PROJECT WORK BRIEF

Albion University is a large university which has two campuses situated 20 miles apart. The university's students and staff are distributed in 4 faculties; these include the faculties of Health and Sciences; Business; Engineering/Computing and Art/Design. Each member of staff has a PC and students have access to PCs in the labs.

REQUIREMENTS

a. Create a network topology with the main components to support the following

Main campus:

➢ Building A: Administrative staff in the departments of management, HR, and finance. The admin staff PCs are distributed in the building offices and it is expected that they will share some networking equipment (Hint: use of VLANs is expected here). The Faculty of Business is also situated in this

➢ Building B: Faculty of Engineering and Computing and Faculty of Art and Design

➢ Building C. Students' labs and IT department. The IT department hosts the University Web server and other servers.

➢ There is also an email server hosted externally on the cloud.

Smaller campus:

Faculty of Health and Sciences (staff and students labs are situated on separate floors)

b. You will be expected to configure the core devices and a few end devices to provide end-to-end connectivity and access to the internal servers and the external server.

➢ Each department/faculty is expected to be on its separate IP network.

➢ The switches should be configured with appropriate VLANs and security settings.

➢ RIPv2 will be used to provide routing for the routers in the internal network and static routing for the external server.

➢ The devices in building A will be expected to acquire dynamic IP addresses from a router-based DHCP server.

THE APPROACH

1. To complete the design and proper separation of each VLAN main campus and smaller campus and also outer cloud server, and label the name and IP address of all the designs to completely satisfy the client requirements.
2. Turn ON all switches and routers.
3. Complete wiring and must "ON" all ports connected.
4. Clock serial cable configuration between the router (clock rate:64000).
5. The router is connected is a separate network (10.10.10.0 & 10.10.10.4).
6. Now L2 switch configuration the ports "range fa0/1-24" – access mode.

```
#int range fa0/1-24
#switchport mode access
#switchport access vlan 10
```

7. L3 multi-layer switch the port connected to the router in "trunk mode" Next the port connected to the L3 is in "access mode" (vlan 10 – 100).
8. The cloud is separate and its configured is static.
9. In the router assign an IP address for VLAN.
   Ex: VLAN 1 – 192.168.1.0

   .   .
   .   .
   VLAN 10 – 192.168.10.0

```
#int g0/0.10
#encapsulation dot1q 10
#ip address 192.168.1.1 255.255.255.0
```

   Do it for all the vlan'S

10. After vlan's ip address is assigned now the "DHCP" configuration.

```
#service dhcp
#ip dhcp pool admin-pool
#network 192.168.1.0 255.255.255.0
#default-router 192.168.1.1
#dns-server 192.168.1.1
```

11. Now the separate router's inter-network will work the packets are exchanged.
12. It is time for the data or packets between the router to exchange the "RIP" protocol is used.

```
#router rip
#version 2
#network 192.168.1.0
#network 192.168.2.0
………………………
#network 192.168.8.0
#network 10.10.10.0
```

And continue all the VLAN's networks to the router connected.

13. Finally the configuration of the server.

LOGICAL VIEW