Here are 50 Linux commonly encountered troubleshooting scenarios by DevOps and Cloud engineers, along with detailed descriptions and the corresponding Linux commands:

1. High CPU Usage: Description: The server is experiencing high CPU usage, impacting performance. Commands:
    - View CPU usage: **top** or **htop**
    - Identify high CPU processes: **ps -eo pid,ppid,%cpu,%mem,cmd --sort=-%cpu | head**
2. High Memory Usage: Description: The server is running out of memory, causing slowdowns. Commands:
    - View memory usage: **free -h**
    - Identify high memory processes: **ps -eo pid,ppid,%cpu,%mem,cmd --sort=-%mem | head**
3. Disk Space Utilization: Description: Check disk space usage on the server. Commands:
    - View disk space: **df -h**
    - Identify large directories: **du -sh * | sort -hr | head**
4. Log File Monitoring: Description: Monitor log files in real-time for troubleshooting. Commands:
    - Tail and follow a log file: **tail -f /path/to/logfile**
5. Port Status: Description: Check the status of network ports. Commands:
    - List listening ports: **netstat -tuln**
    - Check specific port: **netstat -tuln | grep <port_number>**
6. Key Log Locations: Description: Locate important log files for troubleshooting. Commands:
    - System log: **/var/log/syslog**
    - Apache access log: **/var/log/apache2/access.log**
    - MySQL error log: **/var/log/mysql/error.log**
7. Firewall Testing: Description: Verify if firewall rules are allowing/denying traffic correctly. Commands:
    - Check firewall status: **sudo ufw status**
    - Test connectivity to a specific port: **telnet <host> <port>**
8. Archive Management (tar): Description: Create and extract tar archives. Commands:
    - Create a tar archive: **tar -czvf archive.tar.gz /path/to/directory**
    - Extract a tar archive: **tar -xzvf archive.tar.gz**
9. Text Manipulation (sed): Description: Modify text using sed (stream editor). Commands:
    - Replace text in a file: **sed -i 's/<search>/<replace>/g' filename**
10. File Editing (vi editor): Description: Edit files using the vi editor. Commands:

- Open a file for editing: **vi filename**
- Save and exit: Press **Esc** then **:wq** and hit **Enter**

11. Mounting Volumes: Description: Mount external volumes to the Linux filesystem. Commands:
    - List available volumes: **lsblk**
    - Mount a volume: **sudo mount /dev/sdX /mnt/mountpoint**
12. File Permissions: Description: Check and modify file permissions. Commands:
    - Check file permissions: **ls -l filename**
    - Modify file permissions: **chmod <permissions> filename**
13. Network Interface Configuration: Description: Manage network interfaces and configurations. Commands:
    - View network interfaces: **ifconfig** or **ip addr show**
    - Restart network service: **sudo systemctl restart networking**
14. Service Status and Restart: Description: Check the status of services and restart if necessary. Commands:
    - Check service status: **sudo systemctl status <service_name>**
    - Restart a service: **sudo systemctl restart <service_name>**
15. SSH Connection Issues: Description: Troubleshoot SSH connection problems. Commands:
    - Check SSH service status: **sudo systemctl status ssh**
    - Check SSH configuration: **sudo vi /etc/ssh/sshd_config**
16. Network Connectivity Testing: Description: Test network connectivity to a specific host. Commands:
    - Ping a host: **ping <host>**
    - Check if a port is open: **nc -zv <host> <port>**
17. Kernel Parameter Modification: Description: Modify kernel parameters for performance tuning. Commands:
    - View current kernel parameters: **sysctl -a**
    - Modify a kernel parameter: **sudo sysctl -w <parameter>=<value>**
18. Process Monitoring and Management: Description: Monitor and manage running processes. Commands:
    - List running processes: **ps aux**
    - Kill a process: **sudo kill <process_id>**
19. Disk I/O Monitoring: Description: Monitor disk I/O performance. Commands:
    - View disk I/O statistics: **iostat -d**

- Monitor real-time disk I/O: **iostat -d 1**

20. Network Bandwidth Monitoring: Description: Monitor network bandwidth usage. Commands:
    - View network interface statistics: **ifstat**
    - Monitor real-time bandwidth: **ifstat -i <interface_name>**
21. User and Group Management: Description: Manage users and groups on the system. Commands:
    - Add a user: **sudo useradd <username>**
    - Add a user to a group: **sudo usermod -aG <group> <username>**
22. Disk Check and Repair: Description: Check and repair file system errors on disks. Commands:
    - Check disk for errors: **sudo fsck /dev/sdX**
    - Repair disk errors interactively: **sudo fsck -y /dev/sdX**
23. System Reboot: Description: Reboot the Linux system. Commands:
    - Reboot immediately: **sudo reboot**
    - Schedule a reboot: **sudo shutdown -r <time>**
24. Process Resource Usage: Description: Monitor CPU and memory usage of specific processes. Commands:
    - Monitor CPU and memory usage of a process: **top -p <process_id>**
25. Time Synchronization: Description: Synchronize system time with NTP servers. Commands:
    - Check time synchronization status: **timedatectl status**
    - Synchronize time with NTP server: **sudo timedatectl set-ntp true**
26. Package Installation and Updates: Description: Install and update packages using package managers. Commands:
    - Install a package: **sudo apt install <package_name>**
    - Update installed packages: **sudo apt update && sudo apt upgrade**
27. System Load Average: Description: Check system load average. Commands:
    - View load average: **w** or **uptime**
28. System Resource Usage Summary: Description: Get a summary of system resource usage. Commands:
    - View resource usage summary: **top** or **htop** (press **Shift+H** to show threads)
29. Service Auto-Start Configuration: Description: Configure services to start automatically at boot. Commands:
    - Enable a service: **sudo systemctl enable <service_name>**
    - Disable a service: **sudo systemctl disable <service_name>**

30. System Information: Description: Obtain general system information. Commands:
    - View system information: **uname -a** or **lsb_release -a**
31. Nginx Configuration Test: Description: Test the Nginx configuration for syntax errors. Commands:
    - Test Nginx configuration: **sudo nginx -t**
32. Apache Configuration Test: Description: Test the Apache configuration for syntax errors. Commands:
    - Test Apache configuration: **sudo apachectl configtest**
33. Docker Container Management: Description: Manage Docker containers. Commands:
    - List running containers: **docker ps**
    - Stop a container: **docker stop <container_id>**
34. Kubernetes Pod Inspection: Description: Inspect Kubernetes pods for troubleshooting. Commands:
    - List pods: **kubectl get pods**
    - Describe a pod: **kubectl describe pod <pod_name>**
35. Database Connectivity Testing: Description: Test database connectivity. Commands:
    - Connect to a database: **mysql -h <host> -u <username> -p**
36. Firewall Configuration: Description: Configure firewall rules. Commands:
    - Add a firewall rule: **sudo ufw allow <port>/<protocol>**
    - Remove a firewall rule: **sudo ufw delete allow <port>/<protocol>**
37. System Service Logs: Description: View system service logs. Commands:
    - View service logs: **journalctl -u <service_name>**
38. System File Integrity Check: Description: Verify the integrity of system files. Commands:
    - Check file integrity: **sudo debsums -c**
39. Network Route Configuration: Description: Configure network routes. Commands:
    - Add a network route: **sudo ip route add <network> via <gateway>**
    - Remove a network route: **sudo ip route del <network>**
40. SSH Key Configuration: Description: Configure SSH key-based authentication. Commands:
    - Generate an SSH key pair: **ssh-keygen**
    - Copy SSH key to a remote server: **ssh-copy-id <user>@<host>**
41. System Crashes and Kernel Panics: Description: Troubleshoot system crashes and kernel panics. Commands:
    - Check system crash logs: **sudo journalctl -p crit -b**
42. NTP Server Configuration: Description: Configure a Linux server as an NTP server. Commands:

- Install NTP server: **sudo apt install ntp**
- Configure NTP server: **sudo vi /etc/ntp.conf**

43. DNS Resolution Issues: Description: Troubleshoot DNS resolution problems. Commands:
    - Check DNS server configuration: **cat /etc/resolv.conf**
    - Test DNS resolution: **nslookup <domain>**
44. SELinux Configuration: Description: Manage SELinux settings. Commands:
    - Check SELinux status: **sestatus**
    - Change SELinux mode: **sudo setenforce 0** (permissive mode)
45. Filesystem Check and Repair at Boot: Description: Configure filesystem check and repair at boot. Commands:
    - Edit filesystem check configuration: **sudo vi /etc/fstab**
    - Force filesystem check at next boot: **sudo touch /forcefsck**
46. Apache Virtual Host Configuration: Description: Configure Apache virtual hosts. Commands:
    - Create a virtual host file: **sudo vi /etc/apache2/sites-available/<site>.conf**
    - Enable a virtual host: **sudo a2ensite <site>**
47. Docker Image Cleanup: Description: Remove unused Docker images. Commands:
    - List Docker images: **docker images**
    - Remove a Docker image: **docker rmi <image_id>**
48. Filesystem Permissions: Description: Check and modify filesystem permissions. Commands:
    - Check permissions recursively: **ls -lR <directory>**
    - Change ownership recursively: **sudo chown -R <user>:<group> <directory>**
49. Log Rotation Configuration: Description: Configure log rotation for log files. Commands:
    - Edit log rotation configuration: **sudo vi /etc/logrotate.conf**
    - Manually rotate logs: **sudo logrotate -f /etc/logrotate.conf**
50. CPU Performance Scaling: Description: Manage CPU performance scaling settings. Commands:
    - Check CPU frequency scaling: **cpufreq-info**
    - Set CPU performance mode: **sudo cpufreq-set -g performance**

Please note that the commands provided are examples, and actual troubleshooting steps may vary based on the specific Linux distribution and setup.