Assignment Brief (RQF)

Higher National Certificate/Diploma in Computing

Student Name/ID Number:	
Unit Number and Title:	**Unit 2 – Networking**
Academic Year:	**2021/2022**
Unit Assessor:	**Samuel Williams**
Assignment Title:	**Assignment 2**
Issue Date:	**<27th July 2022>**
Submission Date:	**<6th September 2022>**
Internal Verifier Name:	**<Sherry Ann Mohammed>**
Date:	**21.07.2022**

Submission Format:
Guidance Notes: 1. **This assignment is to be attempted individually, in the task order given.** 2. **This assignment's submission(s) are to be uploaded via moodle/emailed to your assessor on or before the due date outlined.** 3. **Late submissions will not be accepted without an accompanied EC form.** 4. **All late submissions without a valid EC, and non-submissions, will be awarded a grade of N/A for all relevant learning outcomes.**
Unit Learning Outcomes:
LO3 Design efficient networked systems. **LO4** Implement and diagnose networked systems.
Assignment Brief and Guidance:

Assignment: Overview [Continued from Assignment 1]

You have recently been hired as a junior network technician at Storage Monster Ltd., a company that specializes in the sale of storage furniture such as wardrobes, cabinets etc. The company has been in existence for just five years but has grown significantly within that time frame. The organization operates out of a large, privately owned warehousing complex (the complex is owned by Storage Monster Ltd) with one of the three buildings on the compound being used as the showroom and retail area. Another building is used for accommodating wholesale purchases and office staff, and the largest building is used to house stock. The company's clientele ranges from regular retail customers to large business and governmental customers.

The organization has several functional areas including a wholesale department, retail sales, marketing, delivery and human resources. As the business is continuing to flourish, management has made the decision to invest in networking infrastructure in order to support the many areas within the organization. Most notably the need for internal communication improvements via email and the ability to share files related to wholesale purchases is urgently required.

Every employee within the organization will be retrained in the coming months and a transition to paperless business is what management is aiming to accomplish. A systems development team has already been scouted to develop a custom system to aid in the management of most day to day, as well as managerial activities. The proposed system is web based and will require a dedicated database server for good performance. Management has allocated $800,000 TTD for the establishment of the network (does not include client machines) and has stressed that the budget is not to be exceeded.

Storage Monster Limited has the following functional areas:

- Retail Sales Department – has 15 computers with integrated Point-of-Sale, 10 VOIP phones, 3 printers, 12 digital signage boards
- Wholesale Sales Department – has 5 computers with integrated Point-of-Sale, 5 VOIP phones, 2 printers
- Human Resources Department – has 4 computers, 4 VOIP phones and 1 printer
- Delivery Department - has 4computers, 4 VOIP phones and 1 printer
- Director's Office – has two 2 computers, 2 VOIP phones and 1 printer.

The director's office is in the same physical space as the accounting department.

The network administrator has indicated that the following servers should be considered:

1. Domain Server
2. DHCP Server
3. IP PBX Server

All connections are to be wired connections, though each department will have a wireless access point for employee personal devices. An additional WAP has also been slated for the retail sales area for free customer access.

Internet access will be allowed for certain employees.

The network administrator has assigned you the following tasks to aid in the design and implementation of the network:

TASK 1

A. Create a diagram illustrating the intended layout for the proposed network (ensure that you use a suitable diagramming tool that provides standard symbols). You are required to identify the following:
   - Switches
   - Routers
   - Firewalls (where necessary)
   - Default Gateway
   - Servers (those identified above)
   - WAPS
   - Client machines (can be one symbol with the number of devices)
   - Phones (can be one symbol with the number of devices)
   - Printers

B. Produce a list of the devices you have documented in part A above, along with justification for their selection. This can be done in a tabular format e.g:

Device	Location	Justification for Selection
Switch – Manufacturer - Model - ABC1234	Sales	Switch provides…

C. The use of a single class B address 172.16.0.0 /26 has been proposed. You have been asked to calculate the following, showing the working you have used:
   - The subnet mask for the network
   - The number of subnets on the network
   - The broadcast address for the network
   - The first three ip address ranges for the network

D. Consider the design you have produced in A-C above along with the requirements that have been outlined. Produce a discussion on whether or not your proposed design meets the requirements along with associated reasons.

E. Examine the list of servers the network administrator has given. Recommend two additional servers that should be added to the list of servers along with associated justification.

This will comprise Section 1 of your report.

TASK 2

A. Follow the attached worksheets (1 and 2) in order and accomplish the tasks outlined. Ensure that you document the required content in your report.

B. Having completed the required configuration, you must now test to ensure that the environment is functioning as required. You are to test the functioning of at least 4 of the following configurations. These tests are to be conducted from a client machine utilizing various user accounts. You must describe details of which user account you are testing and which user group that user belongs to.

1. Deploy Desktop Background via Group Policy
2. Installing and Sharing Two Printers
3. Deploying Printers Using Group Policy
4. Configuring Routing and Remote Access
5. Configuring Remote Connection Restrictions
6. Creating, Configuring Shares and Assigning Permissions
7. Implement File Screening, Quota and Reporting on Shares
8. Deploying Shares Using Group Policy

Using the copy of the Windows 10 Enterprise environment as a client you are to connect this virtual client and join it to the domain.

You are required to produce:

- A test plan documenting the areas you plan to test and associated details
- A test log documenting the results of your testing (including screenshots of your outcomes)
- A one-page discussion on the results of your testing.

C. Produce a maintenance schedule for your proposed network solution. The schedule should cover daily, weekly, fortnightly and monthly activities for the network. You are required to follow the format outlined below:

Frequency	Tasks	Description
How often should this be done?	What are the tasks that should be done?	What do these tasks accomplish? Why are they important?

D. Evaluate the work that you have done in order to accomplish this assignment. Produce a critical evaluation of the work that you have done outlining the following:

- Areas that you have done well. Provide justification why these areas were done well.
- Any challenges that you faced and how you overcame them
- Any improvements that can be made to the work done. For each improvement, state what it is and how it improves the network.

This will comprise Section 2 of your report.

Learning Outcome and Assessment Criteria		
Pass	**Merit**	**Distinction**
LO3 Design efficient networked systems		
P5 Design a networked system to meet a given specification.	**M3** Install and configure network services and application of your choice.	**LO3 & LO4** **D2** Design a maintenance schedule to support the networked system.
P6 Test and evaluate the design to meet the requirements and analyse user feedback with the aim of improving efficiency.		
LO4 Implement and diagnose networked systems		
P7 Implement a networked system based on a prepared design.	**M4** Recommend potential enhancements for the networked systems.	**D3** Use critical reflection to evaluate own work and justify valid conclusions.
P8 Document and analyse test results against expected results.		