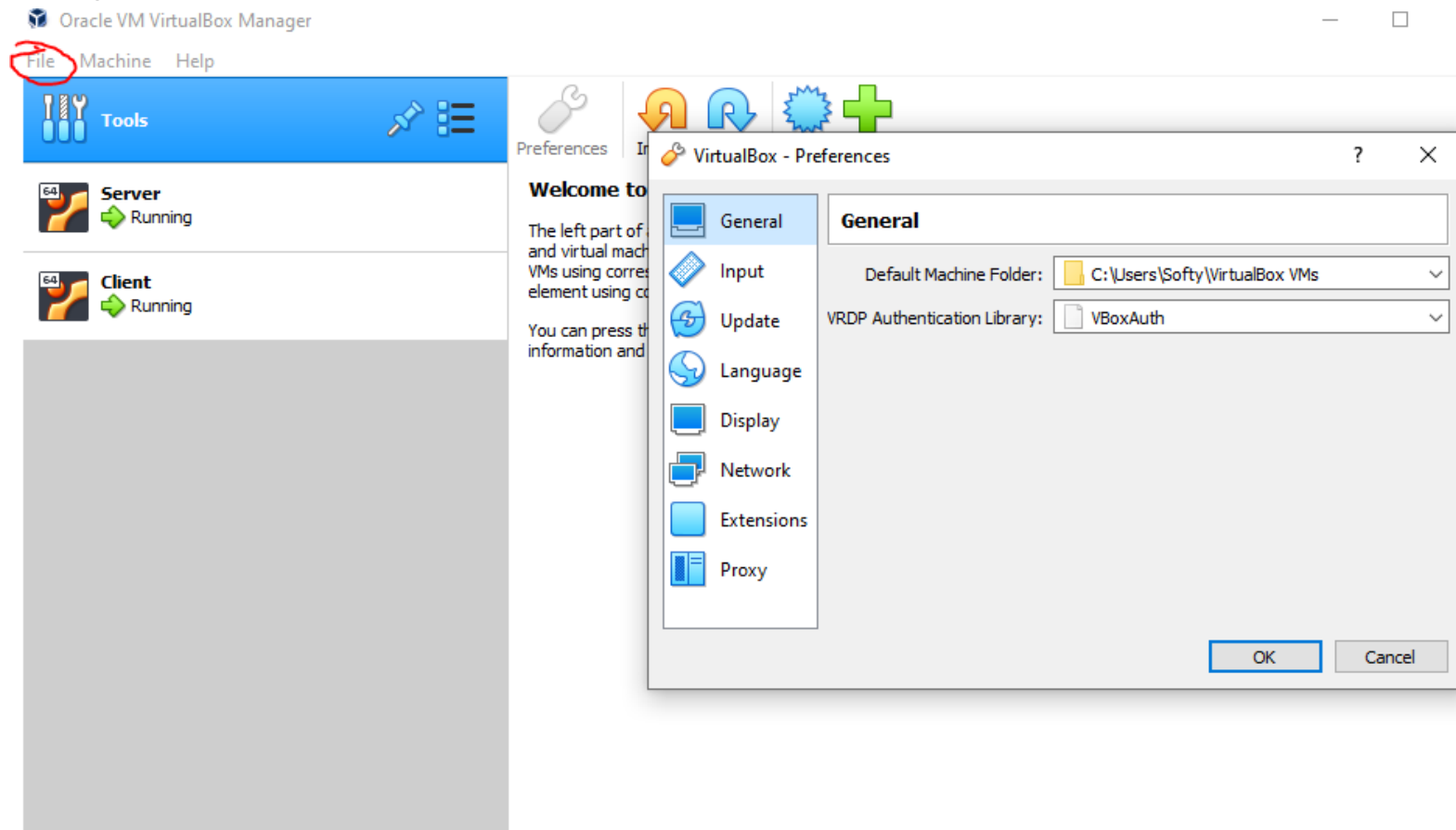


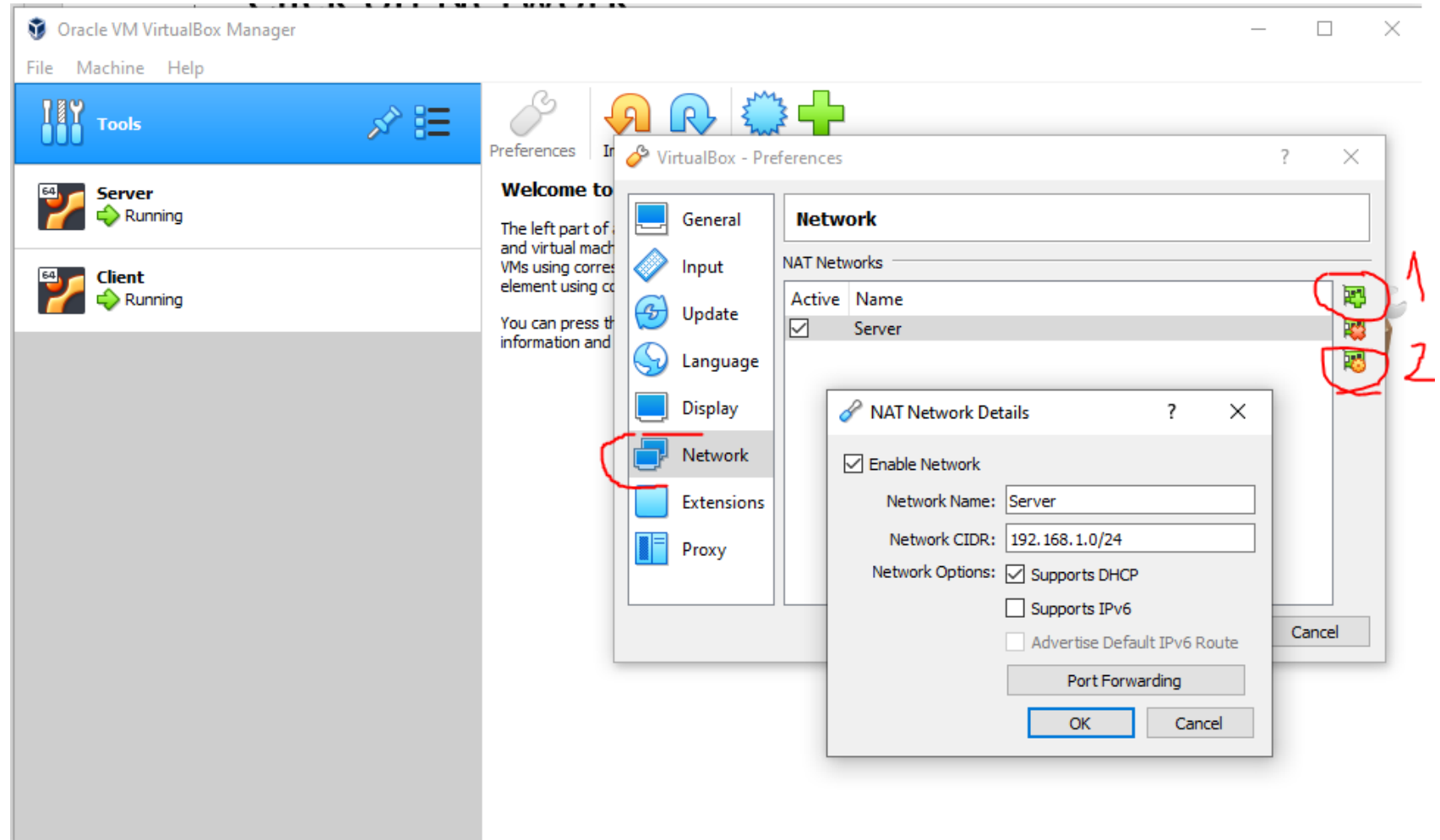
NTP server configuration

Set different IP for the VM

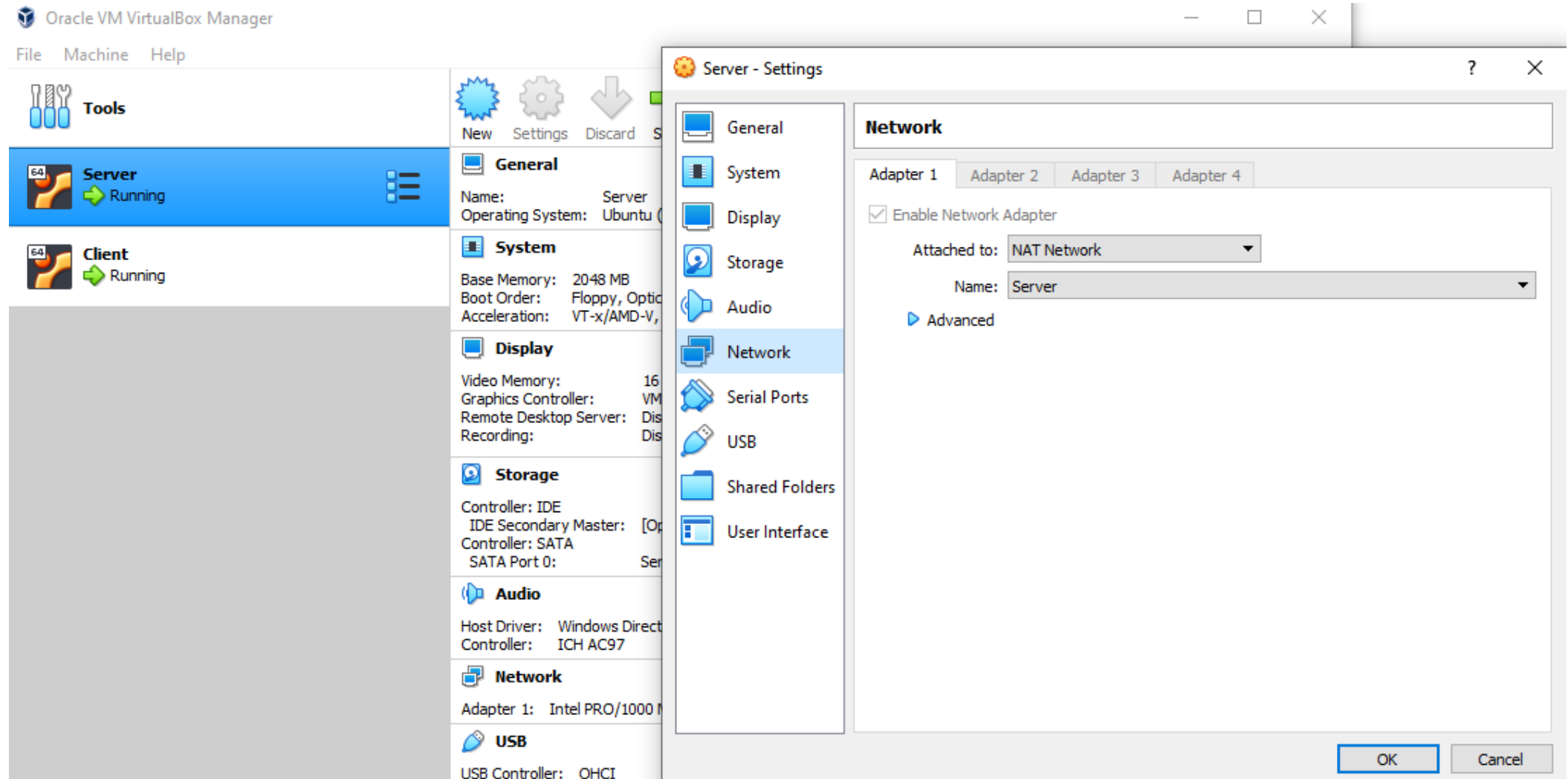
- Oracle VM-click on tools->
- Click on File-> preferences



- Click on Network->click the add button ->then click the network created and click on the wheel button and give it a new name,
- Enable support DHCP, ->set an network IP



- Click a Virtual Machine-Settings->Network
- Select from Drop down NAT Network – select your server that you have set, repeat the steps on this slide for the client as well





Tools



Server

Running



Client

Running



Client - Settings



New



Name



Open



Base



Boot



Access



Video



Graphics



Removal



Recording



Control



IDE



Control



SATA



Adapter



USB



Device



General



System



Display



Storage



Audio



Network



Serial Ports



USB



Shared Folders



User Interface

Network

Adapter 1

Adapter 2

Adapter 3

Adapter 4

☒ Enable Network Adapter

Attached to: NAT Network

Name: Server

▶ Advanced

OK

Cancel

Check if IP is set

- Sudo apt update
- sudo apt install net-tools
- Get ip with command “ifconfig”

oct 9 13:07

server@server-VirtualBox: ~

```
+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 1s (213 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 195722 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
..
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
server@server-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.4 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::3948:ab32:3143:903b prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:c0:8d:d7 txqueuelen 1000 (Ethernet)
    RX packets 7756 bytes 11196083 (11.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2466 bytes 169003 (169.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 168 bytes 15115 (15.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 168 bytes 15115 (15.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

server@server-VirtualBox:~$
```

oct 9 13:07

client@client-VirtualBox: ~

```
+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 1s (169 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 195722 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
..
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
client@client-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.5 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::6d77:d0a9:f2be:7931 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:23:40:47 txqueuelen 1000 (Ethernet)
    RX packets 16492 bytes 24015720 (24.0 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 5189 bytes 331422 (331.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 168 bytes 15198 (15.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 168 bytes 15198 (15.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

client@client-VirtualBox:~$
```

- Try the ping command and check if all is ok

```
client@client-VirtualBox:~$ ping 192.168.1.4
PING 192.168.1.4 (192.168.1.4) 56(84) bytes of data.
64 bytes from 192.168.1.4: icmp_seq=1 ttl=64 time=0.720 ms
64 bytes from 192.168.1.4: icmp_seq=2 ttl=64 time=0.403 ms
64 bytes from 192.168.1.4: icmp_seq=3 ttl=64 time=0.556 ms
64 bytes from 192.168.1.4: icmp_seq=4 ttl=64 time=0.427 ms
64 bytes from 192.168.1.4: icmp_seq=5 ttl=64 time=0.397 ms
64 bytes from 192.168.1.4: icmp_seq=6 ttl=64 time=0.411 ms
64 bytes from 192.168.1.4: icmp_seq=7 ttl=64 time=0.474 ms
64 bytes from 192.168.1.4: icmp_seq=8 ttl=64 time=0.381 ms
64 bytes from 192.168.1.4: icmp_seq=9 ttl=64 time=0.470 ms
^C
--- 192.168.1.4 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8196ms
rtt min/avg/max/mdev = 0.381/0.471/0.720/0.101 ms
```


NTP server-client configuration

Install server with

-sudo apt-get install ntp

Check Installation with

-sntp --version

Edit server pool configuration

-sudo nano /etc/ntp.conf

- Here you can see your NTP pool servers
- Can change the default with the ones available at the site in the document
- CTRL-O to write out and
- CTRL-X to exit

```
GNU nano 6.2 /etc/ntp.conf
# /etc/ntp.conf, configuration for ntpd; see ntp.conf(5) for help

driftfile /var/lib/ntp/ntp.drift
# Leap seconds definition provided by tzdata
leapfile /usr/share/zoneinfo/leap-seconds.list

# Enable this if you want statistics to be logged.
#statsdir /var/log/ntpstats/

statistics loopstats peerstats clockstats
filegen loopstats file loopstats type day enable
filegen peerstats file peerstats type day enable
filegen clockstats file clockstats type day enable

# Specify one or more NTP servers.

# Use servers from the NTP Pool Project. Approved by Ubuntu Technical Board
# on 2011-02-08 (LP: #104525). See http://www.pool.ntp.org/join.html for
# more information.
pool 0.ubuntu.pool.ntp.org iburst
pool 1.ubuntu.pool.ntp.org iburst
pool 2.ubuntu.pool.ntp.org iburst
pool 3.ubuntu.pool.ntp.org iburst

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify
```

Restart service with : “sudo systemctl restart ntp”

Check service status with “sudo systemctl status ntp”

Enable firewall if its disabled

To check status use:

« sudo ufw status verbose »

To enable if is inactive use:

« sudo ufw enable »

Allow other machines to access

Ntp across firewall with

« sudo ufw allow ntp »

```
server@server-VirtualBox:~$ sntp --version
sntp 4.2.8p15@1.3728-o Wed Feb 16 17:13:02 UTC 2022 (1)
server@server-VirtualBox:~$ sudo nano /etc/ntp.conf
server@server-VirtualBox:~$ sudo systemctl restart ntp
server@server-VirtualBox:~$ sudo systemctl status ntp
● ntp.service - Network Time Service
   Loaded: loaded (/lib/systemd/system/ntp.service; enabled; vendor preset: on)
   Active: active (running) since Sun 2022-10-09 13:34:34 EEST; 9s ago
     Docs: man:ntpd(8)
  Process: 3402 ExecStart=/usr/lib/ntp/ntp-systemd-wrapper (code=exited, sta
 Main PID: 3409 (ntpd)
    Tasks: 2 (limit: 2288)
   Memory: 1.6M
      CPU: 27ms
   CGroup: /system.slice/ntp.service
           └─3409 /usr/sbin/ntpd -p /var/run/ntpd.pid -g -u 128:136

oct 09 13:34:34 server-VirtualBox ntpd[3409]: Listening on routing socket on f
oct 09 13:34:34 server-VirtualBox ntpd[3409]: kernel reports TIME_ERROR: 0x204>
oct 09 13:34:34 server-VirtualBox ntpd[3409]: kernel reports TIME_ERROR: 0x204>
oct 09 13:34:34 server-VirtualBox systemd[1]: Started Network Time Service.
oct 09 13:34:35 server-VirtualBox ntpd[3409]: Soliciting pool server 185.125.1
oct 09 13:34:36 server-VirtualBox ntpd[3409]: Soliciting pool server 91.189.94>
oct 09 13:34:37 server-VirtualBox ntpd[3409]: Soliciting pool server 91.189.91>
oct 09 13:34:38 server-VirtualBox ntpd[3409]: Soliciting pool server 185.125.1>
oct 09 13:34:39 server-VirtualBox ntpd[3409]: Soliciting pool server 185.125.1>
oct 09 13:34:40 server-VirtualBox ntpd[3409]: Soliciting pool server 2620:2d:4>
lines 1-22/22 (END)
```

Reload firewall: “sudo ufw reload”

Check firewall status: “sudo ufw status”

```
~
lines 1-22/22 (END)
server@server-VirtualBox:~$ sudo fw status verbose
sudo: fw: command not found
server@server-VirtualBox:~$ sudo ufw status verbose
Status: inactive
server@server-VirtualBox:~$ sudo ufw enable
Firewall is active and enabled on system startup
server@server-VirtualBox:~$ sudo ufw allow ntp
Rule added
Rule added (v6)
server@server-VirtualBox:~$ sudo ufw reload
Firewall reloaded
server@server-VirtualBox:~$ sudo ufw status
Status: active

To Action From
--
123/udp ALLOW Anywhere
123/udp (v6) ALLOW Anywhere (v6)

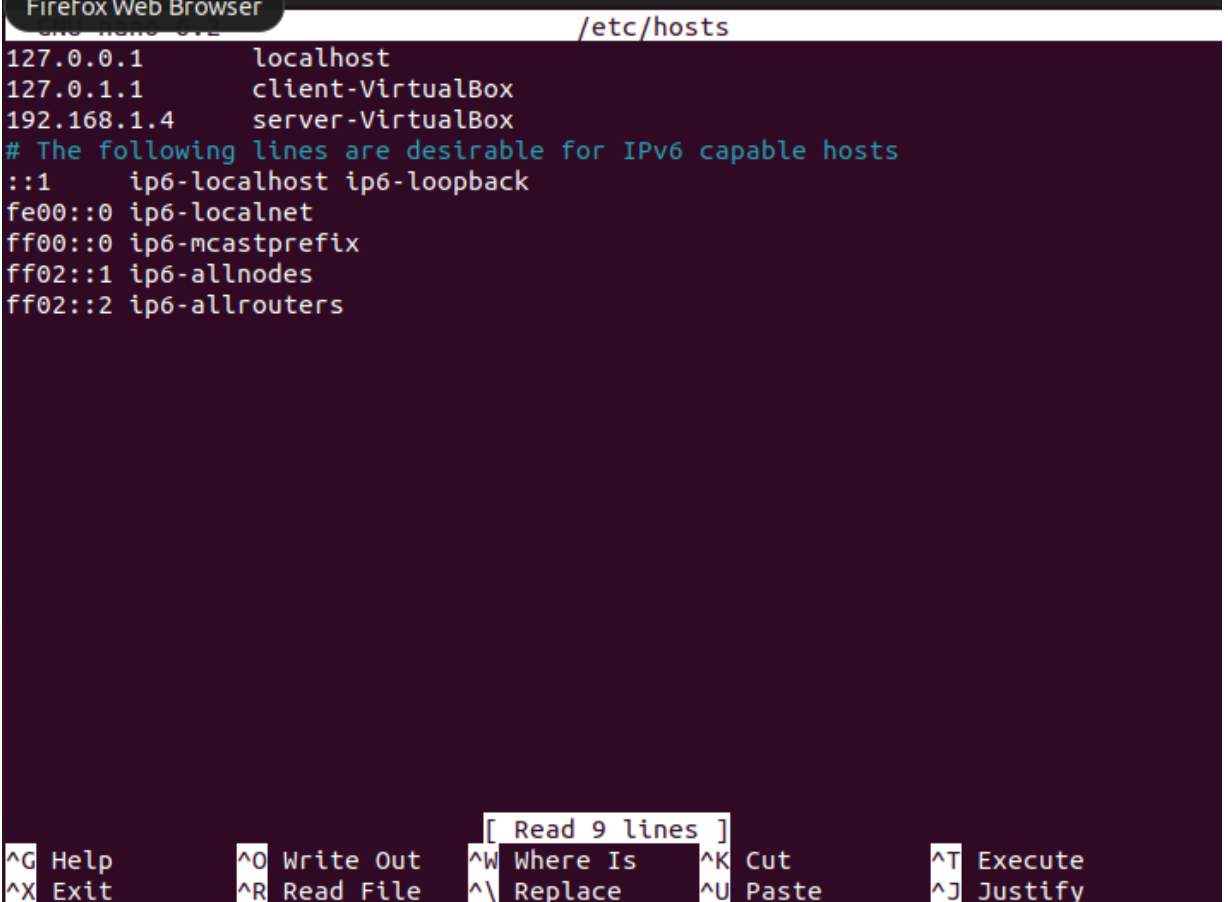
server@server-VirtualBox:~$
```

NTP Client side installation

- “sudo apt install ntpdate”- on the client machine
- “hostname -I “ on the server machine to get the name and ip

Add the hostname and ip to the client host file:

- sudo nano /etc/hosts



The screenshot shows a Firefox Web Browser window with the address bar displaying "/etc/hosts". The main content area shows the contents of the /etc/hosts file, which is being edited in nano editor. The file contains the following lines:

```
127.0.0.1    localhost
127.0.1.1    client-VirtualBox
192.168.1.4   server-VirtualBox
# The following lines are desirable for IPv6 capable hosts
::1         ip6-localhost ip6-loopback
fe00::0     ip6-localnet
ff00::0     ip6-mcastprefix
ff02::1     ip6-allnodes
ff02::2     ip6-allrouters
```

The nano editor interface is visible, including the status bar at the bottom with various keyboard shortcuts like ^G Help, ^O Write Out, ^W Where Is, ^K Cut, ^T Execute, ^X Exit, ^R Read File, ^\ Replace, ^U Paste, and ^J Justify. A message "[Read 9 lines]" is also present in the status bar.

Disable timesyncd service on the client:

- “sudo timedatectl set-ntp off

Install ntp on client

“sudo apt install ntp”

Set Up the ntp client

“sudo nano /etc/ntp.conf”

Add at the end of the file

“server Hostname(put your server name here) prefer iburst”

GNU nano 6.2 /etc/ntp.conf *

```
# By default, exchange time with everybody, but don't allow configuration.
restrict -4 default kod notrap nomodify nopeer noquery limited
restrict -6 default kod notrap nomodify nopeer noquery limited

# Local users may interrogate the ntp server more closely.
restrict 127.0.0.1
restrict ::1

# Needed for adding pool entries
restrict source notrap nomodify noquery

# Clients from this (example!) subnet have unlimited access, but only if
# cryptographically authenticated.
#restrict 192.168.123.0 mask 255.255.255.0 notrust

# If you want to provide time to your local subnet, change the next line.
# (Again, the address is an example only.)
#broadcast 192.168.123.255

# If you want to listen to time broadcasts on your local subnet, de-comment the
# next lines. Please do this only if you trust everybody on the network!
#disable auth
#broadcastclient
server server-VirtualBox prefer iburst
```

^G Help
^X Exit

^O Write Out
^R Read File

^W Where Is
^\ **Replace**

^K Cut
^U Paste

^T Execute
^J Justify

- Restart ntp service on client:
- “sudo systemctl restart ntp”
- View synchronization by using:
- “ntpq -p”

```

      remote           refid      st t when poll reach  delay  offset  jitter
=====
0.ubuntu.pool.n .POOL.          16 p   -   64    0    0.000   +0.000   0.000
1.ubuntu.pool.n .POOL.          16 p   -   64    0    0.000   +0.000   0.000
2.ubuntu.pool.n .POOL.          16 p   -   64    0    0.000   +0.000   0.000
3.ubuntu.pool.n .POOL.          16 p   -   64    0    0.000   +0.000   0.000
ntp.ubuntu.com .POOL.          16 p   -   64    0    0.000   +0.000   0.000
*server-VirtualB 185.125.190.58  3 u   24   64    1    0.724  -16.592   1.151
+ntp1.chroot.ro  13.161.101.224  2 u   23   64    1   42.105   +3.721   2.351
-185.86.67.2     115.75.236.158  2 u   22   64    1   45.862   +6.980   5.173
#46.97.187.202   1 u   22   64    1   69.899  -40.733   8.021
+86.124.75.41 (c 192.53.103.104  2 u   24   64    1   56.610   -4.251   2.196
-92.86.106.228  213.209.109.44  3 u   22   64    1   64.005   +7.446   7.131
-corporate1.blue 193.5.68.2      2 u   27   64    1   52.456   +8.184   4.539
-cache.alsys.ro  193.190.230.65  2 u   26   64    1   52.958   +8.096   7.023
-time.xindi.eu   134.71.66.21    2 u   29   64    1   42.150   +3.781   2.397
-time.cloudflare 10.100.8.54      3 u   27   64    1   78.530  +11.117  10.046
-ntp0.chroot.ro  210.100.177.101  2 u   28   64    1   34.479   +2.952   1.827
136.255.128.126 78.130.168.61    2 u   25   64    1   43.991   +5.561   7.926
185.125.190.57  48.134.154.62   2 u   34   64    1   84.367   -0.435   0.000
birlic.alsys.ro  131.188.3.220   2 u   24   64    1   28.195   -1.771   2.973
alphyn.canonica  94.198.159.10   2 u   37   64    1  147.035   -4.319   0.000
185.125.190.56  48.134.154.62   2 u   36   64    1   65.412   -6.592   0.000
client@client-VirtualBox:~$ ntpq -ps
/usr/bin/ntpq: illegal option -- s
ntpq - standard NTP query program - Ver. 4.2.8p15
Usage: ntpq [ -<flag> [<val>] | --<name>[={| }<val>] ]... [ host ...]

```


Exercise

- Configure an SMTP Server-Client