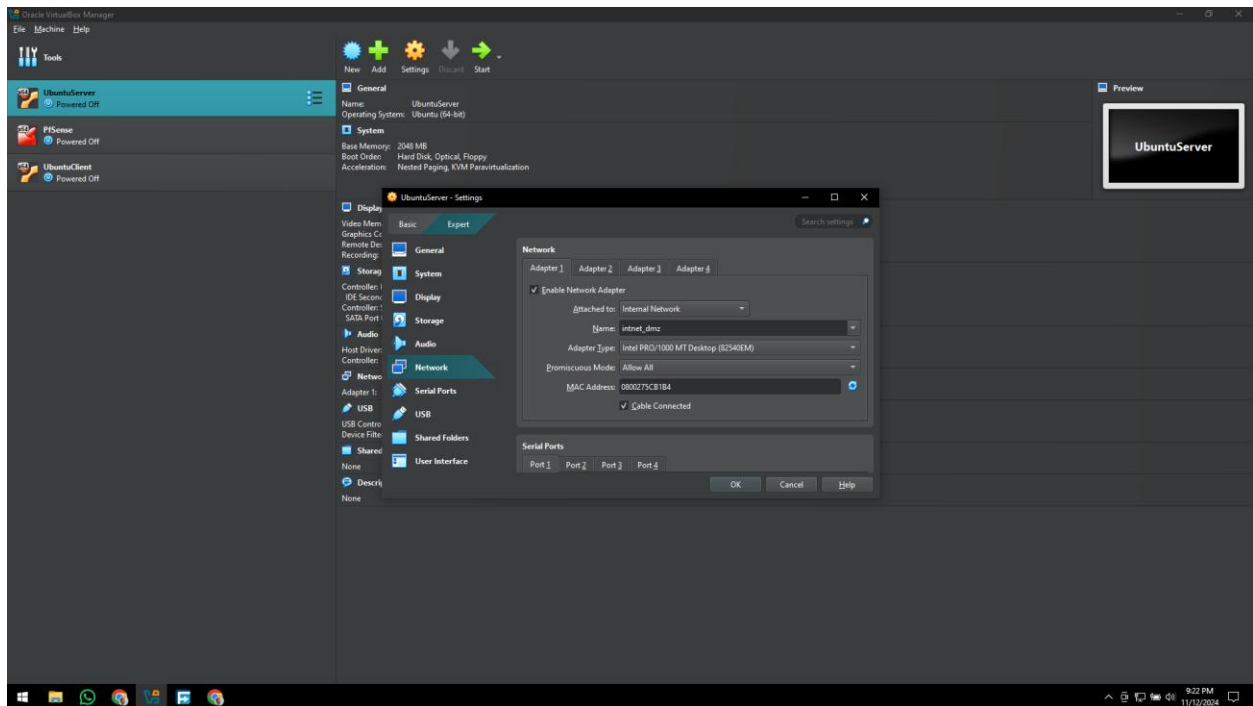
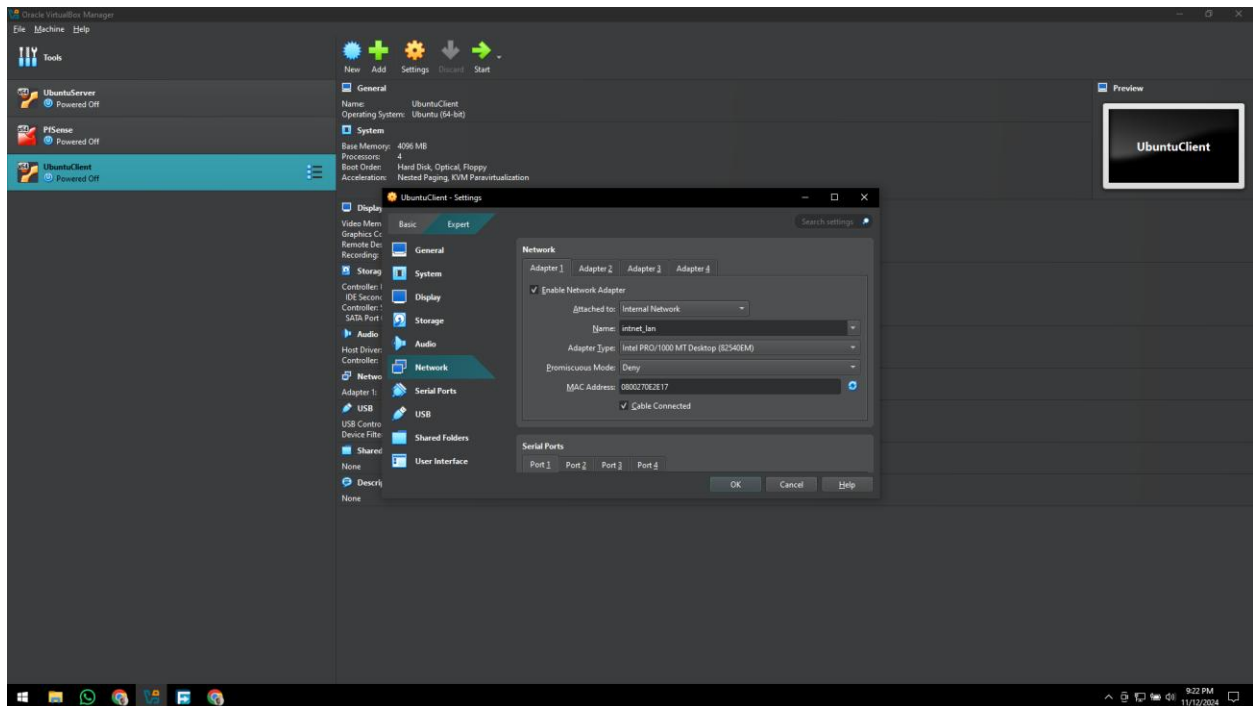


VM configuration:

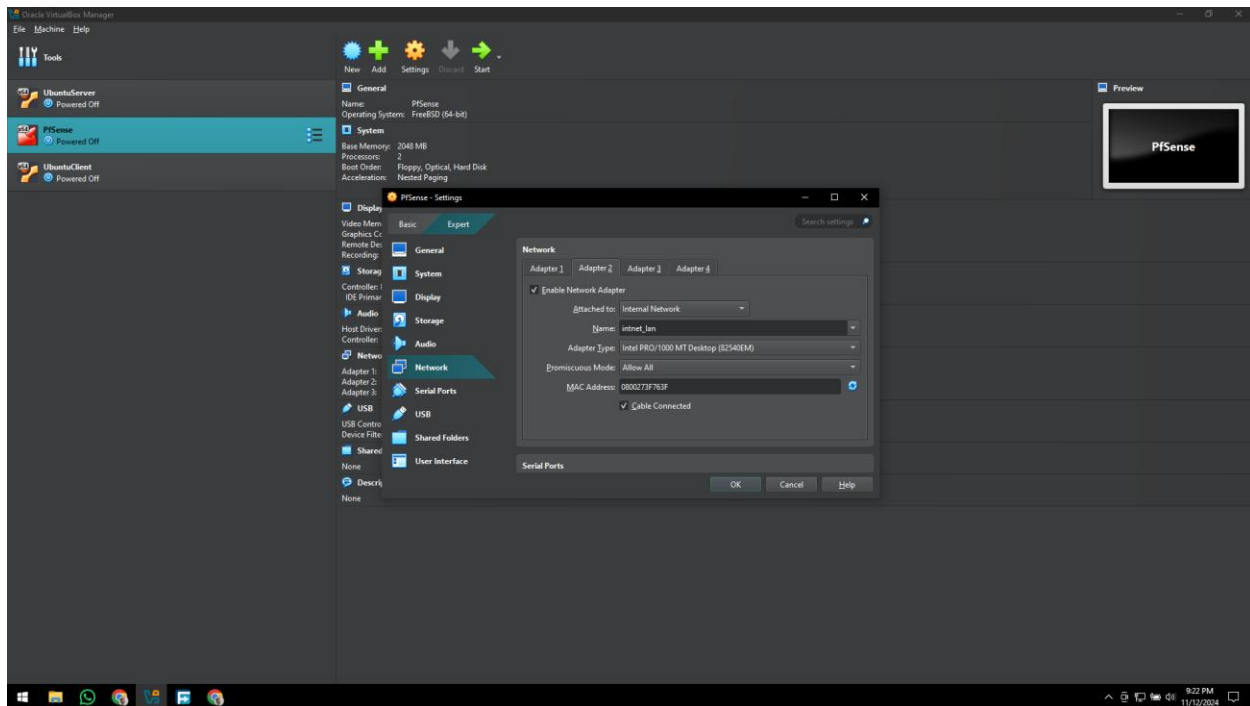
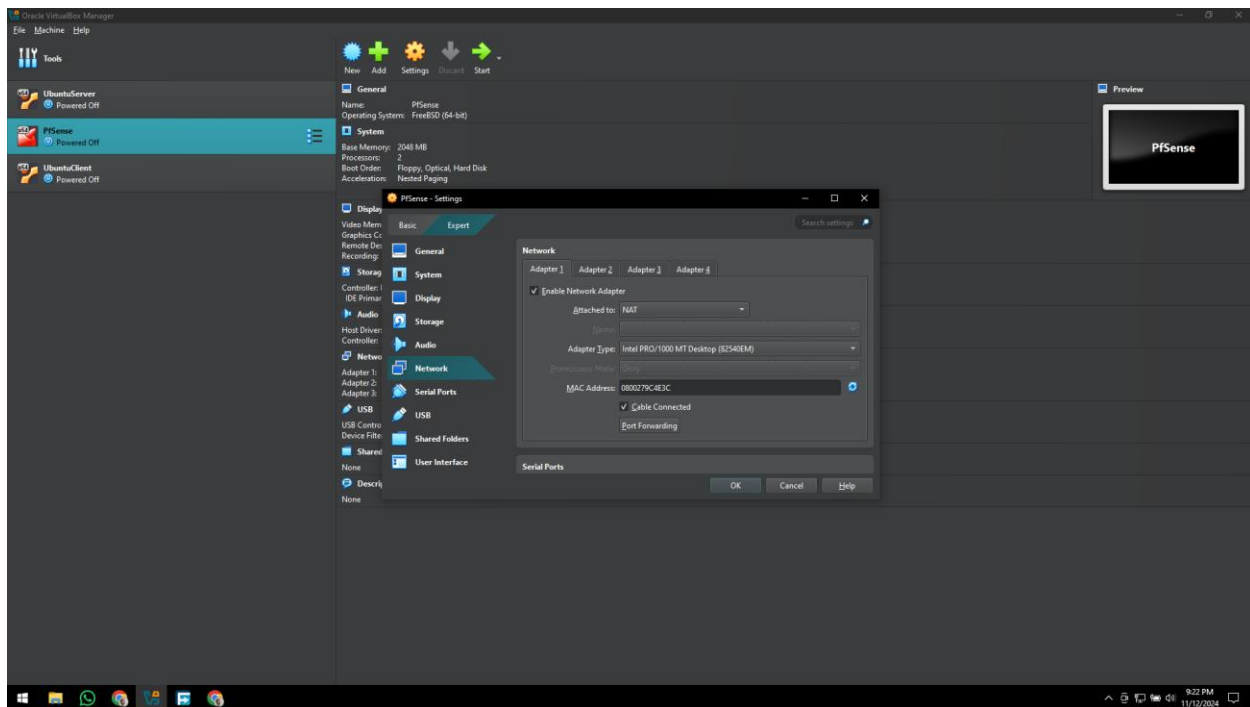
Ubuntu Server:

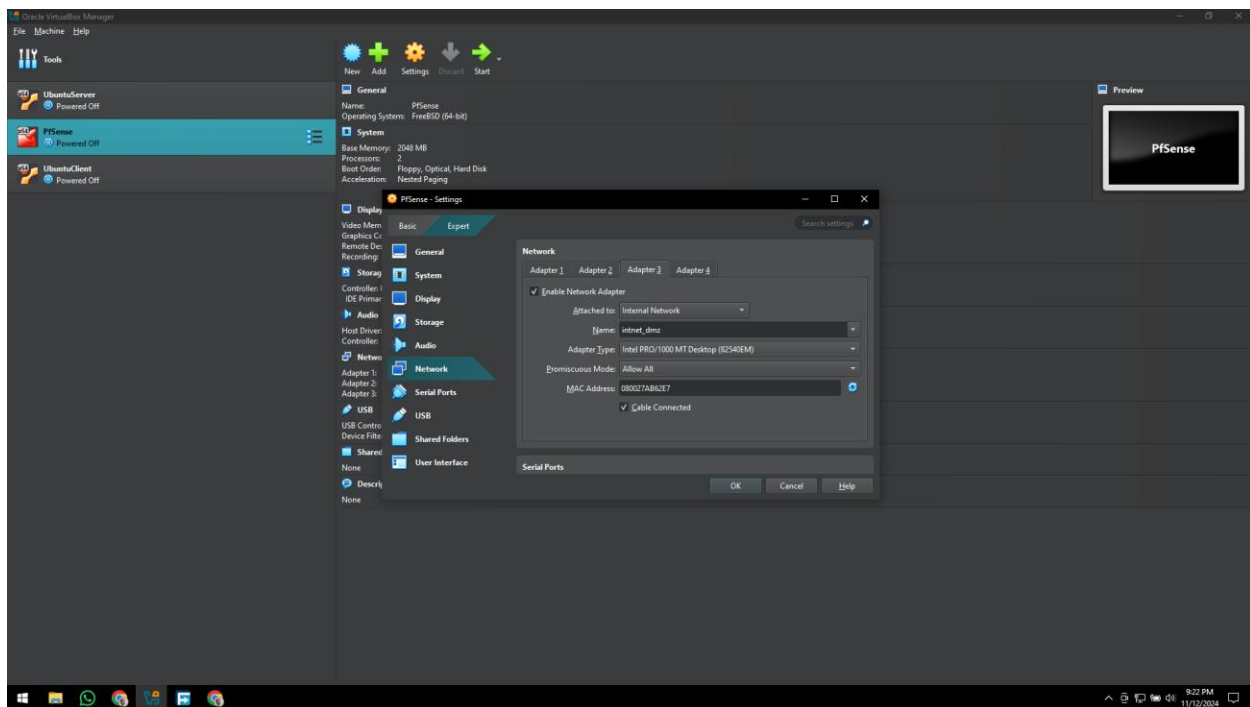


Ubuntu Client:



PfSense:

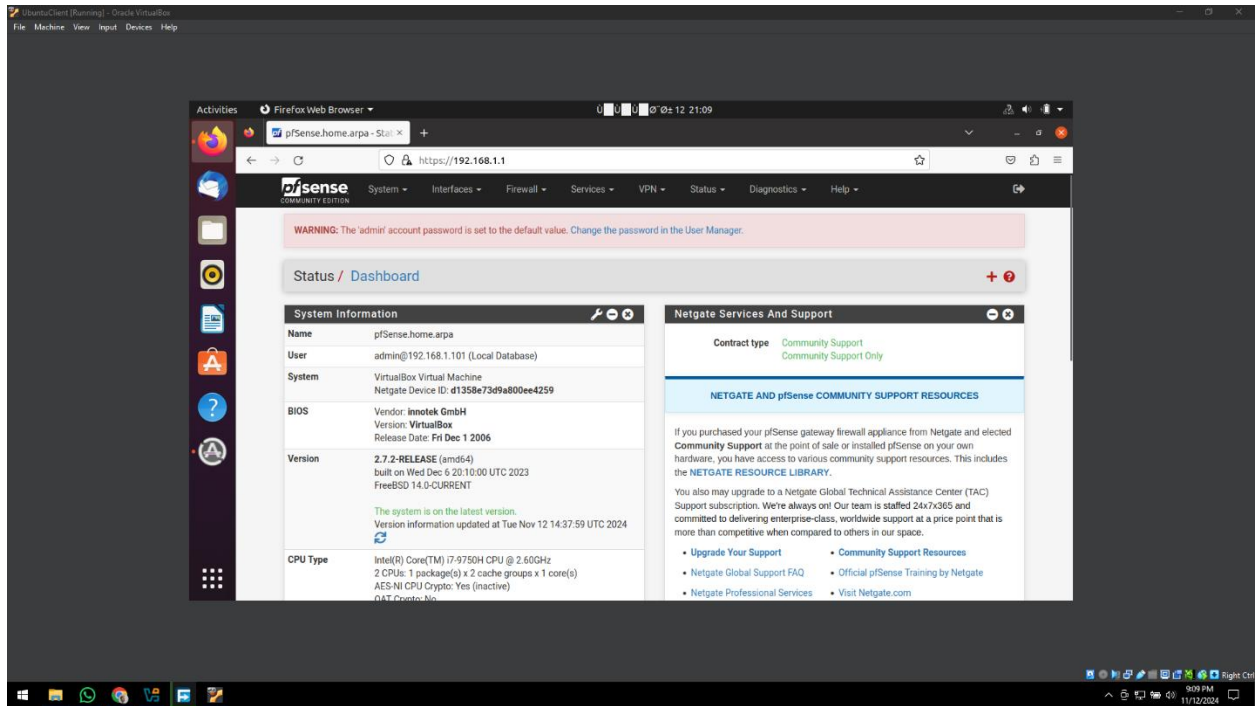




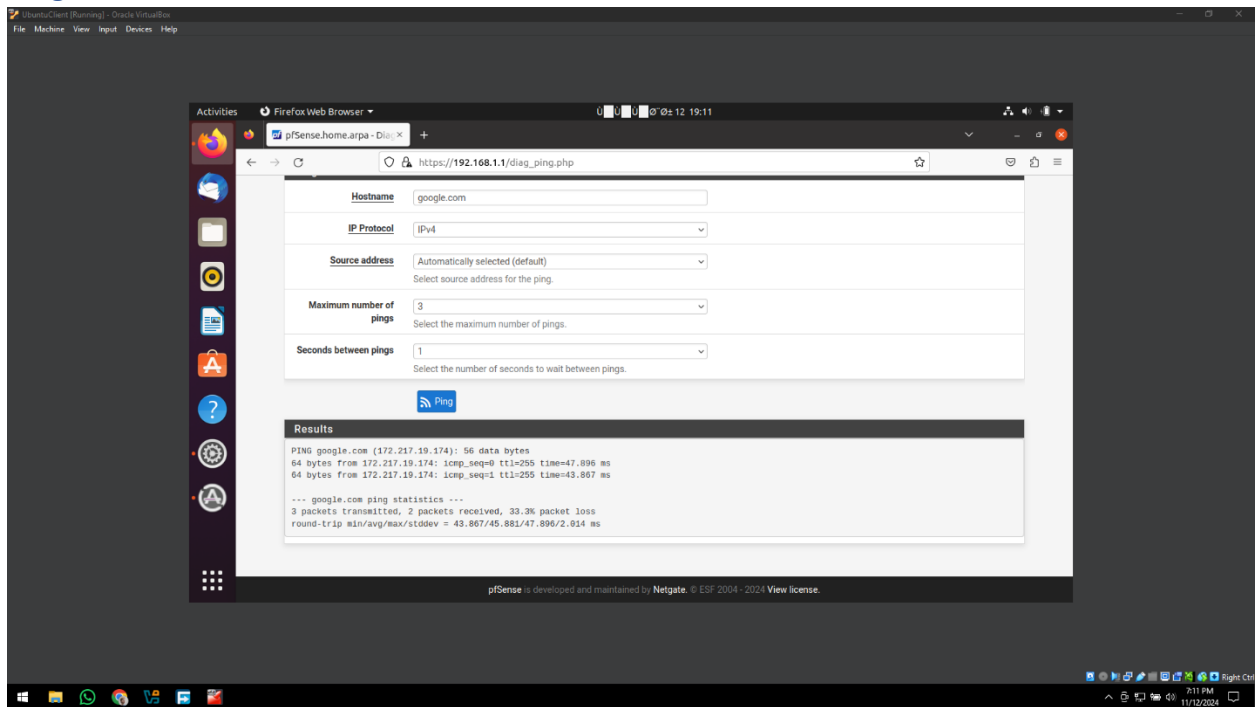
Running all VMs:
PFsense network adpaters:



PfSense web configurator on Ubuntu Client:



Ping Test:



Firewall Rules:

WAN Rules:

The screenshot shows the pfSense Firewall Rules configuration page for the WAN interface. The browser address bar shows the URL `https://192.168.1.1/firewall_rules.php?if=wan`. The page has a warning message: "WARNING: The 'admin' account password is set to the default value. Change the password in the User Manager." Below the warning, the breadcrumb navigation is "Firewall / Rules / WAN". The "Floating" tab is selected, and the "WAN" interface is chosen. The table lists the following rules:

States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
<input checked="" type="checkbox"/>	0/0 B	*	*	RFC 1918 networks	*	*	*	*	Block private networks	
<input checked="" type="checkbox"/>	0/0 B	*	*	Reserved Not assigned by IANA	*	*	*	*	Block bogon networks	
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP	*	*	DMZ subnets	443 (HTTPS)	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP	*	*	DMZ subnets	80 (HTTP)	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP	*	172.16.1.10	80 (HTTP)	*	none		NAT	

At the bottom of the table, there are buttons: "Add", "Add", "Delete", "Toggle", "Copy", "Save", and "Separator".

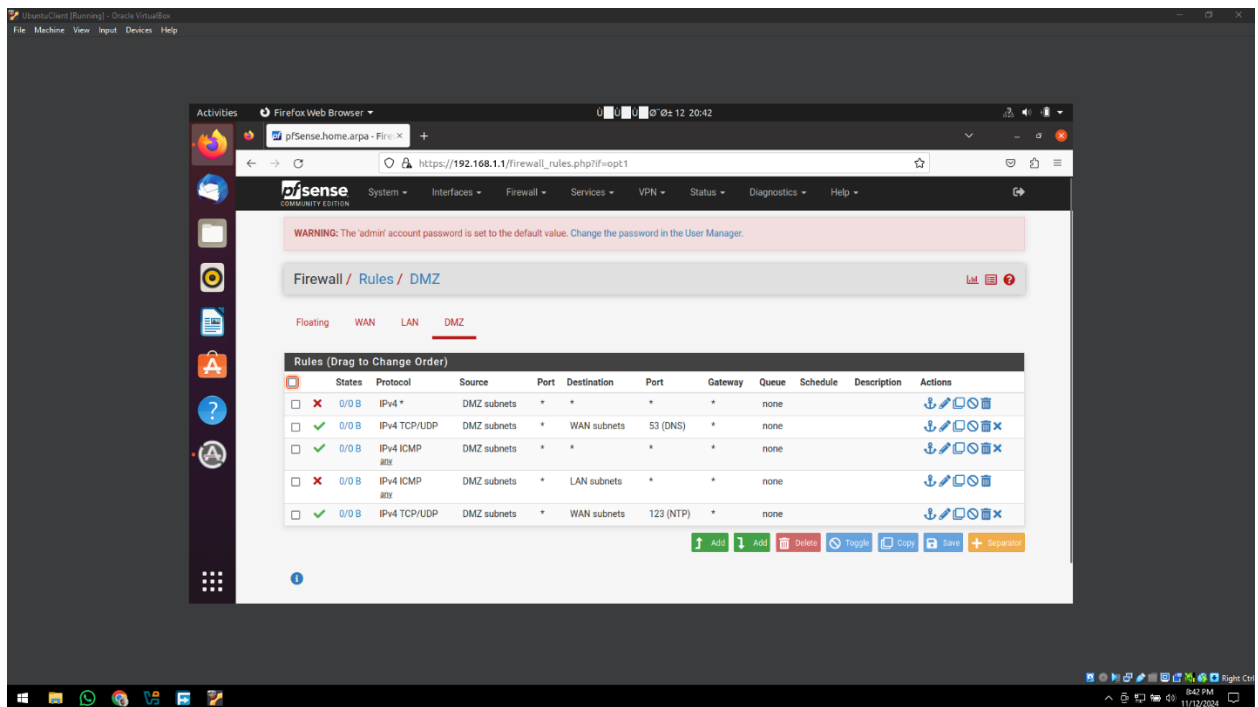
Lan Rules:

The screenshot shows the pfSense Firewall Rules configuration page for the LAN interface. The browser address bar shows the URL `https://192.168.1.1/firewall_rules.php?if=lan`. The table lists the following rules:

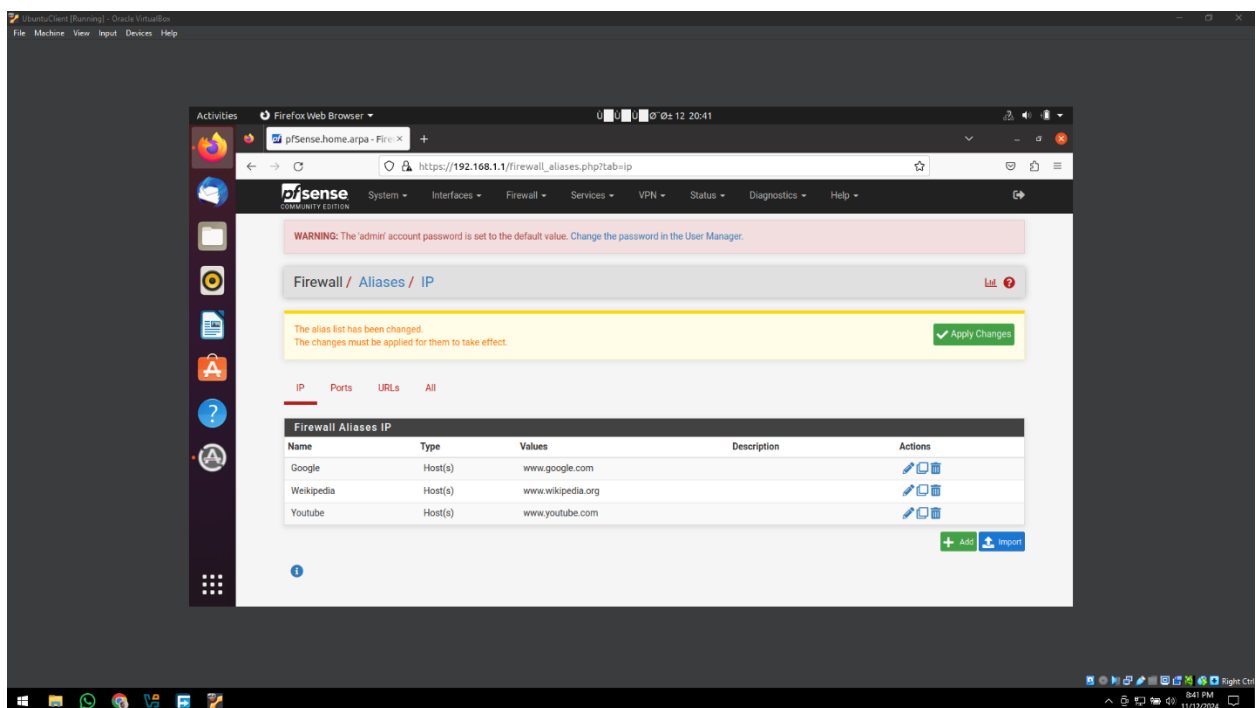
States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
<input type="checkbox"/>	1/1.52 MB	*	*	LAN Address	443 80	*	*	*	Anti-Logout Rule	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	*	*	Wikipedia	443 (HTTPS)	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	*	*	Youtube	443 (HTTPS)	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	LAN subnets	*	DMZ subnets	53 (DNS)	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	LAN subnets	*	DMZ subnets	22 (SSH)	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	LAN subnets	*	DMZ subnets	80 (HTTP)	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 ICMP	800	LAN subnets	*	DMZ subnets	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 *	LAN subnets	*	*	*	*	none		
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 *	LAN subnets	*	DMZ subnets	*	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	*	*	Google	443 (HTTPS)	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP	*	*	8.8.4.4	53 (DNS)	*	none		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 TCP/UDP	*	*	8.8.8.8	53 (DNS)	*	none		

At the bottom of the table, there are buttons: "Add", "Add", "Delete", "Toggle", "Copy", "Save", and "Separator".

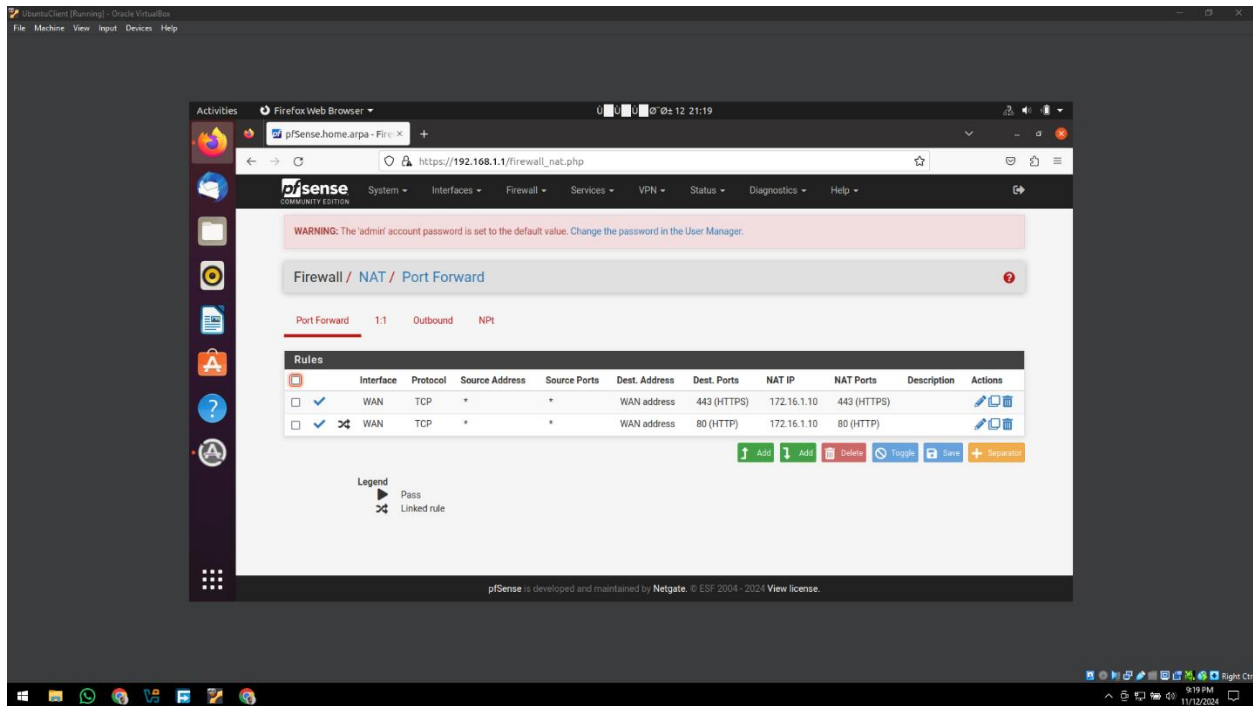
DMZ Rules:



Firewall Aliases:



Port Forwarding on Firewall NAT



Suricata Installation:

