**Graduation Project Report**

**Team Name:** Project 8  
**Project Title:** Securing a Small Business Network

**Team Members:**

* Mohamed Khaled
* Ahmed Refaat
* Hala Hatem
* Mostafa Fouad

**Team Leader:** Mohamed Khaled  
**GitHub Repository:** <https://github.com/ahmed369refaat>

**Project Overview**

A small business with 30 employees requires a secure network infrastructure that supports employee workstations, printers, a small server, and guest WiFi. The network must ensure secure access to sensitive data and provide protection against cyber threats such as malware and unauthorized access.

**Project Timeline and Implementation Plan**

**Week 1: Network Design**

* **✔️Network Topology:** Design a network topology incorporating routers, switches, access points, and a firewall. The network will be segmented into different zones for employees, servers, and guest access.
* **✔️IP Addressing:** Develop an IP addressing scheme using subnetting to separate internal networks from guest access.
* **Security Measures:** Define security policies, including firewall rules, Intrusion Prevention Systems (IPS), and network segmentation. A VPN plan for secure remote access will also be established.

**Week 2: Configuration and Implementation**

* **✔️Device Configuration:** Configure routers, switches, and wireless access points according to the designed topology. Implement VLANs for logical network segmentation and configure necessary routing protocols.
* **Firewall and Security Configurations:** Set up firewall rules, Access Control Lists (ACLs), and configure network-based Intrusion Detection and Prevention Systems (IDPS) to mitigate external threats.
* **✔️Secure Remote Access:** Deploy a Virtual Private Network (VPN) for remote access, ensuring encryption and appropriate access rights for users.

**Week 3: Security Implementation and Testing**

* **Security Hardening:** Apply security best practices, including changing default passwords, disabling unnecessary services, and ensuring that all devices have the latest security patches.
* **Vulnerability Assessment:** Conduct a comprehensive vulnerability scan to identify potential security gaps and apply necessary remediations.
* **Security Monitoring:** Implement logging and monitoring systems to detect and analyze unusual activities within the network.

**Week 4: Documentation and Presentation**

* **Network Documentation:** Create detailed documentation including network diagrams, IP addressing schemes, firewall configurations, and security policies.
* **Security Procedures:** Document security monitoring procedures and incident response protocols to handle potential breaches.
* **Final Presentation:** Prepare and deliver a presentation summarizing the network design, implemented security measures, and results from testing and assessments.

**Conclusion**

This project focuses on securing a small business network by designing a robust architecture, implementing security controls, and performing continuous monitoring and assessment. The final implementation ensures a well-protected network with secure remote access, segmentation, and effective cybersecurity measures.

**Prepared by:** Project 8 Team