**Take Home Case TPA Network 22-1**

* **Network Config**
* There are four cities, and each has a separate local area network. Except for the connection to the wide area network, you must implement **four dynamic routes** in the network (dont use the same dynamic route protocol). Instead, please connect to the **root router** using the **BGP routing protocol**.
* Make sure every **router** or **multilayer switch** **can access** to **ipv6**.
* There are **cities without connected firewalls**, therefore you should **analyze** **the network** and **determine where the firewalls should be installed**.
* You can freely configure pvst for every **multilayer switch**.
* **RaxVous City**

1. In this city, you must create **7 division** and every division have more than **30000 devices** implement your calculation for **vlsm** in this city for **every device**. Use **static ip configuration** for every device in this city and you are free to determine the division for each device, but you must ensure that each division includes at least three devices.
2. **Set each device's IP address** in this network based on its **PC number**.
3. Configure **spanning tree** for this network.
4. Every **voip** must be connected to **each other** and **other network in another city**. Use 111x (x can be a number from 0 - 8) as a **voip number**.
5. **Every network** in **RaxVous City** is **unable to connect** to the **ssh**, **irc**, **asylum**, **and samba ports** on the **moon city server**.

* **Moon City**

1. In this city, you must create **5 division** and every division have **more than 20000** devices implement your calculation for **vlsm** in this city for **every device**.
2. In this city, you must implement **network address translation**.
3. Setup **dhcp** in the server so every device can use the dhcp. You can use **dhcp** for **every device in this network**.
4. Make sure every device can connect to the server using **ssh** with “**TheMoon**” as **username** and “**M0onK11ee3030**” as **password**.
5. Configure the **wifi network** so **every laptop can connect to the network**.
6. Configure the **Domain name server** by selecting one of the servers.
7. Any server service can be configured and managed freely, however the server must have a **website** **server**, **DHCP** **server**, **DNS** **server**, **email** **server**, and **ftp** **server**.
8. Every **voip** must be connected to **each other** and **other network in another city**. Use 212x (x can be a number from 0 - 8) as a **voip number**.
9. Make sure there is no **Single Point of Failure** at the network.

* **Sans City**

1. In this city, you must create **10 division** and every division have **more than 40000** devices implement your calculation for **vlsm** in this city for **every device**.
2. In this city, you must implement **virtual trunking protocol** in the root switch, so every switch does not need to config the virtual lan.
3. Due to the existence of two buildings in this city, you **must set up two of them** so that **they can connect to one another** and **to another network in a different city**.
4. You are free to **configure the wifi** according to **your own preferences** so that every device can communicate with one another.
5. **Every network** in **Sans City** is **unable to connect** to the **ftp**, **mysql**, **and postgresql ports** on the **moon city server**.

* **Network Design**

1. Create your own network using “**Rue** **City**”. Please use **3 Tier Architecture** in your network and make sure there is no **Single Point of Failure** at the core of your network. **Except for the root router**, **no network** in **Rue City** **needs to be connected** to any other networks.
2. Please take the **cost** and **network** **performance** into consideration because **Rue City** is a new city.
3. You can **freely implement such as redundant link**, but you **must be able to explain the purpose**.
4. As a network designer, you must come up with a network design that meets with the specifications because Rue City has plans for more than **5 divisions** and each division will have **more than 300 PCs**.