CS 4400 System Administration

Project 3B: Setting up a Network

**Project Information:**

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| --- | --- |
| Activity Points | 2 |
| Due Date | Monday of Week 5 |

**Make sure you have gotten Project 3A checked off 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 into LAN from WAN | Do not allow |
| Traffic going into WAN from LAN | Allow http, https, ping, dns |

**Between WAN and DMZ**

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

**Between LAN and DMZ**

|  |
| --- |
| Allow all traffic both ways. |

1. **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.
2. **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.
3. **Test the network connectivity** using ping in the following ways:

* On a Windows 11 workstation, ping (1) the other Windows 11 workstation, both servers in the DMZ, the WAN gateway, and [www.google.com](http://www.google.com)
* On the Linux server, ping (1) the Windows server, both workstations in the LAN, the WAN gateway, and [www.google.com](http://www.google.com)
* On the Windows server, ping (1) the Linux server, both workstations in the LAN, the WAN gateway, and [www.google.com](http://www.google.com)
* Note that we aren’t yet checking traffic from the WAN going into the DMZ or LAN, because that all should be turned off by default. When we start adding services to your servers in the DMZ, we’ll modify firewall rules to allow some traffic into the LAN. We’ll test this works in future projects.

**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”