The purpose of this assignment is for you to apply the concepts and skills you have acquired so far in the course:

* Internet models (the five layer - TCP/IP aka the Internet model data communication network)
* Network design
* How to create a Design Proposal
* How to design a LAN
* How to create a backbone network and connect your LAN environments
* How to incorporate VLANs
* How to connect the network to a WAN.

Requirements Analysis

Include the requirements for each of the following:

* Data types
* Data sources
* Numbers of users and priority levels
* Transmission speed requirements
* Load variation estimates
* Storage requirements
* Reliability requirements – The standards reliability requires the network to operate at following percentage rates:
* Standard operations uptime:
* Downtime:
* Error rate: 0.001%
* Existing network (a description of the existing network)

High-Level Diagram

Different levels of design describe the network at different degrees of granularity. Create a high-level diagram of an entire network that shows only the buildings and internet using [SmartDraw (Links to an external site.)](https://www.smartdraw.com/?id=329936&gclid=CPCo_8zDwtMCFV65wAodq4cBWQ" \o "SmartDraw" \t "_blank) or a similar network design software. There are several free options or free trials available online.

Detailed Design

* Design the LAN Network for all of the buildings (separately) using the [Headquarters First Floor](https://ashford.instructure.com/courses/85296/files/15587801/download?wrap=1)[download](https://ashford.instructure.com/courses/85296/files/15587801/download?download_frd=1), [Headquarters Second Floor](https://ashford.instructure.com/courses/85296/files/15587807/download?wrap=1)[download](https://ashford.instructure.com/courses/85296/files/15587807/download?download_frd=1), [Escondido New Sales Office](https://ashford.instructure.com/courses/85296/files/15587798/download?wrap=1)[download](https://ashford.instructure.com/courses/85296/files/15587798/download?download_frd=1), and [Alpine Manufacturing and Production](https://ashford.instructure.com/courses/85296/files/15587803/download?wrap=1)[download](https://ashford.instructure.com/courses/85296/files/15587803/download?download_frd=1)floor plans. Your design should also include network equipment.
* Design the distribution layer backbone that will connect the floors for the San Diego Headquarters. Building. Add this backbone information to your LAN diagram.
* Alternatively, design a VLAN that links the buildings and departments together to establish a virtual environment.
  + With the addition of the new Sales office in Escondido, the CIO wants to be sure that some of the load is taken off of the LAN. In addition, various departments throughout the entire organization should be able to communicate and collaborate in a virtual environment, rather than always needing to meet face-to-face. Add the VLAN-based backbone to your designs as appropriate.
  + Compare the VPN based backbone with the VLAN based backbone and explain which one would be more appropriate for this project and why?
* Design the WAN. Copy your high-level diagram and add the WAN to the diagram by including any physical connections such as T1, T3, CO3, etc. and VPNs as needed.

Equipment Analysis

Determine the equipment needed based on your planned network and create your network's Equipment Analysis table. Specify the products you are considering for your design and include their costs and the total cost of the network. You may use the site [www.cdw.com (Links to an external site.)](http://www.cdw.com/) to find any other equipment needed. To ensure compatibility and reliability, it is recommended to have the devices from one single vendor, such as Cisco.

* Provide a rationale for your choices based on your sources.
* Recommend additional software that Anthony’s will need for ease of communication. For example: Skype, WebEx, Adobe, audio files, email, chat, and video. Provide a rationale for your recommendations using scholarly and/or credible sources.

(NOTE: There is no one single solution. The design is based on your network optimization decisions.)

For your initial post

* Write an email to the CEO of Anthony’s Potato Chip Factory addressing the need for your proposal. In your email, briefly explain the concepts of networking and data communication that relate to the work you plan to do for Anthony’s Potato Chip Company. Remember that you want the CEO to understand your ideas, even though the CEO may not be a network expert.
* Attach your Network Design Proposal and Design.

Maintenance

Complete the Maintenance column, as if you are planning to support your project for 6 months after deployment. Include items such as software updates, upgrades, troubleshooting, Operation and Maintenance (OM) Monitoring.