pfSense Firewall
Firewall - Adding A Rule

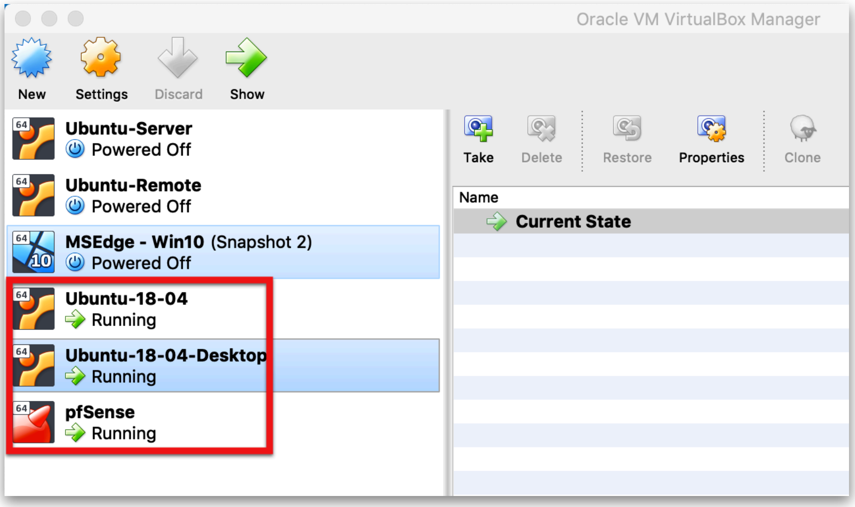
In this lesson, we'll learn how to add a firewall rule.

First, we'll do a quick test to demonstrate that the traffic we want to block works with no rules in place.

Then, we'll create a rule to block. We'll see that the traffic is blocked and the offenders actions logged.

You don't have to follow along in the initial demonstration unless you just like doing that stuff and want to for fun.

In the VirtualBox lab, I have pfSense, the Ubuntu 18.04 Desktop behind pfSense, and an Ubuntu 18.04 server outside the firewall all running.



On the Ubuntu 18.04 server outside the firewall, I'll have netcat listen on port 1337.

```
nc -l 1337
```

On the Ubuntu Desktop behind the firewall, I'll telnet to the listening server.

```
telnet 192.168.254.143 1337
```

The connection goes live, and communication is possible.

The firewall took no action because the activity was permitted.

Now, we'll add a rule, and try again.

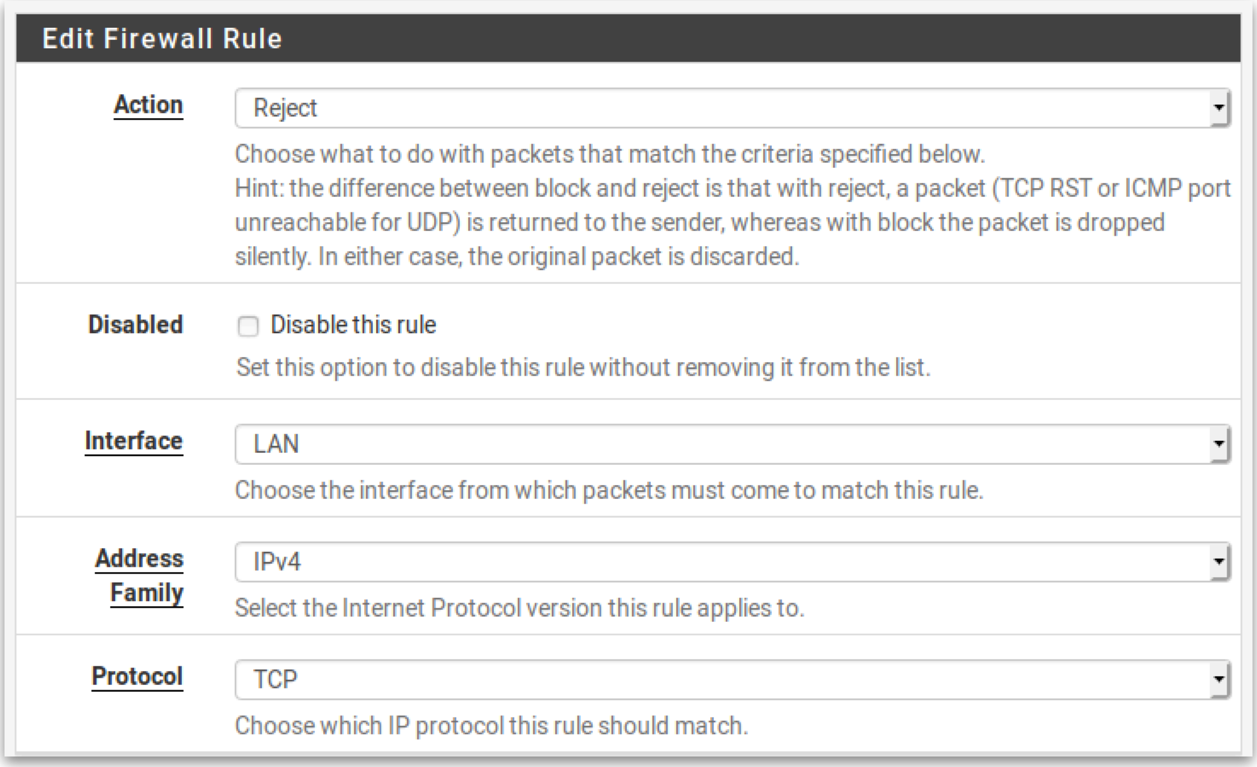
Log into the firewall, and go to Firewall, Rules in the menu.

Remembering that we want to place the rule as close to the threat as possible, we'll put our new rule on the LAN interface. The bad actor is supposedly on our LAN trying to get out.

Click on LAN.

We don’t expect this rule to be hit very often, so well add it to the bottom of the list by choosing the Add with the down arrow.

For traffic inside the network, we’ll choose Reject for the Action.



Edit Firewall Rule

Action: Reject

Choose what to do with packets that match the criteria specified below.
Hint: the difference between block and reject is that with reject, a packet (TCP RST or ICMP port unreachable for UDP) is returned to the sender, whereas with block the packet is dropped silently. In either case, the original packet is discarded.

Disabled: □ Disable this rule

Set this option to disable this rule without removing it from the list.

Interface: LAN

Choose the interface from which packets must come to match this rule.

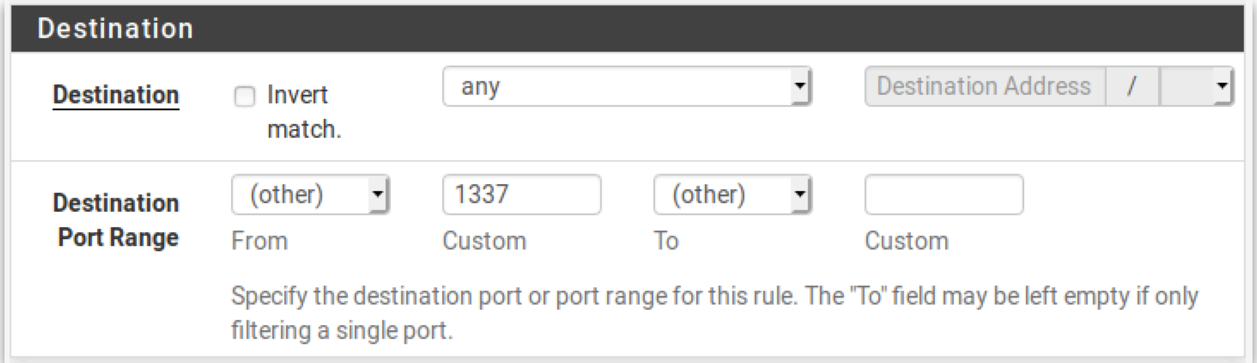
Address Family: IPv4

Select the Internet Protocol version this rule applies to.

Protocol: TCP

Choose which IP protocol this rule should match.

Specify port 1337 in the From field in the Destination Port Range, and leave the To field blank.



Destination

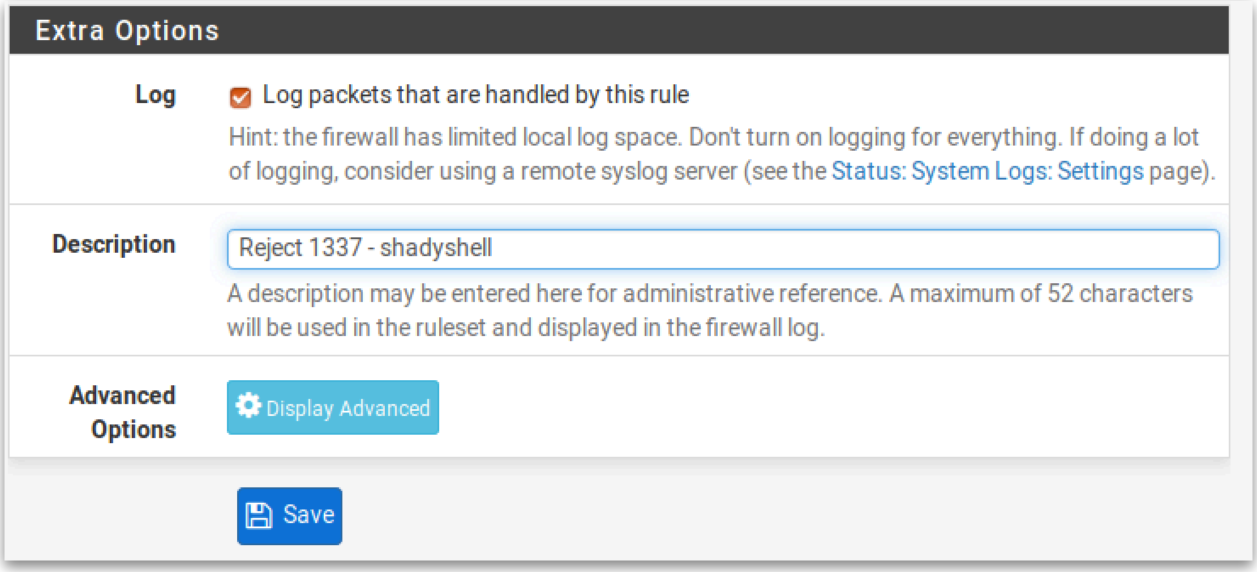
Destination: □ Invert match. any Destination Address /

Destination Port Range: (other) From; 1337 Custom; (other) To; Custom

Specify the destination port or port range for this rule. The "To" field may be left empty if only filtering a single port.

Check the box to Log packets that are handled by this rule.

Provide a descriptive name like Reject 1337 - shadyshell.



Extra Options

Log ☑ Log packets that are handled by this rule

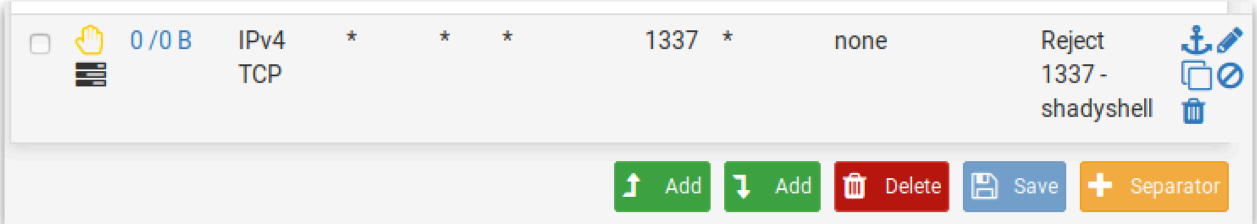
Hint: the firewall has limited local log space. Don't turn on logging for everything. If doing a lot of logging, consider using a remote syslog server (see the Status: System Logs: Settings page).

Description: Reject 1337 - shadyshell

A description may be entered here for administrative reference. A maximum of 52 characters will be used in the ruleset and displayed in the firewall log.

Advanced Options

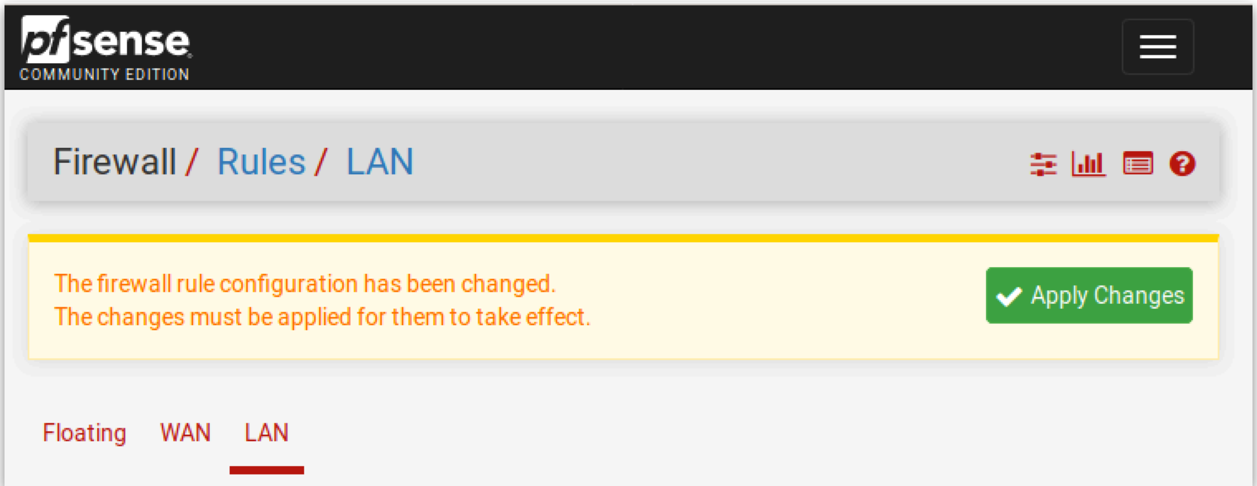
Save your rule.



□	0 /0 B	IPv4 TCP	*	*	*	1337	*	none	Reject 1337 - shadyshell

You can see your new rule defined at the bottom of the list.

On the Firewall/Rules/LAN page, click Apply Changes.



Firewall / Rules / LAN

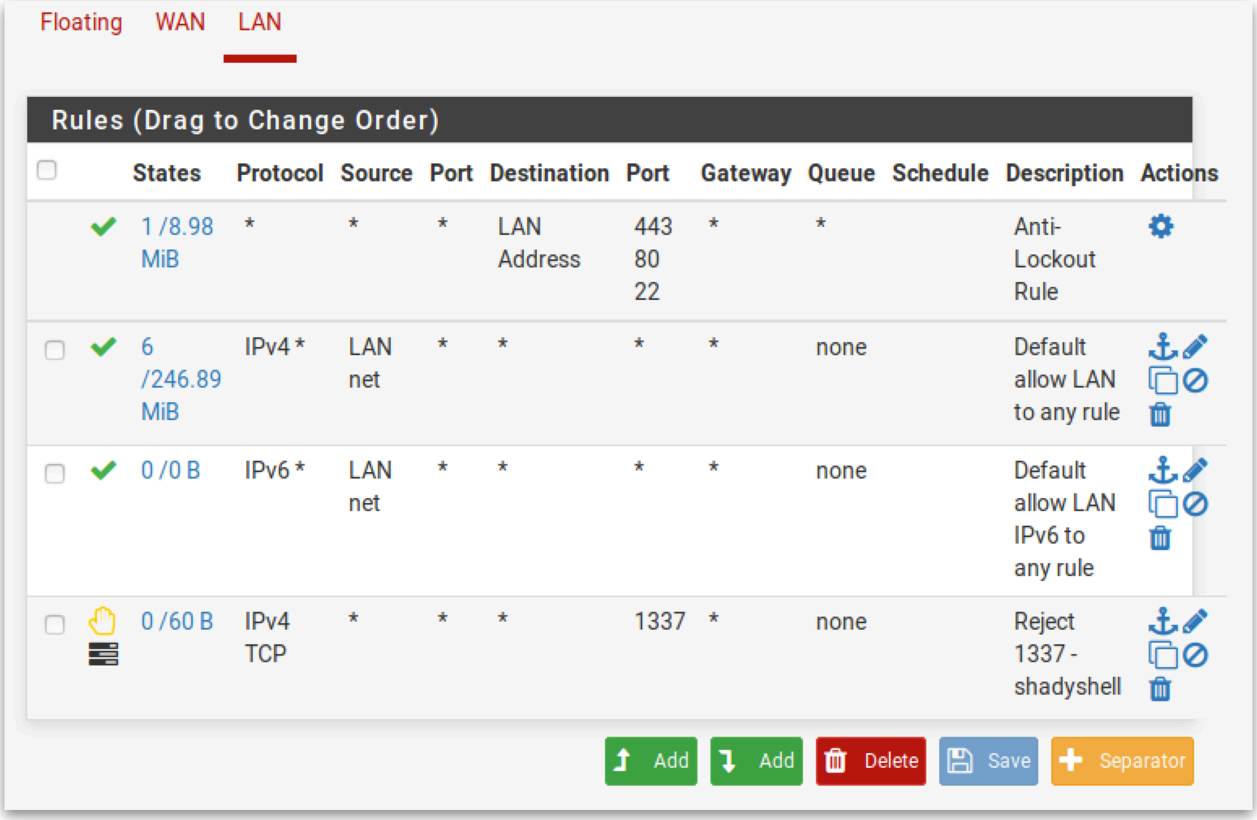
The firewall rule configuration has been changed.
The changes must be applied for them to take effect.

Now, we'll test again by starting netcat and listening on port 1337 on our external server and telnetting to it from the internal Ubuntu Desktop.

It still works! What happened?

The problem is rule order.

We have a permit ANY IP, ANY PORT outbound enabled above our rule. First match wins!

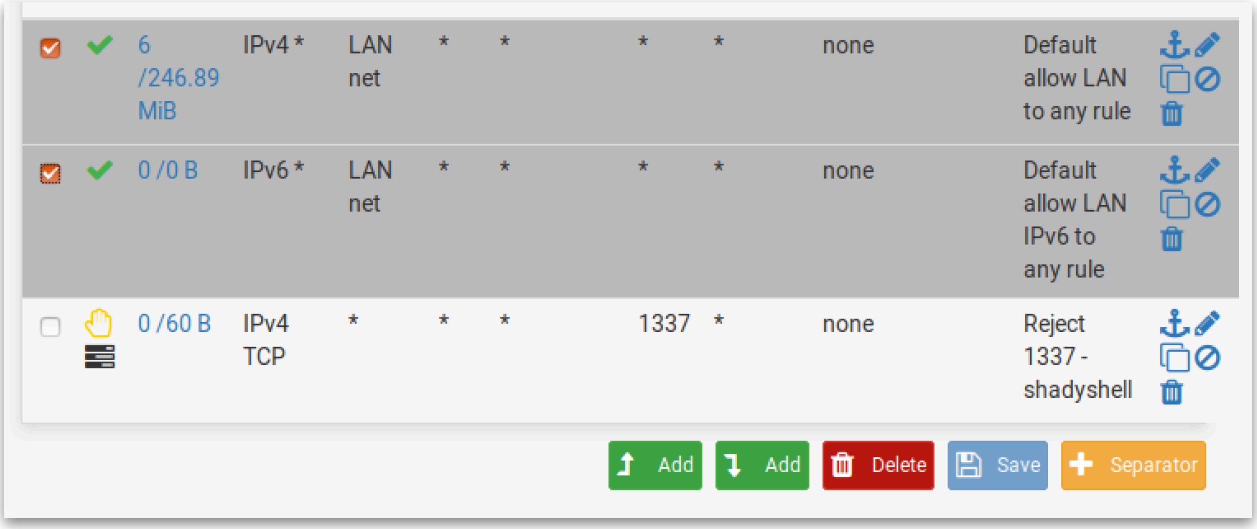


Rules (Drag to Change Order)

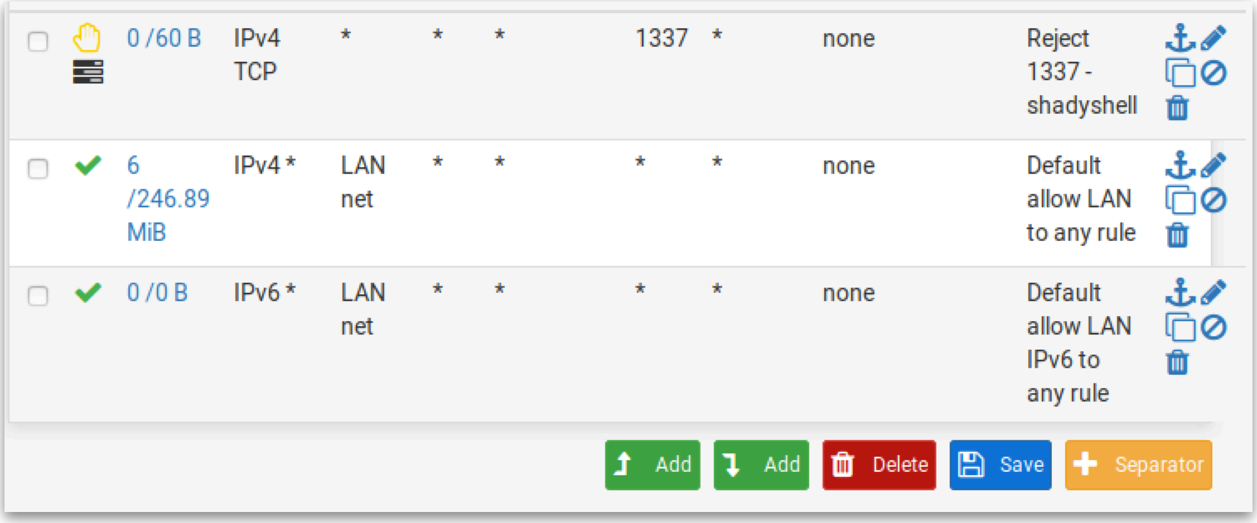
□		States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
	✓	1 /8.98 MiB	*	*	*	LAN Address	443 80 22	*	*		Anti-Lockout Rule	⚙
□	✓	6 /246.89 MiB	IPv4 *	LAN net	*	*	*	*	none		Default allow LAN to any rule	⚓ ✎ ⧉ ⊘ 🗑
□	✓	0 /0 B	IPv6 *	LAN net	*	*	*	*	none		Default allow LAN IPv6 to any rule	⚓ ✎ ⧉ ⊘ 🗑
□	✋	0 /60 B	IPv4 TCP	*	*	*	1337	*	none		Reject 1337 - shadyshell	⚓ ✎ ⧉ ⊘ 🗑

We have to move our rule up so it is hit before the permit ANY ANY rules.

Click to the box next to the green check mark on the two ANY ANY rules (IPv4 and IPv6) then press shift and click the up arrow next to the edit icon on the right.



☑	✓	6 /246.89 MiB	IPv4 *	LAN net	*	*	*	*	none		Default allow LAN to any rule	⚓ ✎ ⧉ ⊘ 🗑
☑	✓	0 /0 B	IPv6 *	LAN net	*	*	*	*	none		Default allow LAN IPv6 to any rule	⚓ ✎ ⧉ ⊘ 🗑
□	✋	0 /60 B	IPv4 TCP	*	*	*	1337	*	none		Reject 1337 - shadyshell	⚓ ✎ ⧉ ⊘ 🗑



☐	✋	0 /60 B	IPv4 TCP	*	*	*	1337	*	none		Reject 1337 - shadyshell
☐	✓	6 /246.89 MiB	IPv4 *	LAN net	*	*	*	*	none		Default allow LAN to any rule
☐	✓	0 /0 B	IPv6 *	LAN net	*	*	*	*	none		Default allow LAN IPv6 to any rule

Click Save at the bottom right of the list, then Apply Changes in green at the top.

Now, we see the traffic is blocked and logged.

If we saw a hit on this rule, we could go and investigate to see what happened to the infected host and clean it up.

Even if you don't want to try the full exercise, I encourage you to add the rule and move it up in the list. You could then try to telnet to any IP address off your network on port 1337 to see the rule enforced.

Nice work!

References

pfSense book
https://docs.netgate.com/manuals/pfsense/en/latest/the-pfsense-book.pdf