Assignment : Final Project

Name : Pritesh Gandhi

1) Why you chose this project

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I chose "Network Design and Build Project " under which I designed & implemented the network **successfully.** I wanted comprehensive knowledge about the widely used technologies in the networking field. This project gives me exposure to different networking technologies & protocols like OSPF,BGP etc at once, while other projects focus on a specific technology.

2) How you went about completing this project (ie: your approach)

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a. First of all in designing & building a network, I considered how many locations are their. In this case, we have 3 locations. Depending on this, I created a topology (without assigning the IP addresses) which had 3 locations & 2 ISPs.
b. After creating topology, I took into consideration the number of devices that will be connecting with the network at each location. In this network,
c. R& D Department 200 devices
d. Management Department 230 devices
e. Customer Care Department 25 devices
f. Processing Department 27 devices
g. Payroll Department 21 devices
h. Depending on the number of devices, I designed a ip subnetting scheme to use for each location.
i. After subnetting for locations, I took into consideration the WAN connections that I'm going to have in the network then I created subnets for the WAN connections.
j. With this IP addressing scheme (developed with the help of VLSM), I configured each device on the network.
k. Now the most crucial part comes which is the selection of network protocols. As in the real world, OSPF & EIGRP are the most widely used, I used these two protocols. I also used BGP as there are 2 ISPs in the network.
l. For giving flexibility to the network by introducing segments, I created VLANs at each location where there are multiple departments.
   Example: At location Poughkeepsie, there are two departments: Customer Care department & Processing Department so created 2 VLANs which enabled both the departments to have their own network on the same switching network.

3) What the outcomes were (ie: was it a success? what did you learn?)

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The project that I worked on was **complete success** .

i. Every device in the network can communicate with the every other device.
ii. All the protocols are implemented successfully.
iii. The IP addressing scheme is implemented successfully.
iv. All the devices are configured properly.

The most important part I learned:

1) With BGP is **patience.** BGP is pretty complex protocol to implement as it takes time to advertise the networks.
2) The importance of network designing as it helps to build network properly & get an idea about how the network would work. Design also helps in future for troubleshooting.
3) Checking & troubleshooting the network with different show commands, debug command, traceroute command.
4) The approach that I should follow while troubleshooting like thinking why the route is received, advertised or device is communicating.
5) And over all, how the fault tolerant network should be designed & implemented with efficient use of IP addresses.
6) Implementing BGP, EIGRP, VLAN, VTP, DHCP protocols,EtherChannel.