Students must create teams with a maximum number of three students per team. **Plagiarism is a serious offence.**

1) WAN Optimization design for enterprise:

Project Scope

A WAN network has to be designed for an organization which has a main branch and remote branch. There are 100 users in the main branch and 50 users in the remote branch. The main branch has an application server which should be accessible by the users in the remote branch. The WAN link has to be optimized such that only the traffic to the application server should be allowed on it.

Network requirements

1.TCP/IP Design for the LAN networks at both the locations.
2.TCP/IP table with IP address details.
3.Network topology diagram with IP address.
4.WAN Network design for both the locations.
5.Allow only traffic to the application server over the WAN link. All other traffic should be denied for performance.
6.Hardware with quantity list.
7.Testing and verification of the design

2) Network Security Policy Implementation for Campus:

Project Scope

A network has to designed aligning to the network security policy requirements outlined below for a campus. The campus has faculty and students. There are 50 users in the faculty and 150 users in the student section respectively. There are two servers on the network, which is used for a social network application and file sharing. The social network application is accessible by web browsers with appropriate username and password combinations. The file server is accessible using FTP client.

Network & Policy Requirements

1. Provide only FTP access to users to the FTP server and all other service only to network admin.
2. Allow only web access to the Social network server and disallow all other service to users other than admin.
3. Mac-level authentication to be provided to users on the network.
4. Remote access to router should be secured with password for admin.

5. The users and the servers should be on separate networks.
6. Cisco based infrastructure to be used.
7. Identify the configurations wherever appropriate.
8. Identify the quantity of switches, routers etc.

3) This is an organisation where we have offices located in four metropolitan cities-:

Network consists of a Four locations,

1. Gweru
2. Bulawayo
3. Harare
4. Mutare

1.The Gweru location has 3 VLANS. They are VLAN 10(Sales), VLAN 20(Finance) and VLAN 30(HR).The Gweru router is configured with proper banner and enable secret as 'gweru@cisco' and VTY password as 'cisco'.

2.The Bulawayo location has 2 VLANs. They are VLAN 100(WareHouse) and VLAN 200(Factory). Bulawayo router is configured with proper banner and enable secret as 'bulawayo@cisco',VTY password as 'cisco'.

3. The Mutare location contains the Webserver(192.168.8.2/24) and the Mail server(192.168.8.3/24).Mutare router is configured with proper banner and enable secret as 'mutare@cisco' and VTY password as 'cisco'.

4. The Harare location has only the office LAN in 192.168.100.0/24 subnet and each computer is getting IP address from the DHCP Server 192.168.1002/24. Harare router is configured with a proper banner. The enable secret is 'harare@cisco and VTY password is 'cisco'.

5.Gweru, Bulawayo and Harare location is connected via Point-to-Point leased line.

6. Users of all regions except the Factory VLAN will have access to the WebServer and Mail server.

7. Inter VLAN routing has been performed and RIPv2 is used as the routing protocol.

VLAN IP:

VLAN 10 (Finance) -- 192.168.1.0/24 VLAN 20(Sales)-- 192.168.2.0/24

VLAN 30 (HR) -- 192.168.3.0/24 VLAN 100 (WareHouse) - 192.168.10.0/24

VLAN 200 (Factory) -- 192.168.20.0/24

Lan Ip :

Mutare LAN - 192.168.8.0/24

Harare LAN – 192.168.100.0/24

Wan Ip :

Gweru to Bulawayo WAN - 192.168.5.0/24

Gweru to Harare WAN - 192.168.4.0/24

Mutare to Harare WAN- 192.168.6.0/24

Mutare to Bulawayo WAN --192.168.7.0/24

4) Configure a network for three blocks, named Block X, Block Y and Block Z. Block X is a double storey building which consist of a 10 and 25employees respectively, while Block Y is a single storey building which consist of 15 employees and Block Z is a triple storey building that consist of 10, 12, and 5 employees. Block X and Z has class C IP addressing scheme and Block Y has class A IP addressing scheme. Every computers in the three buildings can communicate with each other. The packet sent must not drop.

5) Network design proposal for Bank:

Abstract

A network proposal has to be developed for a bank. The bank has a main office , which is located in Harare, and has 5 branch offices located at Lusaka, Pretoria, Windhoek, Lilongwe and Gaborone. The bank has an application server, which is used by it’s customers across the world for online transactions. All the branches have high speed internet connection. There are approximately 100 users in each of the branch offices and 200 users in the main office.

Network requirements.

1.Identify the hardware components required to setup the network for the Bank
2.High availability should be available to the application server, which is accessible using https protocol.
3.The application server should be setup in a secure manner with network and host level protection.
4.All traffic into the application server should be scanned for security attacks.
5.IP network design for the branch and main offices.
6.IP addressing range for users and hardware components.
7.The users at different locations should be able to access each other, including the application server.
8.Identify the features and methodology which would be followed to achieve the solution.
9.Network Topology diagram.