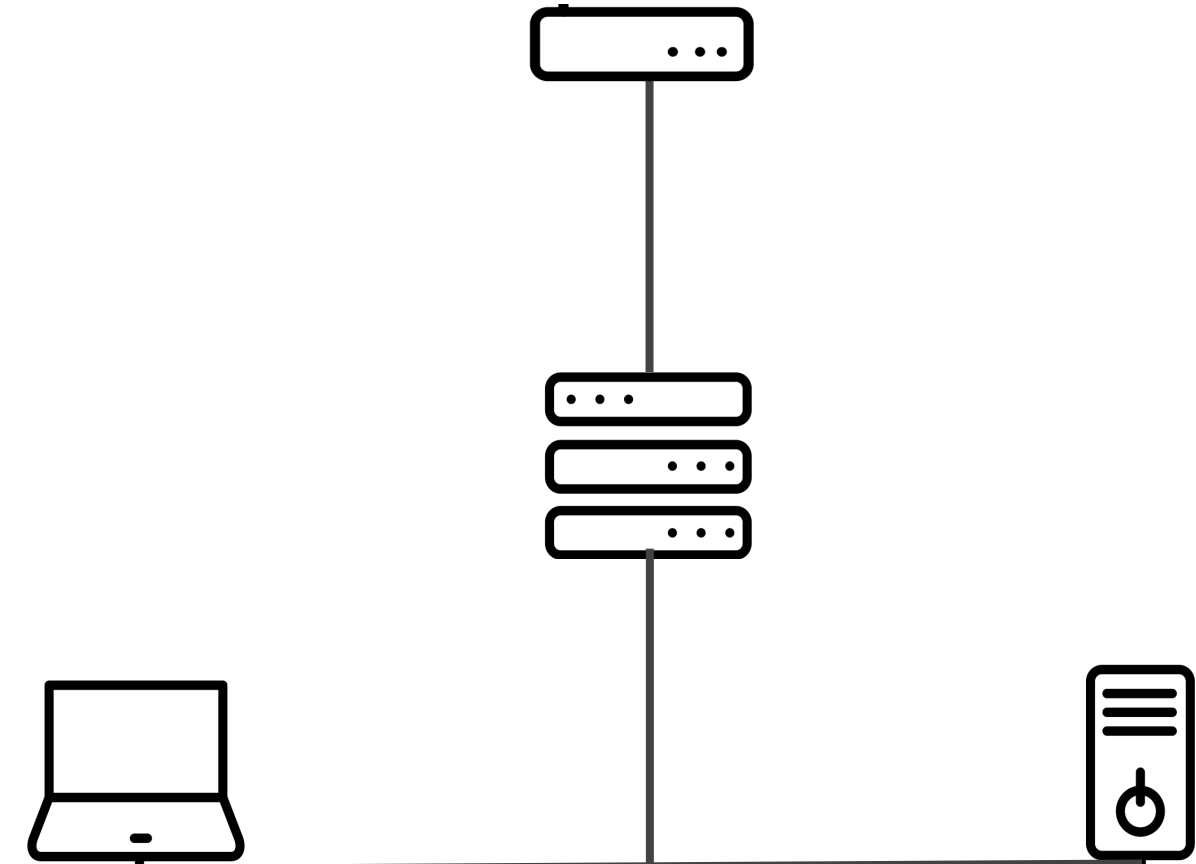- Test communication between devices

Feel free to use the video to help you with these steps.

Credit: The Noun Project

Task 3 - Create a DHCP network - Part 1 - setting up the hardware

As before in Packet Tracer:

- Add a 2621XM Router
- Add a 2960 Switch
- Add 2 PCs
- Connect them together using a straight through connection (black cable) (fast ethernet).

Credit: The Noun Project

Task 3 - Create a DHCP network - Part 2 - Configure the router

The following commands were explained in the video, click on the router and open the command line interface (CLI), **after each command press enter.**

1. Type **no** at the first prompt and press enter, then press enter again.

2. **enable**

3. **conf t**
4. **host R1**
5. **int fa0/0**
6. **ip address 192.168.10.1 255.255.255.0**
7. **no shut**
8. **exit**
9. **ip dhcp pool IP10**

Task 3 - Create a DHCP network - Part 2 - Configure the router

10. `net 192.168.10.0 255.255.255.0`

11. `default 192.168.10.1 255.255.255.0`

12. `exit`

13. `ip dhcp exc 192.168.10.1 192.168.10.10`

14. `exit`

15. `copy run start`

You can now close the router command line interface.

Task 3 - Create a network - Part 3 - Configure the PCs

You will now configure each PC to obtain an IP address.

Repeat these steps for the next PC.

1. Click on one of the PCs.
2. Select **Desktop**.
3. Select **ip configuration**.
4. Select DHCP, you should now see your PC obtain an IP address from the router.

Task 3 - Create a network - Part 4 - Test communication

You will now test the network by using one PC to ping another.

1. Click on one of the PCs.
2. Select **Desktop**.
3. Select **Command Prompt**.
4. Enter the command **ping**. followed by the IP address of the computer you want to communicate with.

Upon pressing enter, if all has been configured correctly you should see a reply from the other computer.

You can re-enter this command and before pressing enter choose **Simulation** mode to see the communication taking place.
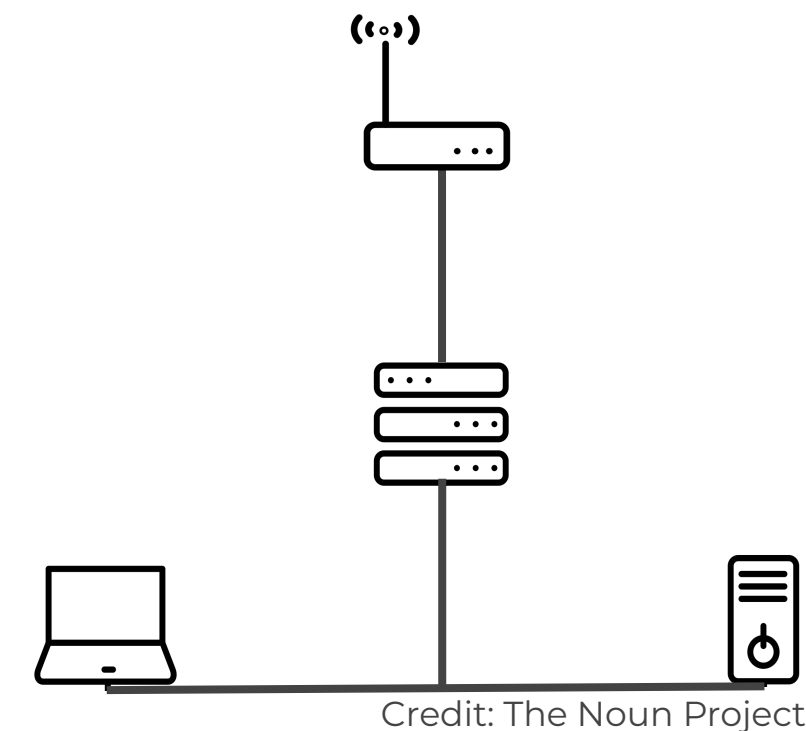
Task 4 - Create a DHCP network using a wireless router

Follow the instructions on this worksheet to:

- Build a DHCP network using a wireless router.

- Configure PCs to obtain an IP address from the router.

- Test communication between devices and access router via one of the PCs.

Feel free to use the video to help you with these steps.
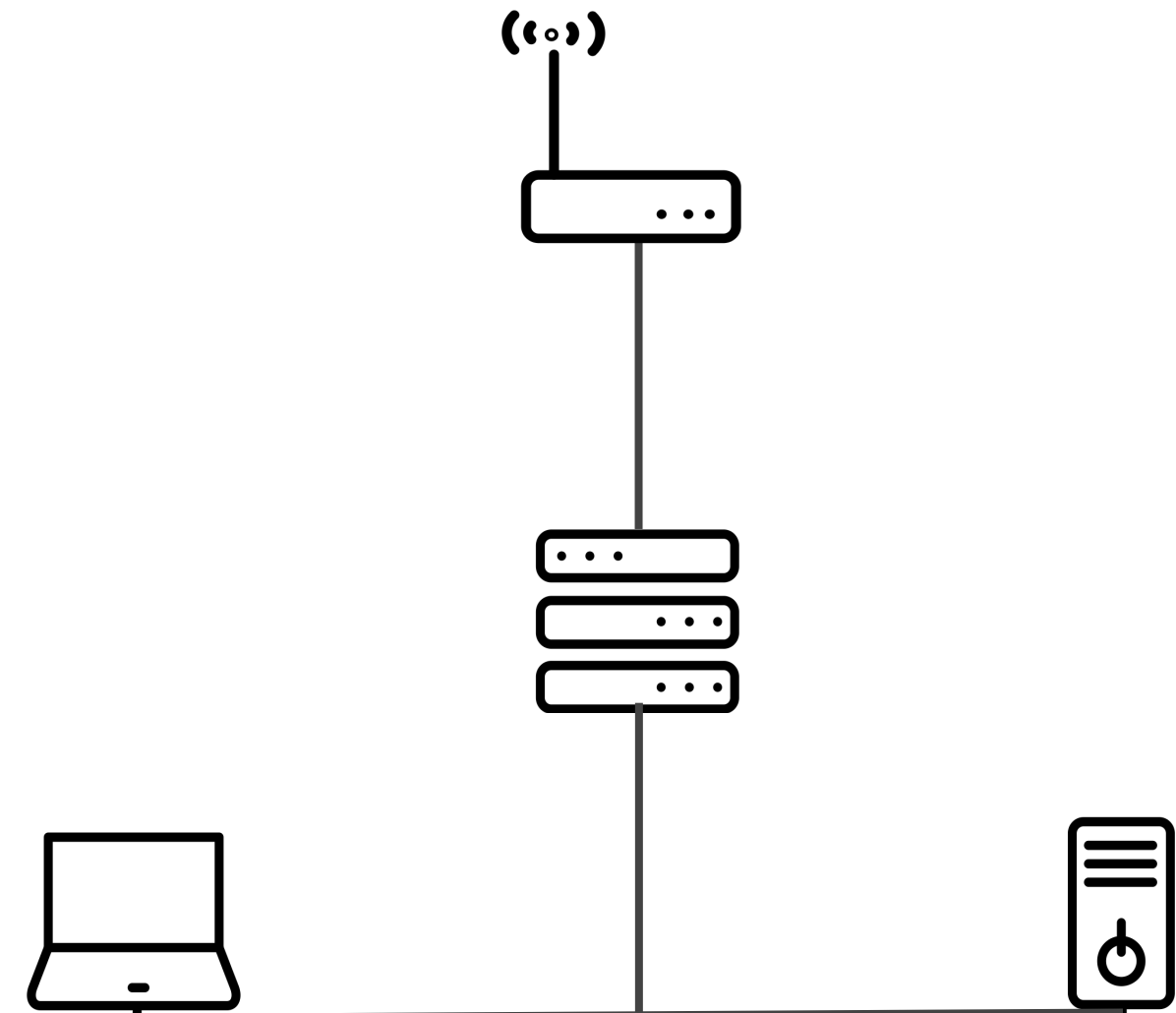
Credit: The Noun Project

Task 4 - Create a DHCP network - Part 1 - setting up the hardware

In Packet Tracer:

- Add a WRT300N Wireless Router.
- Add a 2960 Switch.
- Add 3 PCs.
- Connect them together using a straight through connection (fast ethernet) (black cable).

Credit: The Noun Project

Task 4 - Create a DHCP network - Part 2 - Configure the wireless router

1. Select the router and choose GUI.
2. Check that **Automatic Configuration DHCP** is selected under Internet Setup.
3. Change the IP address of the router to **192.168.10.1**.
4. Choose to start IP Addressing at **192.168.10.20B**.
5. Scroll down and click **Save Settings**.

6. Close the router settings.

Task 4 - Create a network - Part 3 - Configure the PCs

You will now, again, set each PC to obtain an IP address automatically:

Repeat these steps for the next PC.

1. Click on one of the PCs.
2. Select **Desktop**.
3. Select **ip configuration**.
4. Select DHCP, you should now see your PC obtain an IP address from the router.

Task 4 - Create a network - Part 4 - Add wireless devices

You will now add a wireless tablet and smartphone from the devices at the bottom of the screen.

When you add the devices you will see a lined connection between it, and the router.

You can open the device to check it has an IP address.

Task 4 - Create a network - Part 5 - Test communication

You will now test the network by using one device to ping another.

1. Click on one of the devices.
2. Select **Desktop**.
3. Select **Command Prompt**.
4. Enter the command **ping** followed by the IP address of the computer you want to communicate with.

Upon pressing enter, if all has been configured correctly you should see a reply from the other computer.

You can re-enter this command and before pressing enter choose **Simulation** mode to see the communication taking place.

Task 4 - Create a network - Part 6 - Access the wireless router

You will now test that you can access the wireless router from one of the computers.

1. Click on one of the PCs.
2. Select **Web Browser.**
3. Enter the IP address of the router in the address bar.

4. When prompted for a username and password enter **admin** and **admin.**

5. You should now be able to see the router's configuration page.

Well done! You have successfully configured a wireless network!