As a DevOps professional, mastering the Linux command line is crucial for efficient server management, automation, and troubleshooting. In this comprehensive guide, we'll explore 50 essential Linux commands that every DevOps user should know. Each command is accompanied by a clear explanation and practical examples to help you deepen your Linux proficiency.

1. ls – List Files and Directories: List the contents of a directory.

Example: ls –l

2. cd – Change Directory: Navigate to a different directory.

Example: cd /home/user/documents

3. pwd – Print Working Directory: Display the current directory's full path. Example: pwd

4. mkdir – Make Directory: Create a new directory.

Example: mkdir new_folder

5. rm – Remove: Delete files or directories.

Example: rm file.txt

6. cp – Copy: Copy files or directories.

Example: cp file.txt /backup

7. mv – Move: Move files or directories.

Example: mv file.txt /new_location

8. touch – Create Empty File: Create a new empty file.

Example: touch new_file.txt

9. cat – Concatenate and Display: View the content of a file.

Example: cat file.txt

10. nano – Text Editor: Open a text file for editing.

Example: nano file.txt

11. grep – Search Text: Search for text patterns in files.

Example: grep "pattern" file.txt

12. find – Search Files and Directories: Search for files and directories. Example: find /path/to/search -name "file_name"

13. chmod – Change File Permissions: Modify file permissions.

Example: chmod 755 file.sh

14. chown – Change Ownership: Change the owner and group of a file or directory.

Example: chown user:group file.txt

15. ps – Process Status: Display running processes.

Example: ps aux

16. top – Monitor System Activity: Monitor system processes in real-time. Example: top

17. kill – Terminate Processes: Terminate a process using its ID.

Example: kill PID

18. wget – Download Files: Download files from the internet.

Example: wget https://example.com/file.zip

19. curl – Transfer Data with URLs: Transfer data to or from a server. Example: curl -O https://example.com/file.txt

20. tar – Archive and Extract: Create or extract compressed archive files. Example: tar -czvf archive.tar.gz folder

21. ssh – Secure Shell: Connect to a remote server securely.

Example: ssh user@remote_host

22. scp – Securely Copy Files: Copy files between local and remote systems using SSH.

Example: scp file.txt user@remote_host:/path

23. rsync – Remote Sync: Synchronize files and directories between systems.

Example: rsync -avz local_folder/ user@remote_host:remote_folder/

24. df – Disk Free Space: Display disk space usage.

Example: df -h

25. du – Disk Usage: Show the size of files and directories.

Example: du -sh /path/to/directory

26. ifconfig – Network Configuration: Display or configure network interfaces (deprecated, use ip).

Example: ifconfig

27. ip – IP Configuration: Manage IP addresses and network settings. Example: ip addr show

28. netstat – Network Statistics: Display network connections and statistics (deprecated, use ss).

Example: netstat -tuln

29. systemctl – System Control: Manage system services using systemd. Example: systemctl start service_name

30. journalctl – Systemd Journal: View system logs using systemd's journal.

Example: journalctl -u service_name

31. cron – Schedule Tasks: Manage scheduled tasks.

Example: crontab -e

32. at – Execute Commands Later: Run commands at a specified time. Example: echo "command" | at 15:30

33. ping – Network Connectivity: Check network connectivity to a host. Example: ping google.com

34. traceroute – Trace Route: Trace the route packets take to reach a host. Example: traceroute google.com

35. curl – Check Website Connectivity: Check if a website is up.

Example: curl -Is https://example.com | head -n 1

36. dig – Domain Information Groper: Retrieve DNS information for a domain.

Example: dig example.com

37. hostname – Display or Set Hostname: Display or change the system's hostname.

Example: hostname

38. who – Display Users: Display currently logged-in users.

Example: who

39. useradd – Add User: Create a new user account.

Example: useradd newuser

40. usermod – Modify User: Modify user account properties.

Example: usermod -aG groupname username

41. passwd – Change Password: Change user password.

Example: passwd username

42. sudo – Superuser Do: Execute commands as the superuser.

Example: sudo command

43. lsof – List Open Files: List open files and processes using them. Example: lsof -i :port

44. nc – Netcat: Networking utility to read and write data across network connections.

Example: echo "Hello" | nc host port

45. scp – Secure Copy Between Hosts: Copy files securely between hosts. Example: scp file.txt user@remote_host:/path

46. sed – Stream Editor: Text manipulation using regex.

Example: sed 's/old/new/g' file.txt

47. awk – Text Processing: Pattern scanning and text processing.

Example: awk '{print $2}' file.txt

48. cut – Text Column Extraction: Extract specific columns from text. Example: cut –d"," –f2 file.csv

49. sort – Sort Lines: Sort lines of text files.

Example: sort file.txt

50. diff – File Comparison: Compare two files and show differences. Example: diff file1.txt file2.txt