Ifconfig or ip addr – Get Ip Address – Not Avaliable (yum install net-tools)

[Root@myfirstLinux]# - Username (Root), MyFirstLinux – Hostname, # - prompt

Ctrl+C – get the prompt back

Whoami – username

Hostname – Hostname

|  |  |  |  |
| --- | --- | --- | --- |
| FileSystem | Description | FileSystem | Description |
| / | root | /proc | Running process (only exist in memory) |
| /boot | Boot loader (grub.cfg) | /lib | C programming library files needed by commands and apps. Example –e open pwd |
| /root | Root user home directory. Not same as /. | /tmp | Directory for temporary file |
| /dev | System devices (e.g. Disk, speaker, cdrom etc) | /home | Directory for users |
| /etc | Configuration File | /var | System logs |
| /bin | Everyday user commands | /run | System daemons that start very early (e.g. system and udev) to store temporary runtime files like PID files. |
| /sbin | System/File System Commands | /mnt | To mount external filesystem (e.g. NFS) |
| /opt | Optional add-on third party application. | /media | For cdrom mounts |

|  |  |  |  |
| --- | --- | --- | --- |
| File Symbol | Meaning | File Symbol |  |
| - | Regular File | c | Special File or Device File |
| d | Directory | s | socket |
| l | link | p | Named pipe |
| b | Block device |  |  |

Change password: Passwd OR change for another user “sudo passwd username”.

Man: Is similar to help cmd in PowerShell.

|  |  |  |  |
| --- | --- | --- | --- |
| touch | Create new file | cp | Copy from existing file |
| vi | editor | mkdir | Create Directory |
| Multiple files | Touch file1 file2 | Multiple directory | Mkdir dir1 dir2 |

|  |  |  |
| --- | --- | --- |
| find | Will find file in current directory | find . -name “kramer” |
| locate | Locate the file path | Locate Kramer |

If find and locate fail to work. You need locate database and run “updatedb”.

To check = rpm –qa | grep mlocate

To install = yum install mlocate

|  |  |  |
| --- | --- | --- |
| Types of WildCards | | |
| \* | Wild Card | Ls –l \*cd\* |
| ? | Represent single character | rm abc-?-xyz |
| { } | Represent a range of characters | touch abc{1..9}-xyz |
| \ (slash) | As an escape character |  |
| ^ (caret) | The beginning of the line |  |
| $(Dollar sign) | The end of the line |  |

Soft and Hard Link

It is similar to shortcut in windows. If you use SoftLink the Inode of the file changes and size of the file reduces as a shortcut in Linux. If you use HardLink the Inode of the file remain same and the size of shortcut remain same.

|  |  |
| --- | --- |
| ln | Create Hard Link |
| ln -s | Create Soft Link |
| Ls -ltri | Will provide inode’s information |

Linux Syntax Cmd and Access Control

|  |  |  |  |
| --- | --- | --- | --- |
| Linux Syntax | Description | Linux Syntax | Description |
| ls | list | Ls ip \* | Wild card |
| Ls /etc | Show files in particular directory | Ls | grep \_pin\_ or ls \*\_pin\_\* | Find key “\_pin\_” anywhere in the file |
| Ls –l or ll | List files and dir in detail info | Ls –b a\* | Will remove nonprintable character. Example “a\_weird” To a\_weird |
| Ls –a | List all files including hidden files. | Ls –l –d /tmp | Create a blink on tmp |
| Ls –la | List files and dir in detail info. Along with hidden files. | Ls –l -h | Human readable file size |
| Ls –h | Display files with human readable format | Ls –l -A | Will hide files |
| Ls –lh | List all the files with human red able and file size. | Ls –l –R | Will show all files with sub folders. |
| Ls –n | User ID and Group ID will display instead of name | Ls –l –h –S | Sort file by size |
| Ls –l –t | Sort by modifying time | Ls –t | head 1 | Show top 1 line |
| Ls –t | tail 1 | Show bottom 1 line | Ls –l –h –S –r | Reverse sort by size |
| Ls –full-time | Precision timestamp when file was created | Ls –i | inode |
| Ls -F | Appends a character to filenames indicating their type (e.g., / for directories, \* for executables). | Chown Username filename | Change user ownership of the file |
| Chgrp groupName filename | Change owrner of group of the file. | Setfacl –m u:user:rwx /PathOfTheFile | Add permission for user |
| Setfacl –m g:group:rw /PathOfTheFile | Add permission for group | Setfacl –dm rwx /PathOfFile | Inherit the permission in sub directory and files. |
| Setfacl –x u:user:rwx /PathOfTheFile | Remove specific permission for user | Setfacl –b /PathOfTheFile | Remove all ACL permission you have created. |
| Getfacl filename | Check user/group ownership of file |  |  |

Adding Text to File

|  |  |  |  |
| --- | --- | --- | --- |
| Echo “jermy” > filename | Create new or overwrite the existing file | Ls –l > filename | Add result to the file |
| Echo “New Line” >> filename | Add additional line to the file. | Date >> filename | Date will be added to the new line. |
| Echo “hello” | tee filename | Create a new file and display the result at same time. | Echo “hello” | tee –a filename | Append a new file in the file |
| Wc –c filename | Count the letters in the file | Ls –l | tee fille1 file2 file3 | Output in multiple files |
| Ls –l | more | Cmd and more do divide the page into 2 parts | Ls –l | tail -1 | Get the last file in the list |

File Maintenance Commands (cp, rm, mv, mkdir, rmdir)

|  |  |  |  |
| --- | --- | --- | --- |
| cp david greg | Copy file with different name | Mv david /tmp | Move file from current directory to inside /tmp directory. |
| Cp david /tmp | Paste file David to tmp directory | Mkdir DirectoryName | Create new directory |
| Cp /var/log/filename /tmp | Copy and Paste filename to tmp directory | Rm –rf directoryName | Remove directory and sub directory files. |
| Rm filename | Remove filename | Head –2 filename | See first 2 lines of the file |
| Mv david greg | Rename the file in the same directory | Tail –2 filename | See last 2 lines of the file |

Fillters/text Processing Commands (cut,awk, grep,egrep, sort,uniq,wc)

|  |  |  |  |
| --- | --- | --- | --- |
| Cut (used for letters) | Summary | Grep narender /etc/passwd | Will display the line based on search |
| Cut –version | Check version | Grep –i keywords filename | Search without worrying about case |
| Man cut | Check example using cut | Ls –l | awk print {print $1, $3} | Select 1 and 3 words in line |
| Cut –c1 filename | Give you the first characters in the line | Ls –l | awk print {print $NF} | Last field of the output |
| Cut –c1,2,4 | Give info of 1,2 and 4 character. | Grep -v narender filename | Give all the lines that didn’t match the search. |
| Cut –c1-3 | Give info from 1 to 3 character. | Egrep “keyword|keyword2” filename | Search multiple words in the file |
| Cut –c1-3 filename1 filename2 | Give info from 1 to 3 character in both files. | Egrep “keyword|keyword2” filename | Search multiple words in the file with case sensitive. |
| Cut –b 1-3 | Provide information in bytes instead of chracter | Sort filename | Sort file alphabetically |
| cut -d: -f 1-2 filename | -f provide 1–2-line info | Sort –r filename | Sort file in reverse order |
| Grep –c keyword filename | Search the keyword and count the words in file | Sort –k2 filename | Sort by second column |
| Grep –n keyword file | Search and line in number | Sort filename | unique | Sort and remove duplicates |
| Awk (used for words) | Summary | Sort filename | unique –c | Count the unique words |
| Awk –version | Check version | Sort filename | unique –d | Show duplicate only |
| Awk ‘{print $1}’ | Select 1 word in line | Wc filename | Get the line words and character |
| Awk ‘{print $1, $3}’ | Select 1 and 3 words in line | Wc –l filename | Get the line numer in the file |
| Echo “Hello Tom” | awk ‘{$2=” Adam”; print $0}’ | Replace the word in the file | Wc –w filename | Get the word count in the file |
| Grep seinfield filename | Will display the line based on search | Wc –b file | Get the byte size in the file |

Compress and Un-Compress files (tar, gzip, gunzip, truncate)

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| --- | --- | --- | --- |
| Tar cvf filename.tar <location> | Take a bunch of file and compile them | gzip | Gzip filename.tar |
| Tar xvf filename.tar <location> | Extract tar file | Gzip –d filename.tar.gz  Gunzip filename.tar.gz | Gzip or gunzip |

Linux vs Widows command

|  |  |  |
| --- | --- | --- |
| Command | Windows | Linux |
| Listing of a directory | dir | Ls –l |
| Rename a file | ren | mv |
| Copy a file | Copy | cp |
| Move file | Move | mv |
| Clear screen | cls | clear |
| Delete file | del | rm |
| Compare contents of files | fc | diff |
| Search for word/string in file | find | grep |
| Help command | Command /? | Man command |
| Display your location in the file system | chdir | pwd |
| Display the time | time | date |

Sed Command

|  |  |  |  |
| --- | --- | --- | --- |
| Sed ‘s/Kenny/Lenny/g’ filename | Replace all Kennywith Lenny | Sed –i 1,2d filename | Remove 1 and 2 line from the file. |
| Sed –i ‘s/kenny/Lenny/g’ filename | Replace all Kenny with Lenny. Keep output separate. | Sed –i ‘s/\t/ /g’ filename | Remove all the tab space |
| Sed –i ‘s/Constanza//g’ filename | Remove “Constanza” from the file. | Sed –i ‘-s//\t/g’ filename | Set the file in order |
| Sed –i ‘/seinfield/d’ filename | Remove all the line which have seinfield. | Sed –n 12,18p filename | Show line 12 to 18 |
| Sed –i ‘/^$/d’ filename | Remove empty line from the file | Sed –n 12,18d filename | Show line except 12 to 18 |
| Sed –i ‘1d’ filename | Remove first line in the file | Sed –i G filename | Put empty line after every character. |
| Sed ‘8!s/Seinfield/S/’ filename | Replace word Seinfield with S except line number 8 |  |  |

User Account Management

* /etc/passwd - User info (username, userID, GroupID)
* /etc/group - define group in a system
* /etc/shadow - password (username, password, last Password change, min, max, password, expiry).

|  |  |  |  |
| --- | --- | --- | --- |
| useradd john | Add user “John” | Gppasswd –a username groupname | Add user to group using “-a” |
| Useradd –c “Comment” -m John | Create user add comment and create home directory (-m) for user | Gppasswd –d username groupname | Delete user from group |
| Chage [- mindays] [-M maxdays] [-d lastdays] [-I inactive] [-E expiredate] [-W warndays] username | Enable password and aging for user and group | /etc/login.def | Corporate policy |

Switch Users and Sudo Access (su, sudo, visudo)

|  |  |  |  |
| --- | --- | --- | --- |
| Su –John | Switch user to John | Usermod –aG GroupName UserName | Add user in group with sudo permission |
| Su - | Switch to root | Visudo or /etc/sudoers | Give sudo permission to user or create a seperate group |

Talking to Users (users,wall, write)

|  |  |  |  |
| --- | --- | --- | --- |
| users | How many users are login | Wall <username> + enter 2 times + “write the message” | Write message to individual user. |
| Wall + enter 2 times + “Write Message” | Send message to all user who are log in |  |  |

Types of Account

1. Local Accccount
2. Domain/Directory Account [LDAP(llight weight directory protocol), IDAP(Identity Manager), WinBIND (Samba), OpenLDAP (openSource), IBM directory Server, Jump Cloud]

System Utility Commands

|  |  |
| --- | --- |
| Date |  |
| uptime |  |
| hostname |  |
| Uname –a (OS system type) |  |
| Which | Will provide location of the file path |
| calc | Calendar |
| bc | Binary calculator (quit to exit) |

Process/Service Commands (systemctl, ps, top, crontab, at)

|  |  |
| --- | --- |
| Systemctl |start|stop|status servicename | Start, stop, status of servicename |
| Systemctl restart|reload servicename | Restart and reload servicename |
| Systemctl status servicename | Check statos service |
| Ps –e, ps aux, ps –ef, ps -u | What process are running on the system |
| Top | Check memory and CPU per process |
| kill | Kill cmd use to kill proccess ID |
| Crontab | Crontab –e "edit/new”,  -l “list the CronJob entities,  -r remove the crontab,  crond “daemon and service that manage scheduling”  /etc/cron\* (all cron job set up)  /etc/anacrontab (except hourly)  /etc/cron.d/0hourly (hourly) |
| Systemctl crond | Systemctl status crond |
| at | It is similar to cron job allowing you to set schedule jobs only once |

System Monitoring

|  |  |
| --- | --- |
| top | Top process running in the system |
| df | Disk partition (df –h human readable) |
| dmesg | Error message failure info |
| iostat | Internal and external device communication info |
| netstat | Info all the IP connection |
| free | Meomory and swap info |
| Cat /proc/cpuinfo | Cpu info |
| Cat /proc/meminfo | Memory info |

System Maintenance Command

|  |  |
| --- | --- |
| init | The 'init' command initializes the system by executing scripts that set up the operating environment. These scripts, known as "init scripts" or "rc scripts" (short for run command scripts), are used in both Linux and UNIX systems to start and stop services and perform various other tasks during system initialization. |
| shutdown | Shutdown cmd |
| reboot | reboot |
| halt | Shutdown the OS, will now wait on process to close. It is equal to PowerOff |

System information

|  |  |
| --- | --- |
| hostnamectl –set-hostname <newhostname>  Vi /etc/hostname  /etc/sysconfig/network (older version) | Change hostname |
| Uname –a | Provide information the OS |
| dmidecode | Provide information about hardware (run on root privilege only) |

Terminal Control Keys and Command

|  |  |
| --- | --- |
| Ctrl + U | Erase everything you have typed in cmd line |
| Ctrl + C | Stop/killl a command |
| Ctrl + z | Suspend a command |
| Ctrl + d | Exit from a interactive program (Signal end of data) |
| clear | Clear the screen |
| Exit | Exit the terminal or user session |
| Script <filename>.log | Store terminal activity in a logfile |
| Recover Root Password | Restart your computer  Edit grub (press E + rw init=/sysroot/bin/sh, ctrl+x chroot /sysroot, password root)  Change password and exit  reboot |

Environment Variable

|  |  |
| --- | --- |
| Printevn or evn | View all environment |
| View one Environment | View one environment variable |
| Export TEST=1  Echo $TEST | To set the environment variable. Will get when system get reboot. |
| Vi .bashrc  TEST=’123’ | To set environment variable permenently |
| Ls –l /etc/profile or ls –l /etc/bashrc | To set environment variable globally |

Special permission

|  |  |
| --- | --- |
| setuid |  |
| setgid |  |
| stickybit |  |

Networking

|  |  |
| --- | --- |
| /etc/nswitch.conf |  |
| /etc/hostname | Change IP and hostname |
| /etc/sysconfig/network |  |
| /etc/sysconfig/network-script | Define you IP and make it static bootproto=static |
| /etc/resolv.conf | DNS resolution |
| Ifup or ifdown | Find all NIC on your hostname |
| Ehtool <NICName> | Nic Health |
| /etc/sysconfig/network-scripts/ethernal1 | Define you IP address with ONBOOT=YES. If you have multiple NIC. It should be in the same path |
| NMTUI | Network user interface |

Downloading files/Apps and Lookup

|  |  |
| --- | --- |
| Wget <pasteURL> | Download file from website |
| Curl -O <pasteURL> | Download file from website. Similair to wget |
| Nslookup <website> |  |
| Ping <website> |  |

|  |  |
| --- | --- |
| yum,apt-get,rpm | System update, Patch Management and Apps |
| FTP | File transfer Protocol port 21 |
| SFTP and SSH | Secure FTP and SSH port 22 |
| Rsync | Used for backup |
| Createrrep | Create package manager for private manager |
| Rsyslog | generate logs and collect logs from other servers |
| OS hardening | User account, remove unwanted packages, check listening ports, secure SSH configuration, enable FirewallD, Enable SELinux, Change listening service port number |
| Traceroute | Trace network from source to destination. Tracecert in WindowsOS |
| Ssh-keygen | Generate SSH keys |
| Ssh-copy-id root@<ipaddress> | Copy the key remotely |
| Cockpit | Redhat UI tool for centralize management |
| Tune, nice and renice | Helps to prioritize PID |