

## Lab1:Networking and Interface configuration

COMMUNITY EDITION

**WARNING:**  
The password for this account is insecure. Password is currently set to the default value (pfsense).  
Change the password as soon as possible.

Interface Assignments

Interface Assignments    Interface Groups    Wireless    VLANs    QinQs    PPPs    GREs    GIFs    Bridges

LAGGs

Interface	Network port
WAN	em0 (08:00:27:8b:b0:b3)
LAN	em1 (08:00:27:fe:ef:a6)

Interfaces that are configured as members of a lagg(4) interface will not be shown.

Wireless interfaces must be created on the Wireless tab before they can be assigned.



ETHERNET

**MAC Address**  
  
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**  
  
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**

**IPv4 Address**  
 /  

**IPv4 Upstream gateway**

```

v6/DHCP6: fd17:625c:f037:2:a00:27ff:fe8b:b0b3/64
LAN1 (lan) -> em1 -> v4: 192.168.58.5/24

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) Disable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option: 8

[2.8.1-RELEASE][root@pfSense.home.arpa]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8): 56 data bytes
64 bytes from 8.8.8.8: icmp_seq=0 ttl=255 time=54.631 ms
64 bytes from 8.8.8.8: icmp_seq=1 ttl=255 time=33.761 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=255 time=40.890 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=255 time=319.433 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=255 time=524.245 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=255 time=106.684 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=255 time=35.776 ms

```

**pfSense**  
COMMUNITY EDITION

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### WAN (em0)

**General Configuration**

**Enable**  
 Enable interface

**Description**  
WAN  
Enter a description (name) for the interface here.

**IPv4 Configuration Type**  
DHCP

**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.  
192.168.58.5

```
[-I interface] [-i wait] [-k addrtype] [-l preload] [-m hoplimit]
[-p pattern] [-P policy] [-S sourceaddr] [-s packetsize] [-t timeout
]
[-W waittime] [-z tclass] [IPv6-hops ...] IPv6-host
[2.8.1-RELEASE][root@pfSense.home.arpal/root: ping -M DO 1300 -s 8.8.8.8
ping: invalid message: `D'
[2.8.1-RELEASE][root@pfSense.home.arpal/root: ping -m do 1320 8.8.8.8
ping: invalid TTL: `do'
[2.8.1-RELEASE][root@pfSense.home.arpal/root: ping -s 1320 8.8.8.8
PING 8.8.8.8 (8.8.8.8): 1320 data bytes
1328 bytes from 8.8.8.8: icmp_seq=0 ttl=255 time=123.039 ms
1328 bytes from 8.8.8.8: icmp_seq=1 ttl=255 time=66.128 ms
1328 bytes from 8.8.8.8: icmp_seq=2 ttl=255 time=70.618 ms
1328 bytes from 8.8.8.8: icmp_seq=3 ttl=255 time=43.398 ms
1328 bytes from 8.8.8.8: icmp_seq=4 ttl=255 time=50.945 ms
1328 bytes from 8.8.8.8: icmp_seq=5 ttl=255 time=63.465 ms
1328 bytes from 8.8.8.8: icmp_seq=6 ttl=255 time=57.505 ms
1328 bytes from 8.8.8.8: icmp_seq=7 ttl=255 time=31.313 ms
1328 bytes from 8.8.8.8: icmp_seq=8 ttl=255 time=77.630 ms
1328 bytes from 8.8.8.8: icmp_seq=9 ttl=255 time=47.283 ms
1328 bytes from 8.8.8.8: icmp_seq=10 ttl=255 time=45.136 ms
1328 bytes from 8.8.8.8: icmp_seq=11 ttl=255 time=34.354 ms
1328 bytes from 8.8.8.8: icmp_seq=12 ttl=255 time=48.751 ms
1328 bytes from 8.8.8.8: icmp_seq=13 ttl=255 time=37.282 ms
```

## Lab2 :firewall rule logic and policy

Change the password as soon as possible.

LAN1



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

✓ Apply Changes

Floating WAN LAN1

### Rules (Drag to Change Order)

<input type="checkbox"/>	States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description
<input checked="" type="checkbox"/>	13/88 KiB	*	*	*	LAN1 Address	80	*	*		Anti-L
						22				
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv4 ICMP	LAN1 subnets any	*	*	*	*	*	none	
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/72 B	IPv4 *	LAN1 subnets	*	*	*	*	*	none	Defau
<input type="checkbox"/>	<input checked="" type="checkbox"/> 0/0 B	IPv6 *	LAN1 subnets	*	*	*	*	*	none	Defau



**Block**

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**

LAN1

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**

ICMP

Choose which IP protocol this rule should match.

**ICMP Subtypes**

Source quench  
 Timestamp reply  
**Timestamp**  
 Time exceeded

For ICMP rules on IPv4, one or more of these ICMP subtypes may be specified.

**Source**

**Source**

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LAN1

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

**Apply Changes**

Floating   WAN   LAN1

**Rules (Drag to Change Order)**

<input type="checkbox"/>	States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Des
<input checked="" type="checkbox"/>	6/234 KiB	*	*	*	LAN1 Address	80 22	*	*		Allow
<input type="checkbox"/>	✓ 0/0 B	IPv4 TCP	192.168.58.5/24	*	*	*	*	*	none	
<input type="checkbox"/>	✗ 0/0 B	IPv4 ICMP	LAN1 subnets	*	*	*	*	*	none	
<input type="checkbox"/>	✓ 1/805 B	IPv4 *	LAN1 subnets	*	*	*	*	*	none	Deny
<input type="checkbox"/>	✓ 0/0 B	IPv6 *	LAN1 subnets	*	*	*	*	*	none	Deny

**Add** **Up** **Down** **Delete** **Toggle** **Copy** **Save** **Separator**

### Lab 3: Nat and port forwarding

**pfSense**  
COMMUNITY EDITION

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Port Forward ?

The NAT configuration has been changed.  
The changes must be applied for them to take effect. ✓ Apply Changes

Port Forward    1:1    Outbound    NPt

**Rules**

	Interface	Protocol	Source Address	Source Ports	Dest. Address	Dest. Ports	NAT IP	N
<input type="checkbox"/>	WAN	ANY	*	*	WAN subnets	*	LAN1 address	

✚ Add ✚ Add ✖ Delete ✖ Toggle ✖ Save + Separator

**Legend**

- ▶ Pass
- ☒ Linked rule



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

<input type="checkbox"/>	Interface	Source	Source Port	Destination	Destination Port	NAT Address	NAT Port	Static IP
<input type="checkbox"/>	X WAN	LAN1 subnets	8080	*	*	WAN address	*	

 Add  Add  Delete  Toggle  Save

### Automatic Rules

Interface	Source	Source Port	Destination	Destination Port	NAT Address
✓ WAN	127.0.0.0/8 ::1/128 192.168.58.0/24	*	*	500	WAN address
✓ WAN	127.0.0.0/8 ::1/128 192.168.58.0/24	*	*	*	WAN address



Comma separated list of integer rule IDs

 Filter

### States

Interface	Protocol	Source (Original Source) -> Destination (Original Destination)
lo0	udp	fe80::a00:27ff:fe8b:b0b3[546] -> ff02::1:2[547]
WAN	udp	fe80::a00:27ff:fe8b:b0b3[546] -> ff02::1:2[547]
LAN1	tcp	192.168.58.1:50528 -> 192.168.58.5:80
lo0	tcp	127.0.0.1:23202 -> 127.0.0.1:953
lo0	tcp	127.0.0.1:23202 -> 127.0.0.1:953
WAN	ipv6-icmp	fe80::a00:27ff:fe8b:b0b3[64785] -> fe80::2[128]
WAN	icmp	10.0.2.15:65266 -> 10.0.2.2:8
lo0	tcp	127.0.0.1:12192 -> 127.0.0.1:953
lo0	tcp	127.0.0.1:12192 -> 127.0.0.1:953
lo0	udp	fe80::a00:27ff:fefe:efa6[546] -> ff02::1:2[547]

