CS 4400 System Administration

Project 3A: Create a Network Diagram

Project Information:

Activity Points	1
Due Date	Monday of Week 6

Before we start:

You are a new system administrator, and it's time for you to pick out some things about your employer. The choices you decide now will have ramifications later…

1. Choose your organization type: (1) Education, (2) Medical, or (3) Small Business.
2. Choose your organization name.

Description:

We're starting from scratch here at <company name> and need your help designing our network. At the moment we aren't 100% sure what services we'll need, but we do know we'll want to have our employees connect to the network from internal desktops and be able to access the Internet. We also know that we'll need some servers that people will need to connect with outside of the company. Can you build this for us?

Your tasks for this activity are:

1. **Create a network diagram of your architecture.** Use software that keeps your diagram in an easy-to-update/edit format. Pick some free Internet software to make this chart and to periodically update it as you add new services. (Services should also be labeled on the chart.) One free web chart drawing tool is called Lucidchart, but you can use something else. If you use Lucidchart, then you can log in with google and use your UNI email.

We will get practice setting up a classic network configuration:

- You will have 3 separate subnets in your area: a WAN (our "fake" outside Internet), a LAN (most protected where you keep workstations), and a DMZ (semi-protected space where you carefully protect servers that are accessible from the outside.
- Your Linux and Windows servers should be in the DMZ, which will get its own private subnet. In later projects, you'll get to choose what kinds of services to host on these servers.
- You will have two Windows 11 workstations (no, it isn't yet the year of the Linux Desktop) for your workers in the LAN. The LAN will get a different private subnet from the DMZ.
- You'll have a firewall (pfsense) that also acts as a router and dhcp server to divide up and protect the LAN and DMZ private subnets.

You may want your chart to look like the following, filling in the IP and network address areas with your setup. Diesburg's Lucid Chart Template
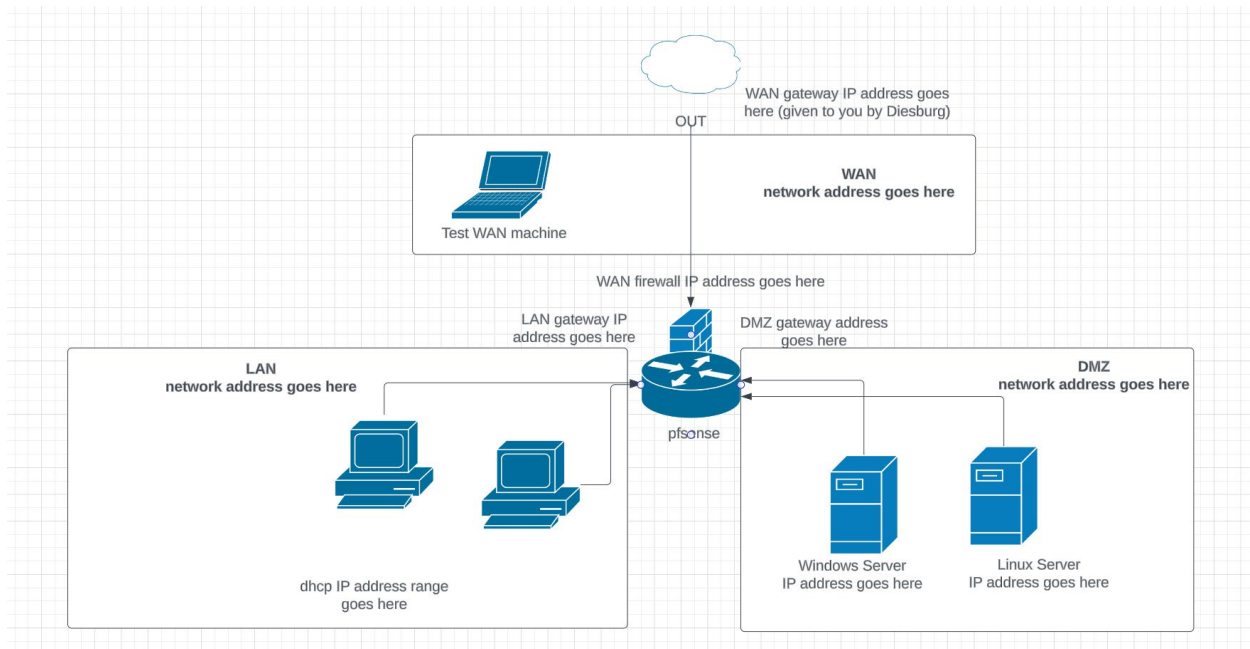
(Note that the test WAN machine will be used in later projects to make sure you can access services in the DMZ from the WAN. It can be another Windows 11 or non-server version of Linux.

2. **Turn in your network diagram.** This is the one project where you will not need to fill out documentation or record a demo. Copy the link to your diagram into the project submission area in eLearning.

Resources:

- IPv4 addressing and subnetting – ULSAH pp.387-394
- Another basic review of networking/ip addresses/subnets - Basic Review of Networking - https://support.microsoft.com/en-us/help/164015/understanding-tcp-ip-addressing-and-subnetting-basics
- IPv6 (ignore it for now, but know the train is coming) – ULSAH pp. 394-399