

# CentOS as A router

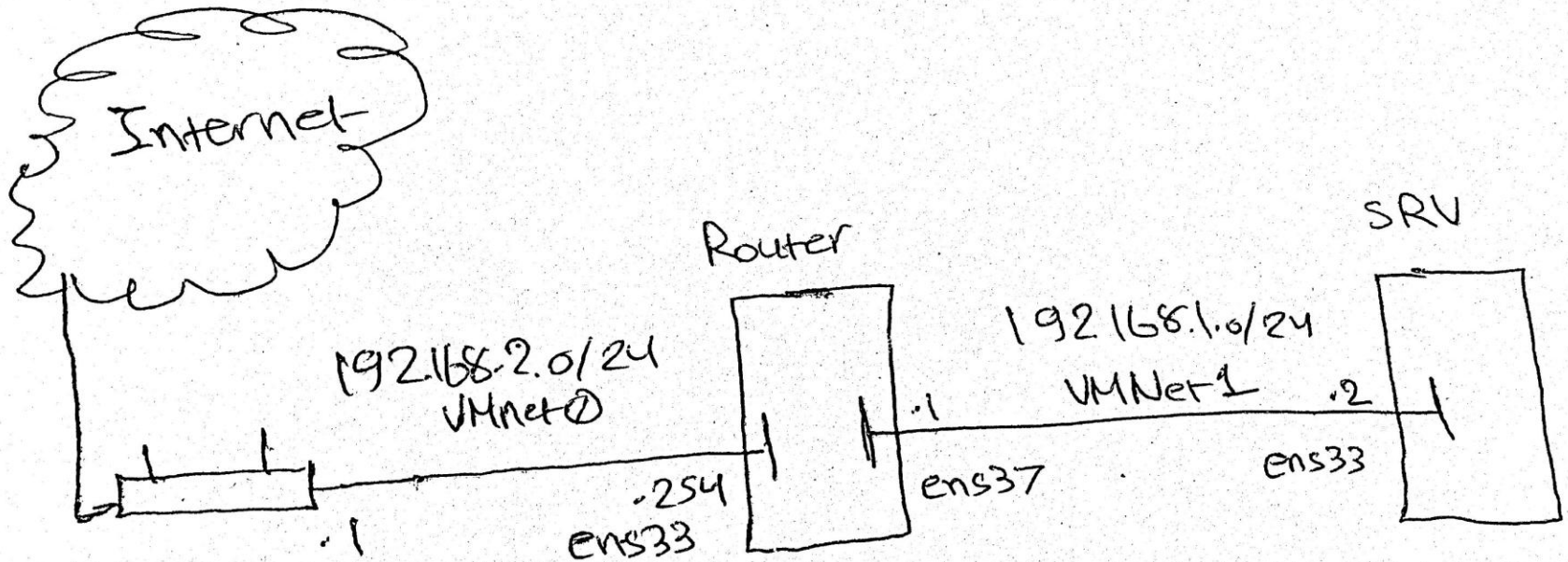
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# CentOS Routing and NAT Complete Example



# CentOS Router IP Addresses

```
[onelabad@router ~]$ nmcli connection add connection.id ens37 connection.interface-name ens37 type ethernet
Connection 'ens37' (f8768c52-cb14-403f-9542-d243d58c1aef) successfully added.
[onelabad@router ~]$ nmcli connection show
NAME      UUID                                  TYPE      DEVICE
ens37     f8768c52-cb14-403f-9542-d243d58c1aef ethernet  ens37
ens33     14ba6fd0-178b-4bc5-8f12-4f069fe5b08f ethernet  ens33
virbr0    ccf14503-49b4-4316-9147-37f11bab0661 bridge    virbr0
[onelabad@router ~]$ nmcli connection modify ens33 ipv4.method manual
Error: Failed to modify connection 'ens33': ipv4.addresses: this property cannot be empty for 'method=manual'
[onelabad@router ~]$ nmcli connection modify ens33 ipv4.addresses 192.168.2.254/24
[onelabad@router ~]$ nmcli connection modify ens33 ipv4.gateway 192.168.2.1
[onelabad@router ~]$ nmcli connection modify ens33 ipv4.dns 8.8.8.8
[onelabad@router ~]$ nmcli connection modify ens33 ipv4.method manual
[onelabad@router ~]$ nmcli connection down ens33
Connection 'ens33' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/1)
[onelabad@router ~]$ nmcli connection up ens33
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/7)
[onelabad@router ~]$ nmcli connection modify ens37 ipv4.addresses 192.168.1.1/24
[onelabad@router ~]$ nmcli connection modify ens37 ipv4.method manual
[onelabad@router ~]$ nmcli connection down ens37
Connection 'ens37' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/8)
[onelabad@router ~]$ nmcli connection up ens37
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/9)
[onelabad@router ~]$ ip a s | grep inet
    inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host
    inet 192.168.2.254/24 brd 192.168.2.255 scope global noprefixroute ens33
    inet6 fe80::6d95:1c7b:9062:80b7/64 scope link noprefixroute
    inet 192.168.1.1/24 brd 192.168.1.255 scope global noprefixroute ens37
    inet6 fe80::9634:feb8:18ba:b242/64 scope link noprefixroute
    inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0
[onelabad@router ~]$ ping www.yahoo.com
PING new-fp-shed.wg1.b.yahoo.com (87.248.98.7) 56(84) bytes of data.
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp_seq=1 ttl=51 time=151 ms
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp_seq=2 ttl=51 time=176 ms
```



# CentOS Router Firewall Zones Configuration

```
[onelabad@router ~]$ firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens33 ens37
  sources:
  services: cockpit dhcpv6-client ssh
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[onelabad@router ~]$ firewall-cmd --remove-interface=ens37 --zone=public --permanent
[root@router onelabad]# firewall-cmd --add-interface=ens37 --zone=trusted --permanent
The interface is under control of NetworkManager, setting zone to 'trusted'.
success

[root@router onelabad]# firewall-cmd --list-all --zone=public
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens33
  sources:
  services: cockpit dhcpv6-client ssh
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[root@router onelabad]# firewall-cmd --list-all --zone=trusted
trusted (active)
  target: ACCEPT
  icmp-block-inversion: no
  interfaces: ens37
  sources:
  services:
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[root@router onelabad]#
```



# CentOS Router Masquerading Configuration

```
[root@router onelabad]# firewall-cmd --zone=public --add-masquerade --permanent
success
[root@router onelabad]# firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens33
  sources:
  services: cockpit dhcpv6-client ssh
  ports:
  protocols:
  masquerade: yes
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

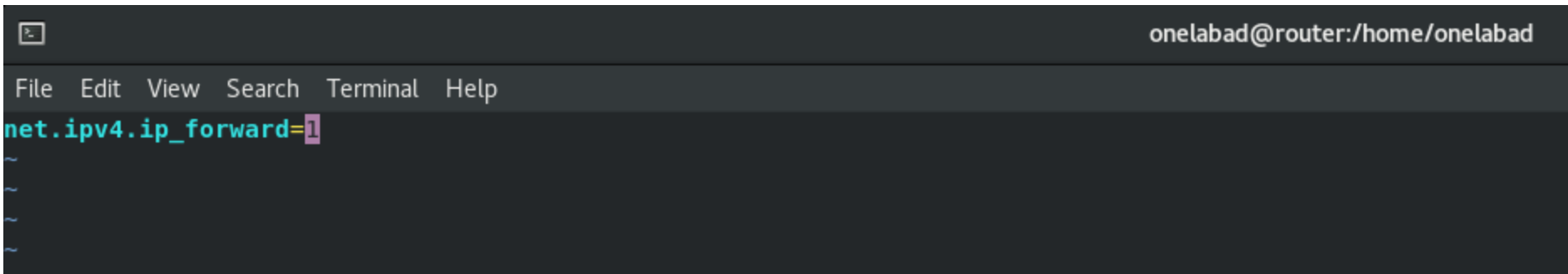
[root@router onelabad]# firewall-cmd --list-all --zone=public
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens33
  sources:
  services: cockpit dhcpv6-client ssh
  ports:
  protocols:
  masquerade: yes
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[root@router onelabad]# firewall-cmd --reload
success
```



# CentOS Router Enable Routing Permanently

```
[root@router onelabad]# echo > 1 /proc/sys/net/ipv4/ip_forward  
[root@router onelabad]# vim /etc/sysctl.d/router.conf  
[root@router onelabad]#
```



The screenshot shows a terminal window with a dark background. The title bar at the top right displays the user and location: `onelabad@router:/home/onelabad`. Below the title bar is a menu bar with the options: `File Edit View Search Terminal Help`. The main content area shows the command `net.ipv4.ip_forward=1` being entered, with the `1` highlighted in pink. Below this line, there are four tilde characters (`~`) indicating the end of the file.



# CentOS SRV IP Configuration

```
[root@srv onelab]# nmcli connection show
NAME      UUID                                  TYPE      DEVICE
virbr0    5735ed9b-66f1-46fd-a4e8-73e1ac67ac77 bridge    virbr0
[root@srv onelab]# nmcli connection add type ethernet connection.id ens33 connection.interface-name ens33
Connection 'ens33' (40bfa065-237e-494b-a698-bb99968e97ea) successfully added.
[root@srv onelab]# nmcli connection modify ens33 ipv4.addr
Error: value for 'ipv4.addr' is missing.
[root@srv onelab]# nmcli connection modify ens33 ipv4.addresses 192.168.1.2/24
[root@srv onelab]# nmcli connection modify ens33 ipv4.gateway 192.168.1.1
[root@srv onelab]# nmcli connection modify ens33 ipv4.dns 8.8.8.8
[root@srv onelab]# nmcli connection modify ens33 ipv4.method manual
[root@srv onelab]# nmcli connection down ens33
Connection 'ens33' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/9)
[root@srv onelab]# nmcli connection up ens33
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/10)
[root@srv onelab]# ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_seq=1 ttl=64 time=7.93 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=64 time=0.800 ms
^C
--- 192.168.1.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 3ms
rtt min/avg/max/mdev = 0.800/4.362/7.925/3.563 ms
[root@srv onelab]# ping -c 4 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=50 time=81.8 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=50 time=78.5 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=50 time=76.9 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=50 time=80.6 ms

--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 16ms
rtt min/avg/max/mdev = 76.910/79.450/81.812/1.915 ms
[root@srv onelab]# ping -c 4 www.google.com
PING www.google.com (172.217.18.36) 56(84) bytes of data.
64 bytes from mrs08s01-in-f4.1e100.net (172.217.18.36): icmp_seq=1 ttl=50 time=78.5 ms
64 bytes from mrs08s01-in-f4.1e100.net (172.217.18.36): icmp_seq=2 ttl=50 time=76.5 ms
```

