

Comp 8006 Assignment 2

Network Emulator

By:

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Due: Feb 7

```

root@datacomm-23:~/Documents
File Edit View Search Terminal Help
09:17:49(-)root@localhost:Documents$ ./test.sh 192.168.0.25
TCP allowed ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.7/2.7/2.7 ms
:20 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:21 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.6/2.6/2.6 ms
:22 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:53 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:80 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:443 is open and PASSED
UDP allowed ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:20 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:21 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:53 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:67 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:68 is open and PASSED

```

```

oc... root@datacom... outbound_test

```

, 2019

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Design Work

Objective

To design, implement and test a standalone Linux firewall and packet filter

Usage

Firewall

Run with root access `./fw0.sh`

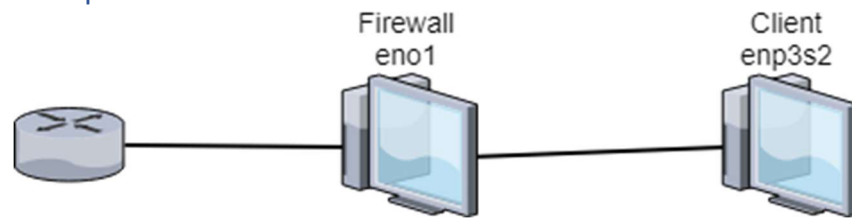
Client

Run with root access `./client_setup.sh`

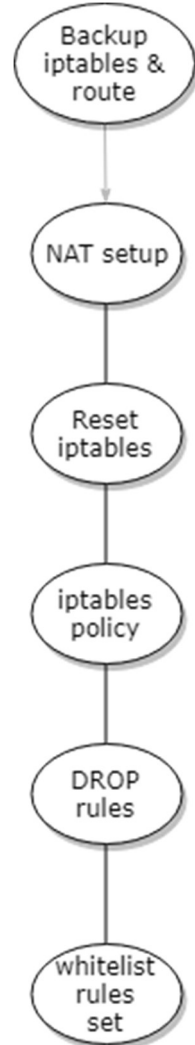
Specifications

- 1 - use netfilter
- 2 - load user configuration for all forwarded traffic
- 3 - set default policies for firewall
- 4 - dns, dhcp enabled
- 5 - in/out tcp/udp ports, icmp types
- 6 - default rule = drop
- 7 - reject wrong way (i.e. syn in on high ports)
- 8 - accept fragments
- 9 - drop tcp with SYN & FIN set
- 10 - no telnet packets allowed
- 11 - block external
- 111, 137-139, 515, 32768-32775
- 12 - ftp/ssh minimum delay,
- 13 - ftp max throughput
- 14 - first [en01] = outside, second [enp3s2] = inside
- 15 - test procedure; test rules, print results (log)
- 16 - need to know which rule passed/failed
- 17 - Allow user to define own rules
- 18 - separate file for config
- 19 - define network interfaces
- 20 - define allowed tcp, udp, icmp
- 21 - stateful filtering

Set up



State Machine



Pseudo Code

User Variables

- 1 – Provide variables to allow user to define values for internal and external interfaces, subnets and IP addresses.
- 2 – Allow user to define what ports to allow for udp and tcp and icmp types

Configure Firewall

- 1- Backup existing configuration
- 2- configure network cards
- 3- Flush existing configuration
- 4- apply default rule and drop all packets
- 5- define chains
- 6- apply user rules, assigning chains for each of tcp, udp, icmp
 - a. for each port, apply rule, add to chain

Configure client

- 1- Backup current config
- 2- Disable primary network
- 3- Connect network cable
- 4- Configure internal network card

Test Plan & Results

Usage './test.sh <IP of target>' on either client for outbound or another machine on the network for inbound

Inbound

Testing	Test method	expected	Result
TCP port 22	hping3 ip -V -S -p 22 -c 1	ALLOWED	PASS
TCP port 80	hping3 ip -V -S -p 80 -c 1	ALLOWED	PASS
TCP port 443	hping3 ip -V -S -p 443 -c 1	ALLOWED	PASS
UDP port 53	hping3 ip -V -udp -S -p 53 -c 1	ALLOWED	FAILED
UDP port 67	hping3 ip -V -udp -S -p 67 -c 1	ALLOWED	FAILED
UDP port 68	hping3 ip -V -udp -S -p 68 -c 1	ALLOWED	FAILED
ICMP port 0	hping3 ip -V -1 -S -p 0 -c 1	ALLOWED	FAILED
ICMP port 8	hping3 ip -V -1 -S -p 8 -c 1	ALLOWED	FAILED
TCP port 23	hping3 ip -V -S -p 23 -c 1	DROPPED	PASS
TCP port 111	hping3 ip -V -S -p 111 -c 1	DROPPED	PASS
TCP port 137	hping3 ip -V -S -p 137 -c 1	DROPPED	PASS
TCP port 138	hping3 ip -V -S -p 138 -c 1	DROPPED	PASS
TCP port 139	hping3 ip -V -S -p 139 -c 1	DROPPED	PASS
TCP port 515	hping3 ip -V -S -p 515 -c 1	DROPPED	PASS
TCP port 32768	hping3 ip -V -S -p 32768 -c 1	DROPPED	PASS
TCP port 32775	hping3 ip -V -S -p 32775 -c 1	DROPPED	PASS
UDP port 23	hping3 ip -V -udp -1 -S -p 0 -c 1	DROPPED	PASS

UDP port 111	hping3 ip -V -udp -1 -S -p 8 -c 1	DROPPED	PASS
UDP port 137	hping3 ip -V -udp -S -p 23 -c 1	DROPPED	PASS
UDP port 138	hping3 ip -V -udp -S -p 111 -c 1	DROPPED	PASS
UDP port 139	hping3 ip -V -udp -S -p 137 -c 1	DROPPED	PASS
UDP port 515	hping3 ip -V -udp -S -p 138 -c 1	DROPPED	PASS
UDP port 32768	hping3 ip -V -udp -S -p 139 -c 1	DROPPED	PASS
UDP port 32775	hping3 ip -V -udp -S -p 515 -c 1	DROPPED	PASS
ICMP port 200	hping3 ip -V -1 -S -p 200 -c 1	DROPPED	PASS
TCP SPOOF	hping3 ip -V -c 1 -S -s 80 -p 80 --spooof 192.168.10.5	DROPPED	PASS
TCP SYN FIN	hping3 ip -V -c 1 -s 1000 -p 80 -SF	DROPPED	PASS
UDP fragment	hping3 ip -V -S -p 22 -c 1 -f	DROPPED	

SSH in - Connected

```
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

22:44:15(master)root@datacomm-25:a2$ ssh 192.168.0.24
root@192.168.0.24's password:
Last failed login: Wed Feb 14 22:44:05 PST 2018 from 192.168.0.25 on ssh:notty
There were 3 failed login attempts since the last successful login.
Last login: Wed Feb 14 22:43:15 2018 from 192.168.0.25
22:45:51(-)root@localhost:~$ ifconfig
enp3s2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.10.1 netmask 255.255.255.0 broadcast 192.168.10.255
```



```
root@datacomm-25:~/Documents
File Edit View Search Terminal Help
09:22:38(~/)root@datacomm-25:Documents$ ./test.sh 192.168.0.24
rm: cannot remove './test_result': No such file or directory
TCP allowed ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:20 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.9/0.9/0.9 ms
:21 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.8/3.8/3.8 ms
:22 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.8/2.8/2.8 ms
:53 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:80 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:443 is open and PASSED
UDP allowed ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:20 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:21 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:53 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:67 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
```

File Edit View Search Terminal Help

```
--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:68 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:221 is closed and FAILED
ICMP allowed ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:0 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:3 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:5 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:8 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:9 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:10 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:11 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:13 is closed and FAILED
TCP deny ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:23 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
```

```
--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:111 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:137 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:138 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:139 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:515 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:32768 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:32775 is closed and PASSED
UDP deny ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:23 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:111 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:137 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:138 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
```

```
root@datacomm-25:~/Documents
File Edit View Search Terminal Help
09:22:38(~/)root@datacomm-25:Documents$ ./test.sh 192.168.0.24
rm: cannot remove './test_result': No such file or directory
TCP allowed ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:20 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.9/0.9/0.9 ms
:21 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.8/3.8/3.8 ms
:22 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.8/2.8/2.8 ms
:53 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:80 is open and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:443 is open and PASSED
UDP allowed ports

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:20 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:21 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:53 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:67 is closed and FAILED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
```



```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:139 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:515 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:32768 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:32775 is closed and PASSED  
ICMP deny ports
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:0 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:3 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:5 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:8 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:9 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:10 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:11 is closed and PASSED
```

```
--- 192.168.0.24 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss
```

```
--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:0 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:3 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:5 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:8 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:9 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:10 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:11 is closed and PASSED

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:13 is closed and PASSED
SYN FIN test
using en0, addr: 192.168.0.25, MTU: 1500
HPING 192.168.0.24 (en0 192.168.0.24): SF set, 40 headers + 0 data bytes

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:13 is closed and blocked the SYN FIN packet PASSED
Spoof subnet
using en0, addr: 192.168.0.25, MTU: 1500
HPING 192.168.0.24 (en0 192.168.0.24): S set, 40 headers + 0 data bytes

--- 192.168.0.24 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
./test.sh: line 82: test: too many arguments
:22 is closed and FAILED the test
09:23:26(-) root@datacomm-25:Documents$
```

Outbound

Testing	Test method	expected	Result
TCP port 22	hping3 ip -V -S -p 22 -c 1	ALLOWED	PASS
TCP port 80	hping3 ip -V -S -p 80 -c 1	ALLOWED	PASS
TCP port 443	hping3 ip -V -S -p 443 -c 1	ALLOWED	PASS
UDP port 53	hping3 ip -V -udp -S -p 53 -c 1	ALLOWED	PASS
UDP port 67	hping3 ip -V -udp -S -p 67 -c 1	ALLOWED	PASS
UDP port 68	hping3 ip -V -udp -S -p 68 -c 1	ALLOWED	PASS
ICMP port 0	hping3 ip -V -1 -S -p 0 -c 1	ALLOWED	PASS
ICMP port 8	hping3 ip -V -1 -S -p 8 -c 1	ALLOWED	PASS
TCP port 23	hping3 ip -V -S -p 23 -c 1	DROPED	PASS
TCP port 111	hping3 ip -V -S -p 111 -c 1	DROPED	PASS
TCP port 137	hping3 ip -V -S -p 137 -c 1	DROPED	PASS
TCP port 138	hping3 ip -V -S -p 138 -c 1	DROPED	PASS
TCP port 139	hping3 ip -V -S -p 139 -c 1	DROPED	PASS
TCP port 515	hping3 ip -V -S -p 515 -c 1	DROPED	PASS
TCP port 32768	hping3 ip -V -S -p 32768 -c 1	DROPED	PASS
TCP port 32775	hping3 ip -V -S -p 32775 -c 1	DROPED	PASS
UDP port 23	hping3 ip -V -udp -1 -S -p 0 -c 1	DROPED	PASS
UDP port 111	hping3 ip -V -udp -1 -S -p 8 -c 1	DROPED	PASS
UDP port 137	hping3 ip -V -udp -S -p 23 -c 1	DROPED	PASS
UDP port 138	hping3 ip -V -udp -S -p 111 -c 1	DROPED	PASS
UDP port 139	hping3 ip -V -udp -S -p 137 -c 1	DROPED	PASS
UDP port 515	hping3 ip -V -udp -S -p 138 -c 1	DROPED	PASS
UDP port 32768	hping3 ip -V -udp -S -p 139 -c 1	DROPED	PASS
UDP port 32775	hping3 ip -V -udp -S -p 515 -c 1	DROPED	PASS
ICMP port 200	hping3 ip -V -1 -S -p 200 -c 1	DROPED	PASS
TCP SPOOF	hping3 ip -V -c 1 -S -s 80 -p 80 --spoof 192.168.10.5	DROPPED	PASS
TCP SYN FIN	hping3 ip -V -c 1 -s 1000 -p 80 -SF	DROPPED	PASS
UDP fragment	hping3 ip -V -S -p 22 -c 1 -f	DROPPED	

SSH out test

```

root@datacomm-25:~
File Edit View Search Terminal Help
08:33:55( ) root@localhost:Documents$ ssh 192.168.0.25
root@192.168.0.25's password:
Permission denied, please try again.
root@192.168.0.25's password:
Permission denied, please try again.
root@192.168.0.25's password:
Last failed login: Thu Feb 15 08:34:39 PST 2018 from 192.168.0.24 on ssh:notty
There were 3 failed login attempts since the last successful login.
Last login: Wed Feb 14 19:55:45 2018 from 192.168.0.23
08:34:47( ) root@datacomm-25:~$

```

```
root@datacomm-23:~/Documents
File Edit View Search Terminal Help
09:17:49(-)root@localhost:Documents$ ./test.sh 192.168.0.25
TCP allowed ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.7/2.7/2.7 ms
:20 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:21 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.6/2.6/2.6 ms
:22 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:53 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:80 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:443 is open and PASSED
UDP allowed ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:20 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:21 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:53 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:67 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:68 is open and PASSED
oc... root@datacom... outbound_test
```



```
--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:221 is open and PASSED
ICMP allowed ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 2.9/2.9/2.9 ms
:0 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 1.9/1.9/1.9 ms
:3 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 3.9/3.9/3.9 ms
:5 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.9/0.9/0.9 ms
:8 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 1.8/1.8/1.8 ms
:9 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 1.8/1.8/1.8 ms
:10 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 1.9/1.9/1.9 ms
:11 is open and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0.9/0.9/0.9 ms
:13 is open and PASSED
TCP deny ports

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:23 is closed and PASSED

--- 192.168.0.25 hping statistic ---
1 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
:111 is closed and PASSED

--- 192.168.0.25 hping statistic ---
```

```
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:137 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:138 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:139 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:515 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:32768 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:32775 is closed and PASSED  
UDP deny ports  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:23 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:111 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:137 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:138 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss  
round-trip min/avg/max = 0.0/0.0/0.0 ms  
:139 is closed and PASSED  
  
--- 192.168.0.25 hping statistic ---  
1 packets transmitted, 0 packets received, 100% packet loss
```