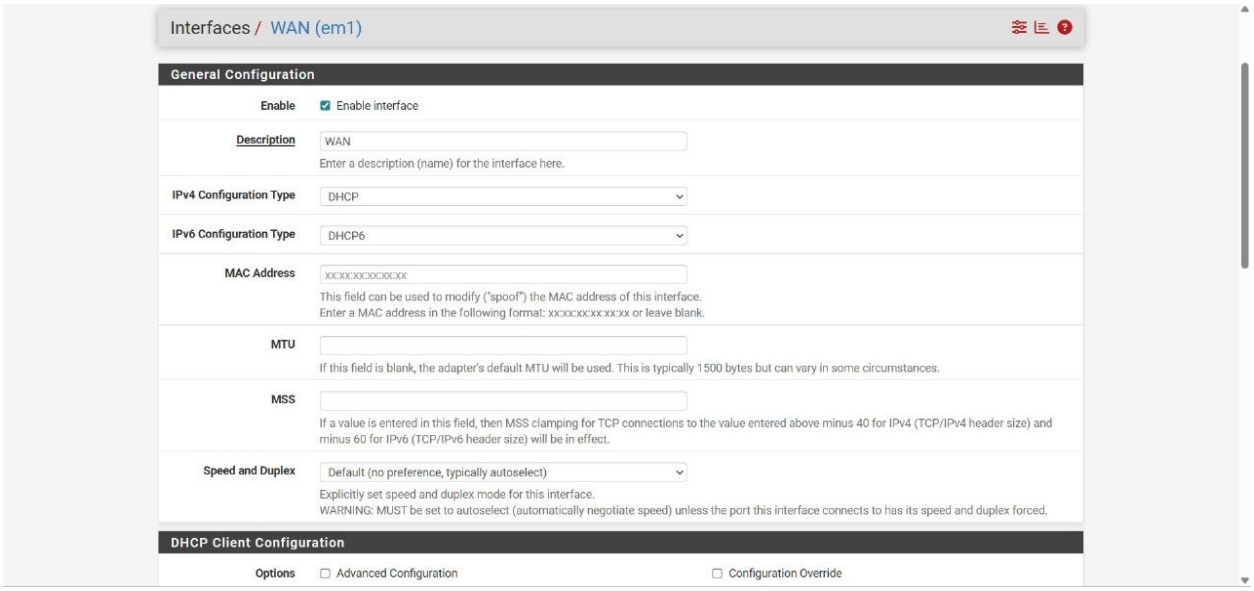
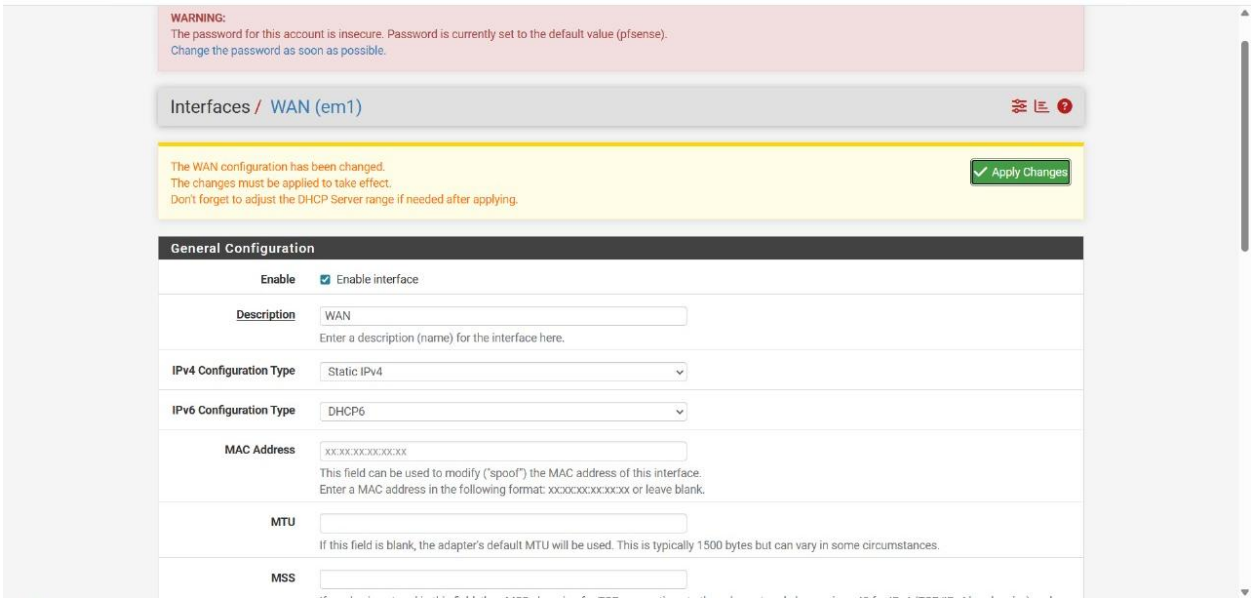
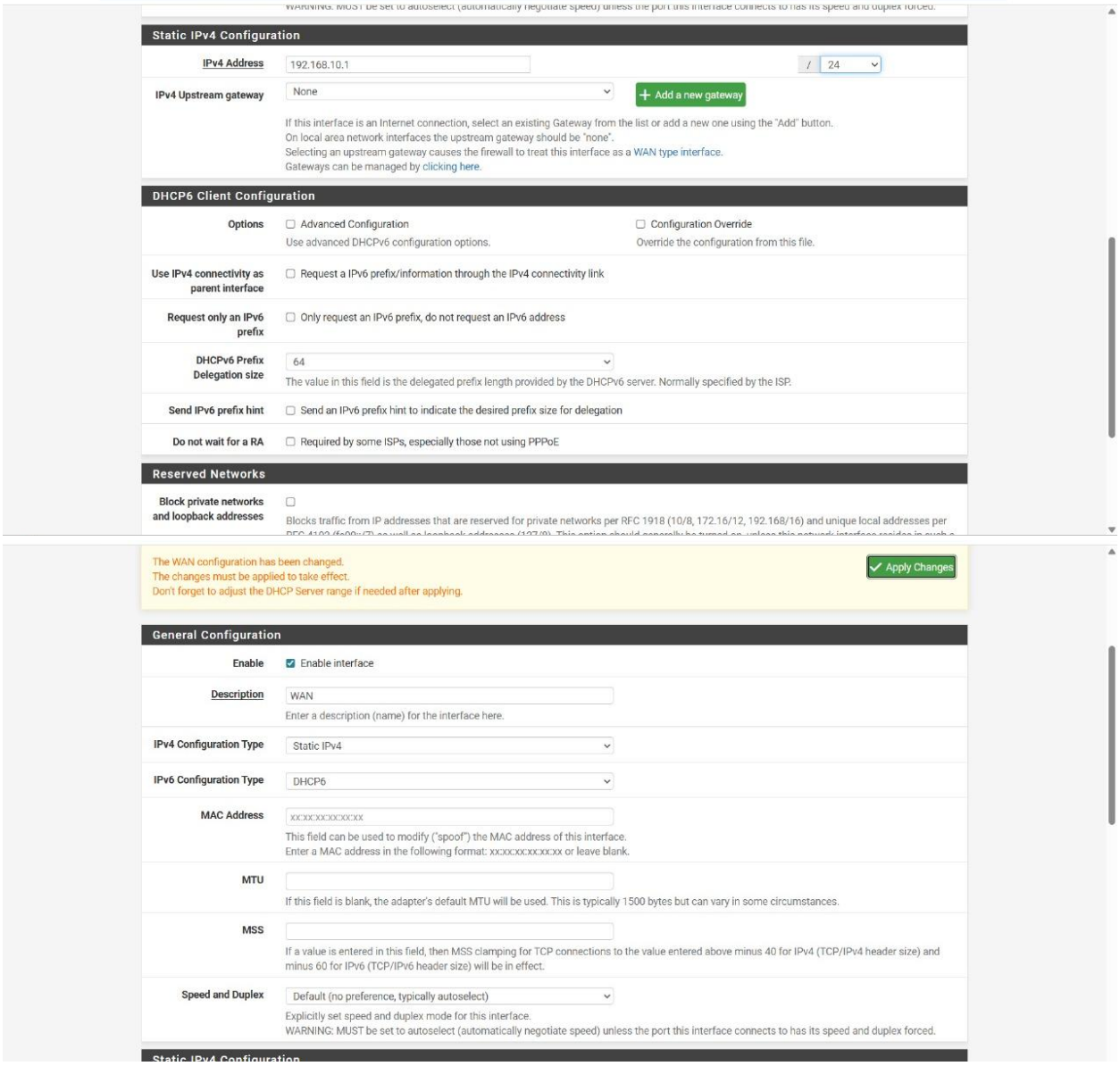
LAB1

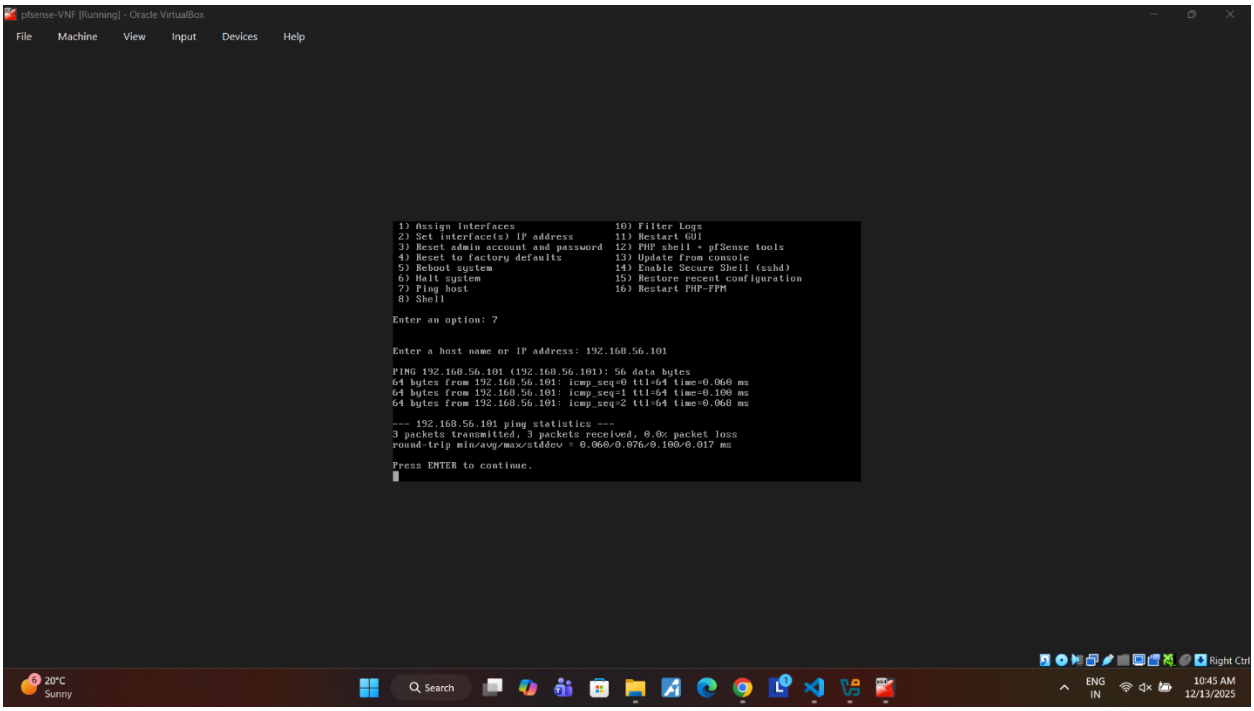
Networking & Interface Configuration

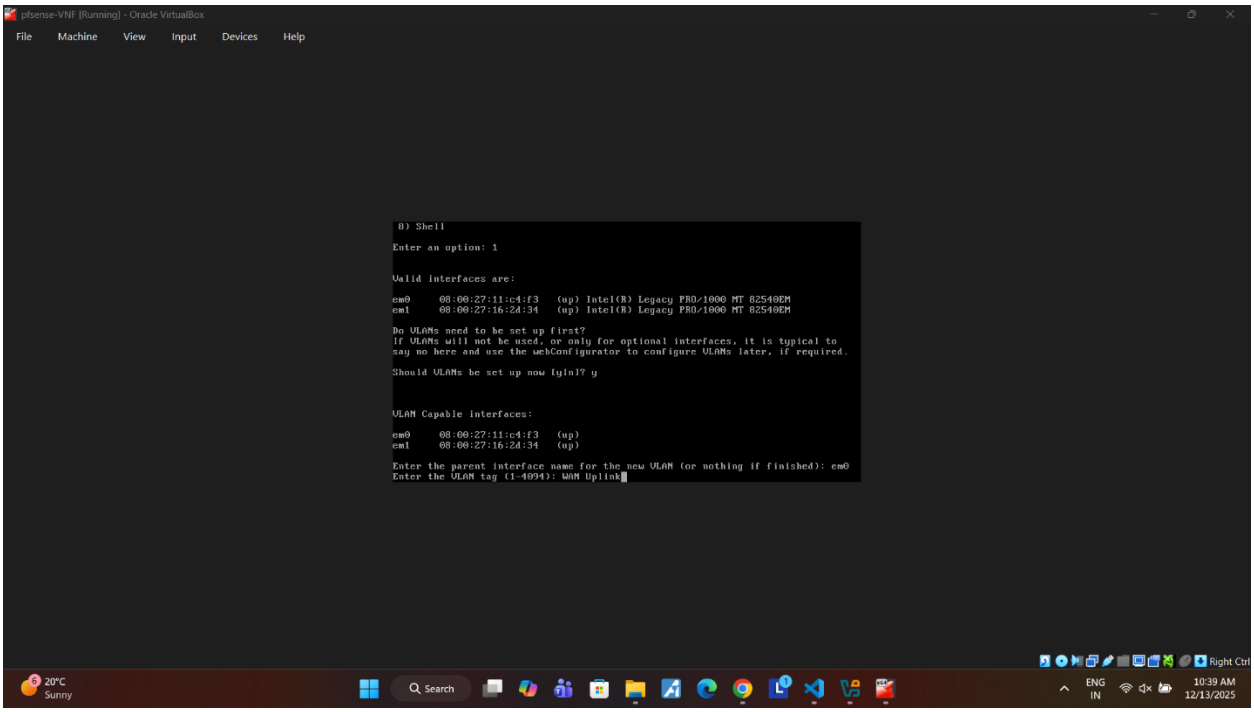


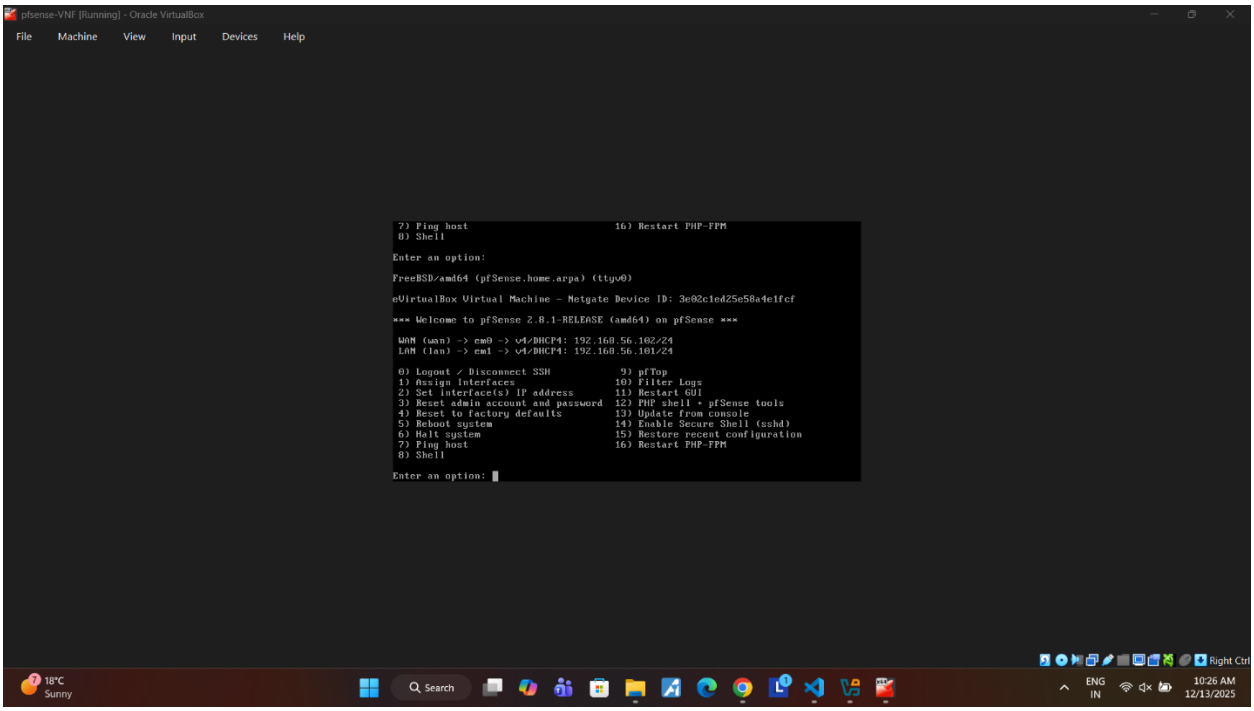



WARNING: MUST be set to autoselect (automatically negotiate speed) unless the port this interface connects to has its speed and duplex forced.
Static IPv4 Configuration
IPv4 Address
192.168.10.1
/ 24
IPv4 Upstream gateway
None
Add a new gateway
If this interface is an Internet connection, select an existing Gateway from the list or add a new one using the "Add" button.
On local area network interfaces the upstream gateway should be "none".
Selecting an upstream gateway causes the firewall to treat this interface as a WAN type interface.
Gateways can be managed by clicking here.
DHCP6 Client Configuration
Options
Advanced Configuration
Use advanced DHCPv6 configuration options.
Configuration Override
Override the configuration from this file.
Use IPv4 connectivity as parent interface
Request a IPv6 prefix/information through the IPv4 connectivity link
Request only an IPv6 prefix
Only request an IPv6 prefix, do not request an IPv6 address
DHCPv6 Prefix Delegation size
64
The value in this field is the delegated prefix length provided by the DHCPv6 server. Normally specified by the ISP.
Send IPv6 prefix hint
Send an IPv6 prefix hint to indicate the desired prefix size for delegation
Do not wait for a RA
Required by some ISPs, especially those not using PPPoE
Reserved Networks
Block private networks and loopback addresses
Blocks traffic from IP addresses that are reserved for private networks per RFC 1918 (10/8, 172.16/12, 192.168/16) and unique local addresses per

The WAN configuration has been changed.
The changes must be applied to take effect.
Don't forget to adjust the DHCP Server range if needed after applying.
Apply Changes
General Configuration
Enable
Enable interface
Description
WAN
Enter a description (name) for the interface here.
IPv4 Configuration Type
Static IPv4
IPv6 Configuration Type
DHCP6
MAC Address
xx:xx:xx:xx:xx:xx
This field can be used to modify ("spoof") the MAC address of this interface.
Enter a MAC address in the following format: xx:xx:xx:xx:xx:xx or leave blank.
MTU
If this field is blank, the adapter's default MTU will be used. This is typically 1500 bytes but can vary in some circumstances.
MSS
If a value is entered in this field, then MSS clamping for TCP connections to the value entered above minus 40 for IPv4 (TCP/IPv4 header size) and minus 60 for IPv6 (TCP/IPv6 header size) will be in effect.
Speed and Duplex
Default (no preference, typically autoselect)
Explicitly set speed and duplex mode for this interface.
WARNING: MUST be set to autoselect (automatically negotiate speed) unless the port this interface connects to has its speed and duplex forced.
Static IPv4 Configuration

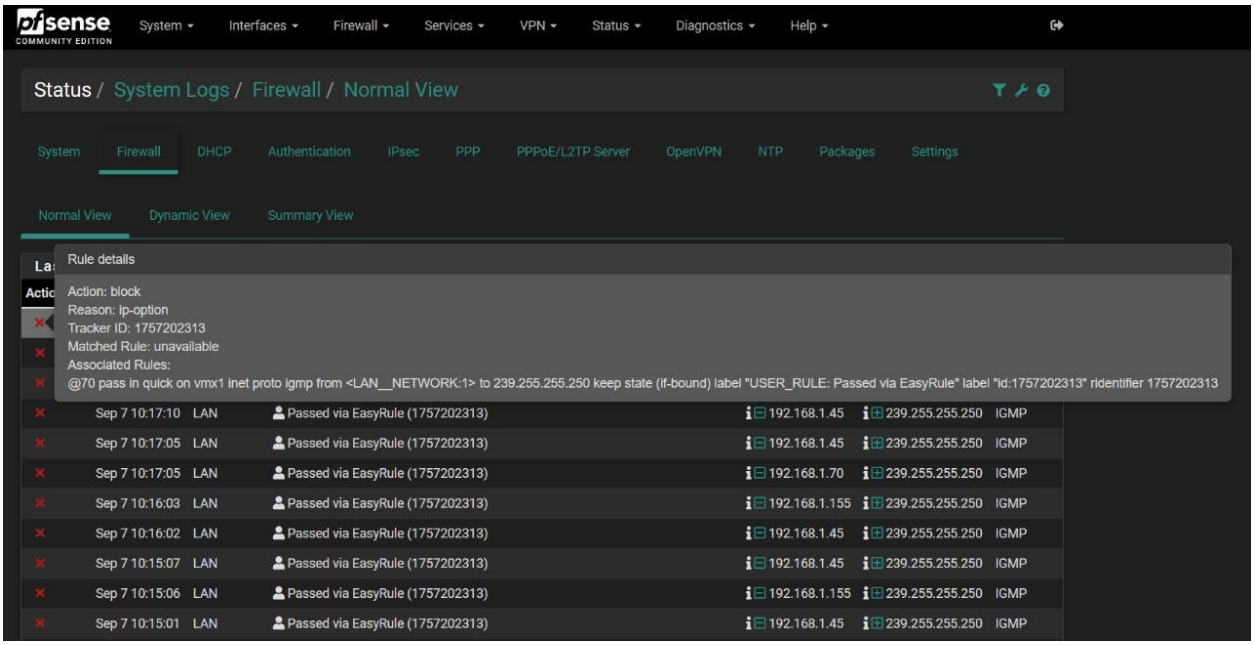

pfsense-VNF [Running] - Oracle VirtualBox
File Machine View Input Devices Help
1) Assign Interfaces
2) Set interface(s) IP address
3) Reset admin account and password
4) Reset to factory defaults
5) Reboot system
6) Halt system
7) Ping host
8) Shell
10) Filter Logs
11) Restart GUI
12) PHP shell + pfSense tools
13) Update from console
14) Enable Secure Shell (sshd)
15) Restore recent configuration
16) Restart PHP-FPM
Enter an option: 7
Enter a host name or IP address: 192.168.56.101
PING 192.168.56.101 (192.168.56.101): 56 data bytes
64 bytes from 192.168.56.101: icmp_seq=0 ttl=64 time=0.060 ms
64 bytes from 192.168.56.101: icmp_seq=1 ttl=64 time=0.100 ms
64 bytes from 192.168.56.101: icmp_seq=2 ttl=64 time=0.060 ms
--- 192.168.56.101 ping statistics ---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.060/0.076/0.100/0.017 ms
Press ENTER to continue.
Right Ctrl
20°C Sunny
Search
ENG IN
10:45 AM 12/13/2025


pfsense-VNF [Running] - Oracle VirtualBox
File Machine View Input Devices Help
8) Shell
Enter an option: 1
Valid interfaces are:
em0 08:00:27:11:c4:f3 (up) Intel(R) Legacy PRO/1000 MT 82540EM
em1 08:00:27:16:2d:34 (up) Intel(R) Legacy PRO/1000 MT 82540EM
Do VLANs need to be set up first?
If VLANs will not be used, or only for optional interfaces, it is typical to
say no here and use the webConfigurator to configure VLANs later, if required.
Should VLANs be set up now [y|n]? y
VLAN Capable interfaces:
em0 08:00:27:11:c4:f3 (up)
em1 08:00:27:16:2d:34 (up)
Enter the parent interface name for the new VLAN (or nothing if finished): em0
Enter the VLAN tag (1-4094): WAN Uplink
Right Ctrl
20°C Sunny
Search
ENG IN
10:39 AM 12/13/2025


pfsense-VNF [Running] - Oracle VirtualBox
File Machine View Input Devices Help
7) Ping host 16) Restart PHP-FPM
8) Shell
Enter an option:
FreeBSD/amd64 (pfSense.home.arpa) (ttyv0)
eVirtualBox Virtual Machine - Netgate Device ID: 3e02c1ed25e58a4e1fcf
*** Welcome to pfSense 2.8.1-RELEASE (amd64) on pfSense ***
WAN (wan) -> em0 -> v4/DHCP4: 192.168.56.102/24
LAN (lan) -> em1 -> v4/DHCP4: 192.168.56.101/24
0) Logout / Disconnect SSH 9) pfTop
1) Assign Interfaces 10) Filter Logs
2) Set interface(s) IP address 11) Restart GUI
3) Reset admin account and password 12) PHP shell + pfSense tools
4) Reset to factory defaults 13) Update from console
5) Reboot system 14) Enable Secure Shell (sshd)
6) Halt system 15) Restore recent configuration
7) Ping host 16) Restart PHP-FPM
8) Shell
Enter an option:
Right Ctrl
18°C Sunny
Search
ENG IN
10:26 AM 12/13/2025

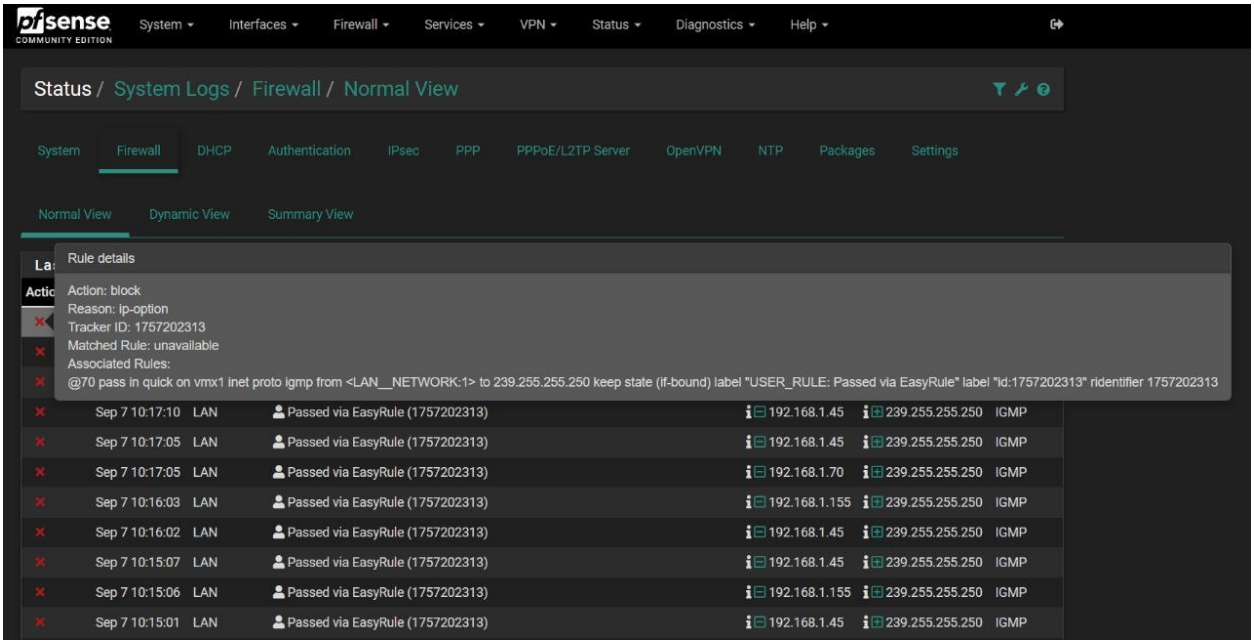
2nd LAB:

Firewall Rule Logic & Policy Enforcement



17 matched log entries.Max(50)

Act	Time	If	Source	Destination	Proto
	Oct 19 01:51:46	LAN	192.168.1.10	159.153.226.105	ICMP
	Oct 19 01:51:45	LAN	192.168.1.10	159.153.225.30	ICMP
	Oct 19 01:51:43	LAN	192.168.1.10	159.153.93.2	ICMP
	Oct 19 01:51:42	LAN	192.168.1.10	64.125.199.186	ICMP
	Oct 19 01:51:40	LAN	192.168.1.10	64.125.31.206	ICMP
	Oct 19 01:51:39	LAN	192.168.1.10	64.125.25.113	ICMP
	Oct 19 01:51:37	LAN	192.168.1.10	64.125.25.46	ICMP
	Oct 19 01:51:36	LAN	192.168.1.10	64.125.30.233	ICMP
	Oct 19 01:51:34	LAN	192.168.1.10	64.125.31.234	ICMP
	Oct 19 01:51:33	LAN	192.168.1.10	64.125.24.5	ICMP
	Oct 19 01:51:32	LAN	192.168.1.10	75.149.228.134	ICMP
	Oct 19 01:51:30	LAN	192.168.1.10	68.86.87.18	ICMP
	Oct 19 01:51:29	LAN	192.168.1.10	68.86.91.229	ICMP
	Oct 19 01:51:27	LAN	192.168.1.10	68.85.155.14	ICMP
	Oct 19 01:51:26	LAN	192.168.1.10	68.85.154.10	ICMP
	Oct 19 01:51:24	LAN	192.168.1.10	162.151.1.141	ICMP
	Oct 19 01:51:23	LAN	192.168.1.10	67.160.236.1	ICMP



Schedule Information

Schedule Name BusinessHours

Description Normal Business Hours

Month August_16

Date

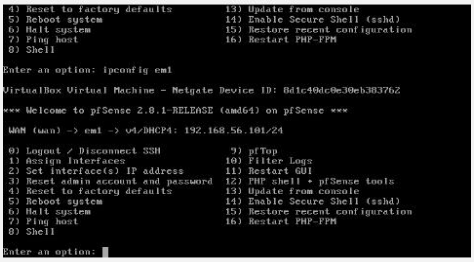
August_2016						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Click individual date to select that date only. Click the appropriate weekday Header to select all occurrences of that weekday.

Time 9 : 00 — 17 : 00

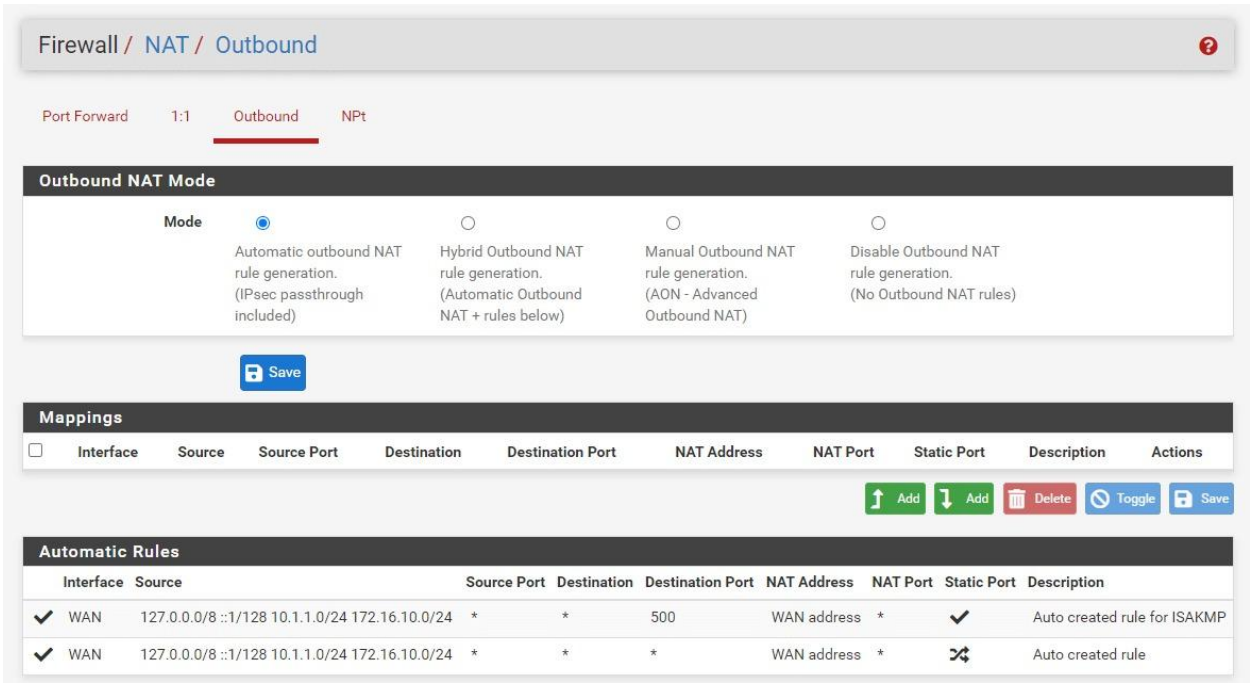
Time range description Work Week

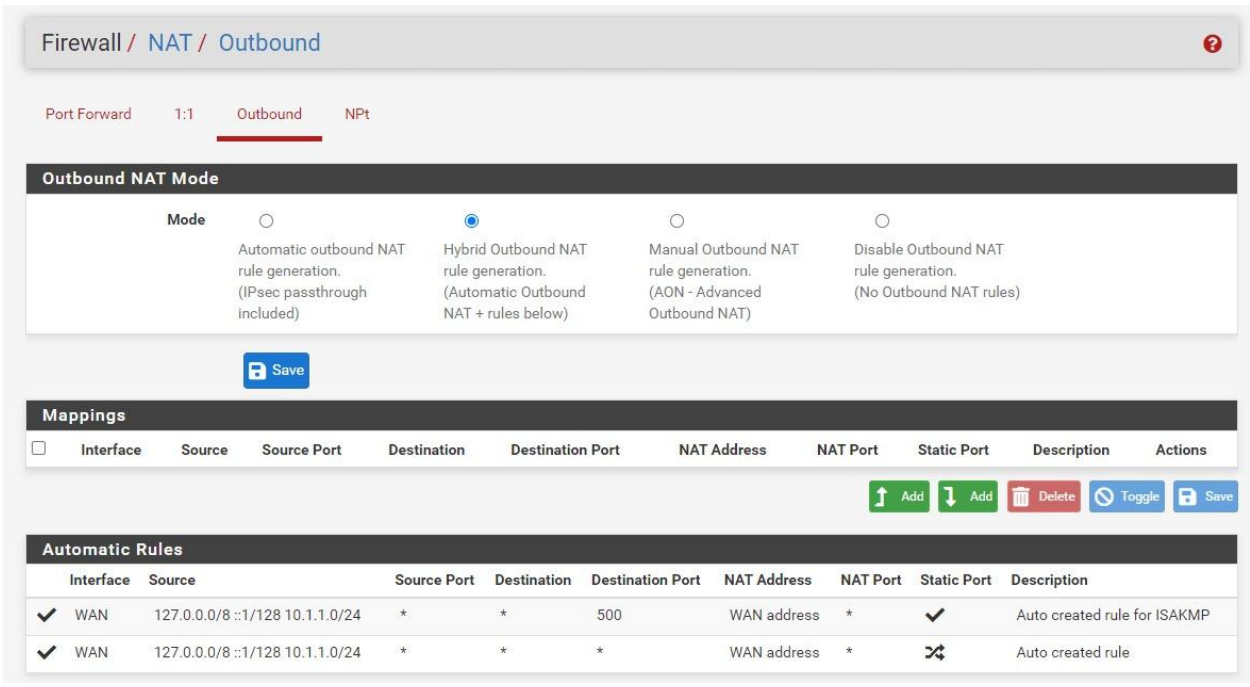
Add Time Clear selection

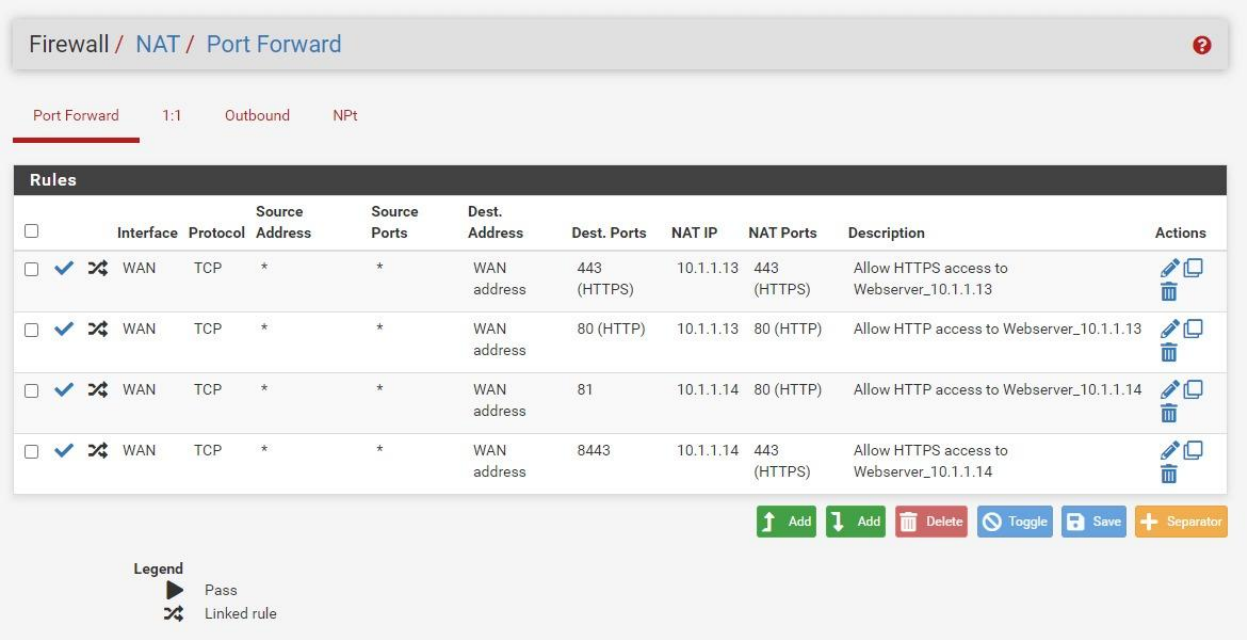


LAB 3:

NAT & Port Forwarding:


Firewall / NAT / Outbound
Port Forward
1:1
Outbound
NPt
Outbound NAT Mode
Mode
Automatic outbound NAT rule generation. (IPsec passthrough included)
Hybrid Outbound NAT rule generation. (Automatic Outbound NAT + rules below)
Manual Outbound NAT rule generation. (AON - Advanced Outbound NAT)
Disable Outbound NAT rule generation. (No Outbound NAT rules)
Save
Mappings
Interface Source Source Port Destination Destination Port NAT Address NAT Port Static Port Description Actions
Add
Add
Delete
Toggle
Save
Automatic Rules
Interface Source Source Port Destination Destination Port NAT Address NAT Port Static Port Description
WAN 127.0.0.0/8 ::1/128 10.1.1.0/24 172.16.10.0/24 * * 500 WAN address * Auto created rule for ISAKMP
WAN 127.0.0.0/8 ::1/128 10.1.1.0/24 172.16.10.0/24 * * * WAN address * Auto created rule


Firewall / NAT / Outbound
Port Forward
1:1
Outbound
NPt
Outbound NAT Mode
Mode
Automatic outbound NAT rule generation. (IPsec passthrough included)
Hybrid Outbound NAT rule generation. (Automatic Outbound NAT + rules below)
Manual Outbound NAT rule generation. (AON - Advanced Outbound NAT)
Disable Outbound NAT rule generation. (No Outbound NAT rules)
Save
Mappings
Interface Source Source Port Destination Destination Port NAT Address NAT Port Static Port Description Actions
Add
Add
Delete
Toggle
Save
Automatic Rules
Interface Source Source Port Destination Destination Port NAT Address NAT Port Static Port Description
WAN 127.0.0.0/8 ::1/128 10.1.1.0/24 * * 500 WAN address * Auto created rule for ISAKMP
WAN 127.0.0.0/8 ::1/128 10.1.1.0/24 * * * WAN address * Auto created rule


Firewall / NAT / Port Forward
Port Forward
1:1
Outbound
NPt
Rules
Interface
Protocol
Source Address
Source Ports
Dest. Address
Dest. Ports
NAT IP
NAT Ports
Description
Actions
WAN TCP * * WAN address 443 (HTTPS) 10.1.1.13 443 (HTTPS) Allow HTTPS access to Webserver_10.1.1.13
WAN TCP * * WAN address 80 (HTTP) 10.1.1.13 80 (HTTP) Allow HTTP access to Webserver_10.1.1.13
WAN TCP * * WAN address 81 10.1.1.14 80 (HTTP) Allow HTTP access to Webserver_10.1.1.14
WAN TCP * * WAN address 8443 10.1.1.14 443 (HTTPS) Allow HTTPS access to Webserver_10.1.1.14
Add
Add
Delete
Toggle
Save
Separator
Legend
Pass
Linked rule