

Using essential tools

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Introduction

Free RHEL 8 License

<https://developers.redhat.com/>

Installing RHEL in VirtualBox

1. Create the virtual network.
2. Setup the hardware:
 - 2 CPU cores
 - 4 GB RAM
 - 20 GB disk
3. Enable the 2nd network adapter ("Host Adapter").

Access to System

```
ssh user@machine-addr
```

Commands

Linux is case-sensitive.

Documentation is usually located here:

```
/usr/share/doc
```

Useful commands:

```
tty
```

Know what console is in use.

```
hostnamectl
```

Information on the host.

```
ip addr help  
man ip
```

Press `q` to exit the manual page.

```
ip -4 addr show  
ip -a
```

```
ss -ntl
```

Show listening TCP sockets.

```
ls /usr/share/doc/
```

Vagrant

```
mkdir -p vagrant/rhel8  
cd vagrant/rhel8  
  
vagrant init generic/rhel8  
vagrant up  
vagrant ssh
```

Register RHEL:

```
sudo subscription-manager register --username <username> --password <password>
```

Power off the VM:

```
vagrant halt
```

Text Files

touch

Create a file:

```
touch file1
```

Check the file type:

```
file file1
```

Write text to a file:

```
echo "hello" > file1
```

Shell Redirection

STDOUT (Standard Output)

Non-error output redirected with:

- `>` overwrite
- `>>` append

Example:

```
ls -l /etc/hosts /etc/hosts > log
```

STDERR (Standard Error)

Error output redirected with:

- `2>` overwrite
- `2>>` append

Example:

```
ls -l /etc/hosts /etc/Hosts 2> log
```

STDOUT and STDERR Combined

Redirect both output streams:

- `&>` overwrite
- `&>>` append

Example:

```
ls -l /etc/hosts /etc/Hosts &> log
```

HEREDOCs

Multiline text files:

```
cat > story.txt <<END
This is line 1
This is line 2
This is line 3
END
```

tee

Using the command tee output is sent both to the console and the file.

```
sudo echo "1.0.0.1 cloudflare" >> /etc/hosts # /etc/hosts : Permission denied
```

it fails since redirection is working at the shell level under the context of the user that started the shell

```
sudo echo "1.0.0.1 cloudflare" >> /etc/hosts # Fails as redirection from shell
echo "1.0.0.1 cloudflare" | sudo tee -a /etc/hosts # Works
```

- tee file1 (overwrite)
- tee -a file1 (append)

Text editors

nano

Simple to use

```
sudo dnf repolist  
sudo dnf install vim nano bash-completion
```

```
nano ./story.txt
```

vim

Powerful but need to be learned

```
vimtutor
```

```
vim ./story.txt
```

Normal mode

Editing mode

i to append before the cursor

a to append after the cursor

Shift + I to append at the start of the line

Shift + A to append at the end of the line

Esq brings back to Normal mode

Ex mode

Save or quit

Esq : x to save

Esq : q! to exit without saving

Changing directories

```
pwd # /home/bryan - print the working directory
```

```
cd /usr/share/doc # to move to the directory
```

```
cd # bring to the home directory
```

```
cd - # bring to the previous directory
```

```
mkdir my_directory # create a directory (need to have write permission)
```

```
mkdir ~/my_directory # create a directory at the specified location
```

```
mkdir -p parent_directory/child_directory # allow creation of a parent directory
```

```
cd ESC+. # shortcut keys to recall last argument
```

```
rmdir parent_directory # fails because not empty
```

```
rm -rf parent_directory # remove recursively
```

Files Operation

```
# cp copy a file (need read permission and write permission where you want to copy)
```

```
cp /etc/hosts .
```

```
# mv move or rename (both need write)
```

```
mv hosts hosts.old
```

```
# rm remove (need write in the directory where the file is)
```

```
rm hosts.old
```

Targeting a file

"*" refers to any character and any number of those characters

- "*" would target all files
- file* would target any files starting with "file"

"?" refers to any character but only one instance

- "?" would target all files with only 1 character in their name
- "file?" would target any files that has 5 character and start with "file"

```
touch files{1..12} # Create 12 files from files1 to files12

ls files* #return files1 to files12

ls files? # return files1 to files9
rm files? # remove files1 to files9

ls files?? # return files 10 to files 12
rm -i files?? # remove files 10 to files 12, -i let verify your interaction
```

Reading text file

cat

List the complete file.

```
cat /etc/hosts
```

head

Read top 10 or any specified number of lines of a file.

```
head -n2 /etc/passwd
```

tail

Read bottom 10 or any specified number of lines of a file.

```
tail -n2 /etc/passwd
```

less

Page through a file (used in man).

```
wc -l /etc/services
# wc : word count
# wc -l : line count

less /etc/services
```

grep

Search through text in a file.

```
sudo grep Password /etc/sshd_config

sudo grep ^Password /etc/sshd_config # ^ : lines startting with

sudo wc -l /etc/sshd_config # return ~ 145 lines
sudo grep -vE '^(#|$)' /etc/sshd_config | wc -l
# -v : don't show me
# E : enhanced application
# '^(#|$)' : line that start with # OR $
# return ~ 16 lines
```