**Linux Commands for DevOps Warriors**

This article will help in understanding most of the important and majorly used Linux commands that would be required for a DevOps Engineer.

To execute these commands one can use any Linux machine / virtual machine / online Linux terminal to quickly start working with the commands.

**System Info Commands**

* **hostname**- shows the name of the system host.
* **hostid**- shows the host id of the system assigned by the OS.
* **date**- shows the current date and time in UTC format.
* **whoami**- shows the currently logged-in username of the terminal.
* **uptime**- shows the elapsed time duration since the machine logged in.
* **uname**- unix name.
* **clear**- clears the screen.
* **history**- lists all the commands executed until now.
* **sudo** - Super User Do.
* **echo $?** - shows the exit status of the last executed command (0 - success, 1-255 - error/failure).
* **shutdown -r now** - restart the machine immediately (-r restart).
* **printenv**- displays all the environment variables of the Linux system.
* **last**- shows previous logins in the Linux system.

**Directory Commands**

* **pwd**- shows the present working directory (abbr. Print Working Directory).
* **cd**- change directory.
* **cd ..** - changes to its parent directory (i.e) one level up.
* **cd <dirName>** - change to the directory mentioned.
* **cd ~** or **cd**- changes to the currently logged in user's home directory.
* **cd ../..** - changes the directory two levels up.
* **cd -** - changes to the last working directory.
* **mkdir**- make directory.
* **mkdir <dirName>** - creates the directory.
* **mkdir -p <pathOftheDir>** - creates directory with its parent directories if it does not exists (-p parent).
* **ls**- lists the files & folders of the directory you are in.
* **ls -a** - lists all files & folders along with hidden files (-a all).
* **ls -al** - lists all files & folders along with hidden files in a formatted manner (-l long listing format).

**File Commands**

* **touch**- creates an empty file or updates timestamp of the existing file.
* **touch <fileName>** - creates a single empty file.
* **touch <file1> <file2>** - creates file1, file2 empty files.
* **cat**- concatenates and displays the contents of files.
* **cat <fileName>** - displays the contents of the file.
* **cat > <fileName>** - creates a new file, allows to input content interactively and redirects inputted content to the created file (> redirection operator).
* **head <fileName>** - displays first 10 lines of the file by default.
* **head -n 5 <fileName>** - displays first 5 lines of the file (-n number)
* **tail <fileName>** - displays the last 10 lines of the file by default.
* **tail -n 5 <fileName>** - displays last 5 lines of the file (-n number).
* **tail -F <fileName>** - displays contents of the file in real-time even when the file is rotated or replaced (used for log file monitoring).
* **less <fileName>** - used to view large files (log files) in a paginated manner.
* **rm**- remove command.
* **rm <fileName>** - removes the file.
* **rm -r <dirName>** - removes files & folders of directory recursively (-r recursive).
* **rm -rf <dirName>** - force remove the files & folders of directory recursively (-f force).
* **cp**- copy command.
* **cp <source> <destination>** - copy the files and folders from source to destination.
* **cp -r <dir1> <dir2>** - copy dir1 directory to dir2 directory recursively (-r recursive).
* **mv**- move or rename command.
* **mv <fileName> <newFileName>** - renames the file to new name.
* **mv <oldFilePath> <newFilePath>** - moves the file to new path.

**File Permission Commands**

* **ls -l <pathOfFileName>** - shows the permissions of the file.
* **ls -ld <dirNamePath>** - shows the permissions of the directory.
* **chmod <octalNumber> <fileName>** - changes mode/permissions of the file.
* **chmod <octalNumber> -R <dirName>** - changes mode/permissions of the directory recursively.
* **chown <newUser> <fileName>** - changes the user ownership of a file.
* **chown <newUser>:<newGroup> <fileName>** - changes the user & group ownerships of a file.
* **chgrp <groupName> <fileName/dirName>** - updates the group name for file/directory.
* **getfacl <fileName/dirName>** - shows the file/directory access control list.
* **setfacl -m u:<userName>:rwx <fileName/dirName>** - modifies the current acl of the file/directory.
* **setfacl -x u:<userName>: <fileName/dirName>** - removes the acl permissions for the file/directory.
* **setfacl -m g:<groupName>:rwx <fileName/dirName>** - modifies the group acls for the file/directory.
* **setfacl -x g:<groupName>: <fileName/dirName>** - removes the group acl permissions for the file/directory.

**File Permission Octal Numbers**

* *read (r) — 4, write (w)- 2, execute (x) — 1*
* *Sum the numbers to create an octal number for providing permission to a file/directory.*

**User Management Commands**

* **useradd**- creates a user account.
* **useradd <userName>** - creates user account without home & mail spool directories.
* **useradd -m <userName>** - creates user account with home & mail spool directories.
* **passwd <userName>** - creates a password for the user and stores it in /etc/shadow file.
* **userdel** - user delete.
* **userdel <userName>** - deletes the user from the system.
* **userdel -r <userName>** - deletes the user from the system along with home and mail spool directories (-r remove).
* **/etc/passwd** - stores information about user accounts.
* **cat /etc/passwd** - displays the complete list of users on that machine.
* **/etc/shadow** - stores the password for users in an encrypted format.
* **cat /etc/shadow** - displays the complete list of user passwords on that machine.
* **su**- substitute user.
* **su <userName>** - switches to the user mentioned.
* **exit**- to logout from that user.
* **usermod**- modify user.
* **usermod -aG <groupName> <userName>** - adds the user to another group (-aG append the user to the group without removing from other groups).
* **chsh**- change shell.
* **chsh -s /bin/bash <user>** - changes the shell to bash for the user.
* **chsh -s /bin/sh <user>** - changes the shell to sh for the user.

**Group Management Commands**

* **groupadd <groupName>** - creates the group.
* **groupdel <groupName>** - delete the group.
* **/etc/group** - stores the information of the groups.
* **cat /etc/group** - displays the complete list of groups on that machine.
* **gpasswd <groupName>** - creates a password for the group.
* **gpasswd -a <userName> <groupName>** - adds the user to the group.
* **gpasswd -d <userName> <groupName>** - removes the user from the group.
* **gpasswd -M <userName1>,<userName2>,<userName3> <groupName>** - adds multiple users to the group and removes the existing ones of the group.

**Searching Commands**

**locate**- used to search for files/directories based on names.

* **sudo updatedb** - updates the database so the results are up-to-date.
* **locate <fileName/dirName>** - locates the file/directory and displays the path.

**GREP Command — Global Regular Expression Print**

* **grep <textToSearch> <fileName>** - used to find text patterns within files.
* **grep -i <textToSearch> <fileName>** - used to find text patterns within the file ignoring the case (-i ignore case).
* **grep -v <textToSearch> <fileName>** - used to find non matching lines of text patterns (-v invert-match).
* **grep -l <textToSearch> <fileNames>** - used to display the matching string file names.

**Find Command**

* **find . -name <fileName>** - finds the mentioned file if available in the current directory (.(period) represents current directory).
* **find <dirName> -name <fileName>** - finds the mentioned file in the directory.
* **find <dirName> -perm 754** - finds the files in the directory having 754 permission.

**Hardware Information Commands**

* **free -h** - shows systems memory information ( -h human readable format).
* **df -h** - shows the disk space usage of mounted file systems.
* **du**- disk usage.
* **du -h** - displays disk usage information (-h human-readable format).
* **du -sh** - displays the total size of the directory instead of individual files in human-readable format (-s summarize).
* **du -sh <fileName/dirName>** - displays the total size of the file/directory.

**Network Commands**

* **ping <hostName>** - tests the reachability & responsiveness of the remote host.
* **dig <domainName>** - shows DNS information of the domain.
* **wget <url>**- used to retrieve/download files from the internet.
* **curl**- client URL.
* **curl <url>** - used to retrieve/download files from the internet.
* **ifconfig**- display available network interfaces.
* **ip addr** - display and manipulate network interface info.
* **curl ifconfig.me** - shows the public ip address of the machine.
* **netstat -antp**- shows all tcp open ports (-a all, t-tcp, n-active, p protocol).
* **traceroute <url>** - traces the route using packets from source to destination host.

**Process Information Commands**

* **ps**- process status.
* **ps**- shows the currently running process.
* **ps -ef** - shows all the processes of the system.
* **top**- shows the real-time, dynamic view of the running processes of a system.
* **kill <pid>** - gracefully terminates the process pid.
* **pgrep <processName>** - shows process id of processes based on name/other criteria.
* **bg**- background, sends the process to the background & continues execution without interruption.
* **fg** - foreground, brings the process to the foreground and makes it an active process.
* **nohup**- no hangup, runs command/script in the background even after the terminal is closed or the user logs out.

**Archiving File Commands**

**tar**- tape archive.

* **tar -cvf <fileName> <directory>** - creates the tar file with the fileName for the directory mentioned (-c create, -v verbose, f - output file name).
* **tar -xvf <sourceTarFileName> -C <destinationDir>** - puts the extracted files into the destination directory (-x extract, v verbose, -f source tar file name).

**Ubuntu Package related Commands**

* **apt** - Package Manager for Debian-based Linux distributions Eg: Ubuntu.
* **apt**- a newer version of the package manager with colorized output, progress bar and additional functions.
* **apt-get** - older version and basic package manager.
* **apt update** - updates the package list.
* **apt list --installed** - lists all the installed packages.
* **apt list --installed <packageName>** - shows the package name if it's installed.
* **apt show <packageName>** - shows information about a package mentioned.
* **apt search <packageName>** - searches and shows the list of packages.
* **apt install <packageName>** - installs the required package.
* **apt remove <packageName>** - removes the required package.
* **apt purge <packageName>** - removes the required package along with its config files.

**Misc Commands**

* **echo "sample text" | grep text** - the output of the first command is passed as an input to the second command using the pipe (|) symbol.
* **ls -l | tee file.txt** - redirects the list to the file.txt and simultaneously displays it in the terminal.
* **echo "sample text" > <fileName>** - write the content to the file mentioned by overwriting the existing content (> redirection operator).
* **echo "new sample text" >> <fileName>** - appends the contents to the file mentioned without overwriting the existing content (>> redirection operation).
* **stat <fileName/dirName>** - shows detailed information about the file or directory.
* **cron**- system daemon for managing scheduled tasks.
* **tree**- tree representation of files and directories of a specific directory.