**Layer 3 and Layer 4 Security**

**CYBR3010**

**Cybersecurity Foundations**

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# Introduction

This document is about Layer 3 and Layer 4 of the OSI Layer, which is the Network Layer and Transport Layer. In here, normal communication in Layer 3 will be discussed, as well as the vulnerabilities and how to mitigate. It is in Layer 3 where logical addressing happens with the use of an IP addresses.

# **IP Address Configuration**

An IP (Internet Protocol) Address is a unique numerical label assigned to each device connected to a computer network which serves two main purposes: to identify a device on a network, and to locate the device that enables communication with other devices over a network like the Internet. There are two ways to configure an IP address: static and dynamic. Static IP addresses are manually assigned and remain the same unless changed by an administrator, while dynamic IP addresses are assigned automatically by a DHCP server. In this document, the focus is on static IP address.

## Configure static IP address of Kali Linux

…add steps and screenshots here

## Configure static IP address of Windows 10

…add steps and screenshots here

## Configure static IP address of Windows 11

…add steps and screenshots here

## Configure the Firewall

…add steps and screenshots here

## Configure the Switch

…add steps and screenshots here

# Network Diagram

One of the crucial components of an organization’s security strategy is often referred to as Identity and Access Management (IAM). IAM ensures that the right people, machines, and software components access the right digital resources at the right time and for the right reasons.

# VLAN Interfaces

## Subtopic 2.1

# DHCP Configuration

## Subtopic 2.1

# NAT Configuration

## Subtopic 2.1

# Layer 3 Attack

## Subtopic 2.1

# Test Results (before and after scenarios)

## Subtopic 2.1

# Prevention and Mitigation

## Subtopic 2.1

# Questions and Answers

## Subtopic 3.1

# References

*What is an IP Address?* (2025, October 7). Retrieved from GeeksforGeeks: https://www.geeksforgeeks.org/computer-science-fundamentals/what-is-an-ip-address/