1)

a) Write a set of iptables rules in the forward chain to allow RDP traffic from IP 196.1.113.4 only

iptables -I FORWARD -p tcp -m tcp --dport 3389 -s 196.1.113.4 -j ACCEPT

b) Write a set of ip tables rules in the forward chain to allow incoming HTTP port 80 and HTTPS port 443 traffic to the web server

iptables -I FORWARD -p tcp -m multiport --dports 80,443 -j ACCEPT

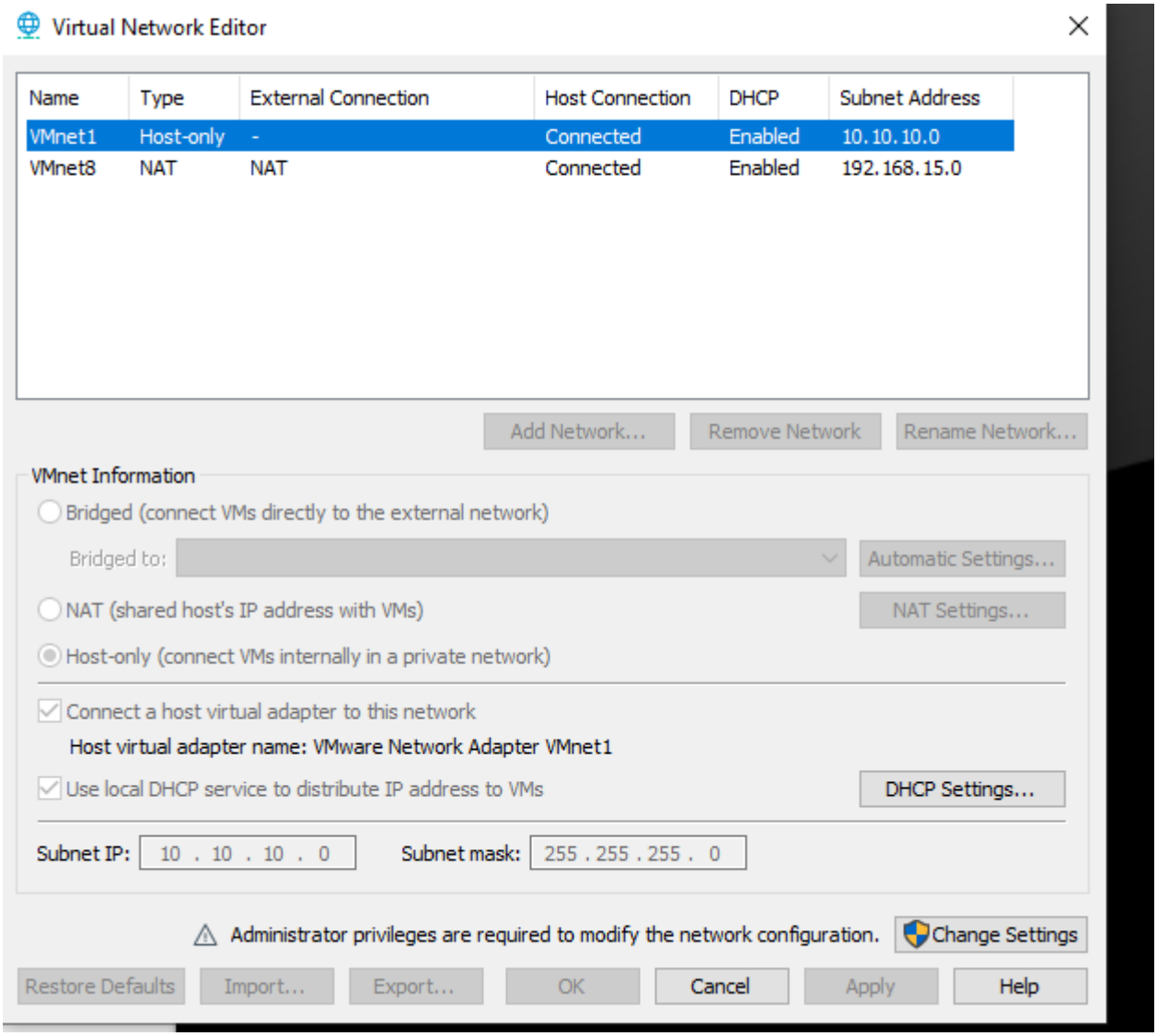
c) Write a set of ip tables rules to log packets directed to port 3389 (RDP)

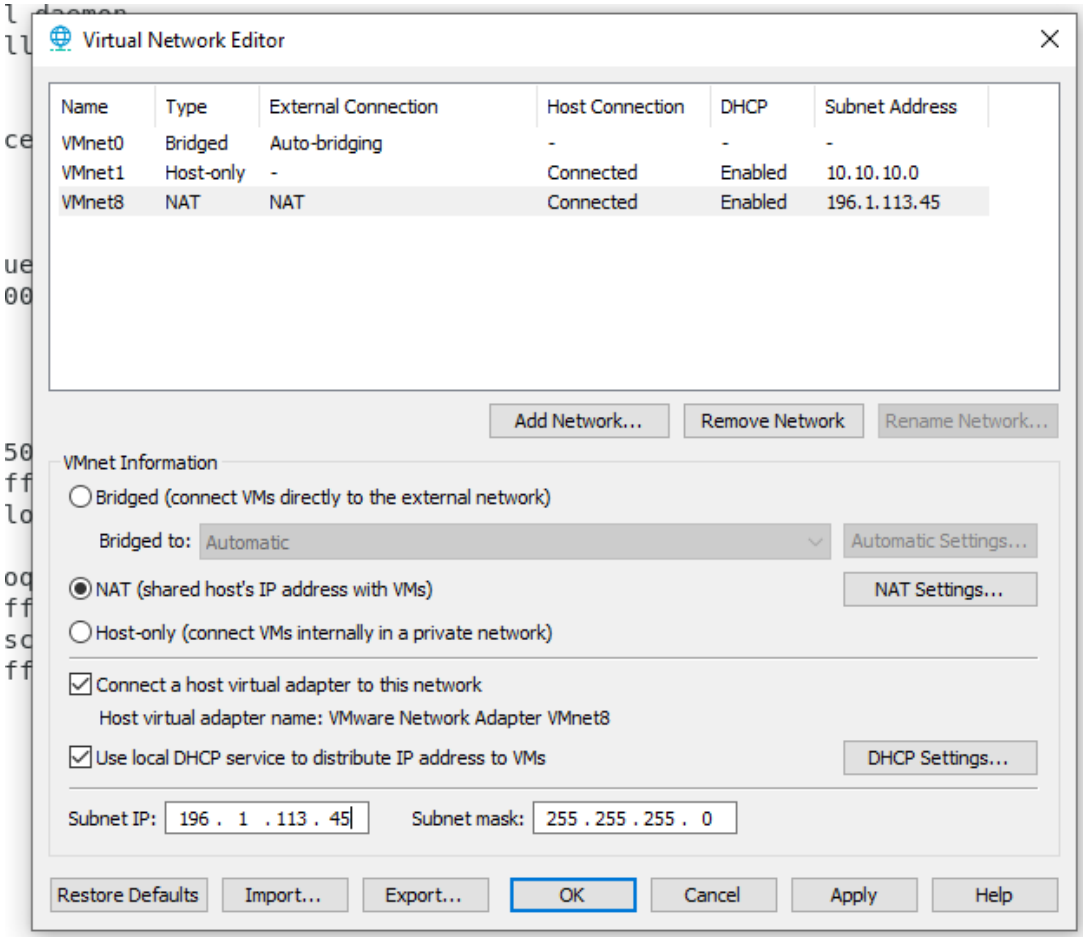
iptables -A INPUT -p tcp --dport 3389 -j LOG --log-prefix "RDP traffic" --log-level 4

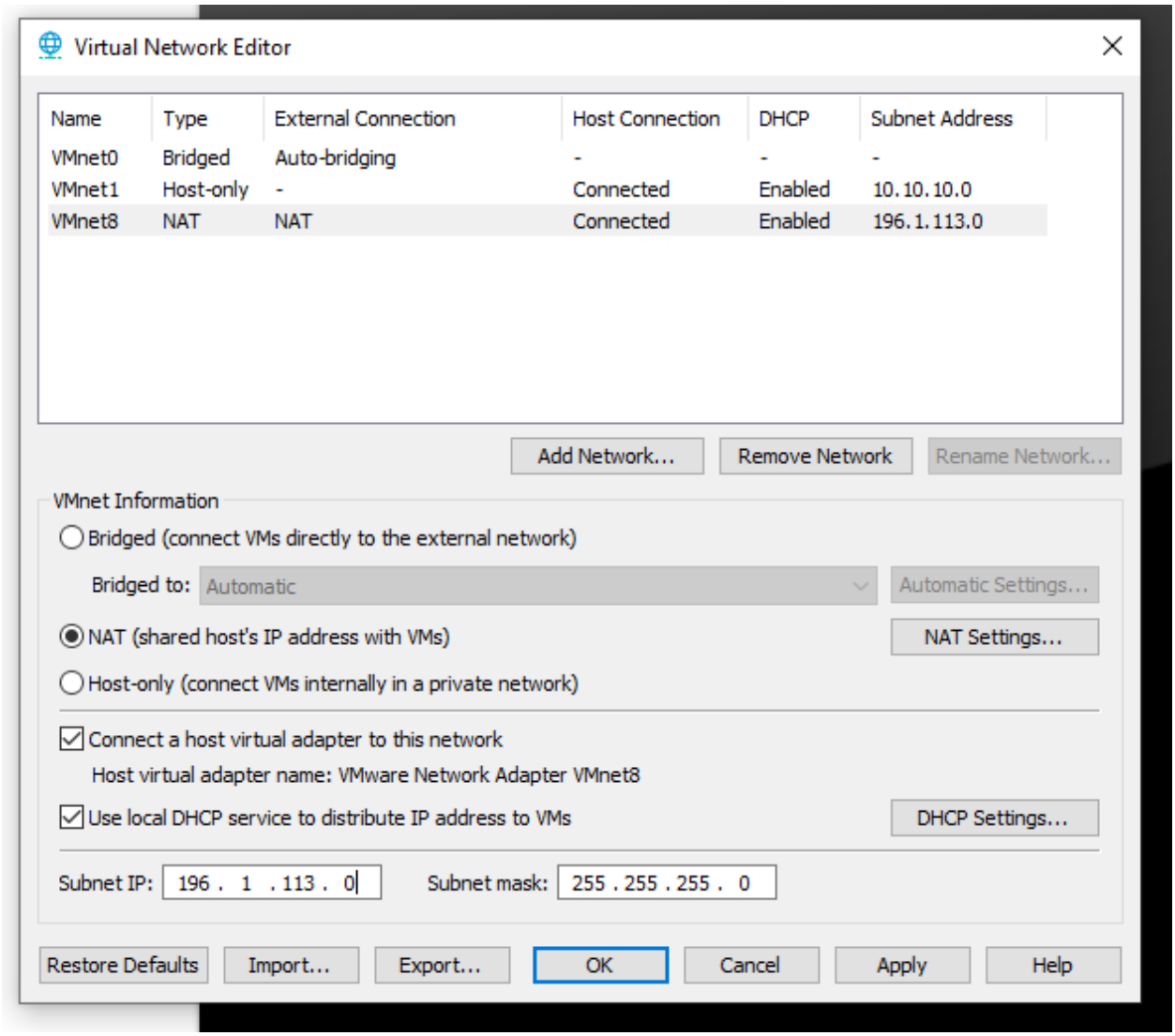
```
[root@reverse-proxy ~]# yum install iptables* -y
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
epel/x86_64/metalink                                                                                                                                | 5.9 kB  00:00:00
 * base: mirrors.nxtgen.com
 * epel: mirrors.thzhost.com
 * extras: mirrors.nxtgen.com
 * updates: mirrors.nxtgen.com
base                                                                                                                                                | 3.6 kB  00:00:00
epel                                                                                                                                                | 4.7 kB  00:00:00
extras                                                                                                                                              | 2.9 kB  00:00:00
updates                                                                                                                                             | 2.9 kB  00:00:00
epel/x86_64/primary_db         FAILED                                          0% [-                                                ]  0.0 B/s |  64 kB  --:--:-- ETA
https://mirror.yer.az/fedora-epel/7/x86_64/repodata/c48897bb68bdb7e715878bede95d2deb7a67f57f702dc076234bcc41da00c116-primary.sqlite.bz2: [Errno 14] HTTPS Error 404 - Not Found --:--:-- ETA
Trying other mirror.
To address this issue please refer to the below wiki article

https://wiki.centos.org/yum-errors

If above article doesn't help to resolve this issue please use https://bugs.centos.org/.

(1/2): epel/x86_64/primary_db                                                                                                                       | 7.0 MB  00:00:02
(2/2): epel/x86_64/updateinfo                                                 91% [=============================================================      ] 786 kB/s | 7.4 MB  00:00:00 ETA
```

```
Transaction test succeeded
Running transaction
  Installing : iptables-devel-1.4.21-35.el7.x86_64
  Verifying  : iptables-devel-1.4.21-35.el7.x86_64

Installed:
  iptables-devel.x86_64 0:1.4.21-35.el7

Complete!
[root@reverse-proxy ~]# iptables -I FORWARD -p tcp -m tcp --dport 3389 -s 196.1.113.4 -j ACCEPT
[root@reverse-proxy ~]# iptables -I FORWARD -p tcp -m multiport --dports 80,443 -j ACCEPT
[root@reverse-proxy ~]# iptables -A INPUT -p tcp --dport 3389 -j LOG --log-prefix "RDP traffic" --log-level 4
[root@reverse-proxy ~]# iptables --list
Chain INPUT (policy ACCEPT)
target     prot opt source               destination
ACCEPT     udp  --  anywhere             anywhere             udp dpt:domain
ACCEPT     tcp  --  anywhere             anywhere             tcp dpt:domain
ACCEPT     udp  --  anywhere             anywhere             udp dpt:bootps
ACCEPT     tcp  --  anywhere             anywhere             tcp dpt:bootps
ACCEPT     all  --  anywhere             anywhere             state RELATED,ESTABLISHED
ACCEPT     icmp --  anywhere             anywhere
ACCEPT     all  --  anywhere             anywhere
ACCEPT     tcp  --  anywhere             anywhere             state NEW tcp dpt:ssh
REJECT     all  --  anywhere             anywhere             reject-with icmp-host-prohibited
LOG        tcp  --  anywhere             anywhere             tcp dpt:ms-wbt-server LOG level warning prefix "RDP traffic"

Chain FORWARD (policy ACCEPT)
target     prot opt source               destination
ACCEPT     tcp  --  anywhere             anywhere             multiport dports http,https
ACCEPT     tcp  --  196.1.113.4          anywhere             tcp dpt:ms-wbt-server
ACCEPT     all  --  anywhere             192.168.122.0/24     ctstate RELATED,ESTABLISHED
ACCEPT     all  --  192.168.122.0/24     anywhere
ACCEPT     all  --  anywhere             anywhere
REJECT     all  --  anywhere             anywhere             reject-with icmp-port-unreachable
REJECT     all  --  anywhere             anywhere             reject-with icmp-port-unreachable
REJECT     all  --  anywhere             anywhere             reject-with icmp-host-prohibited

Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination
ACCEPT     udp  --  anywhere             anywhere             udp dpt:bootpc
[root@reverse-proxy ~]#
```

Configuring the public IP 196.1.113.45


Virtual Network Editor
Name
Type
External Connection
Host Connection
DHCP
Subnet Address
VMnet1
Host-only
-
Connected
Enabled
10.10.10.0
VMnet8
NAT
NAT
Connected
Enabled
192.168.15.0
Add Network...
Remove Network
Rename Network...
VMnet Information
Bridged (connect VMs directly to the external network)
Bridged to:
Automatic Settings...
NAT (shared host's IP address with VMs)
NAT Settings...
Host-only (connect VMs internally in a private network)
Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet1
Use local DHCP service to distribute IP address to VMs
DHCP Settings...
Subnet IP: 10 . 10 . 10 . 0
Subnet mask: 255 . 255 . 255 . 0
Administrator privileges are required to modify the network configuration.
Change Settings
Restore Defaults
Import...
Export...
OK
Cancel
Apply
Help


Virtual Network Editor
Name
Type
External Connection
Host Connection
DHCP
Subnet Address
VMnet0
Bridged
Auto-bridging
-
-
-
VMnet1
Host-only
-
Connected
Enabled
10.10.10.0
VMnet8
NAT
NAT
Connected
Enabled
196.1.113.45
Add Network...
Remove Network
Rename Network...
VMnet Information
Bridged (connect VMs directly to the external network)
Bridged to:
Automatic
Automatic Settings...
NAT (shared host's IP address with VMs)
NAT Settings...
Host-only (connect VMs internally in a private network)
Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet8
Use local DHCP service to distribute IP address to VMs
DHCP Settings...
Subnet IP:
196 . 1 . 113 . 45
Subnet mask:
255 . 255 . 255 . 0
Restore Defaults
Import...
Export...
OK
Cancel
Apply
Help




```
[root@reverse-proxy ~]# systemctl start NetworkManager
[root@reverse-proxy ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:47:ec:f7 brd ff:ff:ff:ff:ff:ff
    inet 196.1.113.128/24 brd 196.1.113.255 scope global noprefixroute dynamic ens33
       valid_lft 1574sec preferred_lft 1574sec
    inet6 fe80::c4e6:ed22:6b40:e0f3/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
3: ens37: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:47:ec:01 brd ff:ff:ff:ff:ff:ff
    inet 10.10.10.136/24 brd 10.10.10.255 scope global noprefixroute dynamic ens37
       valid_lft 1710sec preferred_lft 1710sec
    inet6 fe80::1e9f:478d:f09b:15a1/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
4: tun0: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UNKNOWN group default qlen 100
    link/none
    inet 10.8.0.1 peer 10.8.0.2/32 scope global tun0
       valid_lft forever preferred_lft forever
    inet6 fe80::2b6b:1dd8:24ff:5a28/64 scope link flags 800
       valid_lft forever preferred_lft forever
```

2) configuring Two Linux Machine

Open vpn → NAT and host only

Client → host only

```
[root@reverse-proxy ~]# setenforce 0
setenforce: SELinux is disabled
[root@reverse-proxy ~]# cat /proc/sys/net/ipv4/ip_forward
1
[root@reverse-proxy ~]# vi /etc/sysctl.conf
[root@reverse-proxy ~]# yum install epel-release -y
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirrors.nxtgen.com
 * epel: mirrors.thzhost.com
 * extras: mirrors.nxtgen.com
 * updates: mirrors.nxtgen.com
Package epel-release-7-14.noarch already installed and latest version
Nothing to do
[root@reverse-proxy ~]# yum install openvpn -y
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirrors.nxtgen.com
```

```
# sysctl settings are defined through files in
# /usr/lib/sysctl.d/, /run/sysctl.d/, and /etc/sysctl.d/.
#
# Vendors settings live in /usr/lib/sysctl.d/.
# To override a whole file, create a new file with the same in
# /etc/sysctl.d/ and put new settings there. To override
# only specific settings, add a file with a lexically later
# name in /etc/sysctl.d/ and put new settings there.
#
# For more information, see sysctl.conf(5) and sysctl.d(5).
net.ipv4.ip_forward=1
~
~
~
~
~
~
~
~
```

```
[root@reverse-proxy ~]# cd /etc/openvpn/
[root@reverse-proxy openvpn]# wget https://github.com/OpenVPN/easy-rsa/releases/download/v3.0.6/EasyRSA-unix-v3.0.6.tgz
--2023-07-14 11:51:14--  https://github.com/OpenVPN/easy-rsa/releases/download/v3.0.6/EasyRSA-unix-v3.0.6.tgz
Resolving github.com (github.com)... 20.207.73.82
Connecting to github.com (github.com)|20.207.73.82|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/4519663/8d46db80-266e-11e9-85e3-7de4dbee40d9?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA
JYAX4CSVEH53A%2F20230714%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20230714T062935Z&X-Amz-Expires=300&X-Amz-Signature=9b5bfb1cee32435a387c01678a16898d0125bedd1fca88cda0c15ea205e30094&X-
-SignedHeaders=host&actor_id=0&key_id=0&repo_id=4519663&response-content-disposition=attachment%3B%20filename%3DEasyRSA-unix-v3.0.6.tgz&response-content-type=application%2Foctet-stream [
lowing]
--2023-07-14 11:51:14--  https://objects.githubusercontent.com/github-production-release-asset-2e65be/4519663/8d46db80-266e-11e9-85e3-7de4dbee40d9?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-
dential=AKIAIWNJYAX4CSVEH53A%2F20230714%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20230714T062935Z&X-Amz-Expires=300&X-Amz-Signature=9b5bfb1cee32435a387c01678a16898d0125bedd1fca88cda0c1
205e30094&X-Amz-SignedHeaders=host&actor_id=0&key_id=0&repo_id=4519663&response-content-disposition=attachment%3B%20filename%3DEasyRSA-unix-v3.0.6.tgz&response-content-type=application%2
tet-stream
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.110.133, 185.199.108.133, 185.199.111.133, ...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199.110.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 40840 (40K) [application/octet-stream]
Saving to: ‘EasyRSA-unix-v3.0.6.tgz.1’

100%[================================>] 40,840      --.-K/s   in 0.008s

2023-07-14 11:51:15 (5.02 MB/s) - ‘EasyRSA-unix-v3.0.6.tgz.1’ saved [40840/40840]

[root@reverse-proxy openvpn]# ls
client    EasyRSA-unix-v3.0.6.tgz    server
easy-rsa  EasyRSA-unix-v3.0.6.tgz.1  server.conf
[root@reverse-proxy openvpn]# tar -xvzf EasyRSA-unix-v3.0.6.tgz
EasyRSA-v3.0.6/
EasyRSA-v3.0.6/easyrsa
EasyRSA-v3.0.6/openssl-easyrsa.cnf
EasyRSA-v3.0.6/vars.example
EasyRSA-v3.0.6/x509-types/
EasyRSA-v3.0.6/gpl-2.0.txt
EasyRSA-v3.0.6/mktemp.txt
EasyRSA-v3.0.6/COPYING.md
EasyRSA-v3.0.6/ChangeLog
EasyRSA-v3.0.6/README.md
EasyRSA-v3.0.6/README.quickstart.md
EasyRSA-v3.0.6/doc/
EasyRSA-v3.0.6/doc/EasyRSA-Advanced.md
```

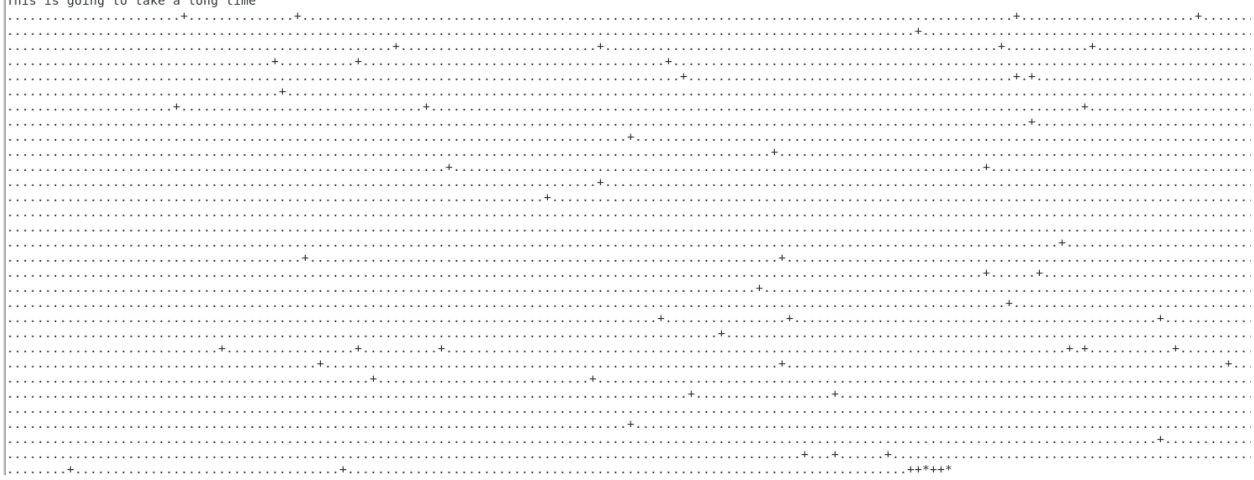
```
[root@reverse-proxy easy-rsa]# ls
ChangeLog   EasyRSA-v3.0.6      pki                    vars.example
COPYING.md  gpl-2.0.txt         README.md              x509-types
doc         mktemp.txt          README.quickstart.md
easyrsa     openssl-easyrsa.cnf  vars
[root@reverse-proxy easy-rsa]# ./easyrsa init-pki

Note: using Easy-RSA configuration from: ./vars


WARNING!!!

You are about to remove the EASYRSA_PKI at: /etc/openvpn/easy-rsa/pki
and initialize a fresh PKI here.

Type the word 'yes' to continue, or any other input to abort.
  Confirm removal:

Aborting without confirmation.
[root@reverse-proxy easy-rsa]#
[root@reverse-proxy easy-rsa]# ./easyrsa build-ca

Note: using Easy-RSA configuration from: ./vars

Using SSL: openssl OpenSSL 1.0.2k-fips  26 Jan 2017

Easy-RSA error:

Unable to create a CA as you already seem to have one set up.
If you intended to start a new CA, run init-pki first.

[root@reverse-proxy easy-rsa]# ls
ChangeLog   EasyRSA-v3.0.6      pki                    vars.example
COPYING.md  gpl-2.0.txt         README.md              x509-types
doc         mktemp.txt          README.quickstart.md
```

```
Note: using Easy-RSA configuration from: ./vars

Using SSL: openssl OpenSSL 1.0.2k-fips  26 Jan 2017
Generating a 2048 bit RSA private key
.....................................................................+++
............+++
writing new private key to '/etc/openvpn/easy-rsa/pki/private/demovpn.key.YjbydLeIlk
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Common Name (eg: your user, host, or server name) [demovpn]:

Keypair and certificate request completed. Your files are:
req: /etc/openvpn/easy-rsa/pki/reqs/demovpn.req
key: /etc/openvpn/easy-rsa/pki/private/demovpn.key

[root@reverse-proxy easy-rsa]# ls pki/reqs/demovpn.req
pki/reqs/demovpn.req
[root@reverse-proxy easy-rsa]# cat pki/reqs/demovpn.req
-----BEGIN CERTIFICATE REQUEST-----
MIICVzCCAT8CAQAwEjEQMA4GA1UEAwwHZGVtb3ZwbjCCASIwDQYJKoZIhvcNAQEB
BQADggEPADCCAQoCggEBAMZNofKtrzXcnhuQssVQGYX1PJ19BumiP7IzG5b2Qu9L
uuYK9LyY6B9sBZHx57b3ZtGBZnfKS/wPKl39EE+5sLpzr9HBcjI3b2ho7+yNPPH5
rDpa/DDbvgf5GEUMQElhKksHRz30Or9Inwfkijdn+noBtK/AL2QnuDc5W1caq07O
bNE8g/gzFhi2UGgM0pUqSn3ZVNxRpCPMK9tvW7+4rKq4D06nfN0up59lZyQA6Yn2
KFUvzf3k2f9ekYTFZWPf660Yc8GUynC0tg9FhU9XYOLHgYnZnfG2i14xHA/0QSL6
e9o1RbWFMMCiQDFdRwjVMPdHFjzeTes4mFfrBVrbPU0CAwEAAaAAMA0GCSqGSIb3
DQEBCwUAA4IBAQC9Kz+a3n2JFy6RaowTy5E/NQv4DUsTAqWHSfZ+q9tqL2pf9iX7
Qw1g/jqh5VaDJmHLfnS5d6902+qRjZNE/Js1d+S7uoSNDC7cVOcLi4q3w4g5EDu6
TzkCHgU/5pEbHBO2njPIoOal1xS6wpT+x58gH6eXCDmNsQW+7eohZyXOBW4giiBL
mNsE93VX5msgElGDqJB+TMdOGlg6d7dDJ/1GCJzjB4Mo1dvjmfwkIe/GvOIdRoBa
hCx4wa/jMu63QL+3i4Bh220nlvBTKS6x/t6R3eA9tW+psTKFACvAP6XzEMfOGTQ5
H7X9VExicMwYW662ZiBiZrqZ0JuKYSGevQUL
-----END CERTIFICATE REQUEST-----
[root@reverse-proxy easy-rsa]#
```

```
pki/reqs/demovpn.req
[root@reverse-proxy easy-rsa]# cat pki/reqs/demovpn.req
-----BEGIN CERTIFICATE REQUEST-----
MIICVzCCAT8CAQAwEjEQMA4GA1UEAwwHZGVtb3ZwbjCCASIwDQYJKoZIhvcNAQEB
BQADggEPADCCAQoCggEBAMZNofKtrzXcnhuQssVQGYX1PJ19BumiP7IzG5b2Qu9L
uuYK9LyY6B9sBZHx57b3ZtGBZnfKS/wPKl39EE+5sLpzr9HBcjI3b2ho7+yNPPH5
rDpa/DDbvgf5GEUMQElhKksHRz30Or9Inwfkijdn+noBtK/AL2QnuDc5W1caq07O
bNE8g/gzFhi2UGgM0pUqSn3ZVNxRpCPMK9tvW7+4rKq4D06nfN0up59lZyQA6Yn2
KFUvzf3k2f9ekYTFZWPf660Yc8GUynC0tg9FhU9XYOLHgYnZnfG2i14xHA/0QSL6
e9o1RbWFMMCiQDFdRwjVMPdHFjzeTes4mFfrBVrbPU0CAwEAAaAAMA0GCSqGSIb3
DQEBCwUAA4IBAQC9Kz+a3n2JFy6RaowTy5E/NQv4DUsTAqWHSfZ+q9tqL2pf9iX7
Qw1g/jqh5VaDJmHLfnS5d6902+qRjZNE/Js1d+S7uoSNDC7cVOcLi4q3w4g5EDu6
TzkCHgU/5pEbHBO2njPIoOal1xS6wpT+x58gH6eXCDmNsQW+7eohZyXOBW4giiBL
mNsE93VX5msgElGDqJB+TMdOGlg6d7dDJ/1GCJzjB4Mo1dvjmfwkIe/GvOIdRoBa
hCx4wa/jMu63QL+3i4Bh220nlvBTKS6x/t6R3eA9tW+psTKFACvAP6XzEMfOGTQ5
H7X9VExicMwYW662ZiBiZrqZ0JuKYSGevQUL
-----END CERTIFICATE REQUEST-----
[root@reverse-proxy easy-rsa]# ./easyrsa sign-req server demovpn

Note: using Easy-RSA configuration from: ./vars

Using SSL: openssl OpenSSL 1.0.2k-fips  26 Jan 2017


You are about to sign the following certificate.
Please check over the details shown below for accuracy. Note that this request
has not been cryptographically verified. Please be sure it came from a trusted
source or that you have verified the request checksum with the sender.

Request subject, to be signed as a server certificate for 365 days:

subject=
    commonName                = demovpn


Type the word 'yes' to continue, or any other input to abort.
  Confirm request details: yes
Using configuration from /etc/openvpn/easy-rsa/pki/safessl-easyrsa.cnf
Enter pass phrase for /etc/openvpn/easy-rsa/pki/private/ca.key:
Check that the request matches the signature
Signature ok
The Subject's Distinguished Name is as follows
```

```
            X509v3 Extended Key Usage:
                TLS Web Server Authentication
            X509v3 Key Usage:
                Digital Signature, Key Encipherment
            X509v3 Subject Alternative Name:
                DNS:demovpn
    Signature Algorithm: sha256WithRSAEncryption
         ae:02:74:2b:ed:3c:6a:de:da:7a:de:9b:8c:06:c4:16:1e:ba:
         5f:8b:98:a7:7f:5e:54:63:79:ce:7d:fb:12:c3:0d:55:91:b5:
         5e:2b:55:16:3c:51:f9:62:ef:15:05:53:e6:9e:73:24:24:0b:
         65:72:c9:2a:5c:7d:c6:16:fb:84:e3:d8:a5:20:22:bd:74:24:
         c3:8e:57:e7:07:35:97:fc:03:89:2b:37:5a:b3:f3:1a:d5:b0:
         82:fb:55:0f:1c:22:f9:1b:87:04:bd:24:16:90:58:79:a8:8a:
         82:70:11:e5:0f:69:94:0e:2d:10:10:5d:1c:32:0c:58:89:d1:
         b5:59:e4:e6:21:4d:66:07:94:41:fb:c7:58:5a:1a:97:e9:ef:
         3b:d5:31:6c:dc:55:6e:f4:70:4f:5e:af:40:eb:01:be:8d:b3:
         92:78:88:30:19:74:89:ac:a5:93:19:c4:06:f3:b3:c1:a0:25:
         9c:43:22:48:89:20:22:5b:e6:bd:08:e7:e8:20:34:e0:20:58:
         91:d7:68:f9:69:b3:6b:3e:d4:aa:96:73:ca:2e:66:b7:ae:63:
         cf:0c:c1:18:90:0e:c4:5b:c8:b0:9a:5c:72:fe:0c:e3:29:5f:
         5a:21:14:d0:eb:83:6a:07:29:65:70:be:d2:41:4f:e3:35:d6:
         12:f0:96:49
-----BEGIN CERTIFICATE-----
MIIDVzCCAj+gAwIBAgIRAKrlPcDGuAim4c/Az+zeyOkwDQYJKoZIhvcNAQELBQAw
EjEQMA4GA1UEAwwHYWN0c3ZwbjAeFw0yMzA3MTQwNjMxMjNaFw0yNDA3MTMwNjMx
MjNaMBIxEDAOBgNVBAMMB2RlbW92cG4wggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAw
ggEKAoIBAQDGTaHyra813J4bkLLFUBmF9TydfQbpoj+yMxuW9kLvS7rmCvS8mOgf
bAWR8ee292bRgWZ3ykv8Dypd/RBPubC6c6/RwXIyN29oaO/sjTzx+aw6Wvww274H
+RhFDEBJYSpLB0c99Dq/SJ8H5Io3Z/p6AbSvwC9kJ7g3OVtXGqtOzmzRPIP4MxYY
tlBoDNKVKkp92VTcUaQjzCvbb1u/uKyquA9Op3zdLqefZWckAOmJ9ihVL8395Nn/
XpGExWVj3+utGHPBlMpwtLYPRYVPV2Dix4GJ2Z3xtoteMRwP9EEi+nvaNUW1hTDA
okAxXUcI1TD3RxY83k3rOJhX6wVa2z1NAgMBAAGjgacwgaQwCQYDVR0TBAIwADAd
BgNVHQ4EFgQUnpxyUNQfVolu0PNq347H6QbOViowQgYDVR0jBDswOYAUc5E6U/BZ
tyQ4AIkdL4uOHO6h8gmhFqQUMBIxEDAOBgNVBAMMB2FjdHN2cG6CCQCEfFvMy62U
RzATBgNVHSUEDDAKBggrBgEFBQcDATALBgNVHQ8EBAMCBaAwEgYDVR0RBAswCYIH
ZGVtb3ZwbjANBgkqhkiG9w0BAQsFAAOCAQEArgJ0K+08at7aet6bjAbEFh66X4uY
p39eVGN5zn37EsMNVZG1XitVFjxR+WLvFQVT5p5zJCQLZXLJKlx9xhb7hOPYpSAi
vXQkw45X5wc1l/wDiSs3WrPzGtWwgvtVDxwi+RuHBL0kFpBYeaiKgnAR5Q9plA4t
EBBdHDIMWInRtVnk5iFNZgeUQfvHWFoal+nvO9UxbNxVbvRwT16vQOsBvo2zkniI
MBl0iaylkxnEBvOzwaAlnEMiSIkgIlvmvQjn6CA04CBYkddo+Wmzaz7UqpZzyi5m
t65jzwzBGJAOxFvIsJpccv4M4ylfWiEU0OuDagcpZXC+0kFP4zXWEvCWSQ==
-----END CERTIFICATE-----
```

```
[root@reverse-proxy easy-rsa]# openssl verify -CAfile pki/ca.crt pki/issued/demovpn.crt
pki/issued/demovpn.crt: OK
[root@reverse-proxy easy-rsa]# ./easyrsa gen-dh

Note: using Easy-RSA configuration from: ./vars

Using SSL: openssl OpenSSL 1.0.2k-fips  26 Jan 2017
Generating DH parameters, 2048 bit long safe prime, generator 2
This is going to take a long time
```



setenforce 0

cat /proc/sys/net/ipv4/ip_forward

vi /etc/sysctl.conf

cat /proc/sys/net/ipv4/ip_forward

yum install openvpn -y

cd /etc/openvpn/

wget https://github.com/OpenVPN/easy-rsa/releases/download/v3.0.6/EasyRSA-unix-v3.0.6.tgz

ls

tar -xvzf EasyRSA-unix-v3.0.6.tgz

mv EasyRSA-v3.0.6 easy-rsa

ls

cd easy-rsa/

```
vim vars
ls
./easyrsa init-pki
 ./easyrsa init-pki
./easyrsa build-ca
ls pki
 ls pki/private/
./easyrsa gen-req hpcsa1 nopass
ls pki/reqs/hpcsa1.req
cat pki/reqs/hpcsa1.req
 ./easyrsa sign-req server demovpn
./easyrsa sign-req server hpcsa1
cat pki/issued/hpcsa1.crt
 ./easyrsa gen-dh
 cp pki/ca.crt /etc/openvpn/server/
cp pki/dh.pem /etc/openvpn/server/
cp pki/private/hpcsa1.key /etc/openvpn/server/
  cp pki/issued/hpcsa1.crt /etc/openvpn/server/
 ./easyrsa gen-req client nopass
./easyrsa sign-req client client
 ./easyrsa gen-req jerry nopass
 cp pki/ca.crt /etc/openvpn/client/
ls /etc/openvpn/client/
cp pki/issued/client.crt /etc/openvpn/client/
cp pki/private/client.key /etc/openvpn/client/
```

ls /etc/openvpn/client/

vi /etc/openvpn/server/server.conf

systemctl start openvpn-server@reverse-proxy

vi /etc/openvpn/server/server.conf

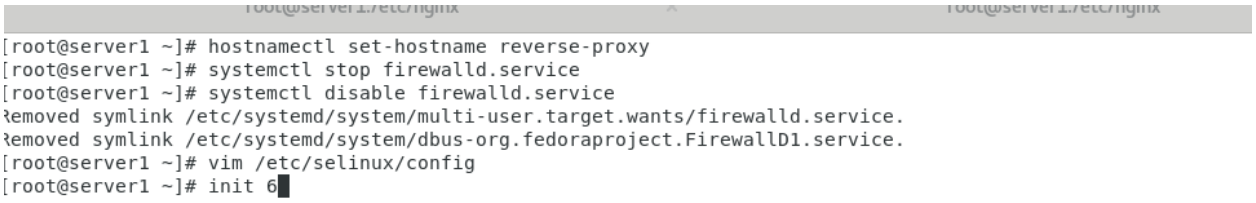
systemctl start openvpn-server@server

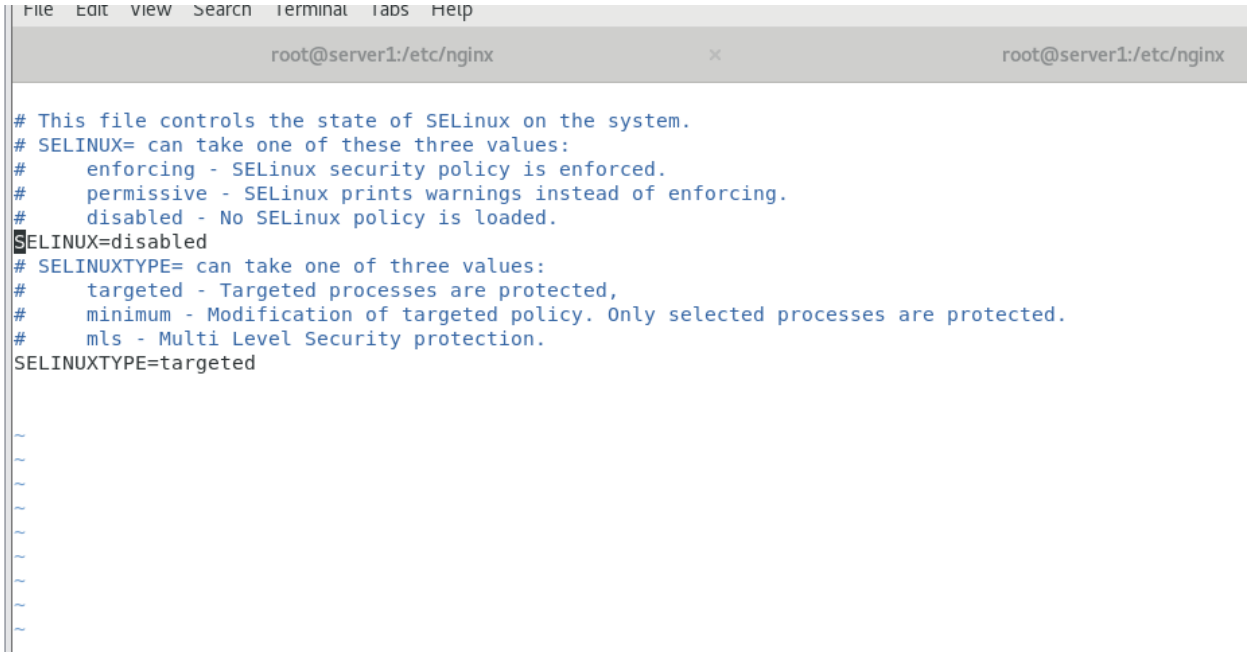
4) We take three Machine

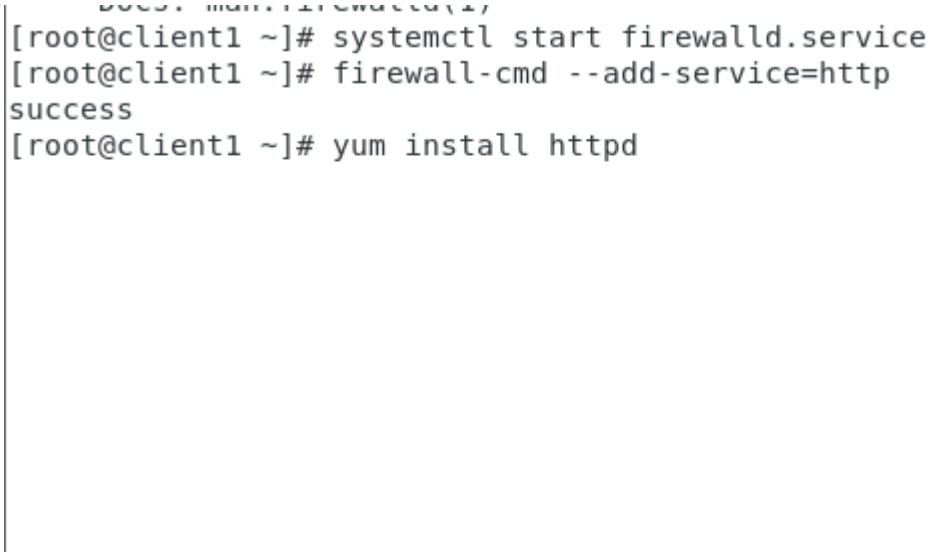
Reverse Proxy → Nat and Host only NAT ip – 196.1.113.128

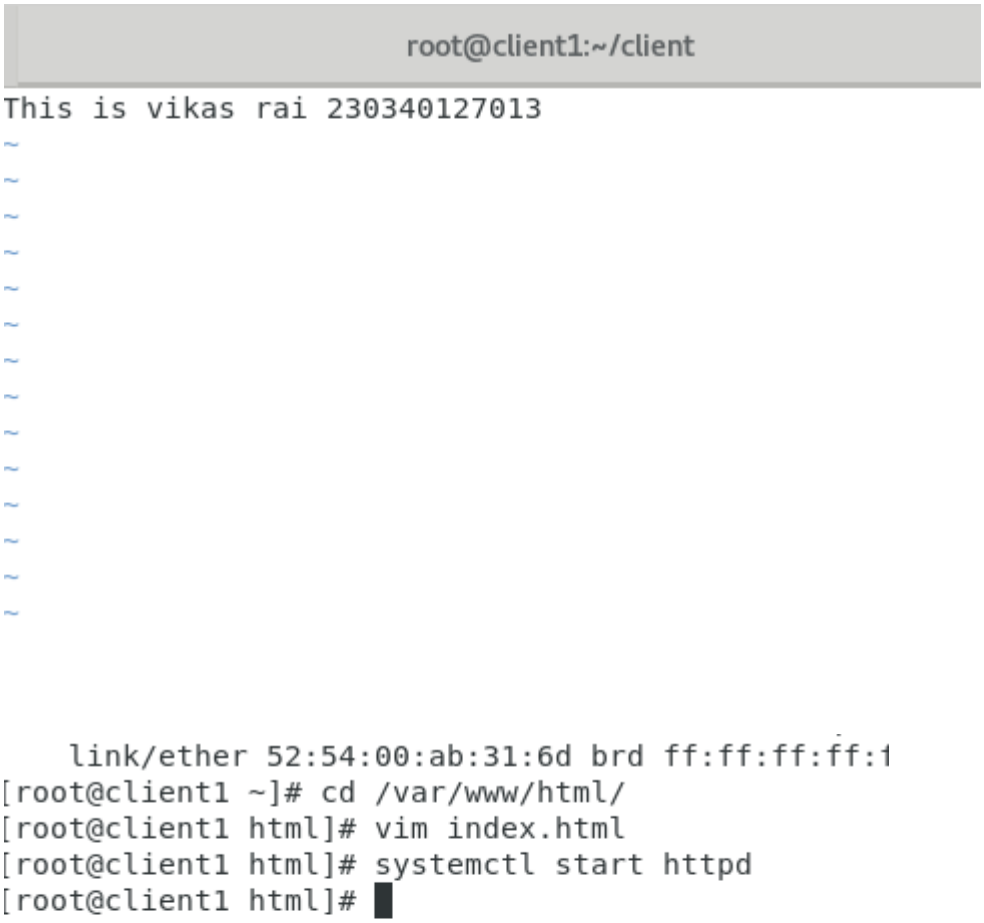
Client → host Only 10.10.10.137

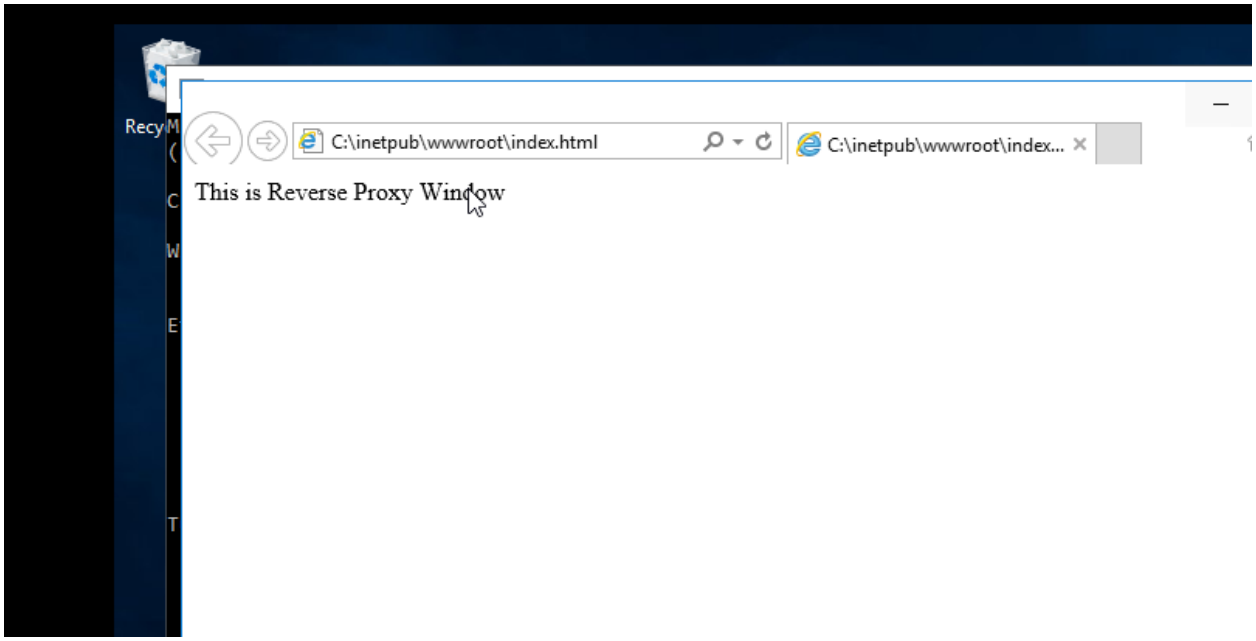
Window → host only 10.10.10.133 install iis manager → go to c drive inetpub → www.root → create html file (index.html)

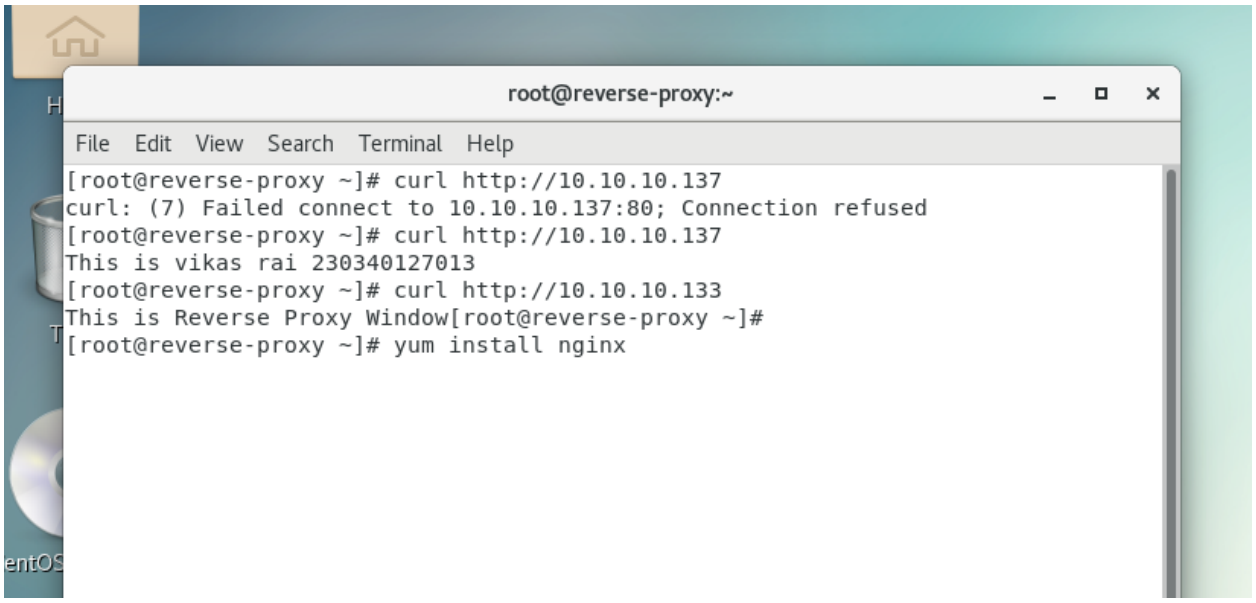



File Edit View Search Terminal Tabs Help
root@server1:/etc/nginx
root@server1:/etc/nginx
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of three values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted


[root@client1 ~]# systemctl start firewalld.service
[root@client1 ~]# firewall-cmd --add-service=http
success
[root@client1 ~]# yum install httpd


root@client1:~/client
This is vikas rai 230340127013
~
~
~
~
~
~
~
~
~
~
~
~
~
~
link/ether 52:54:00:ab:31:6d brd ff:ff:ff:ff:f
[root@client1 ~]# cd /var/www/html/
[root@client1 html]# vim index.html
[root@client1 html]# systemctl start httpd
[root@client1 html]#


C:\inetpub\wwwroot\index.html
C:\inetpub\wwwroot\index...
This is Reverse Proxy Window


root@reverse-proxy:~
File Edit View Search Terminal Help
[root@reverse-proxy ~]# curl http://10.10.10.137
curl: (7) Failed connect to 10.10.10.137:80; Connection refused
[root@reverse-proxy ~]# curl http://10.10.10.137
This is vikas rai 230340127013
[root@reverse-proxy ~]# curl http://10.10.10.133
This is Reverse Proxy Window[root@reverse-proxy ~]#
[root@reverse-proxy ~]# yum install nginx

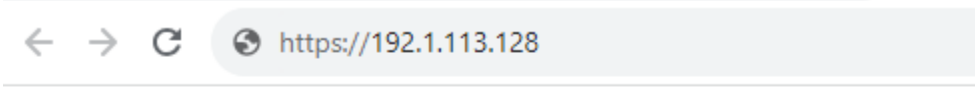
```
sendfile            on;
tcp_nopush          on;
tcp_nodelay         on;
keepalive_timeout   65;
types_hash_max_size 4096;

include             /etc/nginx/mime.types;
default_type        application/octet-stream;

# Load modular configuration files from the /etc/nginx/conf.d directory.
# See http://nginx.org/en/docs/ngx_core_module.html#include
# for more information.
include /etc/nginx/conf.d/*.conf;
    upstream hpcsa {
            server 10.10.10.137 weight=3;
            server 10.10.10.133;


server {
    listen       80;
    listen       [::]:80;
    server_name  _;
    root         /usr/share/nginx/html;

    # Load configuration files for the default server block.
    include /etc/nginx/default.d/*.conf;
    location /{
            proxy_pass http://hpcsa/;
```

```
[root@reverse-proxy ~]# cd /etc/nginx/
[root@reverse-proxy nginx]# vim nginx.conf
[root@reverse-proxy nginx]# systemctl restart nginx
[root@reverse-proxy nginx]#
```

#systemctl restart nginx

Output -

This is vikas rai 230340127013

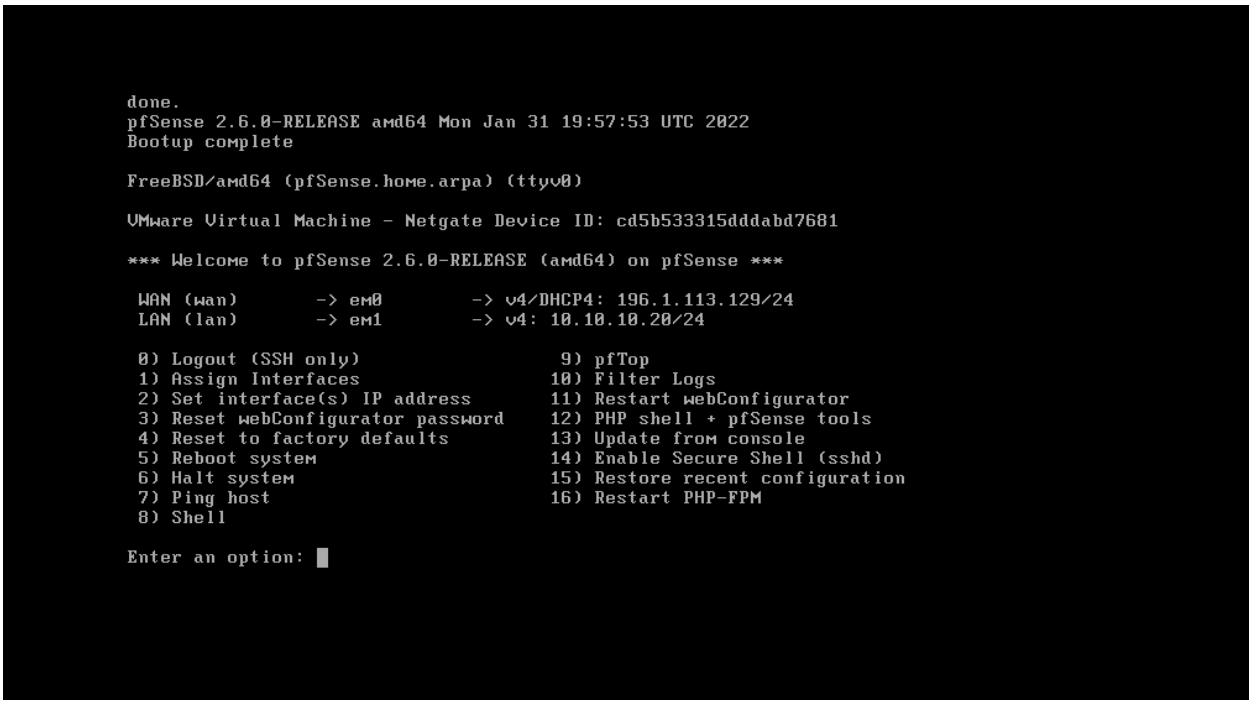


This is Reverse Proxy Window

3)

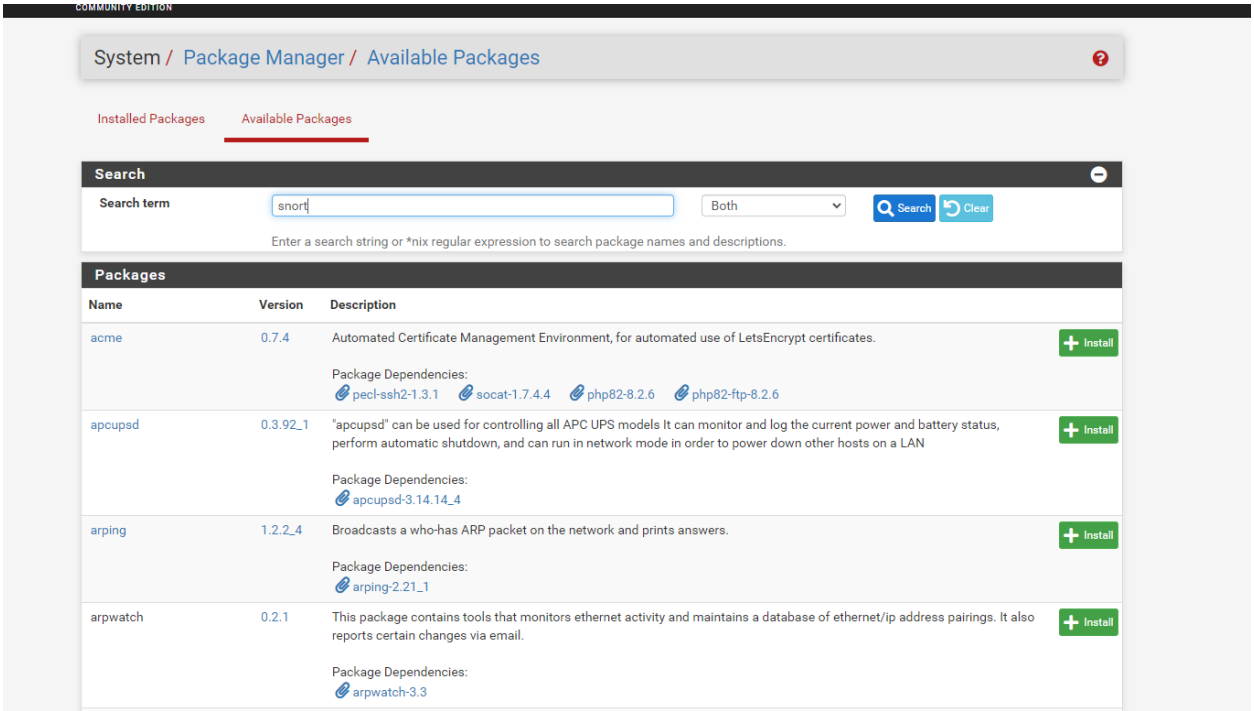
Pfsense machine → NAT and host only

Centos machine → Bridge

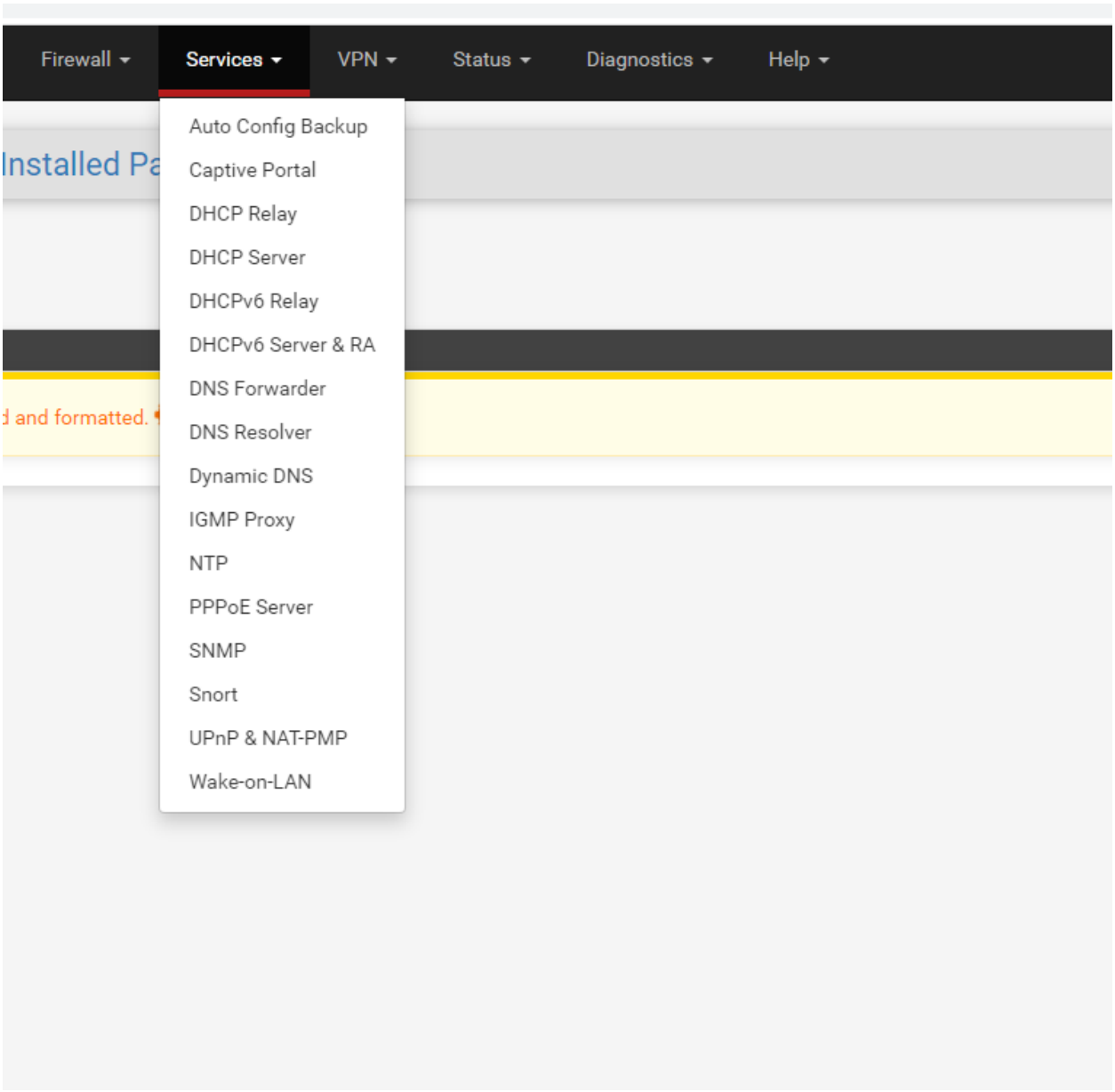


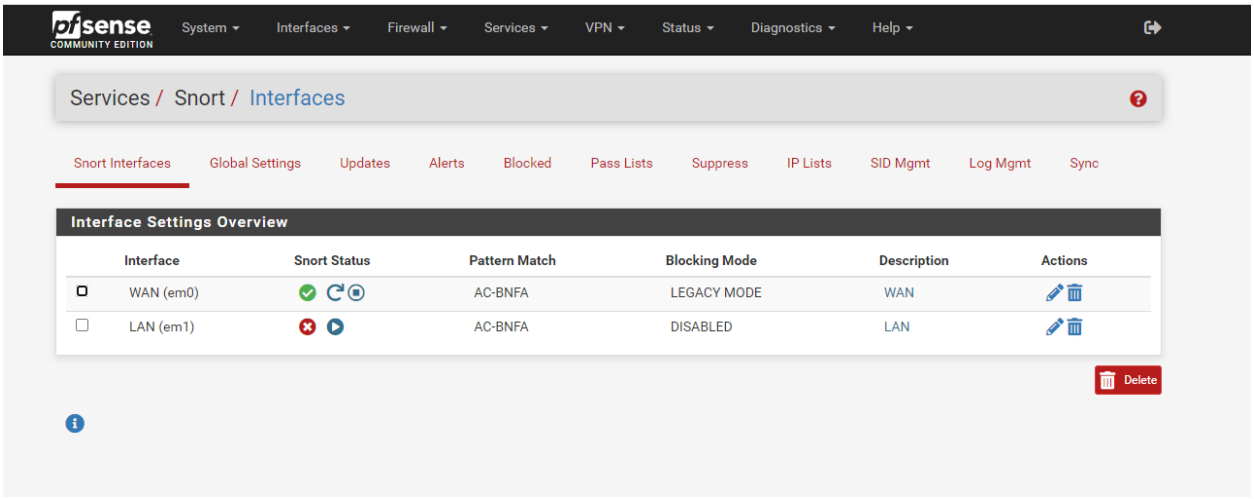
Login →

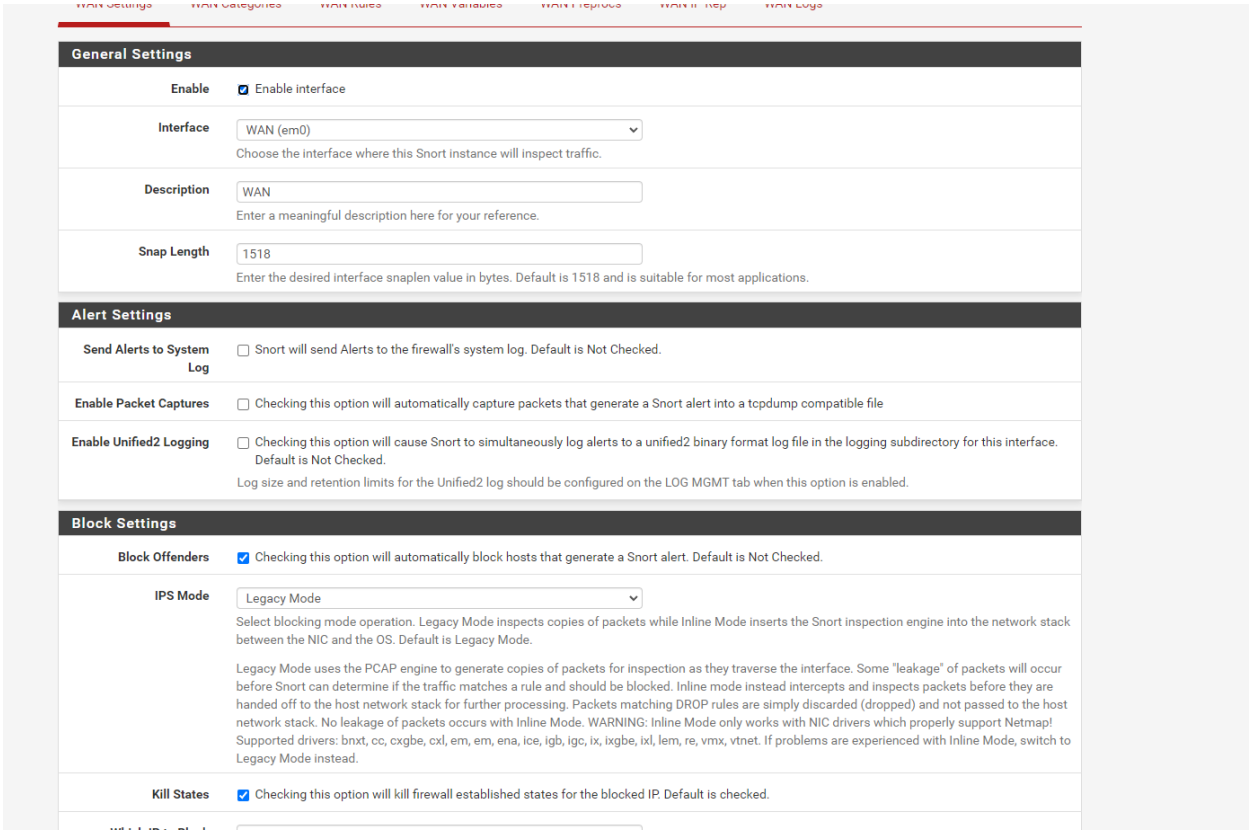
Install the Snort Packages



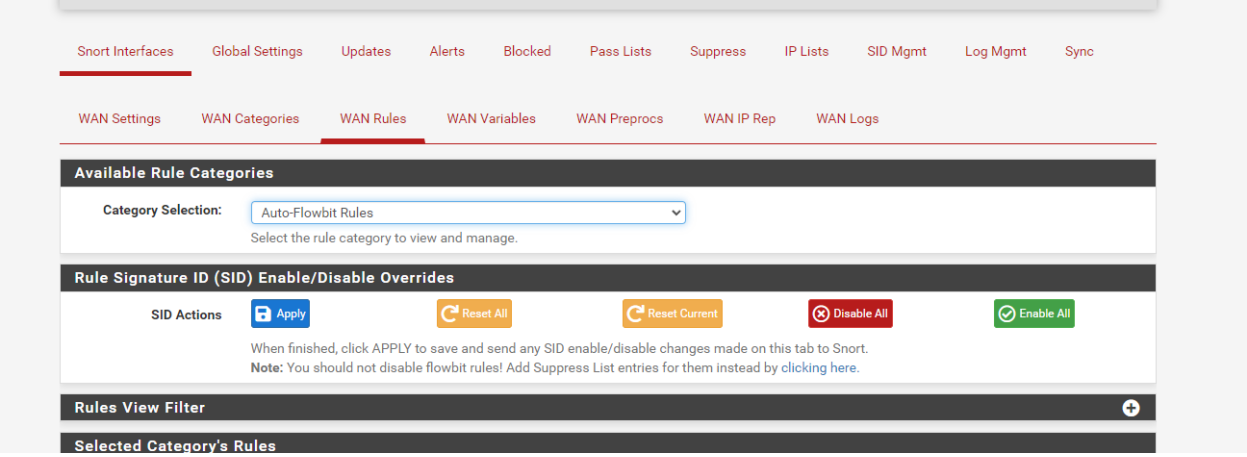
Go to the Services and then go to snort


Firewall
Services
VPN
Status
Diagnostics
Help
Auto Config Backup
Captive Portal
DHCP Relay
DHCP Server
DHCPv6 Relay
DHCPv6 Server & RA
DNS Forwarder
DNS Resolver
Dynamic DNS
IGMP Proxy
NTP
PPPoE Server
SNMP
Snort
UPnP & NAT-PMP
Wake-on-LAN

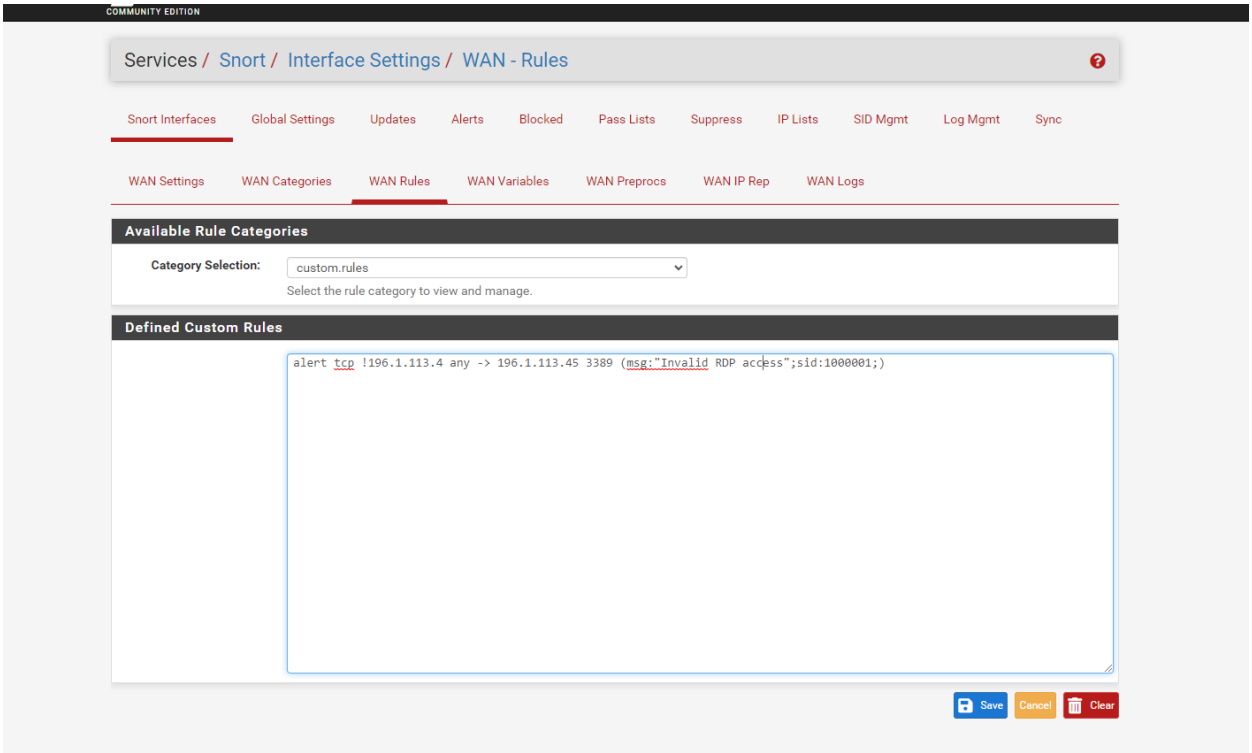




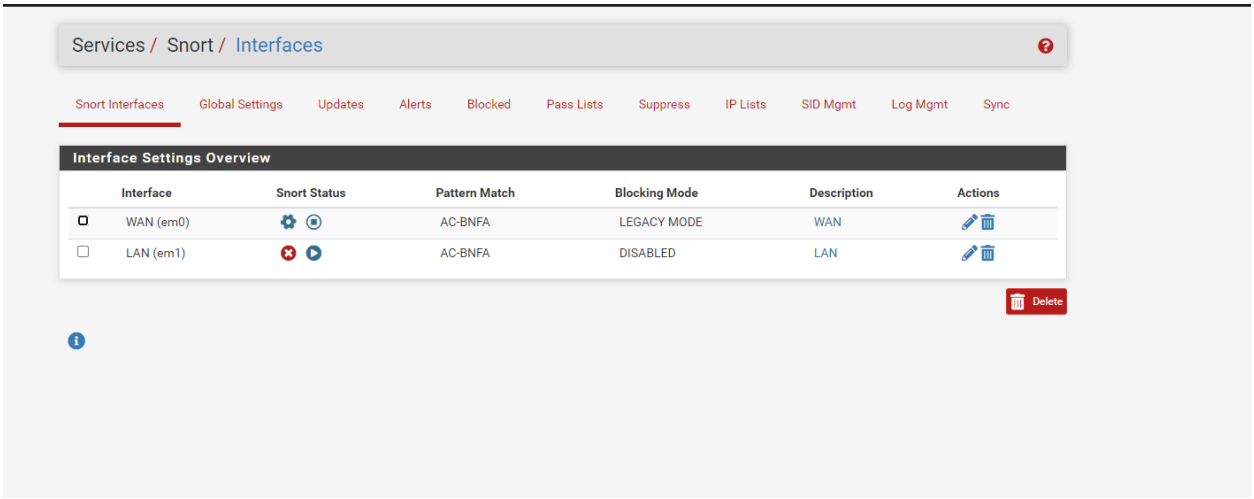
Category selection → custom rules



In Custom rules write the Rules



Now go to Snort interface and restart the snort status



Now go to alert msg and check