ECE 404 Homework #9

Due: Thursday 4/02/2020 at 4:29PM

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:

- Remove any previous rules or chains

- 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).

- Block a list of specific IP addresses (of your choosing) for all incoming connections.

- Block your computer from being pinged by all other hosts (Hint: ping uses ICMP Echo requests).

- Set up port-forwarding from an unused port of your choice to port 22 on your computer. Test if you can SSH into your machine using both ports (Hint: You need to enable connections on the unused port as well).

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

- 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 that allows only a single IP address in the internet to access your machine for the HTTP service.

- Permit Auth/Ident (port 113) that is used by some services like SMTP and IRC.

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.

Spam Filter Account Set-up

You should have been sent credentials for an account on Shay that will be used for a later spam filtering assignment, as well as an email with instructions for setting up the account. To show that you have properly set up this account to accept emails, include a page worth of entries from the logfile in your Mail directory as well as your updated .procmailrc file.

Submission Requirements

- Your submission should include a shell (.sh) file with your iptables rules used to achieve the requirements specified above (i.e. the shell file with the rules), your updated .procmailrc file and a PDF containing a page worth of logfile contents.

- 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

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turnin -c ece404 -p hw09 firewall404.sh .procmailrc hw09.pdf
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