

Practical Exercise 10-1: Configuring NTP

This Practical Exercise will take students through configuring NTP to get time from us.pool.ntp.org.

Open VirtualBox and start the openSUSE VM. Run snapshot 16-2 for the correctly configured environment. To run snapshot 16-2:

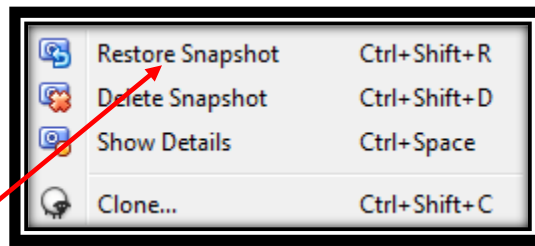
1. Open the Oracle VM VirtualBox manager by double clicking this icon on your desktop:



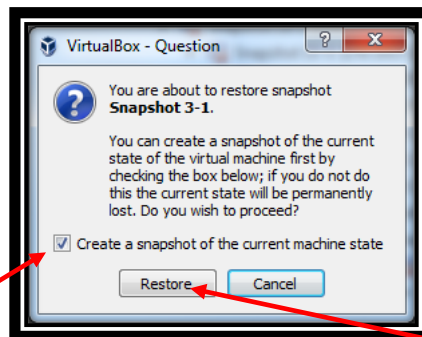
2. Click "Snapshots" in the top right of the Oracle VM Virtualbox Manager.



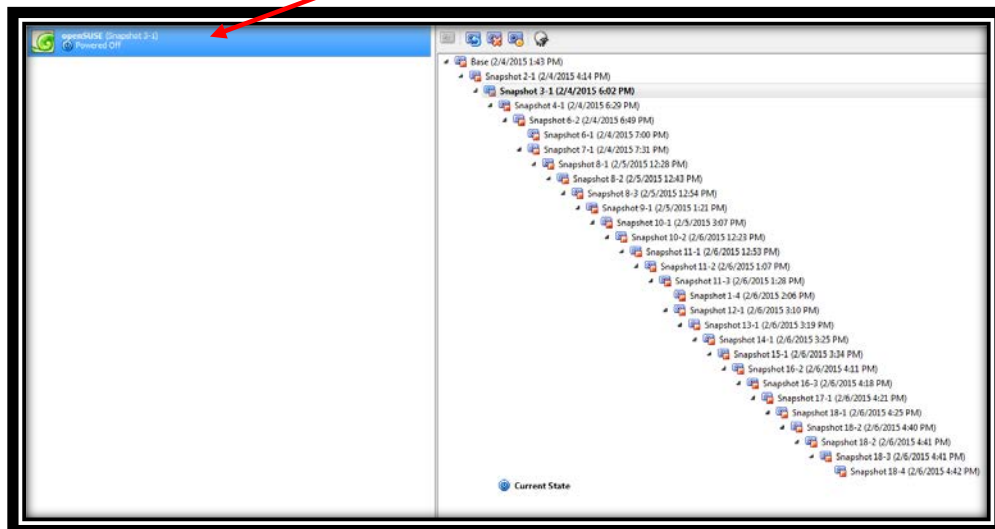
3. In the right side box populated with snapshots scroll up and find the one titled "Snapshot 16-2" and right click on it. The following box should appear:



4. Select "Restore Snapshot" and the following pop-up should appear:



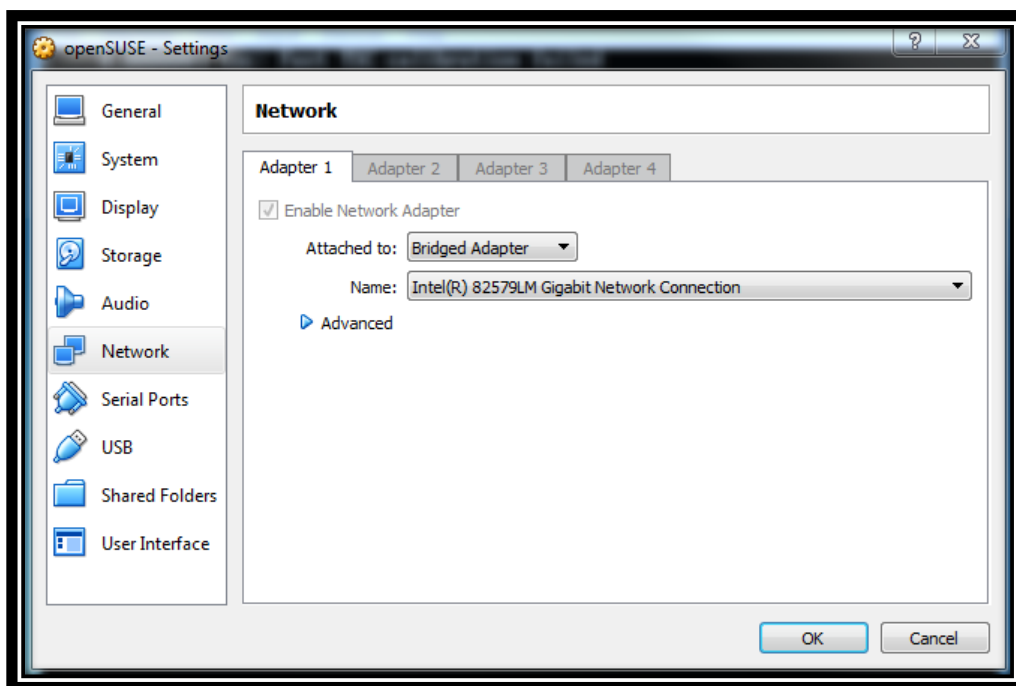
5. Uncheck the "Create a Snapshot of the current machine state" box and then click the "Restore" button. If the pop up box does not have the check box, just click "Restore."
6. You should now see in the left box the openSUSE (Snapshot 16-2) with a status of "Powered Off." Power it on by double clicking it.



7. In this Practical Exercise we will also have to bridge the network adapter for virtual box to the hosts network interface card. To do this at the bottom right of the Virtual Box window find the icon with two computer screens:



8. Right click the icon and select the network settings.
9. Under the Adapter 1 tab ensure the "Enable Network Adapter" box is checked. Set the "Attached to" to Bridged Adapter. Once that is done the Name should auto populate.



10. Press OK and the Network Settings window will close.
11. A separate window should open and you should see the openSUSE Linux OS booting.
12. Press **CTRL+ALT+F1** and login with the username: **root** and password: **student**.
13. Restart the network services by entering **systemctl restart network**.
14. Enter **dig www.google.com** and make sure it resolves and lists Google's IP addresses.

15. At the shell prompt, verify that the ntp package has been installed on your system by entering **rpm -q ntp** at the shell prompt. The version of ntp installed should be displayed.

16. Enter **vi /etc/ntp.conf**.

17. Scroll down to the lines that read:

```
# server 127.127.1.0          # local clock (LCL)
# fudge 127.127.1.0 stratum 10 # LCL is unsynchronized
```

18. Press Insert and then remove the comment character (#) from the beginning of those two lines.

19. Add a new line below the fudge line.

20. Add the following to that new line:

server us.pool.ntp.org

The above line is used to configure the ntp service to synchronize your local computers time with the time on a public NTP server on the Internet.

21. The file should look like this now:

```
## and when no outside source of synchronized time is available.
##
server 127.127.1.0          # local clock (LCL)
fudge 127.127.1.0 stratum 10 # LCL is unsynchronized
server us.pool.ntp.org_
##
## Add external Servers using
```

22. Press **Esc** and then enter a **colon (:)** and then **wq** to save the file and exit vi.

23. Perform a one-time synchronization by entering **rcntp ntp timeset** at the shell prompt.

We run this command first prior to starting the ntp service to get the time synched within 17 minutes of the provider to avoid the insane time that the ntp daemon will not adjust.

24. Start the ntp service by entering **systemctl start ntp** at the shell prompt.
25. Check the status of the ntp daemon by entering **systemctl status ntp** at the shell prompt.
You should see that ntp is active.
26. Enter **ntpq -p** and you should see the local time provider (loopback, the 127.127 address from step 17) and then below it the external time provider from the pool at us.pool.ntp.org.
27. Enter **reboot** to reboot the system.
28. Press **CTRL+ALT+F1** and login with the username: **root** and password: **student**.
29. Check the status of the ntp daemon by entering **systemctl status ntp**. You should see that the service is inactive (dead).
30. To ensure that the ntp service starts on reboot to maintain the correct time enter **chkconfig -s ntp 35**. This will turn the ntp service on at restart at run levels 3 and 5. Run level 3 is full multiuser with networking and run level 5 is full multiuser with networking and GUI.
31. Verify that ntp now has those run levels set to on by entering **chkconfig -l ntp**. You should see that 3 and 5 are on.
32. Enter **reboot** to reboot the system.
33. Press **CTRL+ALT+F1** and login with the username: **root** and password: **student**.
34. Enter **systemctl status ntp** and you should see that ntp is active.
35. Enter **ntpq -p** and you should see the local time provider (loopback, the 127.127 address from step 17) and then below it the external time provider from the pool at us.pool.ntp.org which may be a different IP or domain name than what you saw in step 26.
36. The run levels turned on in step 30 for ntp are stored in their own directory within the /etc/init.d directory. Each run level has its own directory. An example would be run level three, its directory would be rc3.d. You can enter **ls -l /etc/init.d/rc3.d** and among the services listed you should see a symbolic link for ntp listed among others like cron and

network. Enter **ls -l /etc/init.d/rc5.d** and you will see some of the same from 3 including ntp.

--End of Practical Exercise--