ECE 404 Homework #7

Due: Thursday 03/10/2022 at 5:59PM

Packet Filtering Firewalls

Design a firewall for your Linux machine using the `iptables` packet filtering modules. It is likely that `iptables` came pre-installed with the Linux distribution you are using. Otherwise, you may need to upgrade it to get `iptables` to work. If you don't have a Linux environment on your PC, you can try setting up a virtual machine using software such as VirtualBox or VMware.

Write a set of `iptables` rules (as a shell script) to do the following:

1. Remove any previous rules or chains.

2. For all outgoing packets, change their source IP address to your own machine's IP address (Hint: Refer to the `MASQUERADE` target in the `nat` table).

3. Block all new packets (i.e. a packet that creates a new connection) coming from `yahoo.com`.

4. Block your computer from being `ping`ed by all other hosts (Hint: `ping` uses ICMP Echo requests).

5. Set up port-forwarding from an unused port of your choice to port 22 on your computer. You should be able to SSH into your machine using both ports (You may need to enable connections on the unused port as well).

6. Allow for SSH access (port 22) to your machine from only the engineering.purdue.edu domain.

7. Assuming you are running an HTTPD server on your machine that can make available your entire home directory to the outside world, write a rule for preventing DoS attacks by limiting connection requests to 30 per minute after a total of 60 connections have been made.

8. Drop any other packets if they are not caught by the above rules.

To run your script, you will have to include a shebang line at the beginning of the file for `sh` (this program is almost always located in `/bin/sh`). Your script should be able to run without error. You will also need superuser privileges to edit any of the packet-filtering tables.

Submission Instructions

- For this homework, your submission must include a shell (.sh) file with your `iptables` rules used to achieve the requirements specified above (i.e. the shell file with the rules).

- Please write comments for each of the `iptables` commands in your shell script.

- For the shell file, please include a homework header in the comments as described in the homework section of the ECE 404 website.

Electronic Turn-in

```
turnin -c ece404 -p hw07 firewall404.sh hw09.pdf
```