

# **Establishing Local Communication and Configuring a Private Network**

ITAS 167 – Lab 7

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# ITAS 167 – Lab 7 – Part B - Configuring a Private Network and Testing Internet Access

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## Contents

<b>Lab 7 – Part B – Objective .....</b>	<b>1</b>
<b>Lab 7 – Part B – Steps.....</b>	<b>1</b>
1. <b>Using a Router to Create a Private Network .....</b>	<b>2</b>
2. <b>Network Configuration:.....</b>	<b>2</b>
3. <b>Security Configurations: .....</b>	<b>2</b>
4. <b>Host Machines Configuration: .....</b>	<b>2</b>
5. <b>Demonstration in Class:.....</b>	<b>2</b>
6. <b>Port Forwarding Configuration: .....</b>	<b>2</b>
7. <b>Test the Configuration: .....</b>	<b>2</b>
8. <b>Demonstration in Class:.....</b>	<b>2</b>
<b>Network Diagram of Set-up .....</b>	<b>3</b>
<b>Lab 7 – Part B - Summary:.....</b>	<b>3</b>
<b>References/Citation Section: .....</b>	<b>4</b>

## Lab 7 – Part B – Objective

The objective of this project is to demonstrate the manual configuration of a private network using a router, ensuring optimal security measures and smooth connectivity within the network and to the internet. The project aims to showcase the setup of a private network by configuring DNS, DHCP, NAT services, security protocols, and port forwarding, highlighting the importance of manual configuration and security settings.

## Lab 7 – Part B – Steps

In our lab assignment, we were tasked with the job of configuring a private network and ensuring that it could successfully access the internet. Below are the steps we took in detail:

**1. Using a Router to Create a Private Network**

To start our project, we picked a router and found its model number (DIR-655) to locate the user manual. Since the router had a password, we had to reset it to its default settings. After the reset, we accessed the router's settings and manually configured it as recommended, skipping the setup wizard.

**2. Network Configuration:**

We selected a non-routable class c subnet for our private network. We then set up DNS, DHCP, and NAT services. Finally, We verified internet connectivity for devices on the private network.

**3. Security Configurations:**

We implemented MAC address filtering for enhanced security. We utilized the WPA 2 wireless security protocol. We then deactivated remote and wireless management options.

**4. Host Machines Configuration:**

We set up one of the machines with a static IP on the private subnet, essentially turning it into a server. Then we configured two machines as clients with DHCP for IP assignment. We set up one final client machine for wireless connectivity, also using DHCP for IP assignment. We established a machine "outside" of our private network to test our configurations.

**5. Demonstration in Class:**

We demonstrated how devices within the private network can access the internet and showcased our private network setup.

**6. Port Forwarding Configuration:**

We configured our router to redirect connections from port 4460 to our server's port 4460.

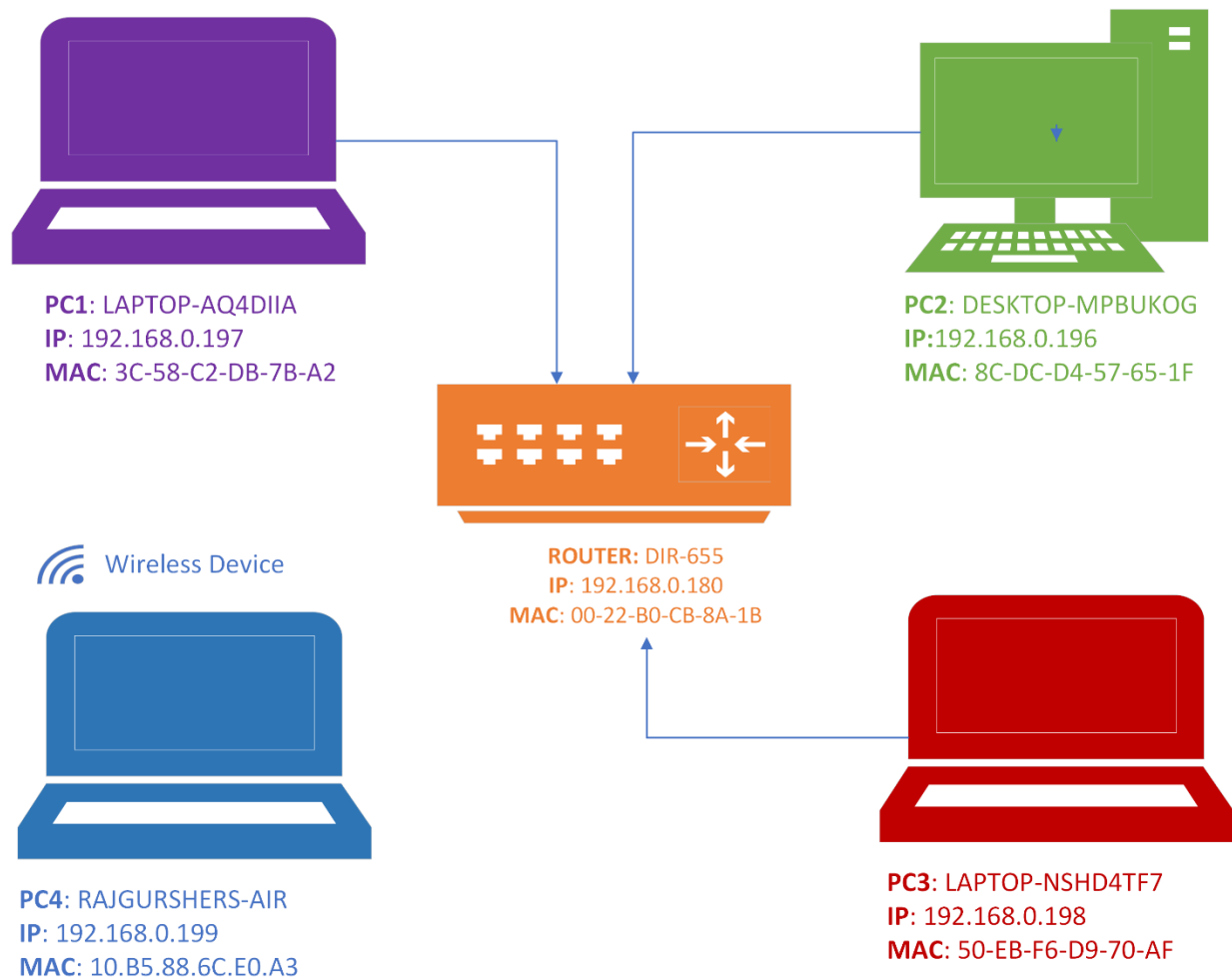
**7. Test the Configuration:**

We utilized ncat to test our setup and ensured successful communication from an external machine to our server on port 4460.

**8. Demonstration in Class:**

We exhibited successful port forwarding and emphasized our ability to connect to the server from a machine outside our private network.

## Network Diagram of Set-up



Network Diagram: Devices, IPs, and Internet Connectivity

## Lab 7 – Part B - Summary:

This project focuses on creating a private network using a home router, treating the existing network as the internet service provider (ISP). The network will be configured manually, avoiding the use of automated setup wizards. A private, non-routable Class C subnet will be chosen for the network, and essential services like DNS, DHCP, and NAT will be configured. Security measures will include MAC address filtering and employing the best available wireless security protocol (e.g., WPA2). Host machines will be configured, including setting up a server with a static IP, a client using DHCP, and a wireless client. The project will demonstrate successful internet access from the private network and showcase port forwarding, allowing connections to the server from

external machines. The aim is to emphasize the importance of manual configuration and security measures in establishing a secure private network.

## **References/Citation Section:**

NCAT download URL:

<https://nmap.org/>

Investigating reset protocol URLs:

[https://ftp.dlink.de/dir/dir-655/documentation/DIR-655\\_man\\_revC\\_Manual\\_en.pdf](https://ftp.dlink.de/dir/dir-655/documentation/DIR-655_man_revC_Manual_en.pdf)

<https://eu.dlink.com/uk/en/support/faq/routers/how-do-i-change-my-dlink-routers-password>

Router settings URL:

<http://192.168.0.1/Basic/Network.shtml>