



RHEL9

Session 2 – 9th October 2022 Summary

- Command to check the network interface and IP Address in Linux

```
[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 150
        inet 10.0.2.15 netmask 255.255.255.0 broadcast 10
        inet6 fe80::a00:27ff:fea0:bb9c prefixlen 64 scope
          ether 08:00:27:a0:bb:9c txqueuelen 1000 (Ethernet)
            RX packets 52 bytes 5674 (5.5 KiB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 105 bytes 10393 (10.1 KiB)
            TX errors 0 dropped 0 overruns 0 carrier 0 colli
```

- Command to check the size of the RAM

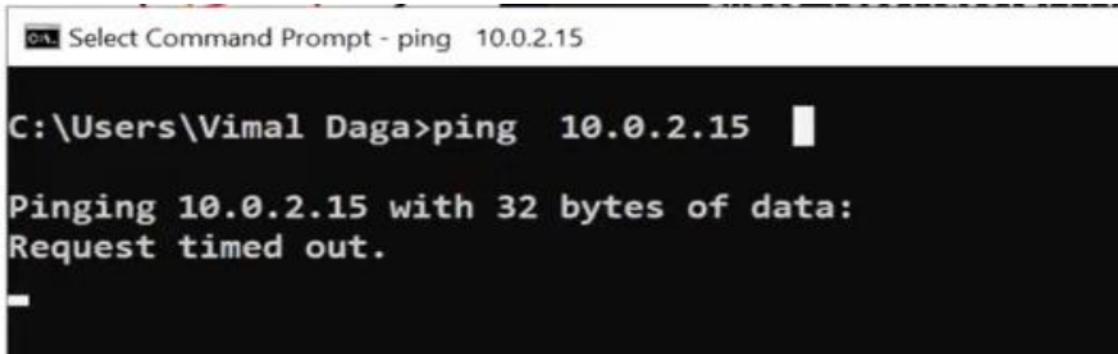
```
[root@localhost ~]# free -m
              total        used        free      shared
Mem:       7941M       846M      6548M        24M
Swap:      1023M         0M      1023M
[root@localhost ~]#
```

- Command to check the IP Address on Windows

```
C:\ Command Prompt
Microsoft Windows [Version 10.0.19044.2006]
(c) Microsoft Corporation. All rights reserved.

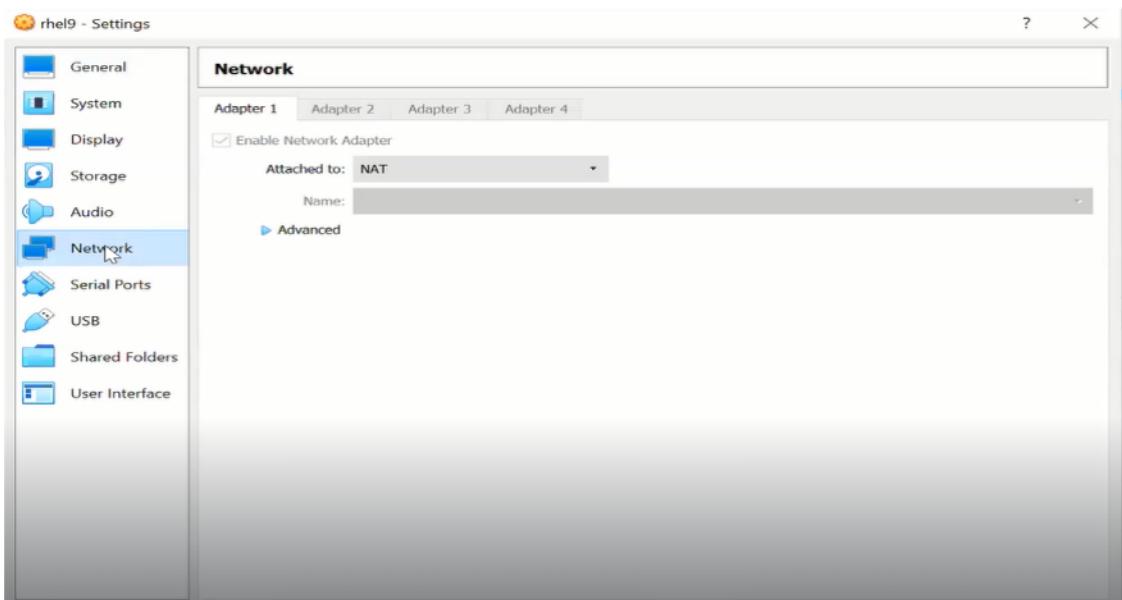
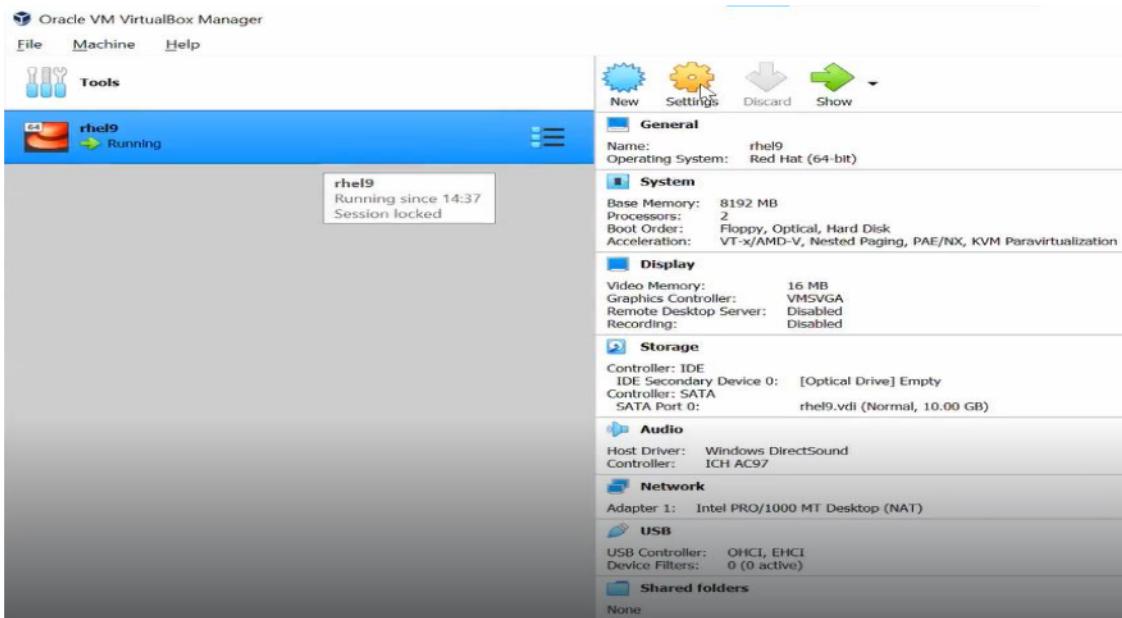
C:\Users\Vimal Daga>ipconfig ■
```

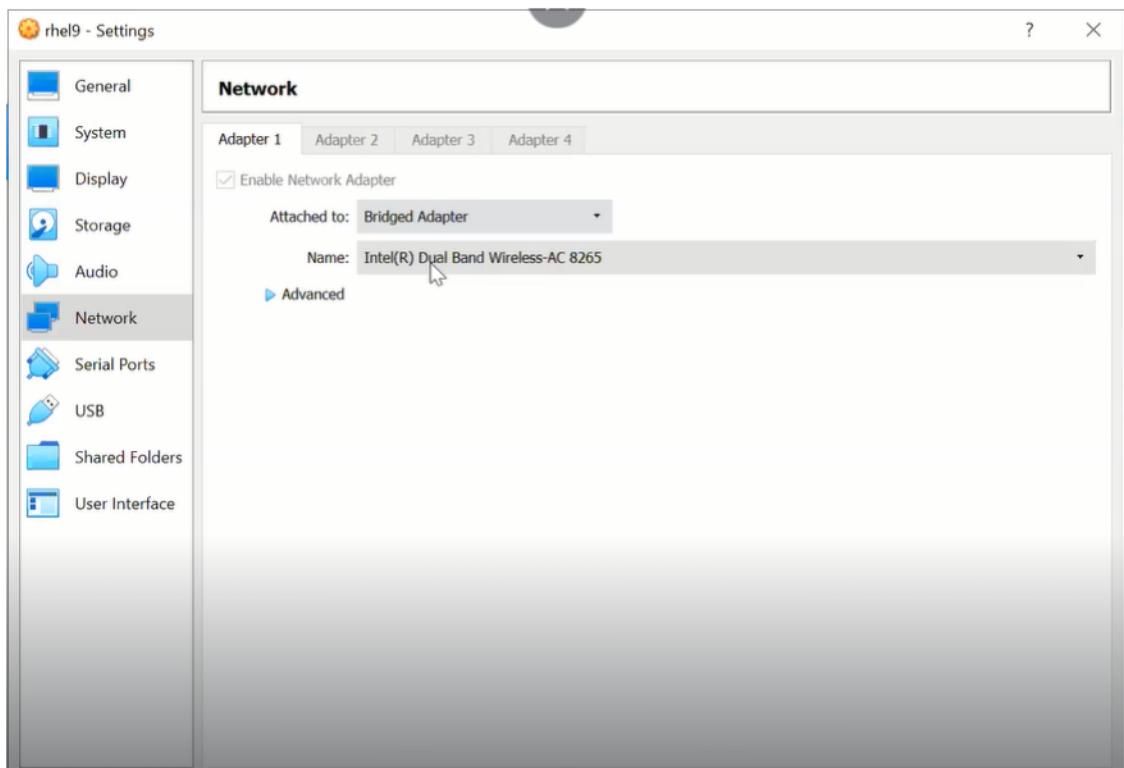
- Command to check the network connectivity between windows and linux



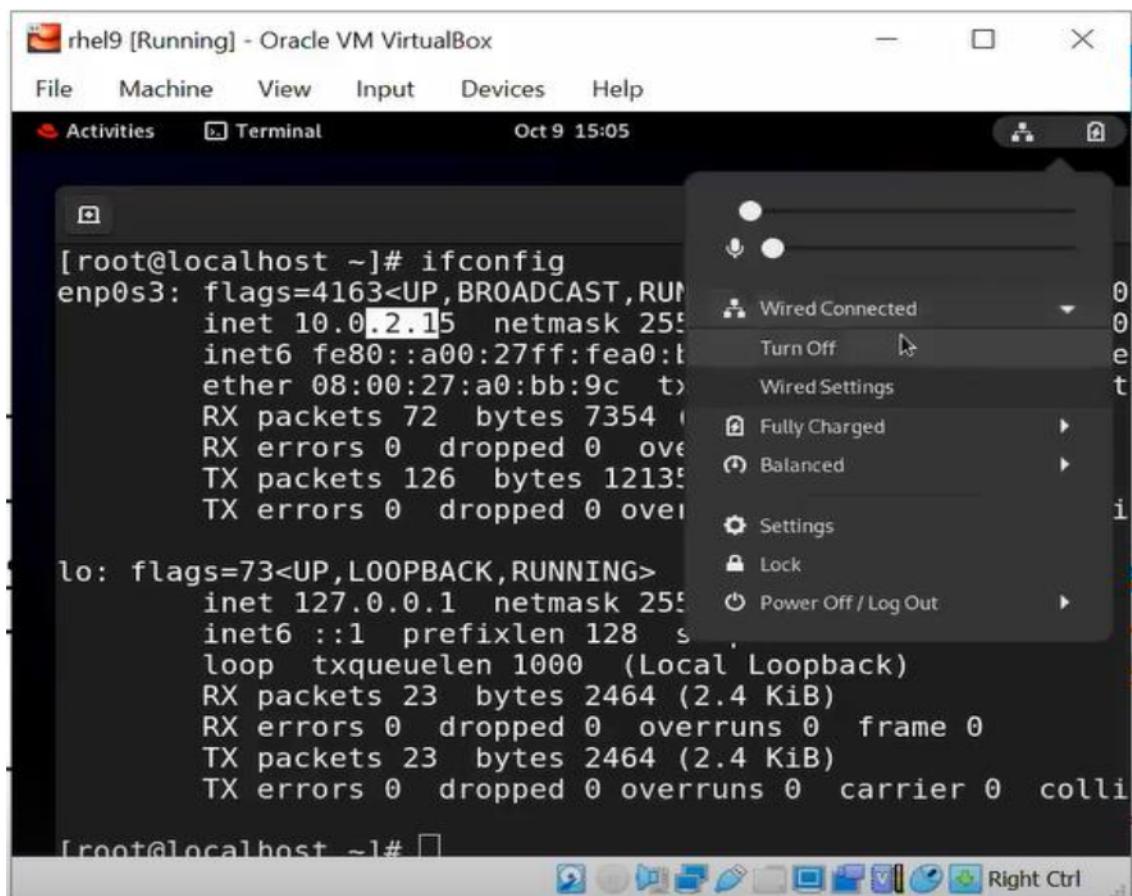
```
C:\Users\Vimal Daga>ping 10.0.2.15
Pinging 10.0.2.15 with 32 bytes of data:
Request timed out.
```

- Not able to connect because there is no common medium – for this





- To reload the settings – turn off and turn on the wired connection



rhel9 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 9 15:05

```
[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
          inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
            inet6 fe80::a00:27ff:fea0:9c  prefixlen 64  scopeid 0x20<link>
              ether 08:00:27:a0:bb:9c  txqueuelen 1000  (Ethernet)
                RX packets 72  bytes 7354 (7.3 KB)
                RX errors 0  dropped 0  overruns 0  frame 0
                TX packets 126  bytes 12135 (12.1 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 23  bytes 2464 (2.4 KiB)
                RX errors 0  dropped 0  overruns 0  frame 0
                TX packets 23  bytes 2464 (2.4 KiB)
                TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

[root@localhost ~]#
```

➤ After this again check the IP Address

rhel9 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Oct 9 15:05

```
root@localhost:~
```

```
[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
          inet 192.168.1.2  netmask 255.255.255.0  broadcast 192.168.1.255
            inet6 fe80::a00:27ff:fea0:bb9c  prefixlen 64  scopeid 0x20<link>
              ether 08:00:27:a0:bb:9c  txqueuelen 1000  (Ethernet)
                RX packets 183  bytes 20955 (20.4 KiB)
                RX errors 0  dropped 0  overruns 0  frame 0
                TX packets 261  bytes 27411 (26.7 KiB)
                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 31  bytes 3136 (3.0 KiB)
                RX errors 0  dropped 0  overruns 0  frame 0
                TX packets 31  bytes 3136 (3.0 KiB)
                TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

- Now ping with the IP Address

```
C:\Users\Vimal Daga>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time<1ms TTL=64
Reply from 192.168.1.2: bytes=32 time=1ms TTL=64
Reply from 192.168.1.2: bytes=32 time<1ms TTL=64
```

- Command for remote login – from window to linux

```
C:\Users\Vimal Daga>ssh -l root 192.168.1.2
The authenticity of host '192.168.1.2 (192.168.1.2)' can't be established.
ECDSA key fingerprint is SHA256:F7PdcjyIrrbGYoXk6g8Mx0YfN+EQwQMu7doT3gKV3Y0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.2' (ECDSA) to the list of known hosts.
root@192.168.1.2's password:
Activate the web console with: systemctl enable --now cockpit.socket

Register this system with Red Hat Insights: insights-client --register
Create an account or view all your systems at https://red.ht/insights-dashboard
Last login: Sun Oct  9 15:18:29 2022 from 192.168.1.12
[root@localhost ~]#
[root@localhost ~]#
```

- Without login to linux, we can run the commands

```
[root@localhost ~]# exit
logout
Connection to 192.168.1.2 closed.

C:\Users\Vimal Daga>
C:\Users\Vimal Daga>
C:\Users\Vimal Daga>ssh -l root 192.168.1.2      date
root@192.168.1.2's password:          ↗
Sun Oct  9 03:23:28 PM IST 2022

C:\Users\Vimal Daga>
C:\Users\Vimal Daga>
```

- From single command prompt, we can run multiple commands

```
C:\Users\Vimal Daga>
C:\Users\Vimal Daga>ssh -l root 192.168.1.2 "date;cal"
root@192.168.1.2's password:
Sun Oct  9 03:26:16 PM IST 2022
          October 2022
Su Mo Tu We Th Fr Sa
                  1
 2 3 4 5 6 7 8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

- Command to check the IP Address of a particular network interface – any IP Address having 4 bytes – is a valid IP Address

```
[root@localhost ~]# ifconfig enp0s3
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.1.2  netmask 255.255.255.0  broadcast 192.168.1.255
      inet6 fe80::a00:27ff:fea0:bb9c  prefixlen 64  scopeid 0x20<link>
      inet6 2402:e280:2319:1c:a00:27ff:fea0:bb9c  prefixlen 64  scope id 0x0<global>
        ether 08:00:27:a0:bb:9c  txqueuelen 1000  (Ethernet)
        RX packets 23926  bytes 24744026 (23.5 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 13371  bytes 4218229 (4.0 MiB)
        TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

- Command to change the IP Address

```
[root@localhost ~]# ifconfig enp0s3 192.168.12345
```

- Command to check local network is working

```
[root@localhost ~]# ping 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=60 time=28.6 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=60 time=27.0 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=60 time=31.4 ms
```

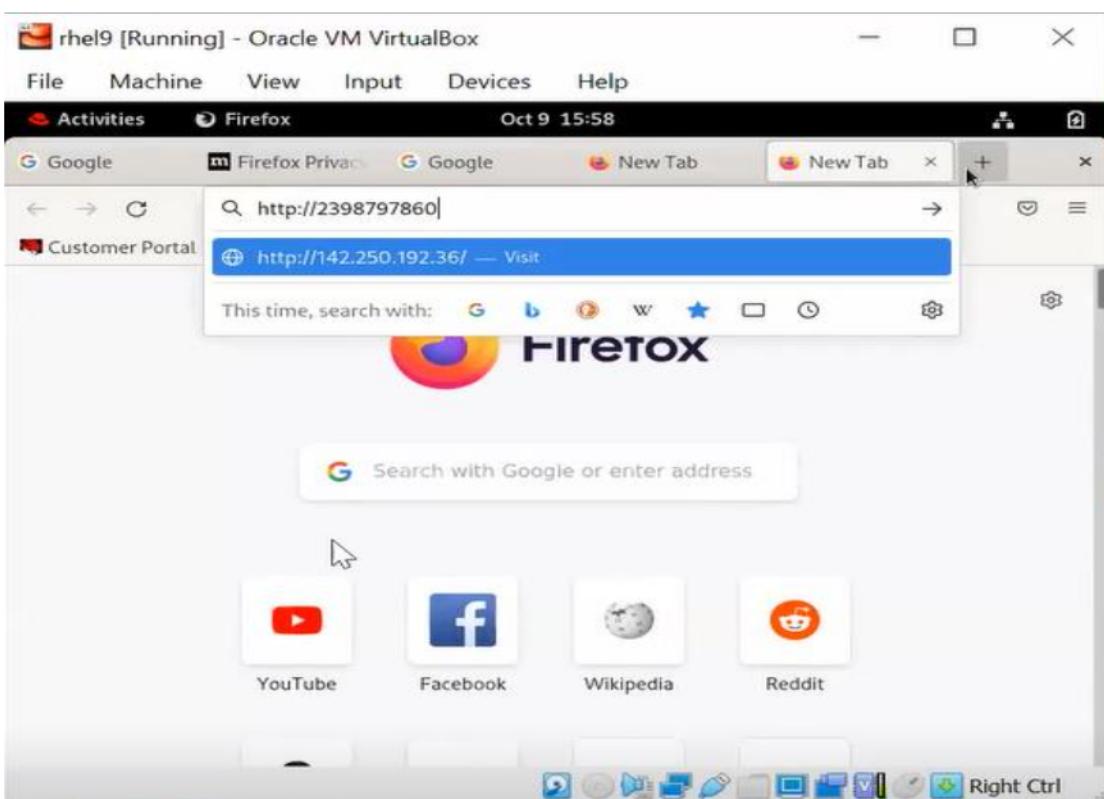
- Command to get the IP Address of a particular Website

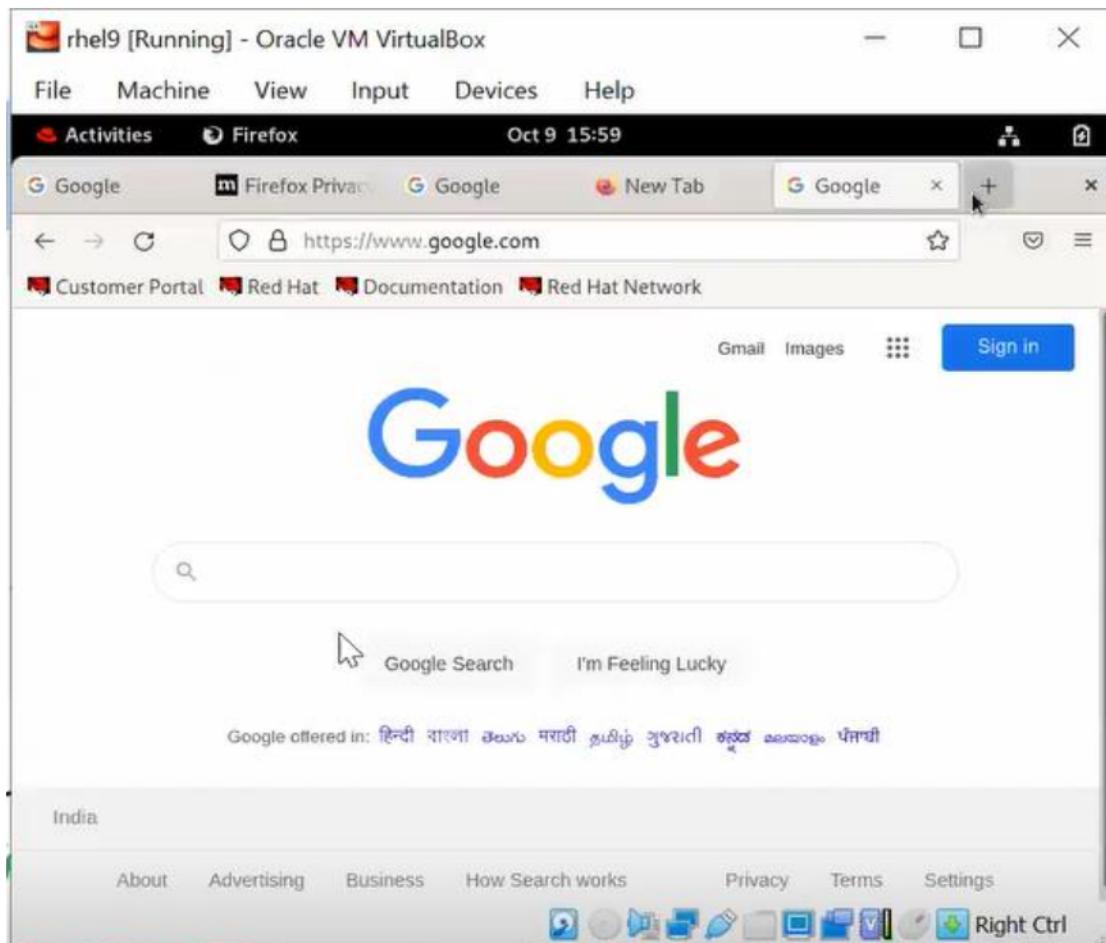
```
[root@localhost ~]# nslookup www.google.com
Server:          192.168.1.254
Address:         192.168.1.254#53

Non-authoritative answer:
Name:   www.google.com
Address: 142.250.192.36
Name:   www.google.com
Address: 2404:6800:4009:828::2004
```

- To convert the IP Address of Google – 142.250.192.36 into one Octet

```
[root@localhost ~]# bc
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2
Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
142*2^24 + 250*2^16 + 192*2^8 + 36*2^0
2398797860
```





➤ Putty for Windows

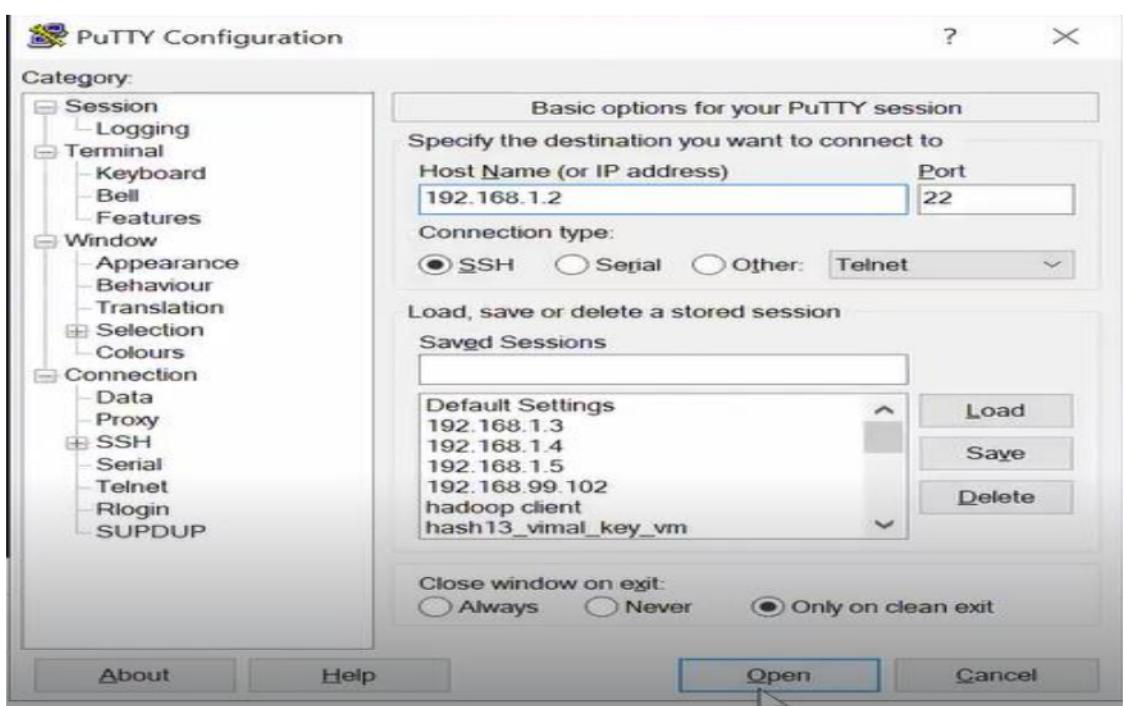


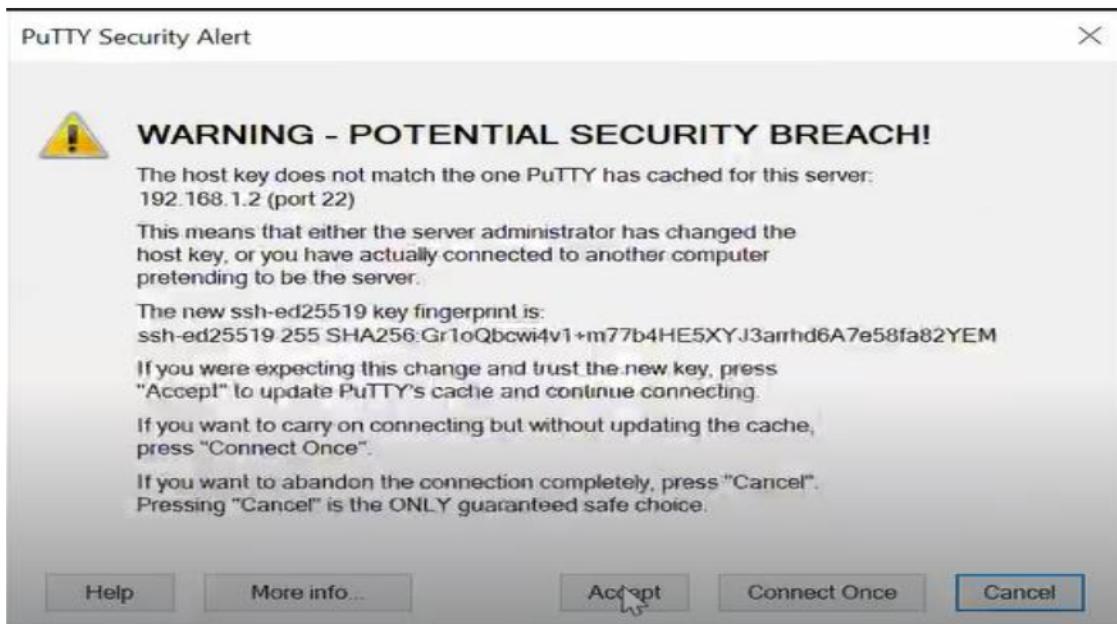
The screenshot shows a web browser window with the URL chia.greenend.org.uk/~sgtatham/putty/latest.html. The page provides information about the installer packages and standalone binaries available for download. It includes links for 64-bit x86, 64-bit Arm, and 32-bit x86 versions of putty.exe, each with a corresponding signature link. A note at the top states that installer packages provide versions of all components except PuTTYtel and pterm.

The installer packages above will provide versions of all of these (except PuTTYtel and pterm), but you can download standalone binaries one by one if you prefer.
(Not sure whether you want the 32-bit or the 64-bit version? Read the [FAQ entry](#).)

putty.exe (the SSH and Telnet client itself)

64-bit x86:	putty.exe	(signature)
64-bit Arm:	putty.exe	(signature)
32-bit x86:	putty.exe	(signature)





```
root@localhost:~  
[root@localhost ~]# login as: root  
[root@localhost ~]# root@192.168.1.2's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
  
Register this system with Red Hat Insights: insights-client --register  
Create an account or view all your systems at https://red.ht/insights-dashboard  
Last login: Sun Oct  9 14:41:57 2022  
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]#
```

```
root@localhost:~  
[root@localhost ~]# login as: root  
[root@localhost ~]# root@192.168.1.2's password:  
Activate the web console with: systemctl enable --now cockpit.socket  
  
Register this system with Red Hat Insights: insights-client --register  
Create an account or view all your systems at https://red.ht/insights-dashboard  
Last login: Sun Oct  9 15:16:31 2022  
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]# firefox  
Error: no DISPLAY environment variable specified  
[root@localhost ~]# date  
Sun Oct  9 03:19:14 PM IST 2022  
[root@localhost ~]# cal 2 1234  
      February 1234  
Su Mo Tu We Th Fr Sa  
        1  2  3  4  
 5  6  7  8  9 10 11  
12 13 14 15 16 17 18  
19 20 21 22 23 24 25  
26 27 28
```

- Command to query a software installed or not

```
[root@localhost ~]# rpm -q firefox
firefox-91.8.0-1.el9_0.x86_64
```

- Command to check the manual of the “rpm” command

```
[root@localhost ~]# man rpm
```

- Command to check detailed information of firefox

```
[root@localhost ~]# rpm -q -i firefox
Name        : firefox
Version     : 91.8.0
Release    : 1.el9_0
Architecture: x86_64
Install Date: Sat 08 Oct 2022 04:09:16 PM IST
Group       : Unspecified
Size        : 277491573
License      : MPLv1.1 or GPLv2+ or LGPLv2+
Signature   : RSA/SHA256, Wed 06 Apr 2022 11:40:08 AM IST, Ke
51
Source RPM  : firefox-91.8.0-1.el9_0.src.rpm
Build Date  : Tue 05 Apr 2022 05:43:45 PM IST
Build Host  : x86-vm-56.build.eng.bos.redhat.com
Packager    : Red Hat, Inc. <http://bugzilla.redhat.com/bugzi
Vendor      : Red Hat, Inc.
URL         : https://www.mozilla.org/firefox/
```

- Command to query all the software installed

```
[root@localhost ~]# rpm -q -a
```

- Command to query the name of the software of a command

```
[root@localhost ~]# date
Sun Oct  9 04:26:11 PM IST 2022
[root@localhost ~]# which date
/usr/bin/date
[root@localhost ~]# rpm -q -f /usr/bin/date
coreutils-8.32-31.el9.x86_64
[root@localhost ~]#
```

- Command to list the commands supported by a firefox

```
[root@localhost ~]# man firefox
[root@localhost ~]# rpm -q -l firefox
```

```
/usr/lib64/firefox/platform.ini
/usr/lib64/firefox/plugin-container
/usr/lib64/firefox/run-mozilla.sh
/usr/lib64/mozilla/extensions/{ec8030f7-c20a-464f-9b2b-945c6a97330c}
/usr/share/appdata/firefox.appdata.xml
/usr/share/applications/firefox.desktop
/usr/share/icons/hicolor/16x16/apps/firefox.png
/usr/share/icons/hicolor/22x22/apps/firefox.png
/usr/share/icons/hicolor/24x24/apps/firefox.png
/usr/share/icons/hicolor/256x256/apps/firefox.png
/usr/share/icons/hicolor/32x32/apps/firefox.png
/usr/share/icons/hicolor/48x48/apps/firefox.png
/usr/share/icons/hicolor/symbolic/apps/firefox-symbolic.png
/usr/share/man/man1/firefox.1.gz
/usr/share/mozilla/extensions/{ec8030f7-c20a-464f-9b2b-945c6a97330c}
[root@localhost ~]#
```

- Command to query about the Kernel software

```
[root@localhost /]# rpm -q kernel
kernel-5.14.0-70.22.1.el9_0.x86_64
[root@localhost /]# rpm -q -i kernel
Name        : kernel
Version     : 5.14.0
Release     : 70.22.1.el9_0
Architecture: x86_64
Install Date: Sat 08 Oct 2022 04:09:19 PM IST
Group       : Unspecified
Size        : 0
License     : GPLv2 and Redistributable, no modifications
Signature   : RSA/SHA256, Fri 05 Aug 2022 03:35:22 AM
Source RPM  : kernel-5.14.0-70.22.1.el9_0.src.rpm
Build Date  : Tue 02 Aug 2022 07:03:41 PM IST
Build Host  : x86-vm-08.build.eng.bos.redhat.com
Packager    : Red Hat, Inc. <http://bugzilla.redhat.com/bugzilla>
```

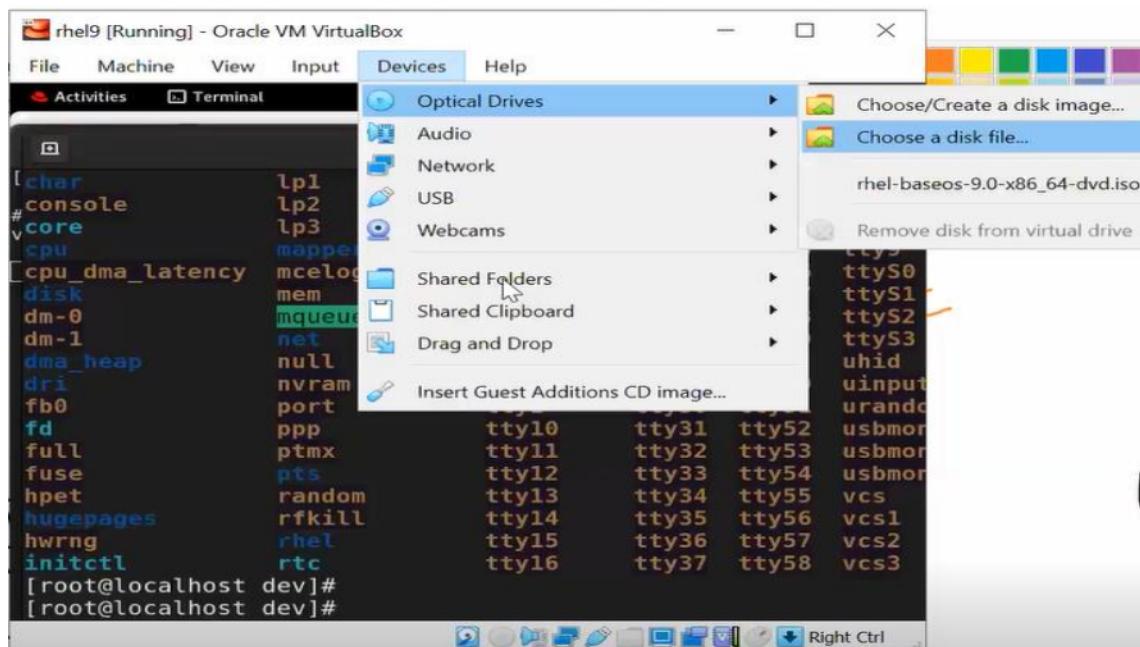
- All the devices in Linux OS is managed by /dev folder

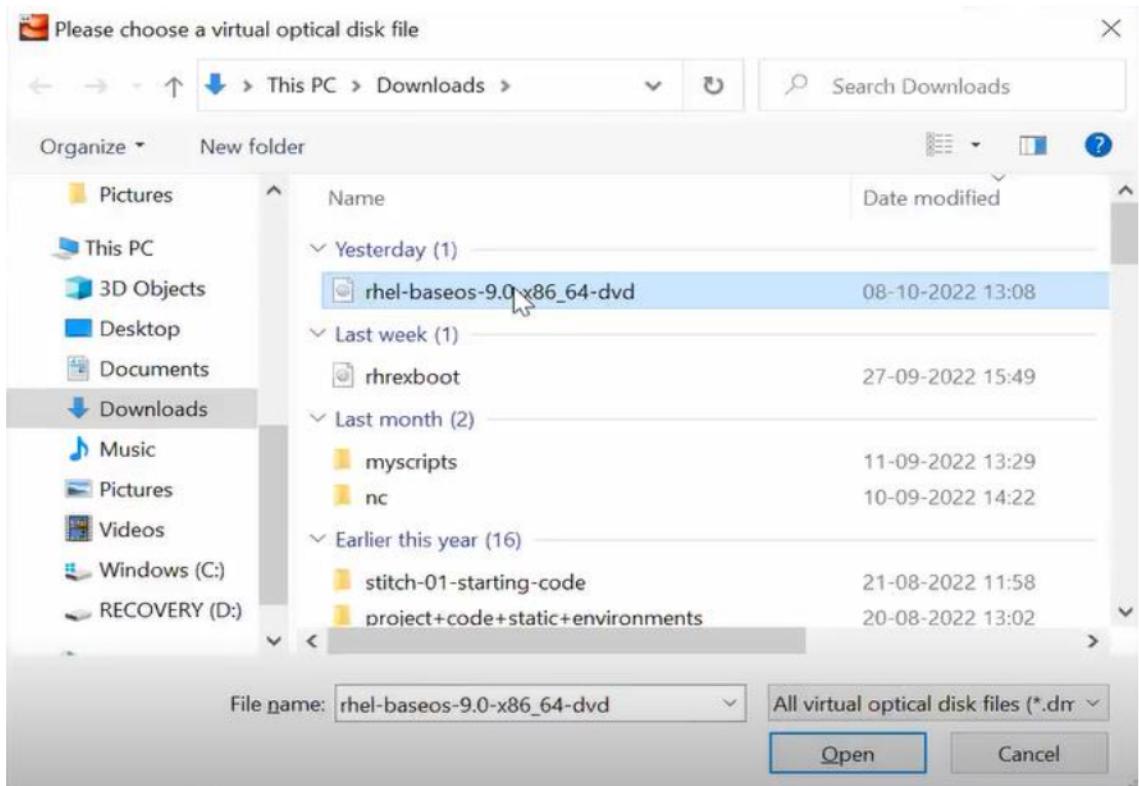
```
[root@localhost /]# cd /dev
[root@localhost dev]# ls
[console          lp2           shm        tty22  tty43  tty7
 core             lp3           snapshot   tty23  tty44  tty8
 #cpu             mapper       Shd        tty24  tty45  tty9
 vcpu             mcelog      sr0        tty25  tty46  ttyS0
 cpu_dma_latency mem          stderr     tty26  tty47  ttyS1
 disk             mqueue      stdin     tty27  tty48  ttyS2
 dm-0              null        stdout    tty28  tty49  ttyS3
 dm-1              net         tty       tty29  tty5  uhid
 dma_heap         nvram      tty0      tty3   tty50  uinput
 dri               port        tty1      tty30  tty51  urandom
 fb0              ppp         tty10     tty31  tty52  usbmon
 fd               ptmx       tty11     tty32  tty53  usbmon
 full             pts         tty12     tty33  tty54  usbmon
 fuse             random     tty13     tty34  tty55  vcs
 hpet             rfkill     tty14     tty35  tty56  vcs1
 hugepages        rhel        tty15     tty36  tty57  vcs2
 hwrng            rtc         tty16     tty37  tty58  vcs3
```

- Command which speaks for us

```
[root@localhost dev]# cd snd/
[root@localhost snd]# pwd
/dev/snd
[root@localhost snd]# ls
by-path  controlC0  pcmC0D0c  pcmC0D0p  pcmC0D1c  seq  timer
[root@localhost snd]# espeak -ng
hello
[
```

- To share a iso file





- Command to see the path or location of a package – from CLI

```
[root@localhost dev]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/devtmpfs        3.9G   0    3.9G  0% /dev
tmpfs           3.9G   0    3.9G  0% /dev/shm
tmpfs           1.6G  9.2M  1.6G  1% /run
/dev/mapper/rhel-root  8.0G  4.4G  3.7G  55% /
/dev/sda1       1014M 232M  783M  23% /boot
tmpfs           795M 132K  794M  1% /run/user/0
/dev/sr0         8.0G  8.0G    0 100% /run/media/root/
86_64
[root@localhost dev]# cd /run/media/root/RHEL-9-0-0-BaseOS-x86_64
[root@localhost RHEL-9-0-0-BaseOS-x86_64]#
[root@localhost RHEL-9-0-0-BaseOS-x86_64]#
[root@localhost RHEL-9-0-0-BaseOS-x86_64]# pwd
/run/media/root/RHEL-9-0-0-BaseOS-x86_64
[root@localhost RHEL-9-0-0-BaseOS-x86_64]#
```

```
[root@localhost RHEL-9-0-0-BaseOS-x86_64]# ls
AppStream     EULA          Images        RPM-GPG-KEY-redhat-t
BaseOS        extra_files.json isolinux     RPM-GPG-KEY-redhat-r
EFI           GPL           media.repo
[root@localhost RHEL-9-0-0-BaseOS-x86_64]#
[root@localhost RHEL-9-0-0-BaseOS-x86_64]#
```

- Command to go into one of the folder – it contains multiple software

```
[root@localhost RHEL-9-0-0-BaseOS-x86_64]# cd AppStream/
[root@localhost AppStream]# ls
Packages  repodata
[root@localhost AppStream]# cd Packages/
[root@localhost Packages]# ls
```

- Command to uninstall a software

```
[root@localhost Packages]# rpm -q firefox
firefox-91.8.0-1.el9_0.x86_64
#[root@localhost Packages]# rpm -e firefox
[root@localhost Packages]# rpm -q firefox
[package firefox is not installed]
[root@localhost Packages]# firefox
bash: firefox: command not found...
[root@localhost Packages]#
```

- Command to check a software contains a package – use Tab key for auto completion

```
[root@localhost Packages]# ls  fire
firefox-91.8.0-1.el9_0.x86_64.rpm
firewall-applet-1.0.0-4.el9.noarch.rpm
firewall-config-1.0.0-4.el9.noarch.rpm
[root@localhost Packages]# ls  firefox-91.8.0-1.el9_0.x86_6
firefox-91.8.0-1.el9_0.x86_64.rpm
[root@localhost Packages]#
[root@localhost Packages]#
[root@localhost Packages]#
```

- Command to install a software using rpm command

```
[root@localhost Packages]# rpm -i firefox-91.8.0-1.el9_0.x86_64.rpm
warning: firefox-91.8.0-1.el9_0.x86_64.rpm: Header V3 RSA/SIG
ID fd431d51: NOKEY
[root@localhost Packages]# rpm -q firefox
firefox-91.8.0-1.el9_0.x86_64
[root@localhost Packages]#
```

- Command to see the detailed information of command output – with –v (verbosity) option – shows what is happening behind the scene

```
[root@localhost Packages]# rpm -i -v firefox-91.8.0-1.el9_0.x86_64.rpm
warning: firefox-91.8.0-1.el9_0.x86_64.rpm: Header V3 RSA/SIG
ID fd431d51: NOKEY
Verifying packages...
Preparing packages...
firefox-91.8.0-1.el9_0.x86_64
```

- Command to see the hashing information – with –h option

```
[root@localhost Packages]# rpm -i -v -h firefox-91.8.0-1.el9_0.x86_64.rpm
warning: firefox-91.8.0-1.el9_0.x86_64.rpm: Header V3 RSA/SHA256 Signature, key
ID fd431d51: NOKEY
Verifying...                                              ##### [100%]
Preparing...                                               ##### [100%]
Updating / installing...
  1:firefox-91.8.0-1.el9_0.x86_64.rpm                 ##### [100%]
[root@localhost Packages]#
```

- Standard command in Linux to install any software or package

```
[root@localhost Packages]# rpm -ivh firefox-91.8.0-1.el9_0.x86_64.rpm
warning: firefox-91.8.0-1.el9_0.x86_64.rpm: Header V3 RSA/SHA256 Signa
ID fd431d51: NOKEY
Verifying... #####
Preparing... #####
Updating / installing...
 1:firefox-91.8.0-1.el9_0 #####
[root@localhost Packages]#
```