



pfSense Configuration for TeleVoIPs

Follow the directions below to ensure proper configuration and QoS settings for the pfSense firewalls. Please understand, instructions may vary based on the model and firmware version of your device

I. Required Changes

A. Set Conservative State Table Optimization

1. Go to **System > Advanced**
2. Click **Firewall & NAT**
3. Set 'Firewall Optimization Options' to **Conservative**

The screenshot shows the pfSense web interface. The breadcrumb trail is System / Advanced / Firewall & NAT. The 'Firewall & NAT' tab is selected. Under the 'Firewall Advanced' section, the 'Firewall Optimization Options' dropdown menu is set to 'Conservative' and is highlighted with a red box. Below it, the 'Firewall Adaptive Timeouts' section is visible with input fields for 'Adaptive start' and 'Adaptive end'.

4. Under the 'State Timeouts' section set 'UDP First, Single, and Multiple' to **300**

State Timeouts (seconds - blank for default)	
TCP First	<input type="text"/>
TCP Opening	<input type="text"/>
TCP Established	<input type="text"/>
TCP Closing	<input type="text"/>
TCP FIN Wait	<input type="text"/>
TCP Closed	<input type="text"/>
UDP First	<input type="text" value="300"/>
UDP Single	<input type="text" value="300"/>
UDP Multiple	<input type="text" value="300"/>
ICMP First	<input type="text"/>
ICMP Error	<input type="text"/>

B. Set up Outbound NAT

1. Go to **Firewall > NAT**
2. Click **Outbound**
3. Set 'Outbound Nat Mode' to **Manual Outbound NAT rule generation (AON - Advanced Outbound NAT)**

pfSense COMMUNITY EDITION System Interfaces Firewall Services VPN Status Diagnostics Help

Firewall / NAT / Outbound

Port Forward 1:1 **Outbound** NPt

Outbound NAT Mode

<input checked="" type="radio"/> Mode	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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

C. Add TeleVoIPs IPs

(Contact our support team at support@televoips.com if you have not already received them)

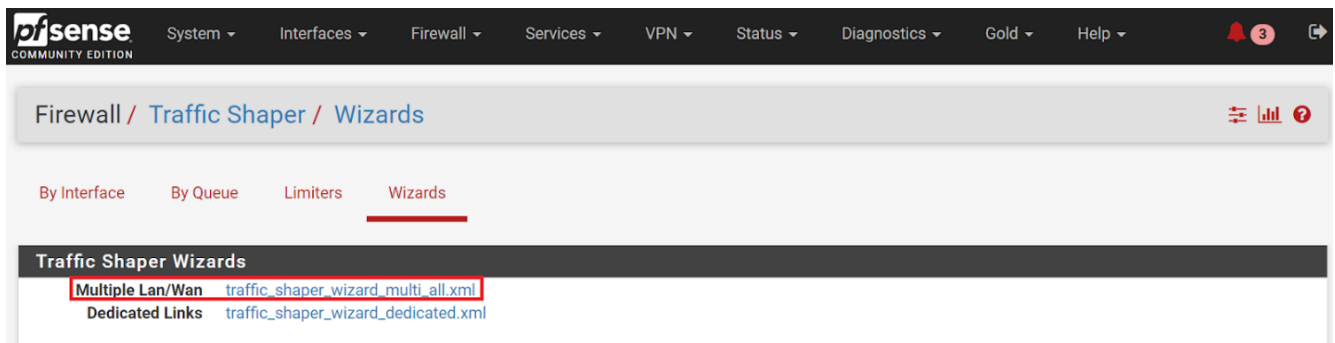
1. Go to **Firewall > Rules**
2. Click **LAN**

3. Click **Add**
4. Add each TeleVoIPs IP one at a time in the destination.
 - a. Client Phone server IP(s)
 - b. Proxy IP(s)
 - c. Fax server IP(s)
5. Add each TeleVoIPs port one at a time.
 - a. SIP 5060-5160
 - b. RTP 10000-20000

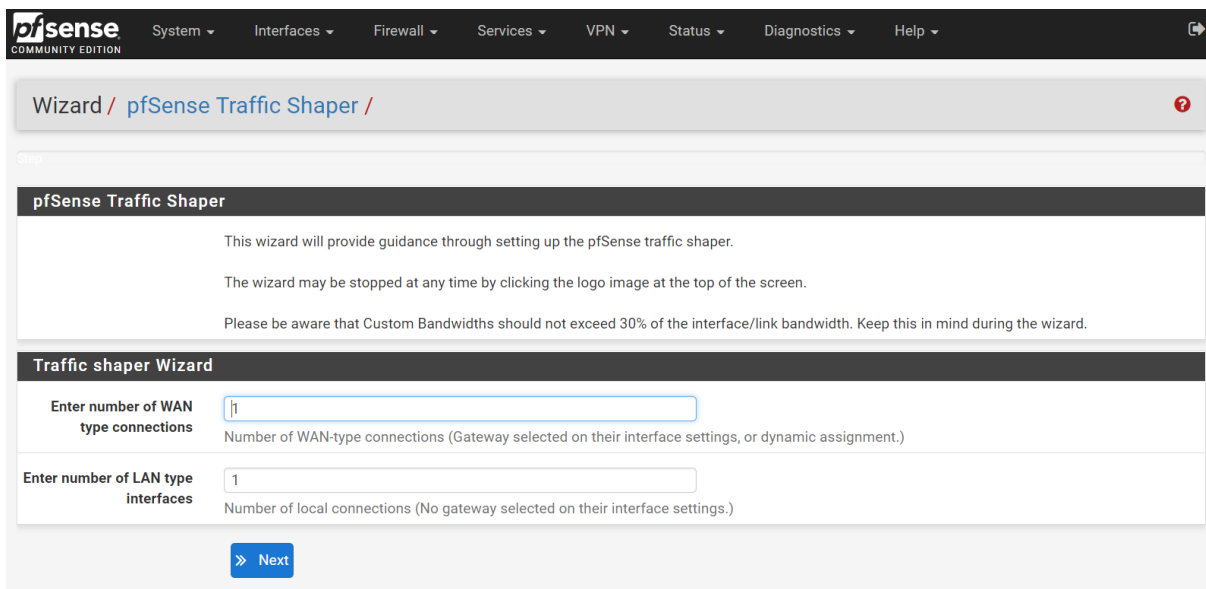
II. QoS Optimization (Recommended)

A. Set Traffic Shaping Rules

1. Go to **Firewall > Traffic Shaper**.
2. Click **Wizards**.
3. Click **Multiple Lan/Wan**.



4. Enter the number of WAN type connections and LAN type interfaces.



5. Select **HFSC** for 'Interface & Scheduler.'
6. Make sure your Upload and Download speed is set correctly. If you have an internet connection established on your pfSense, it should be set automatically. Enter your interface WAN #1 upload and download speed. (Screenshot below is an example, every network will have different up/down speed, we highly recommend working with your IT department or system administrator for the correct up/down speed for your network.)

Wizard / pfSense Traffic Shaper / Shaper configuration

Step 1 of 8

Shaper configuration

Shaper configuration

Setup connection speed and scheduler information for interface LAN #1

Interface & Scheduler: LAN

Interface & Scheduler: HFSC

Setup connection speed and scheduler information for interface WAN#1

Interface & Scheduler: WAN

Interface & Scheduler: HFSC

Upload: 10

Upload: Mbit/s

Download: 50

Download: Mbit/s

» Next

7. Click **Next**.
8. Under the 'Voice over IP' section Enable **Prioritize Voice over IP traffic**.
9. The next Step depends on how many users you have on your network. For the network in the below example, it is highly unlikely that more than 5 people will have a phone call at the same time. In this step we are going to set bandwidth we want to reserve for our VOIP traffic, in this example we set the 'Connection for WAN#1 and LAN#1' limits to 1Mbit/s Up/Down.

As a rule of thumb you can assume the following traffic rules:

Number of Concurrent Calls	Minimum Required Bandwidth	Recommended Speed
1	100 Kbps Up and Down	3 MBps Up and Down

3	300 Kbps Up and Down	3 MBps Up and Down
5	500 Kbps Up and Down	5 MBps Up and Down
10	1 MBps Up and Down	5-10 MBps Up and Down

Step 2 of 8

Voice over IP

Voice over IP

enable Prioritize Voice over IP traffic.

VOIP specific settings

Provider: Generic (lowdelay)
Choose Generic if the provider isn't listed.

Upstream SIP Server:
(Optional) If this is chosen, the provider field will be overridden. This allows providing the IP address of the remote PBX or SIP Trunk to prioritize. NOTE: A Firewall Alias can also be used in this location.

Connection WAN #1

Upload:
 Units: Mbit/s

Connection LAN #1

Download:
 Units: Mbit/s

1. Click **Next**.
2. The next steps are unique to each network, make sure you go through each section and check anything that pertains to your network until you get to the end of the Wizard.
3. Confirm the wizard has created the proper queues for your network by navigating back to **Firewall > Traffic Shaper**.
4. Click **By Interface**.
5. In this section, you can modify or adjust the queues that were created by the Wizard. Note, this is the fastest and easiest way of creating the Traffic Shaping rules, but there are multiple ways of creating these queues. You can find more information on creating these rules by visiting the pfSense website and forums.

The screenshot shows the Mikrotik WinBox interface for configuring traffic shapers. At the top, the navigation menu includes System, Interfaces, Firewall, Services, VPN, Status, Diagnostics, and Help. The breadcrumb path is Firewall / Traffic Shaper / By Interface. Below the breadcrumb, there are four tabs: By Interface (selected), By Queue, Limiters, and Wizards. The main area displays a tree view of the configuration:

- WAN
 - qInternet
 - qACK
 - qDefault
 - qVoIP
- LAN
 - qLink
 - qInternet
 - qACK
 - qVoIP

At the bottom left, there is a red button labeled "Remove Shaper" with a trash icon, and an information icon below it.