Step-By-Step Configuration of NAT with iptables

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This tutorial shows how to set up network-address-translation (NAT) on a Linux system with iptables rules so that the system can act as a gateway and provide internet access to multiple hosts on a local network using a single public IP address. This is achieved by rewriting the source and/or destination addresses of IP packets as they pass through the NAT system.

Requirements:

CPU - PII or more
OS - Any Linux distribution
Software - Iptables
Network Interface Cards: 2

Here is my considerations:

Replace xx.xx.xx.xx with your WAN IP

Replace yy.yy.yy.yy with your LAN IP

(i.e. 192.168.0.0/16, 172.16.0.0/12, 10.0.0.0/8 as suggested by Mr. tzs)

Step by Step Procedure

Step #1. Add 2 Network cards to the Linux box

Step #2. Verify the Network cards, Wether they installed properly or not

```
ls /etc/sysconfig/network-scripts/ifcfg-eth* | wc -l
```

(The output should be "2")

Step #3. Configure eth0 for Internet with a Public (IP External network or Internet)

```
cat /etc/sysconfig/network-scripts/ifcfg-eth0
```

```
DEVICE=eth0
BOOTPROTO=none
BROADCAST=xx.xx.xx.255    # Optional Entry
HWADDR=00:50:BA:88:72:D4    # Optional Entry
IPADDR=xx.xx.xx.xx
NETMASK=255.255.255.0    # Provided by the ISP
NETWORK=xx.xx.xx.0       # Optional
ONBOOT=yes
TYPE=Ethernet
USERCTL=no
IPV6INIT=no
PEERDNS=yes
GATEWAY=xx.xx.xx.1    # Provided by the ISP
```

Step #4. Configure eth1 for LAN with a Private IP (Internal private network)

```
cat /etc/sysconfig/network-scripts/ifcfg-eth1
```

```
BOOTPROTO=none
PEERDNS=yes
HWADDR=00:50:8B:CF:9C:05    # Optional
TYPE=Ethernet
IPV6INIT=no
DEVICE=eth1
NETMASK=255.255.0.0        # Specify based on your requirement
BROADCAST=""
IPADDR=192.168.2.1        # Gateway of the LAN
NETWORK=192.168.0.0        # Optional
USERCTL=no
```

```
ONBOOT=yes
```

Step #5. Host Configuration (Optional)

```
cat /etc/hosts
```

```
    127.0.0.1       nat localhost.localdomain   localhost
```

Step #6. Gateway Configuration

```
cat /etc/sysconfig/network
```

```
    NETWORKING=yes
    HOSTNAME=nat
    GATEWAY=xx.xx.xx.1    # Internet Gateway, provided by the ISP
```

Step #7. DNS Configuration

```
cat /etc/resolv.conf
```

```
    nameserver 203.145.184.13      # Primary DNS Server provided by the ISP
    nameserver 202.56.250.5        # Secondary DNS Server provided by the
ISP
```

Step #8. NAT configuration with IP Tables

Delete and flush. Default table is "filter". Others like "nat" must be explicitly stated.

```
iptables --flush            # Flush all the rules in filter and nat tables
```

```
iptables --table nat --flush
```

```
iptables --delete-chain
```

Delete all chains that are not in default filter and nat table

```
iptables --table nat --delete-chain
```

Set up IP FORWARDing and Masquerading

```
iptables --table nat --append POSTROUTING --out-interface eth0 -j MASQUERADE
```

```
iptables --append FORWARD --in-interface eth1 -j ACCEPT
```

Enables packet forwarding by kernel

```
echo 1 > /proc/sys/net/ipv4/ip_forward
```

#Apply the configuration

```
service iptables restart
```

Step #9. Testing

Ping the Gateway of the network from client system

```
ping 192.168.2.1
```

Try it on your client systems

```
ping google.com
```

Configuring PCs on the network (Clients)

- All PC's on the private office network should set their "gateway" to be the local private network IP address of the Linux gateway computer.
- The DNS should be set to that of the ISP on the internet.

Windows '95, 2000, XP, Configuration:

- Select "Start" + Settings" + "Control Panel"
- Select the "Network" icon
- Select the tab "Configuration" and double click the component "TCP/IP" for the ethernet card. (NOT the TCP/IP -> Dial-Up Adapter)
- Select the tabs:

o "Gateway": Use the internal network IP address of the Linux box. (192.168.2.1)
o "DNS Configuration": Use the IP addresses of the ISP Domain Name Servers. (Actual internet IP address)
o "IP Address": The IP address (192.168.XXX.XXX - static) and netmask (typically 255.255.0.0 for a small local office network) of the PC can also be set here.