The Design and Implementation of Secure Servers for Online Applications

Module: Server Administration and Security

Module Code: CSY2085

Submission Deadline: 19th May 2024

What to Submit: A technical report of up to 2000 Word words, excluding the appendices, submitted on NILE.

Objectives
- To set up, configure, and administer both the Windows and Linux server environments.
- To deploy secure, web applications interacting with backend databases.
- To safeguard Server and Application Security using comprehensive security and data protection strategies.
- To document the project's workflow, configuration details, and security measures, providing a critical analysis of the challenges encountered and solutions deployed.

Assessment Criteria
- Configuration Accuracy (50%): Accuracy and functionality of the server setups and application deployments.
- Security Implementation (25%): Effectiveness of the deployed and recommended security, backup and recovery measures.
- Quality of Documentation (15%): Clarity and thoroughness of the project documentation.
- Critical Analysis (10%): Insightfulness of the reflection on the project process and solutions.

Scenario

Imagine you are a Systems Administrator for a growing tech start-up, focused on developing online applications for various client. Your company has tasked you with setting up and managing two server environments—one based on Windows Server and another on Linux—to support the development and hosting of online applications. This task will serve as a prototype for a new client project that involves sensitive data transactions, requiring both robust functionality and stringent security measures.

Your role encompasses the end-to-end setup, configuration, and security of these Servers. Additionally, you must ensure the seamless operation of the online applications and databases, by implementing measures to mitigate against potential security threats, and to ensure data security.

Practical Implementation Tasks

The following tasks require hands-on engagement with server environments. You are expected to actively set up and configure systems as detailed:

1. Windows Server Environment Setup
   - Install and configure Windows Server, set up DNS and File Services.
   - Utilise Internet Information Services (IIS) to host a static website.
   - Implement a web application environment using the WAMP stack with a connection to a MySQL database.
   - Implement security measures for the Windows Server environment to ensure application and data security.

2. Linux Server Environment Setup
   - Configure an Ubuntu Server to host a web application.
   - Install and configure the LAMP stack for an online application.
   - Implement the MySQL database for secure data storage and database management.
   - Implement security measures for the Linux Server.

3. Server Security Configuration
   - Configure a firewall with user privilege management, and encryption for secure Server Access and data transmission.

Analytical and Reporting Tasks

These tasks involve the analysis of your practical work and the articulation of your processes and findings in written form:

4. Vulnerability Mitigation and Disaster Recovery
   - Describe in technical detail
     - how you would mitigate against online application vulnerabilities.
     - your recommendations for data backup and disaster recovery.

5. Documentation and Reporting
   - Produce a report in technical detail, the configuration processes, security measures, and the rationale behind your choices.
   - Include appendices with configuration details, screenshots, and any scripts or commands utilised.

Additional Information

- This assignment is to be completed individually; collaborative efforts will be considered academic misconduct.
- You should write the report in your own words.
- Originality is imperative; plagiarism or cheating will result in disciplinary actions.
- Further details on submission guidelines and marking criteria are available on NILE.

This assignment is an opportunity to demonstrate your ability to apply theoretical knowledge and practical skills, using real-world scenario.
Good luck!