CS 4400 System Administration

Project 3B: Setting up a Network

Project Information:

Activity Points	2
Due Date	Monday of Week 7

Make sure you have gotten Project 3A done before moving on to this project!

Description:

Once your network diagram has been approved, you will need to do the following:

1. **Set up pfsense.** Make sure it has 3 interfaces (3 NIC cards). You'll want to configure the new network addresses for both the DMZ and LAN. For the LAN, you can turn on the dhcp service, as it doesn't really matter what network IP addresses the workstations receive at any given time. You will not want to turn on dhcp for the DMZ, because servers need static IP addresses.
2. **Set up the following pfsense firewall rules.** Firewall rules govern which traffic is allow into and out of interfaces. If this is configured wrong, your workstations/servers may not be able to access the Internet.

   Set up firewall rules in pfsense to allow the following:

   Between WAN and LAN

Traffic going "in" into LAN from WAN	Do not allow
Traffic going "out" onto WAN from LAN	Allow http, https, ping, dns

   Between WAN and DMZ

Traffic going "in" into DMZ from WAN	Do not allow for now. (This will change as we add services to your servers.)
Traffic going "out" onto WAN from DMZ	Allow all

   Between LAN and DMZ

Allow all traffic going into the DMZ from the LAN, no traffic going into the LAN from the DMZ

3. **Create two Windows 11 Workstations.** Add these workstations to the LAN via dhcp. Verify they have LAN IP addresses. To get this part to work, you'll need to do more configuration in pfsense to the dhcp service to make sure any LAN computer that connects gets both an IP address and the UNI DNS server addresses. Be sure to use the dhcp range on your networking diagram.

4. **Move the Linux Server and the Windows Server into the DMZ.** You can do this by giving them new static IP address in the DMZ network address range. Be sure to use the IP addresses you put on your networking diagram.

5. **Test the network connectivity** using ping in the following ways:
    - On a Windows 11 workstation, ping the other Windows 11 workstation, both servers in the DMZ, the WAN gateway, and www.google.com
    - On the Linux server, ping the Windows server, both workstations in the LAN (should fail), the WAN gateway, and www.google.com
    - On the Windows server, ping the Linux server, both workstations in the LAN (should fail), the WAN gateway, and www.google.com

Resources:

- DHCP – ULSAH pp. 402-404
- Static addressing for Linux – ULSAH pp. 418-419
- Windows Server static addressing -- https://www.snel.com/support/how-to-configure-static-ip-on-windows-server-2019/
- What services belong to which ports? – go to Linux server, issue: “nano /etc/services”