**Network Plan**

There are 110 staff members who need to be adequately suited to work in their proper networks for the optimized efficiency. There needs to be measures taken to ensure that the sales staff has their own room and no access to the accounting department for limiting and security purposes. The accounting and engineer staff need to be in the own room as well as the executives their own room. Here is a proposed breakdown of how we plan on implementing the network.

1. We will have 3 rooms, with an equal number of computers per person at each desk:
   * 1. one for the 60 sales staff
     2. one for the 30 engineers and 10 accounting staff
     3. one for the 10 executive members
2. The network will be comprised of a Cisco 3 Layer Hierarchical model.
   * 1. There will be 1 access layer switch for each department(4 total) that will each contain their own VLAN, which is a way to separate the departments so that they can communicate with each other without other traffic interfering. This is beneficial because with different departments, there will be varying traffic, and it will allow each department VLAN to run more efficiently. <https://library.netapp.com/ecmdocs/ECMP1196907/html/GUID-C9DA920B-F414-4017-8DD1-D77D7FD3CC8C.html>
     2. The 4 access layer switches will be connected to 2 distribution layer switches
     3. A core switch that is connected to the distribution switches
     4. DHCP server
     5. A router that is connected to the ISP

NAT(Network Address Translating) will be used to make sure that the addresses that are private can properly be translated to a private network. Because the company will surely be growing at a future point, NAT can also be beneficial because as more networks are needed, more IP addresses will be needed as well. NAT can help keep the IP addresses closer to the “network scheme”. shttps://www.certificationkits.com/cisco-certification/ccna-articles/cisco-ccna-network-address-translation-nat/cisco-ccna-nat-advantages-a-disadvantages/

1. A separate DNS server will be added to the core switch
2. The rooms and departments will be separated as follows:
   * 1. The sales staff room will be separated with their own switch and network so that they cannot access the accounting information
     2. The accounting and engineer staff also be on another network that will have will 10 workstations for accounting and 30 for the engineers, respectively.
     3. The executive staff will have 10 workstations on another network
3. DHCP will be used as well as a local DNS server
4. Appropriate security measures will be taken
   * 1. A hardware firewall will be installed and configured between the core switch and the router to monitor and block potentially malicious data to all network devices <https://www.digitalocean.com/community/tutorials/7-security-measures-to-protect-your-servers>
     2. Access control measures will be taken to make sure that no outside devices will be connected
     3. All networking devices will be in a room that is non-accessible to individuals without the proper authorization and keys.

**Equipment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Equipment** | **Model** | **Quantity** | **Individual Price** | **Each totaled price** |
| Access switches | **Cisco Catalyst 3650-12X48UR-S Switch** | 4 | $8,916.99 | $35,667.96 |
| Distribution switches | **Cisco Catalyst 6503-E Switch** | 2 | $2,740.45 | $5,480.90 |
| Core switches | **Catalyst 3650 Series Switches** | 1 | $516.00 | $516.00 |
| Network Firewall | **SonicWall TZ300 01-SSC-0215 VPN Wired Gen 6 Firewall appliance** | 1 | $516.00 | $516.00 |
| Router | **Ubiquiti Edge Router** | 1 | $299 | $299 |
| Ethernet cabling | Cat5e Bulk 1000ft Ethernet Cable White | 2 | $36.50 | $73.00 |
|  |  |  | Total | $42,552.86 |

**Labor**

|  |  |  |  |
| --- | --- | --- | --- |
| Labor performed | Hours | Hourly rate | Price |
| Wiring | 10 | 70 | 700 |
| Configuration | 8 | 120 | 960 |
|  |  | Labor Total | $1,660.00 |
|  |  |  |  |

|  |  |
| --- | --- |
| **Grand Total** | **$44,212.86** |

**References**

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